BROOME AND BEYOND

PLANTS AND PEOPLE OF THE DAMPIER PENINSULA, KIMBERLEY, WESTERN AUSTRALIA

KEVIN F. KENNEALLY, DAPHNE CHOULES EDINGER and TIM WILLING

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KEVIN F. KENNEALLY,

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and

TIM WILLING

with the assistance of members of the Broome Botanical Society (Inc.),

especially Brian Carter, David Dureau, Paul Foulkes and John Martin,

and Aboriginal Communities of the Dampier Peninsula

BROOME AND BEYOND

Department of Conservation and Land Management

CONTRIBUTORS

The following people have made an essential contribution to this book over many years, serving on an advisory committee during the formative stages of the project, collecting plant specimens and making invaluable observations on the flora of the Dampier Peninsula.

Brian Carter came to Derby in 1959, to work as one of the Kimberley's first air charter pilots. Since 1972 he and his wife Violet, a member of the Bardi community, have lived with their family at One Arm Point. During this time he has developed a strong interest in traditional Aboriginal plant usage. Brian began collecting and photographing botanical specimens in the mid-1980s, and contributed many of the photographs in this book. **David Dureau** arrived in Broome aboard a lugger in 1970, after a varied career in farming, fishing and mining. He spent the next eight years as a lugger skipper and diving for pearls. Since then he has worked in Broome, serving as a Shire Councillor 1977–80. David has always had a strong interest in conservation and was a founder member of the Broome Botanical Society. **Paul Foulkes** migrated to Australia from England with his family, settling in Broome in 1974. Paul was a founder member of the Broome Botanical Society, the Kimberley Conservation Group and the Field Naturalists' Club, and has played a leading role in all three organisations. He has become well known for his plant drawings, many of which have appeared in *Broome News*, and his discovery of important new dinosaur footprints and trackways in the area, and has pioneered Broome Bushwalks. His sons Kevin, Ian and Troy have all contributed to field work. **John Martin** has been a resident of Broome since 1980, including five years living at the Beagle Bay Aboriginal Community where he developed an interest in Aboriginal plant usage. Between 1986 and 1988 he was a collector for the CSIRO National Tree Seed Centre. He is an active member of the Broome Botanical Society, Kimberley Conservation Group and Kimberley Field Naturalists' Club.

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Broome Botanical Society

PREFACE

The aim of this book is to provide a readily usable, yet comprehensive, source of natural history and botanical information for Broome and its immediate region. It will help both residents and visitors to the region to understand and interpret the landscape of the Dampier Peninsula. In addition, it brings together a detailed history of botanical exploration in the area, from the early forays of Dampier and Cunningham to the present day.

Aborigines have lived on the Dampier Peninsula for many thousands of years, their intimate knowledge of natural cycles, animals and plants allowing them to survive in the harsh environment. Detailed knowledge of plants was passed on in the oral tradition, but relatively little has been documented until recently. Here, we attempt to combine the botany of both Aboriginal and European cultures. We hope this book will encourage readers to appreciate the wonders of the bush and to discover the traditional values and uses of many of the plants.

With the current focus on the environment and the move towards nature-based tourism, people everywhere are striving for a better understanding of the natural environment. Arid Australian landscapes such as those found on the Dampier Peninsula have often been dismissed as mere 'bush' or 'scrub', without apparent value in strict monetary terms, but their value lies in the wealth of plant and animal species they contain. It is increasingly being recognised that the preservation of this 'biodiversity' is essential to ensuring a sustainable future for Australia and the world.

Because of its novel setting at the transition between the desert and tropics, the Dampier Peninsula contains many unusual plants and plant communities, some of which are threatened by human activities. Exploitation of natural resources and the pastoral impact of introduced European animals have transformed the Kimberley landscape. It is this habitat alteration and destruction that threatens the survival of some Peninsula species.

This inventory of the plants of the Dampier Peninsula will be invaluable in assessing and monitoring the biodiversity of the Peninsula and the adequacy of its conservation reserves. It is believed to be the most detailed botanical work yet produced for a restricted geographical area of tropical Australia.

The book contains introductory sections on the environment, traditional plant usage, botanical exploration, plant communities and conservation of the Peninsula. This is followed by a comprehensive plant list covering descriptions and usages for the more than 700 species known to occur on the Peninsula. Although no botanical identification keys have been attempted, the wealth of colour photographs will assist in the swift recognition of species. There are appendices covering the algae, fungi, lichens and type-specimens collected from the Peninsula, a glossary to assist with unfamiliar terms and a bibliography of useful references.

ACKNOWLEDGEMENTS

A project of this enormity in such a remote area of the State could not have been completed without the help and assistance of many people, to all of whom we are indebted.

In particular, we thank the Aboriginal Communities at One Arm Point, Lombadina, Beagle Bay and Broome for their assistance and advice. Brian Carter particularly acknowledges the Bardi Community and his wife Violet for support and guidance with information on plants, their uses and names. John Martin particularly acknowledges his friends and co-workers at the Beagle Bay Aboriginal Community, together with those who have since set up outstations, including those at Ladjardarr Bay and Bargajuk, for showing him right across their country, passing on a wealth of information on local uses of plants and wildlife, and for their patience and good humour. Assistance with the orthography for Bardi names has been provided by Gedda Aklif of the Department of Linguistics, Australian National University, Canberra. Special thanks to Martina Dixon and Graham Donation for all their help.

The initial fieldwork on the Peninsula in 1977 was arranged and co-ordinated by Norm McKenzie of the Department of Conservation and Land Management (but then of the Department of Fisheries and Wildlife). He was also responsible for organising the Kimberley Rainforest Survey, which included sites on the Peninsula at Cygnet Bay, Cape Borda and Cape Leveque.

Members of the Broome Botanical Society have provided much of the plant material and photographs over the years, as well as responding to numerous requests for follow-up collections. They have also joined many of the field expeditions and provided logistical support and local knowledge. To their immense credit, almost all of this has been done in their own time and at their own expense.

Staff of the Battye Library of WA and the Broome Shire Library have tirelessly assisted with numerous requests for obscure literature. Many Broome residents and members of the Broome Historical Society have shared information and their memories of the town and the Peninsula. We particularly thank Freddy Redfearn and Peggy Lawrence.

Botanical colleagues in herbaria, within Australia and overseas, have been tremendously supportive of this project and have given freely of their expertise in providing identifications of plants in families under revision and advice on historical collections and collectors. We thank the various Australian Botanical Liaison Officers at the Royal Botanic Gardens, Kew, for obtaining photographs of type-specimens and for checking historical information.

We pay tribute to Judy Wheeler (Editor) and her colleagues at the WA Herbarium, for their major accomplishment in completing the *Flora of the Kimberley Region* and the technical staff at the WA Herbarium, in particular Phil Spencer, Wendy Searle and Suzanne Curry.

Copies of P.P. King's unpublished charts were supplied by the Hydrographic Office, London. Advice on Allan Cunningham was provided by Suzanne Curry and Bruce Maslin.

The assistance of Dr Stephen McLoughlin of the Geology Department, University of Western Australia, with advice on the fossil flora of the Broome Sandstone is gratefully acknowledged.

We thank Peter White, his successor Allen Grosse and their staff at the Department of Conservation and Land Management in Broome, and Chris Done the Regional Manager, Kimberley, for their assistance and support throughout the project. The staff of the Broome office of the Department of Agriculture provided willing support and encouragement to Botanical Society members.

Paul Lane kindly made available conference room facilities in Broome, by courtesy of the Commission for Aboriginal Reconciliation.

This book would not have been published without the foresight of the Lotteries Commission community funding initiative, which provided a substantial grant to the Broome Botanical Society via the Gordon Reid Foundation for Conservation. We are deeply indebted to all the committee members who believed in our capacity to bring it to fruition, and to Michael Crouch the Executive Officer who co-ordinated the grant. The publication was further advanced by a grant provided by Ernie Bridge, M.L.A. for Kimberley, during his tenure as Minister for the North West. Bruce Barker of Onslow and Ross Barker of Broome also made substantial personal donations to assist with the cost of colour plates, which we acknowledge with gratitude.

Finally, Tim Willing and Kevin Kenneally would like to acknowledge the support of their wives, Alison Spencer and Irene Ioannakis, for their forebearance and companionship throughout this project.

CONTENTS

PART ONE

Pink mulla mulla (Ptilotus exaltatus)

INTRODUCTION

The Dampier Peninsula forms a remarkable environmental transition zone between the Great Sandy Desert to the south and the monsoonal tropics to the north.

The interior of the Peninsula presents a harsh landscape of low sandstone outcrops and red 'pindan' sandplains. The grasslands of the pindan country are dotted with a variety of eucalypts and low wattles. By mid-year the golden blaze of the pindan wattle dominates the landscape and the night air is heavy with its perfume. Throughout the year the scent of saltwater paperbark pervades the tropical air.

John Lort Stokes, who explored the Peninsula in 1838 from HMS *Beagle*, described his impressions of the pindan (Stokes, 1846):

> "The soil of the extensive plain over which we journeyed this day, was light and sandy in character, but the large amount of vegetable matter which it contains, and the effect of the late rains, which had penetrated some 24 or 30 inches into it, made us perhaps somewhat overvalue its real merits. This plain rose gradually before us until it reached an elevation of 180 feet above the level of the sea, and was covered with a long, thin grass, through which the startled kangaroo made off every now and then at a killing pace.
>
> "The face of the country was well but not too closely covered with specimens of the red and white gum, and paper bark tree, and several others. The timber was but small, the diameter of the largest, a red gum, 18 inches.
>
> "Ever and anon the sparkling brilliant lizards darted down from their resting places among the boughs, so rapid in their fearful escape, that they caught the eye more like a flash of momentary light, than living, moving forms."

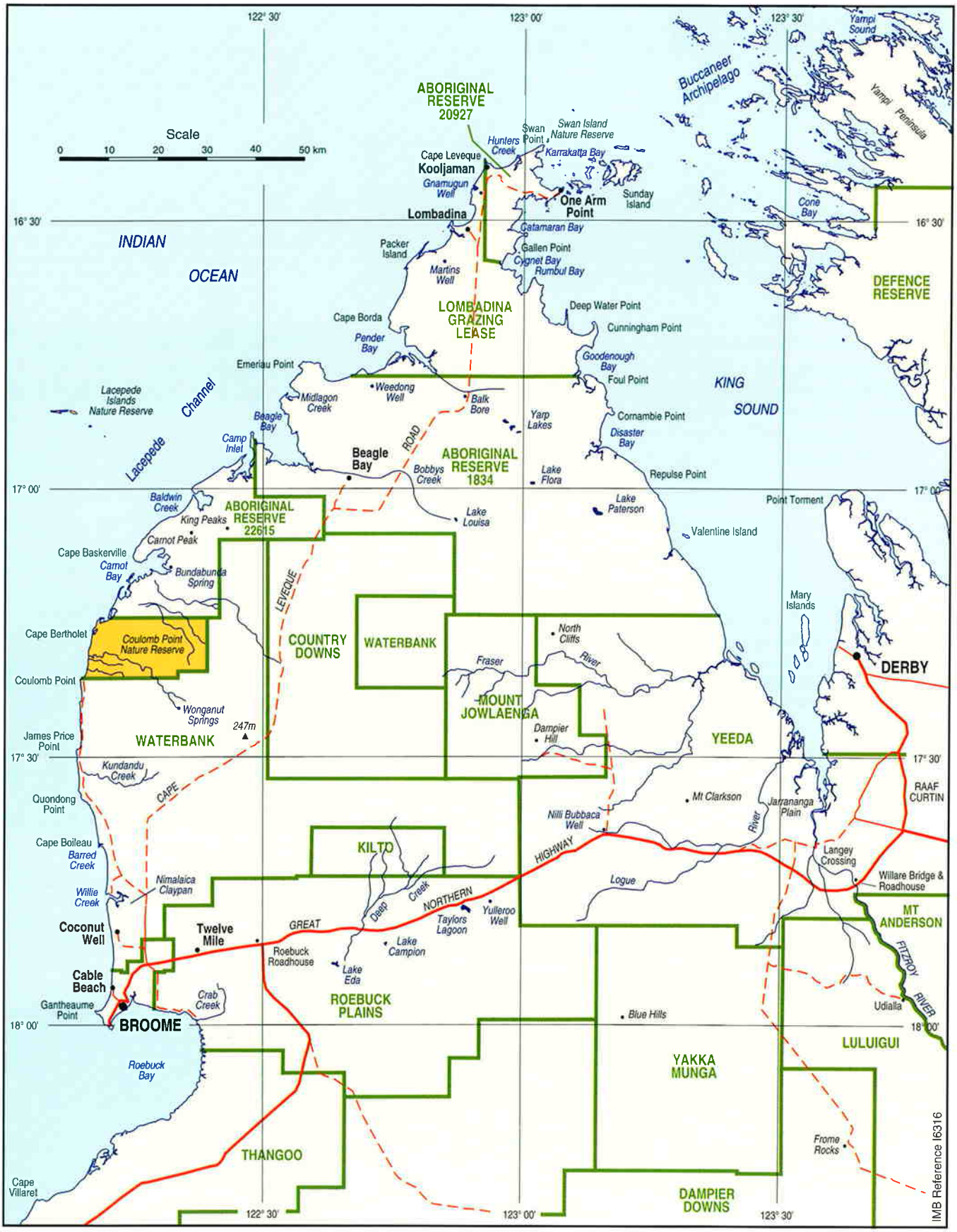
*Pindan wattle (*Acacia tumida*)*

The plant communities of the coast around the Peninsula are especially varied, where dense belts of mangrove form a link between the land and sea, constantly flooded by the daily rise and fall of the large tides. Within this green mantle hide unusual marine animals and birds that are adapted to the rich environment. The white sandy beaches are dotted with clumps of spinifex and the creeping purple-flowered beach morning glory.

Behind the beach dunes are vast areas of tidal mudflat, dominated by fields of red-stemmed samphire and saline grasslands. Here, flocks of brolga can be seen feeding or noisily trumpeting as they perform their display rituals. Fringing the landward side of the coast are pockets of tangled vine thicket. Where the land is wet and swampy, majestic groves of paperbark crowd together, sheltering banks of feathery ferns and myriad butterflies.

To some, the vegetation of the Peninsula may appear dull and uninteresting, but to those who take the time to understand its complexities, it reveals a wealth of fascinating plant communities.

Moochoo Davey hunting in mangroves with Acacia tumida *spear*



Map of the Dampier Peninsula

DEFINING THE DAMPIER PENINSULA

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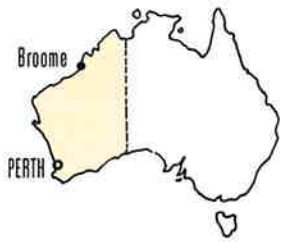
In this book the Dampier Peninsula (sometimes referred to as Dampierland or Dampier's Land) is defined as that area of land extending north of the Great Northern Highway (between Broome and Willare on the Fitzroy River) and bounded to the west by the Indian Ocean and to the east by King Sound. Because Roebuck Plains Station abuts the southern boundary, plant records from here have been included. All of the Peninsula falls within the Dampier Botanical District of the Northern Botanical Province, as defined by Beard (1979). The Peninsula covers about 14 000 square kilometres; the total area of the Dampier Botanical District is 84 400 square kilometres.

Climate and Seasonality

The Dampier Peninsula has a tropical climate with a distinct wet season from December to March, during which almost all the annual rainfall is received and the humidity is usually high. There are only two significant seasons, separated by brief transitional periods. The difference between the wet and dry seasons is dramatic and the landscape takes on an entirely different complexion.



IN SAVAGE AUSTRALIA

The seasonal changes were vividly described by a Norwegian naturalist Knut Dahl (1926, p. 310 *et seq.*) during a visit to the Peninsula in January 1896. At this time, Dahl was staying at an outstation owned by Streeter & Co., called Loomingoon (about 64 kilometres from Broome along the telegraph line towards Derby), which is now part of Roebuck Plains pastoral station.

> "Before Christmas no green straw, except the spinifex grass, was to be seen anywhere. Everything was grey and withered, swept by grass fires, eaten by animals and insects. The trees certainly carried some brownish-green leaves, but all annual vegetation was completely suppressed, annihilated, and the earth was strewn with debris of dry remains of plants, droppings from animals, remains of insects, etc., which mingled with the loose sand of the soil. I had certainly expected the rainy season to produce an alteration. But in these parts the wet season is only of short duration, and the biggest annual rainfall previously registered did not much exceed twenty inches. I anticipated, therefore, that no excessive change could be expected to take place in the character of the landscape and of the flora and fauna. I have never made a greater mistake, and never in my life have I witnessed a more striking development of flora and fauna than that which took place in this region as soon as the rainy season set in in real earnest.
>
> "At Christmas time and during our march to Loomingoon it had rained a good deal, but this rain was immediately absorbed by the thirsty soil, and soon after the rain had ceased and the sun had come out the landscape appeared as dry as ever. Certain signs, however,

Knut Dahl

Waterlogged pindan during the wet season

*Dense stands of cane grass (*Sorghum stipoideum*) after the wet season*

Storm approaching Broome

seemed to indicate that enormous forces were slumbering in this apparently barren soil. Everywhere in the sandhills, in the plains, and in the pindan, minute green sprouts began to appear, almost like what one sees in a sprouting field in Europe.

"During our stay at Loomingoon the rains became more and more frequent, until finally it poured day after day with only small interruptions. When these rains were followed by a few days of sunshine the whole land became one steaming hotbed. All vegetation shot up with incredible rapidity. Very soon the grass stood as high as a man between the trees of the pindan. The leaves of the forest took on a luscious blue-green colour, and in the plains, and along the shores of temporary lakes, grasses and water-weeds sprang with irresistible force from soil which a couple of weeks before might have been that of the Sahara desert.

"The heat was intense, and the temperature in the shallow waters rose to an extent undreamed of. Unfortunately my thermometers had been destroyed, but it may give an idea of the excessive temperature when I say that it was actually painful to put one's hand into these pools, just as it is when the water is too hot in a bath. The water had a brownish tint and violent decompositions probably took place in the organic debris derived from the surface of the land.

"In a surprisingly short time an enormous wealth of lower organisms developed. The water was soon teeming with minute crustaceans, mainly belonging to *ostracada* [*sic*] and *phyllopoda* [*sic*]. Everywhere the small ostracods swarmed, and phyllopods, among these especially a large species of *apus*, simply swept the waters of the shallow lakes.

"As the rains increased the toads and frogs came to life. During the dry season there had been no sign that they even existed. But now almost every hollow tree appeared to contain them, and their nocturnal croakings overpowered every other sound of the night, even the eternal song of the cicadas, which had previously dominated the dark hours of these tropical regions. Multitudes of these frogs were now spawning in these waters, and in a very short time, the pools were teeming with tadpoles, which covered the bottom everywhere like little black peas, and sometimes occurred in such numbers that the water appeared almost solid with them. This latter case was of course exceptional, and mainly occurred when the volume of the pools or lakelets had shrunk considerably.

"As this wealth of lower organisms developed, a vast variety of birds arrived in order to feast on this easily obtained food, and also to breed in the profuse vegetation along the shores of the temporary lagoons. And, as the waters of the plains increased in area and the wealth of lower organisms was augmented, the number of migrating birds also grew, until the whole landscape finally teemed with a life as overwhelmingly prolific as I can remember ever seeing anywhere. If anybody had seen this land as it was a month ago, had fixed its appearance firmly in his memory, and then after the interval had suddenly been faced by the same landscape in its altered appearance, he would have said that the whole thing was a deception, a lie, a shameless and elaborate lie which almighty Nature jestingly wanted to impose upon him.

"Some weeks ago these plains were desert. Dry and fine sand rose in little clouds at every step of the horses, while the wind swept the sand away and played with the dry debris of the withered vegetation. Now it might happen that the grass and rushes rose higher than the saddle as one rode among chains of glittering lagoons, and every step of the horses might flush a profusion of waterfowl . . .

"In Western Australia, and also in many other tropical lands with periodical dry and rainy seasons, the drought is the main factor in necessitating the torpid state. Only the advent of the rainy season is instrumental in the reawakening of the organisms and the culmination of life."

Aboriginal concepts of seasonality are more complex than that of a wet-dry season pattern. The Bardi and Yawuru people recognise six seasons, distinguished mainly by wind and rainfall direction and intensity, ripening of fruits, and appearance or disappearance and 'fatness' of fish and animals. The beginning, duration and end of the seasons vary, though approximate timing relative to calendar months is included here (see figures 1 and 2 on page 8). Bardi and Yawuru descriptions of the seasons and recollections of traditional foraging patterns follow, beginning with the season closest to January.

Mid-December–January: ***Mankal*** is the Wet, the rains, or the monsoon season. It is characterised by strong winds and storms from the ocean (*oonkoonkool*) and whirlwinds (*ajibankoor*). People normally shift away from the coast to the inland during periods of heavy rain, staying in paperbark shelters (*giidoon*). In some years, *Mankal* may last only one or two weeks. With the exception of *gamooloon* (*Personia falcata*), little fruit is available, though some roots are dug from the rain-softened ground. The beginning of the rain usually signifies the movement of turtles away from the area and thus the end of the turtle-hunting season, but turtle eggs are collected.

February: ***Ngalandany*** is the end of the Wet, and literally means 'no fruit'. Temperatures and humidity are high, there is no wind, and during this 'rubbish time' people move around as little as possible.

March–mid-May: ***Iralboo*** is the period of king or big tides; the low tides are ideal for reefing. There is much fruit available. Generally it is hot and windless at the beginning of the season, but towards April *aloolboorr*, the south-easterly breezes, begin to blow, bringing the mosquitoes. The appearance of *ngoorrngool* (*Avicennia marina)* fruit indicates that it is time to shift camp to beaches and high dunes to avoid mosquitoes. *Mambin*, soft gentle rain falling straight down without wind, ripens the *gaamba* (nuts) of *iidool* (*Pandanus*). Goannas, caterpillars, grasshoppers and kangaroos are fat. As the heads of grasses turn brown, stingray cease to be fat, and when the *biilarl* (*Eucalyptus dampieri*) flowers the dugong hunting season begins.

Mid-May–July: ***Barrgana*** is the 'cold' season, when people start to light night fires. Strong, sometimes unpleasant, south-east winds blow, and the season is often called 'south-east time'. *Barrgana* is said to have begun when pandanus nuts (*gaamba*) are red. This is the dugong hunting season. Many fish are 'fat' and night fishing (*oondoog*) is common, though tides are 'rubbish' for reefing. This is also the time when resources are plentiful in the pindan, and people take advantage of wells sunk in the bush country before the Wet, to exploit resources including honey, snakes, wallaby, lizards and popular fruits including *joongoon* (*Mimusops elengi*).

August–September: ***Jalalay*** is a short warming-up season. *Almban*, the west winds, start. The dugong season ends, and people exploit the exceptionally low spring tides and concentrate on reefing. *Garnboorr* (*Melaleuca dealbata*) flowers indicate that stingray are fat.

October–mid-December: ***Lalin***, the build-up to the Wet, is hot and humid. This is 'married turtle time' (the mating season), the turtle-hunting season. Favoured *iilarr* (*Syzygium eucalyptoides*) fruit is available. The winds vary in intensity, shifting from westerly to strong north-westerly

BARDI SEASONS
(after Smith & Kalotas, 1985)

*Dampier's bloodwood (*Eucalyptus dampieri*)*

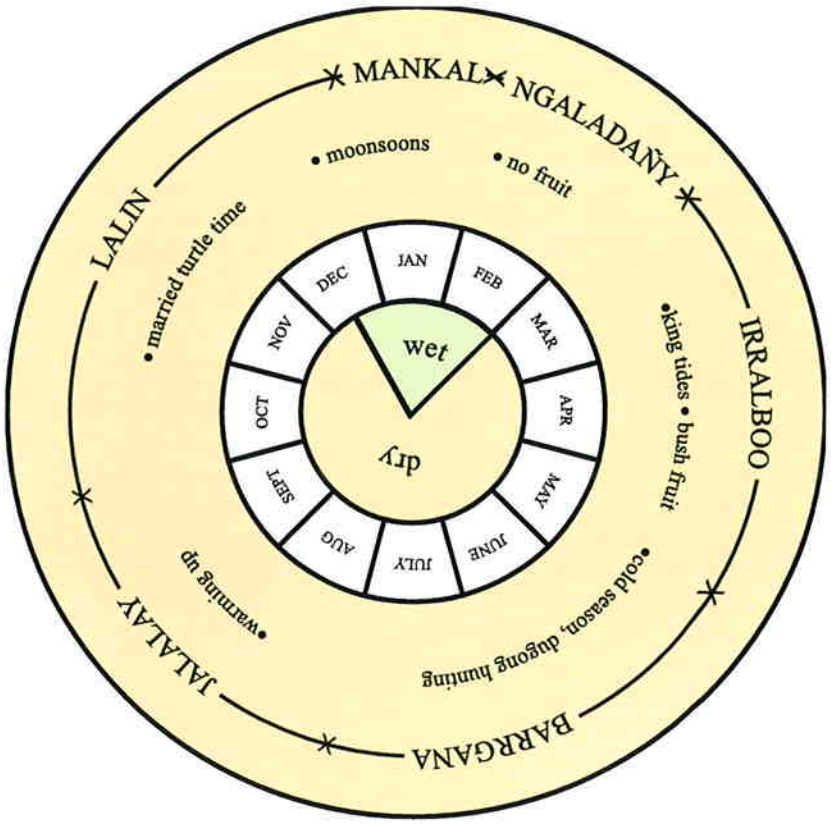


Figure 1. *Diagrammatic representation of Bardi seasons in relation to calendar months (adapted from Smith & Kalotas, 1985)*

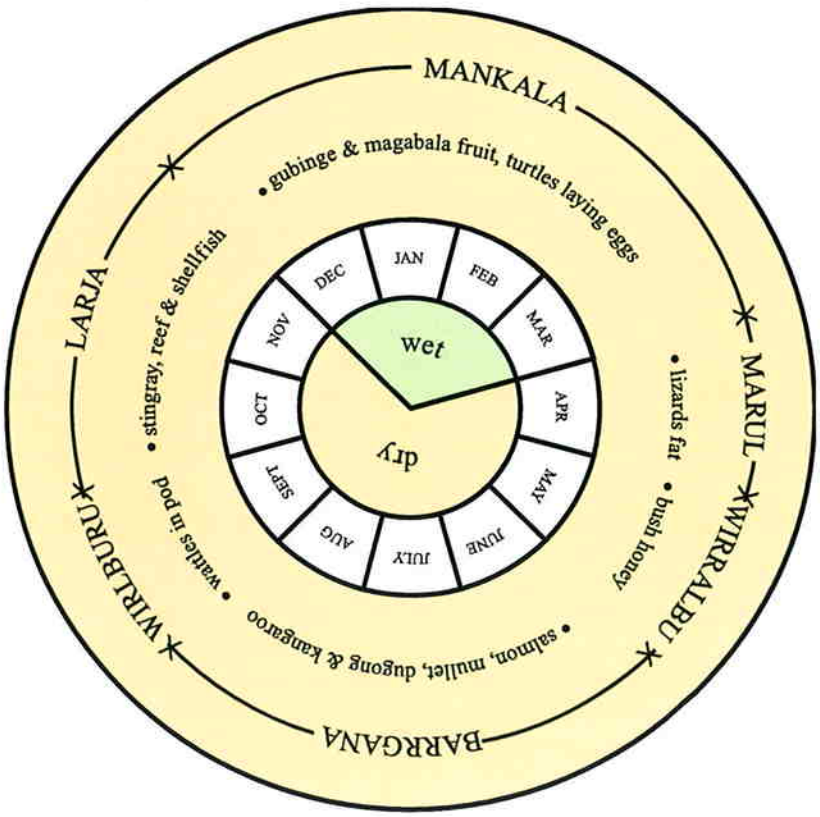


Figure 2. *Diagrammatic representation of Yawuru seasons in relation to calendar months (adapted from Lands & Mann; courtesy of Yawuru Corporation)*

(*banijoon*) bringing the rain (sometimes rain comes from the south). Tropical storms or 'cock-eyed bobs' (*janyjal*) from the north-west occur in December. People tend to camp close to the coast to hunt turtles.

YAWURU SEASONS

(after Merrilee Lands & Maria Mann, unpublished; courtesy of Yawuru Corporation)

December–March: ***Mankala*** is the Wet. Strong north-westerly winds and sometimes cyclones (*wirdu wangal*) blow. *Ngaliwany* (*Persoonia falcata*), *gabiny* (*Terminalia ferdinandiana*) and *magabala* (*Marsdenia viridiflora*) are in fruit. Flying foxes come to eat fruit. Kangaroos are skinny, as are shellfish. Bush honey is hard to find. Turtles are laying eggs.

April: ***Marul*** is the hot period after the Wet. Winds are light and humidity is high; 'rubbish time'. *Gundurung* (*Avicennia marina*) is in fruit. There are big tides but reef fish are skinny. Lizards are fat.

May: ***Wirralburu***. South-easterly winds begin to blow and cool nights start. *Darlab* (*Brachychiton diversifolius*) and most wattles (*Acacia* species) are in flower. This is the best time for bush honey. Lizards go underground. Birds seek out *yarrinyarri* or bush onions (*Cyperus bulbosus*).

June–August: ***Barrgana***. South-easterly winds blow. Occasional fogs and duststorms occur. The nights are cold and *gumanyba* (the Seven Sisters star formation) shines brightly. Threadfin salmon, mullet, catfish and dugong are fat, as are kangaroo. Lizards are in their holes. Cockatoos hatch their young. *Jiggal* tree (*Lysiphyllum cunninghamii*) is in flower.

September: ***Wirlburu***. West winds return. Nights are warmer. Cockatoos feed on ripening acacia pods. Reef and shellfish are getting fat, lizards are skinny.

October–November: ***Larja*** is the build up to the Wet. Winds strengthen from westerly to north-westerly. *Gubinge* (*Terminalia ferdinandiana*) and the white gum *gunurru* (*Eucalyptus*) *Corymbia flavescens* are in flower. It is a good time for bush honey. Stingray, reef and shellfish are fat. Turtles are mating.

Rainfall and Temperature

There is a marked seasonal variation in rainfall and temperature at Broome. In January the mean maximum temperature is 33°C, with mean rainfall 163 mm. In contrast, in July the mean temperature is 28°C and rainfall 6 mm. This wet and dry season weather pattern results in an effective growing season of three to four months.

Total rainfall varies markedly from year to year and from place to place throughout the Dampier Peninsula. On average, Broome receives 540 mm, Beagle Bay 725 mm and Cape Leveque 718 mm. Remarkably, Country Downs Station, which is about 95 kilometres by road north of Broome and situated on the highest land on the Peninsula, receives an annual average of 914 mm, almost twice as much rain as Broome. This may be due to thunderstorms being attracted to this higher land and the orographic effect of its 150-metre altitude.

It is important to understand that much of the heavy rainfall received during the wet season is dependent on the near proximity of cyclones. Records of extreme rainfall over a 24-hour period due to cyclonic conditions include 568 mm at Roebuck Plains on 6 January 1917 and 635 mm at Kilto Station on 4 December 1970.

A large percentage of the season's rainfall is lost through evaporation. The average evaporation for Broome is estimated at 2 860 mm per year.

Surface water is usually present only after heavy rains. In many places, the rainfall is soaked up by the pindan sandplains and recharges the aquifers. Good quality ground water is obtained from Quaternary sediments and the Broome Sandstone.

Winds and Weather

The wind and weather in the region are controlled by the seasonal migration of a belt of high-pressure anti-cyclonic (counter-clockwise) winds south of Broome. During winter when the belt moves north, easterly to south-easterly winds (of 10-30 kilometres per hour) prevail, resulting in fine dry conditions. In summer, when the belt moves south, it brings a north-westerly monsoon with attendant westerly winds (of 10-20 kilometres per hour), resulting in tropical rain and humid conditions. Between December and April tropical cyclones may affect the Broome area, bringing gale to hurricane-force winds and rain. Gale-force winds, other than those associated with cyclones, do not often occur (less than one per cent of observations) and are most commonly associated with thunderstorms. Occasional fogs occur in the winter months, especially at Broome.

Cyclones and Storms

Tropical revolving storms, or cyclones, in which clockwise winds reach hurricane force, are the most violent type of storm affecting the coastline near Broome. Cyclones originate mainly in the Timor Sea between November and April, and typically travel south-east. Many cross the coast between Cape Leveque and Exmouth, although a small proportion travel to the west of Broome and cross the coast south of Carnarvon. Gale to hurricane-force winds (more than 85 knots or 160 kilometres per hour) are often experienced within 20-150 nautical miles from the centre of a cyclone. Since 1909, a total of 24 cyclones have crossed the coast within 150 kilometres of Broome, and of these eight have crossed within 50 kilometres. A further 16 cyclones that did not cross the coast have passed within 150 kilometres of Broome, and of these three have passed within 50 kilometres.

As the majority of cyclones pass to the north and west, the coast around Broome is mainly affected by the winds associated with these storms. These normally swing from east through north to west. Also, the north-west to westerly swells affect both west-facing and north-facing shores.

The cyclones that pass to the east or south result in winds arriving from the south-west and south-east quadrants. These generate waves and storm surges in Roebuck Bay, which affect both south and east-facing shorelines around the Broome townsite. Although cyclones occur relatively infrequently, the forces they create can cause major damage to the entire ecosystem. This includes destruction of seagrass beds, mangroves and terrestrial plant life.

Currents and Tides

Seasonal changes in the regional wind system have a considerable effect on the oceanic currents off the north coast of Australia. During winter the predominant current direction is westerly. During summer this direction is reversed, with currents flowing to the north-east, although weak south-westerly flowing counter currents may develop near the coast.

The tides at Broome have both a large range (11 metres) and regular cycles. The so-called 'king tides' occur around the solar equinoxes during March and September. Tidal streams over Roebuck Deep can reach five knots during spring tides, although at other times the rate seldom exceeds two knots. Tides are a major factor affecting the coastal environment, particularly as they increase the range of wave and current action.

Unlike many tropical coastlines, the Peninsula seems to receive rather

few tropical drift seeds and fruits that have been dispersed over long distances (Gunn & Dennis, 1976). However, a barnacle-encrusted nicker or matchbox bean (*Entada* sp.), found at Willie Creek by Coralie Kennedy in February 1993, suggests such instances may occur occasionally. The most favourable weather for driving drifting seeds onto the shore would seem to be periods of prolonged onshore winds associated with the north-west monsoon.

The 'Staircase to the Moon' phenomenon is visible over Roebuck Bay from Town Beach, when a rising full moon reflects off exposed mudflats at low-water spring tide, creating the illusion of a glittering staircase. The large tides, besides being a tourist attraction, have an important influence on the types of plants, marine animals and birds to be found.

Geology, Geomorphology and Stratigraphy

Much of the south-west Kimberley is typified by extensive reddish sandy plains, and this is true for most of the Dampier Peninsula. Its entire area is underlain by the ancient (Pre-Cambrian) rocks of the Canning Basin, a large structure that extends along the Western Australian coast from Port Hedland to the tip of the Dampier Peninsula, and inland almost to the Northern Territory border.

The oldest geological formation exposed on the Dampier Peninsula is the Jarlemai Siltstone, but it outcrops only in the lower Fraser River area. It dates from the Upper Jurassic or Early Cretaceous (150-120 million years ago), and contains numerous fossil marine shells.

The Jowlaenga Formation, named from sandstone outcrops found at Mount Jowlaenga, is more extensive. This formation is exposed from the Fraser River along the east coast of the Dampier Peninsula. It also contains numerous fossil marine shells.

The younger Broome Sandstone is comprised of strongly cross-bedded sandstone, with some mudstone and minor conglomerate, all of which were deposited by tidal currents in a shallowing sea. There are good exposures of the Broome Sandstone in coastal cliffs between Broome and Cape Leveque, and some poor exposures inland. Where this formation outcrops, it displays brilliant variegated colours, mainly reds and yellows, but these are usually absent in the subsurface layers. The 'type-section' of the Broome Sandstone is at Gantheaume Point near Broome. The Broome Sandstone is generally regarded as being of Early Cretaceous age, and has been found to be up to 286 metres thick in petroleum exploration wells drilled on the Dampier Peninsula.

Overlying the Broome Sandstone is the Melligo Sandstone, which consists of thin-bedded, well-sorted sandstones. This formation was deposited as beach sands, but now forms the flat-topped, erosion-resistant hill-cappings found in the Mount Jowlaenga area and along cliffs on the north-eastern coast of the Peninsula.

The fifth formation is the Emeriau Sandstone, which outcrops at Emeriau Point near Beagle Bay. This sandstone features minor conglomerate and appears to have been deposited by a river. Most outcrops of this series, such as the low hills in the Carnot Peak–King Peaks area, exhibit ironstone capping.

The most recent of the geological formations is the Borda Sandstone, which is recognised only at Cape Borda. It is thought to be of Tertiary origin (less that 65 million years old) and comprises lateritised river sands and gravels.

Most of the Dampier Peninsula is mantled by reddish sandplains of mixed river-deposited and wind-blown sediments. These grade into yellowish-grey sandplains towards the northern end of the Peninsula, where rainfall is higher. Areas of red wind-blown sand manifest themselves as

Broome Sandstone at Gantheaume Point

weak linear dunes, which occur throughout the Peninsula. These are understood to be remnants from a previous era of widespread aridity, which featured strong easterly winds and expansion of the Great Sandy Desert. A later return to a somewhat wetter climate has obliterated discernible dune structure over much of the Peninsula today.

Some 17 000 years ago, sea levels fell to around 150 metres below present, exposing large areas of the present-day continental shelf. As the glaciers melted, sea levels rose. By 7 000 years ago sea levels had reached their present position and King Sound was formed (McKenzie, 1983).

A section taken from east to west through the Dampier Peninsula would reveal a gently convex 'whaleback'; it reaches a maximum elevation of 247 metres about 60 kilometres north-east of Broome. Sheet flooding is the dominant pattern of drainage, because of the low gradients of the country that forms the broad spine of the Peninsula. The southern half of the Peninsula features a peripheral, radial system of minor creeks, that are best-developed near the coast in the Coulomb Point Nature Reserve and east of Dampier Hill.

The low elevation of the northern end of the Peninsula has favoured the development of broad sub-coastal drainage valleys with seasonal swamps, particularly inland from Beagle and Pender Bays.

Coastal processes in recent geological time continue to result in a dynamic mosaic of coastal sediments including mudflats, shell ridges, beach sand, dunes and limestone platforms.

Soils

Apart from the Holocene dunes, which lack a soil horizon, and the immature soils developed in the Pleistocene dunes, the principal soil-type on the Peninsula is the pindan, which developed during the Quaternary period (the past two million years) on a desert dune sandstone.

Pindan cliff with trailing beach morning glory at James Price Point

The term pindan has been used to describe the most widespread plant community on the Peninsula, and is also applied to the soil-type associated with this vegetation. The soils of the area are red earthy sands, which are of wind-blown origin. They have deep uniform profiles of coherent clayish sands, and an earthy appearance apparently due to the coating and bridging of sand grains by clayish materials, including iron oxides. In recent years, house bricks made from pindan have found wide acceptance for construction in the Broome area.

The pindan soils form extensive undulating plains with little or no organised surface drainage; seasonal runoff forms sheets of water behind the coastal dune systems. Around Broome, the pindan is often overlain by a layer of more recent, coarser and unconsolidated sand, which assists in water penetration, plant establishment and growth.

When pindan soils dry out, they become rock-hard with a dusty surface. When they are wet they become soft and greasy, with the potential to erode rapidly and form deep, steep-sided gullies.

Where the pindan plain meets the sea, undercutting of the land often occurs at high-tide level, followed by slumping, which creates an eroding pindan cliffline.

Fossil Plants and Footprints

The fossil remains and impressions of various long-extinct plants have been found in the Broome area. Discoveries such as these help to build-up a picture of the flora of the area millions of years ago, which in turn gives hints as to the climate of the time (McLoughlin & Guppy, 1993).

The main fossils found to date are leaf impressions, pollen grains and fossilised wood. They have been found in outcrops of Broome Sandstone, and in several drill-cores from holes drilled into sandstones underlying

the Dampier Peninsula. Broome Sandstone was first described from Gantheaume Point, and this location still has many of the best macrofossils of the early palaeofloras.

Correlating Broome Sandstone floras with those in other areas of Australia, particularly those that have marine sequences, and using the results from the few palynological (fossil pollen) studies available, suggests that the Broome fossil floras might be 145-124 million years old, or from the Early Cretaceous (Neocomian–Barremian) era.

The Broome Sandstone, in which the plant fossils are preserved, is medium to coarse-grained. This suggests that the sand grains were deposited in a moderate to high-energy environment. Past geological studies have suggested a riverine delta as the most likely depositional setting for the Broome Sandstone.

Palaeomagnetic studies have suggested that during the Early Cretaceous period the Broome area lay at latitudes of 50-55° South. This is a lot further south than at present (in fact, further south than the tip of South Island, New Zealand), yet studies of *Foraminifera* (primitive protozoa) seem to suggest that relatively warm water conditions were prevalent along the western margins of the pre-Australian land mass at this time. It now seems that global climates were then considerably warmer than at present.

The diversity of ferns and lycophytes among the plant fossils found to date, implies that the ancient environment was relatively wet. Fossils of six fern species have been found in the Broome Sandstone, with two other doubtful identifications. The six positive identifications are a species of *Cladophlebis* (compared with *C. oblonga*), *Microphyllopteris gleichenioides*, *Phyllopteroides lanceolata*, *Hausmania* sp., and two *Sphenopteris* species. Only one lycophyte fossil (often called 'clubmosses' or 'fern-allies'), *Nathorstianella babbagensis*, has been found in the Broome Sandstone.

Although these plants imply a wet environment, the lack of any deciduous ginkgophytes, together with the abundance of cycadophytes, dipteridacean ferns and araucarian conifers, suggests that relatively warm conditions prevailed at this time. Fossils of six different species from the cycad order, Cycadeoids, namely *Otozamites bengalensis*, *Ptilophyllum acutifolium*, *P. boolensis*, and three *Nilssonia* species have been found in the Broome Sandstone.

The Pteridosperms, also known as seed ferns, are an extinct group of plants that were similar to the fern group but bore seeds instead of spores. One of these, *Taeniopters daintreei*, has been identified in the Broome Sandstone.

Two species of *Aracauria* (representatives of conifers or pines) have been identified as fossils in the Broome Sandstone. Another pine fossil in the genus *Rissikia* has also been recognised.

As well as fossil plants, the footprints of dinosaurs have been found in the Broome Sandstone. In 1945, Walter Jones reported to the Western Australian Museum that, while collecting shells at extreme low spring tide near the Gantheaume Point lighthouse, he had noticed impressions in the sandstone shaped like giant emu tracks. Indeed, Aboriginal elders perceive the tracks to be imprints of *Marella*, or Emu Man, a notable creator-being from the Dreamtime.

In February 1987, Broome Botanical Society member Paul Foulkes accidentally discovered a series of large round footprints forming a trackway. This prompted him to initiate a major coastal search for further footprints. So successful was this search that the Broome coastline can now claim to have the most varied collection of dinosaur footprints known worldwide. The new discoveries were authenticated by the WA Museum in March 1990.

Otozamites bengalensis *is a common plant fossil in the Broome Sandstone*

Paul Foulkes inspects a dinosaur track at Gantheaume Point

Although the fossil plants do not give direct evidence of the ancient animals that might have eaten them, trackways preserved in the Broome Sandstone indicate that a variety of herbivorous dinosaurs roamed the area. The size of some of the sauropod footprints (up to 80 centimetres in diameter) suggests that many were enormous creatures, requiring a large and regular intake of plant matter. Like giraffes (their present-day long-necked mammalian counterparts), sauropods probably grazed chiefly on trees such as the araucarian and podocarp conifers. Other dinosaur trackways seem to belong to smaller bipedal and quadrupedal ornithiscians, including possible stegosaurians (Long, 1990). Bipedal ornithiscians (especially quadrupedal stegosaurs), with their relatively short stocky fore-limbs and low-slung heads, probably fed chiefly on the herb and shrub-sized plants, notably cycadophytes, ferns, seed-ferns and lycophytes. Evidence of other dinosaurs that would have preyed on the plant-eaters has been found. The best-known of these is the medium-sized carnivore *Megalosauropus broomensis*, described by Colbert and Merrilees (1967).

ABORIGINAL PLANT USAGE

3

The actual dates of Aboriginal arrival on the Dampier Peninsula may never be known with certainty. However, excavation of a rock shelter at nearby Koolan Island by archaeologist Sue O'Connor (1989) revealed occupation in excess of 27 000 years.

Until European settlement of the area, Aboriginal family groups camped at favourable sites throughout the Peninsula on a semi-nomadic basis. (For a map of Aboriginal language boundaries, see page 20.) The abundance of shell middens, associated with anvil stones, suggests that they lived a coastal fishing, hunting and gathering lifestyle. Large baler shells were valued as water containers and were also fashioned into hafted chisels and adzes for cutting wood (Akerman, 1976).

Where surface water was rare or non-existent, ingenious water-harvesting techniques were employed to permit travel across country. Curved bloodwood logs, piped-out naturally by termites, were dug into the ground at the base of *Eucalyptus polycarpa* trees, or below impervious areas of flat antbed, to collect storm run-off. Such hollow 'tank' logs (*djarlbunguru*) could reportedly hold drinkable water for long periods (Roe *et al.*, 1984).

Shelter

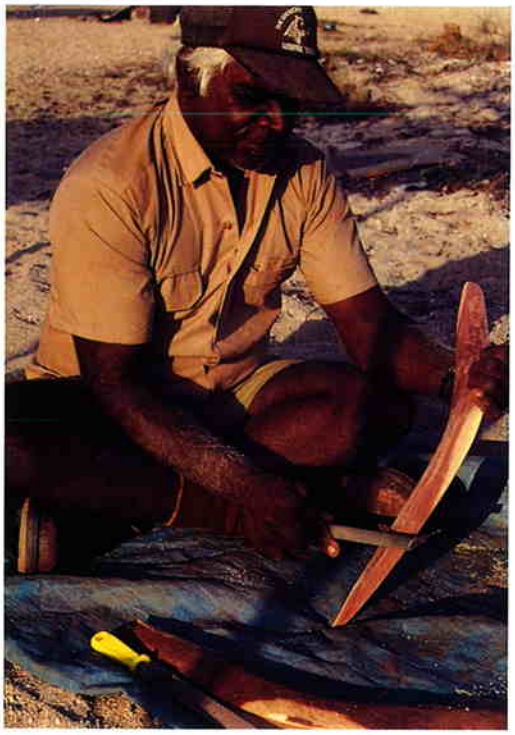
In the wet season, underground dugouts (*mirdibalang*) provided shelter from cyclones, monsoonal rain and ensuing plagues of mosquitoes. Froggatt (1888) noted:

> "The coast tribes do not build huts, but make mosquito-pits to defend themselves from these terrible pests, which swarm over the low-lying coast country. Digging a circular hole in the sand about two feet deep, they roof it over with sticks and paperbark, finally covering it all over with sand except a small aperture on the side, through which they crawl; and then, stuffing the hole with grass they lie all night in this substitute for a mosquito net, packed like herrings."

For dry season shelter, windbreaks were made from branches, using species such as *Acacia colei*, *Grevillea refracta*, *Lysiphyllum cunninghamii* and *Terminalia canescens*. Beach shelters roofed with *Spinifex longifolius* grass were, and still are, sometimes built for shade. More durable, framed huts were also built by the Bardi. They were constructed using poles of *Melaleuca acacioides* and waterproof roofs made from bark sheets of *Eucalyptus miniata*, *Melaleuca dealbata* or *M. nervosa*. At Lombadina, photographs taken at the turn of the century show paperbark huts built on the dunes to take advantage of the strong cool sea breeze.

Hunting and Gathering

Fishing was undertaken with harpoons and boomerangs, the latter fashioned from mangrove wood (*Bruguiera exaristata*, *Ceriops tagal*, *Rhizophora stylosa*). In the northern Peninsula, Bardi people manufactured special sea-going rafts (*kalwar*), from the lightweight stems of the kapok mangrove (*Camptostemon schultzii*). These were capable of carrying up to four adults (Akerman, 1975a). Green turtle and dugong were skillfully stalked and harpooned from such rafts and seabird and turtle eggs collected from offshore islands.



Peter Hunter carving a boomerang from tree hakea (Hakea arborescens)

Reef pools were, and still are, poisoned for fish using root preparations from various *Tephrosia* species, but only during the season when it was considered effective. Night fishing was done by the light of 'torches' made from burning rolls of *Melaleuca acacioides* bark.

Common marine hazards were dealt with using specific treatments. Bare feet were, and still are, rubbed with leaves of *Distichostemon hispidulus* or *Gardenia pyriformis* for protection against coral cuts and stonefish stings. The pain from catfish spikes was soothed with a root infusion from *Flueggea virosa*; the agony from stingray barbs with powdered charcoal of *Gyrocarpus americanus*. Swimmers in pursuit of harpooned turtles traditionally wore *Acacia wickhamii* or *Croton habrophyllus* branches tied through a hair belt. The powerful scent of these reportedly acted as an effective shark repellent (Smith & Kalotas, 1985; Paddy & Smith, 1987).

In the subsistence economy, the gathering of plant foods, essentially women's activity, was of major importance. A digging stick made from hardwood (such as *Acacia monticola* or *Dodonaea lanceolata*) and a coolamon or carrying dish made from softwood (such as *Gyrocarpus americanus*) were a woman's most valued implements. They were essential in foraging for and collecting yams (such as *Dioscorea bulbifera*, *Ipomoea* sp. and *Vigna vexillata*), bulbs (such as *Cyperus bulbosus*), edible corms (such as *Cartonema parviflorum*, *Eleocharis dulcis* and *Nymphaea violacea*) and a wide variety of seeds (such as *Acacia* spp. and *Brachychiton diversifolius*). The harder seeds (such as *Acacia colei* and *A. tumida*) were often winnowed and ground, then baked and eaten as a nutritious paste.

Storage of food was an uncommon practice, although *Acacia colei* seeds were sometimes wrapped in paperbark and stored underground, and sweet lerps from bloodwood eucalypts were rolled into balls and eaten months later (Lands, 1987).

The seasonal calendar emphasised the inter-relationship between the flowering and fruiting of certain plants and the breeding of animals, fish and turtle, so that resources were exploited at an appropriate time (see pages 7-9). Immense environmental knowledge, handed down orally from generation to generation, was required to ensure survival.

Broome Aborigines around 1910 applying paint obtained from the caustic bush (Grevillea pyramidalis). *From E. Mjöberg, 1915*

DAMPIER PENINSULA SONG LINES

Song cycles, reflecting the travels and creative activities of ancestral beings, are widespread in the region, with a major one beginning in islands to the north of the Peninsula, then travelling south towards Broome and La Grange, before veering south-east into the interior. Such song cycles play a major part in Aboriginal mythology and are important in the naming of topography, ceremony, law and ritual, and determine the significance of particular trees and vegetation in the landscape.

Aboriginal cultural beliefs emphasise that ancestral beings left their power at special sites. Such sites are still regarded today as spiritually significant and sometimes dangerous, requiring avoidance. All country is believed to possess its own essential character (or *le-an*), which affects people both positively and negatively (Roe & Muecke, 1983; Roe *et al.*, 1984).

The Lurujarri Heritage Trail, following 80 kilometres of coastline north of Broome, represents a recent innovative attempt by Aboriginal custodians to educate non-Aboriginal people to an understanding of part of the song cycle and the Aboriginal relationship to land.

Fire Management

Throughout northern Australia, Aboriginal landcare practices paid particular attention to fire management strategies. The usual practice was for many small fires to be carefully lit, sometimes on a daily basis, at the appropriate season and in restricted areas. This promoted a patchwork mosaic, in both space and time, of vegetative regrowth, which prevented the spread of lightning-induced wildfires and maximised diversity in the ecosystem. Hunting of wallabies and other animals was assisted because they were attracted to regenerating vegetation. The supply of important plant foods was probably increased by judicious 'fire farming' techniques. Among the Bardi, care was taken to keep fire away from coastal vine thickets, because of the valuable food resources they contain (Paul Sampi, personal communication).

With the arrival of Europeans the land was divided into cattle station leases, radically changing its ecology and fire regimes. Aboriginal elders such as Paddy Roe (personal communication) believe young wattle regrowth is now much more dominant in pindan country than a century ago, probably as a result of increased wildfires. Waterholes and springs often became polluted or were fenced off and developed. Many medium-sized and small native mammals, such as the boodie and the golden bandicoot, vanished, and emus were shot out (McKenzie, 1983). The implications of such losses for the Peninsula's ecosystems are far from being understood, but they are likely to be significant in areas such as plant abundance and seed dispersal.

Plant Use and Knowledge Today

Traditional Aboriginal community life and practices were changed forever by European settlement. Sadly, some centuries-old knowledge of plants has been lost, and there is now a pressing need to document the encylopaedic knowledge of Aboriginal elders, before such opportunities are lost forever.

The remarkable resurgence of Aboriginal culture since the 1960s has found many expressions, including the 'outstation' movement — symbolic of a determination to live on traditional lands, independent of white supervision. Renewing the bond with 'country' has provided spiritual revitalisation, a healthier lifestyle and an upsurge of interest in traditional resources, including plants, and ceremonial life. Many of the traditional plant uses described in this section are still practised by Aborigines on the Dampier Peninsula.

Interest in 'bush tucker' has greatly increased in recent years throughout both black and white communities. Guided bushwalks have become very popular with tourists, traditional foods are being scientifically assessed for their nutritive values and there is a new wave of gourmet restaurants in major cities, often supplied from Aboriginal communities. The establishment of Aboriginal-run health services has also rekindled interest in traditional medicines, the efficacy of which is increasingly being documented on a scientific basis (for example, the bactericidal properties of *Ventilago viminalis* bark).

The rapid expansion of the tourist industry (especially at Broome since the 1970s) has been matched by an upsurge in the manufacture of artefacts and art, both traditional and non-traditional, by Aboriginal people catering for the souvenir trade. Examples include carved boab nuts, boomerangs and acrylic paintings. The artefact industry may need to implement replanting strategies for favoured timbers (for example, *Gyrocarpus americanus*) if the industry is to be sustainable in the long-term, or it risks over-exploitation of these resources.

*Ripe fruits of marool (*Terminalia petiolaris*)*

*Edible fruit of the magabala (*Marsdenia viridiflora*) showing seeds*

ABORIGINAL PLANT USAGE

FOOD

EDIBLE FRUITS: *Adansonia gregorii, Amyema* spp., *Avicennia marina, Bridelia tomentosa, Buchanania obovata, Canarium australianum, Capparis lasiantha, Carissa lanceolata, Cassytha filiformis, Celtis philippensis, Cynanchum pedunculatum, Diospyros ferrea, Ehretia saligna, Exocarpos latifolius, Ficus leucotricha, Ficus opposita, Ficus virens, Flueggea virosa, Gardenia pyriformis, Grewia brevifolia, Grewia retusifolia, Lysiana spathulata, Mallotus nesophilus, Marsdenia viridiflora, Mimusops elengi, Passiflora foetida, Pavetta kimberleyana, Persoonia falcata, Planchonia careya, Pouteria sericea, Santalum lanceolatum, Syzigium eucalyptoides, Terminalia ferdinandiana, Terminalia petiolaris*

EDIBLE LEAVES: *Amaranthus hybridus, Portulaca oleracea*

EDIBLE SEEDS AND NUTS: *Acacia colei, Acacia tumida, Adansonia gregorii, Brachychiton diversifolius, Canarium australianum, Eucalyptus miniata, Eucalyptus polycarpa, Grevillea heliosperma, Pandanus spiralis, Terminalia cunninghamii, Terminalia ferdinandiana*

EDIBLE ROOTS: (including bulbs, corms and yams) *Boerhavia gardneri, Brachychiton diversifolius, Calandrinia strophiolata, Cartonema parviflorum, Cochlospermum fraseri, Cymbidium canaliculatum, Cyperus bulbosus, Dioscorea bulbifera, Eleocharis dulcis, Ipomoea* sp. A, *Nymphaea violacea, Portulaca napiformis, Triglochin pterocarpa, Vigna vexillata*

EDIBLE GALLS: on *Eucalyptus dampieri, Eucalyptus polycarpa*

EDIBLE LERPS: on *Eucalyptus polycarpa*

EDIBLE GRUBS: in *Acacia adoxa*

EDIBLE GUM: *Acacia tumida, Brachychiton diversifolius, Grevillea heliosperma, Lysiphyllum cunninghamii, Terminalia canescens, Terminalia ferdinandiana, Terminalia petiolaris*

EDIBLE NECTAR: *Amyema bifurcata, Amyema thalassia, Crotalaria cunninghamii, Dendrophthoe acacioides, Eucalyptus miniata, Lysiana spathulata, Lysiphyllum cunninghamii, Sonneratia alba*

DRINK: *Brachychiton diversifolius, Persoonia falcata, Terminalia ferdinandiana*

EDIBLE FLOWERS: *Grevillea heliosperma*

SUGARBAG/BUSH HONEY: in *Avicennia marina, Eucalyptus miniata, Eucalyptus zygophylla, Lysiphyllum cunninghamii, Melaleuca acacioides, Pouteria sericea*

BUSH TOBACCO: *Pterocaulon sphacelatum* and *Stemodia lythrifolia* with ash of *Eucalyptus dampieri, Ficus opposita, Planchonia careya, Ventilago viminalis*

MEDICINAL

MEDICINES: *Acacia monticola, Acacia wickhamii, Canavalia rosea, Capparis lasiantha, Croton habrophyllus, Distichostemon hispidulus, Eucalyptus dampieri, Eucalyptus polycarpa, Exocarpos latifolius, Ficus opposita, Flueggea virosa, Gardenia pyriformis, Gymnanthera oblonga, Gyrocarpus americanus, Melaleuca acacioides, Melaleluca nervosa, Owenia reticulata, Planchonia careya, Tephrosia crocea, Terminalia ferdinandiana, Tinospora smilacina, Ventilago viminalis*

SMOKING RITUAL: *Carissa lanceolata, Santalum lanceolatum*

FLY REPELLENT: *Cleome viscosa*

SANDFLY REPELLENT: *Avicennia marina*

MOSQUITO REPELLENT: *Carissa lanceolata, Exocarpos latifolius, Melaleuca acacioides, Santalum lanceolatum*

SHARK REPELLENT: *Acacia wickhamii, Croton habrophyllus*

SHELTER

WINDBREAKS: *Acacia colei, Grevillea heliosperma, Grevillea refracta, Lysiphyllum cunninghamii, Osbornia octodonta, Scaevola taccada, Terminalia canescens*

HUT FRAMES: *Melaleuca acacioides*

HUT ROOFING: *Eucalyptus miniata, Melaleuca acacioides, Melaleuca dealbata, M. nervosa, Spinifex longifolius*

HUNTING AND GATHERING

SEA-GOING RAFTS: *Camptostemon schultzii*

RAFT PEGS: *Acacia monticola*

HARPOONS: *Bruguiera exaristata*

FISHING BOOMERANGS: *Bruguiera exaristata, Cerops tagal, Rhizophora stylosa*

FISH POISONS: *Aegiceras corniculatum, Planchonia careya, Tephrosia crocea, Tephrosia* sp. D, *Tephrosia rosea*

FISHING TORCHES: *Melaleuca acacioides*

SPEARS: *Acacia colei, Acacia eriopoda, Acacia neurocarpa, Acacia platycarpa, Acacia tumida, Bruguiera exaristata, Cerops tagal, Flagellaria indica, Grewia brevifolia, Lumnitzera racemosa, Premna acuminata*

SPEARHEADS: *Acacia monticola*

BOOMERANGS: *Acacia monticola, Acacia tumida, Eucalyptus miniata, Exocarpos latifolius, Grevillea striata, Hakea arborescens, Hakea macrocarpa, Ventilago viminalis*

AXE HANDLES: *Thespesia populneiodes*

COOLAMONS: *Gyrocarpus americanus*

WATER CONTAINERS: *Eucalyptus tectifica, Planchonia careya*

DIGGING STICKS: *Acacia monticola, Dodonaea lanceolata*

ARTEFACTS

CLAPPING STICKS: *Acacia monticola*

SHIELDS: *Canarium australianum, Eucalyptus miniata, Excoecaria agallocha, Ficus opposita, Ficus virens, Gyrocarpus americanus, Rhizophora stylosa, Sonneratia alba*

FIGHTING STICKS: *Erythrophleum chlorostachys*

WALKING STICKS: *Dodonaea lanceolata*

SANDPAPER: *Ficus opposita*

MISCELLANEOUS

FIRESTICKS: *Ehretia saligna, Flueggea virosa, Premna acuminata*

FIREWOOD: *Cerops tagal, Eucalyptus dampieri, Lysiphyllum cunninghamii, Planchonia careya, Rhizophora stylosa, Terminalia canescens*

SMOKING PIPES: *Diospyros ferrea*

STRING & CORD: *Acacia tumida, Brachychiton diversifolius, Ficus virens, Gymnanthera oblonga*

FOOTWEAR: *Cassytha filiformis, Pandanus spiralis*

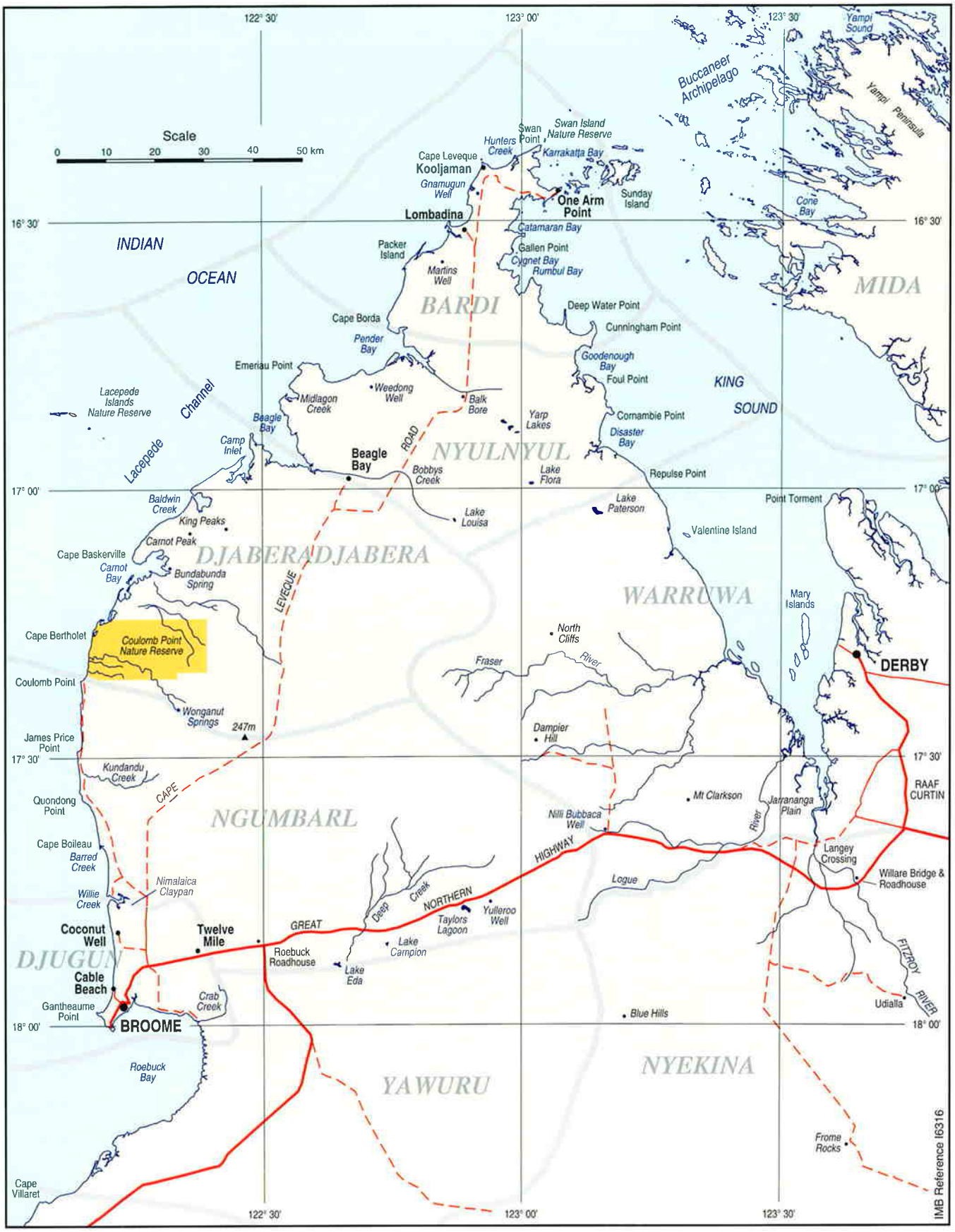
MARBLES: *Caesalpinia major*

ORNAMENTATION: *Abrus precatorius, Adansonia gregorii, Croton habrophyllus, Erythrina vespertilio, Flagellaria indica, Grewia brevifolia, Rhizophora stylosa, Tinospora smilacina*

BODY PAINT: *Grevillea pyramidalis*

DYES: *Ceriops tagal*

SOAP: *Acacia colei*



Map of the Dampier Peninsula illustrating Aboriginal language boundaries (based on Stephen L. Davis, Australia's Extant and Imputed Traditional Aboriginal Territories, *Melbourne University Press, 1993)*

EXPLORATION AND BOTANICAL DISCOVERY

4

Although Portuguese mariners may have preceded him, the first European navigator believed to have landed on the Dampier Peninsula was the Dutchman Abel Tasman, on a voyage from Batavia in 1644. Unfortunately, no account of this expedition survives, but secondary sources place the landing around Carnot Bay on the west coast of the Peninsula.

The earliest recorded observations of the vegetation of the Peninsula were made by the Englishman William Dampier in January and February 1688, when aboard the *Cygnet* under Captain Reed. From his careful analysis and fieldwork, Leslie Marchant (1988) concludes that the vessel was careened in a cove within Karrakatta Bay at the tip of the Peninsula. Dampier noted:

> "... the Woods are not thick, nor the Trees very big. Most of the Trees that we saw are Dragon-Trees as we supposed: and these too are the largest Trees of any there. They are about the bigness of our large Apple-trees, and about the same height; and the Rind is blackish, and somewhat rough. The leaves are of a dark Colour; the Gum distils out of the Knots or Cracks that are in the Bodies of the Trees . . . There was pretty long Grass growing under the Trees, but it was very thin."

By about 1700, Macassans are known to have been crossing the Timor Sea regularly in sailing prahus, reaching northern Australia. Periods were spent ashore boiling down catches of trepang, also known as *bêche de mer* or sea cucumber. The introduced tamarind trees (*Tamarindus indica*) on the north-west Kimberley coast are evidence of Macassan campsites.

Collections 1800–1850

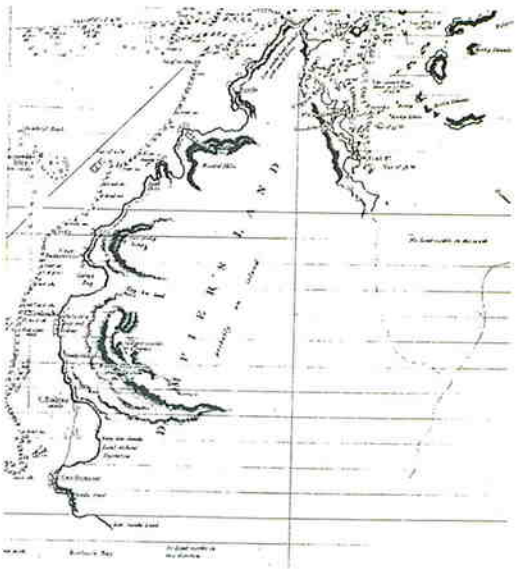
In August 1821, Phillip Parker King charted the west coast of the Peninsula in HM Brig *Bathurst*, after passing and naming the Buccaneer Archipelago and Swan Point. Allan Cunningham, the ship's botanist, was sick at this time. Passing Cape Leveque, King noted:

> "The land was clothed with a small brushwood, but altogether the coast presented a very unproductive appearance . . . Many large smokes on the horizon at the back of Cygnet Bay."

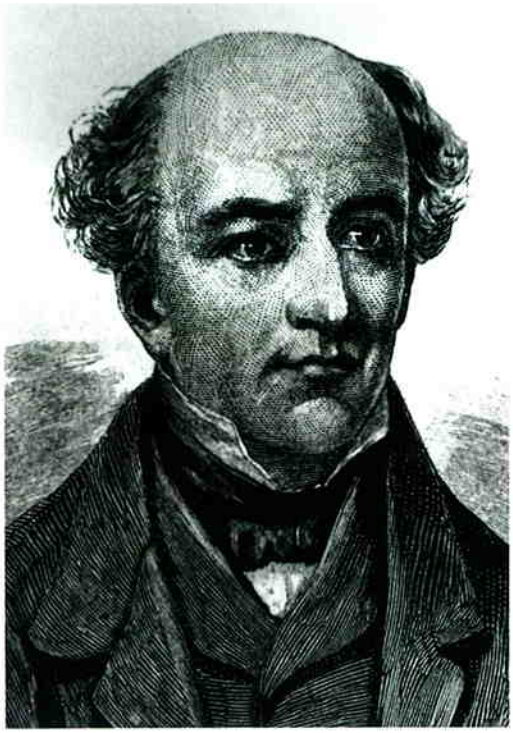
Passing the red cliffs south of Point Coulomb, King observed:

> "The interior is here higher than to the northward, and gradually rises, at the distance of eight miles from the shore, to wooded hills, and bears a more pleasing and verdant appearance than we have seen for some time past . . . the smokes of fires have been noticed at intervals of every four to five miles along the shore, from which it may be inferred that this part of the coast is very populous."

The place that had been named 'Gantheaume Island' by the French expedition under Baudin was corrected to a Point, and Roebuck Bay was named, although not investigated.



King's chart of the Peninsula



Allan Cunningham

King returned to the Peninsula in the *Bathurst*, via Rowley Shoals, in February 1822. After negotiating a ferocious tide race off Swan Point, control was lost of the vessel as a 9-knot flood tide sluiced into King Sound, through a maze of islets and hazardous rocks. After a miraculous escape from nautical oblivion, anchorage was made off Point Cunningham, named by King:

> ". . . after my friend Mr Cunningham, to whose indefatigable zeal the scientific world is considerably indebted for the very extensive and valuable botanical collection that has been formed upon this voyage."

Cunningham collected plants ashore over several days. Insects, shells and Aboriginal artefacts were also gathered. Numerous important type-collections now at the Royal Botanic Gardens, Kew (England), were made by Cunningham. George Bentham's seven-volume *Flora Australiensis* (1863–1878) lists 30 plant specimens from Cygnet Bay, six from Point Cunningham, one from Goodenough Bay and two from Foul Point. As Curry and Maslin (1990) have noted, all specimens ascribed 'Cygnet Bay' by Cunningham were actually collected from the Point Cunningham area. Hordern (1989) comments that at the time of the voyage, the name Cygnet Bay actually referred to King Sound itself. The name was later transferred by Stokes to the bay so named today.

The *Bathurst* proceeded southwards — despite the crew's complaints of heat and humidity — naming Carlisle Head, Goodenough Bay and Foul Point (for its reef). Cunningham named Repulse Point after attempting to go ashore there, when a squall struck, followed by heavy rain and lightning. The loss of *Bathurst*'s anchor in the storm was commemorated by the name Disaster Bay, and was a major factor in hastening the vessel's subsequent return to Port Jackson (Sydney).

In January and February 1838, HMS *Beagle*, under the command of John Clements Wickham and John Lort Stokes examined both east and west coasts of the Peninsula. Roebuck Bay was searched in vain for a major river, Barred Creek was named 'Useless Inlet' and Beagle Bay was named for the ship. Anchoring at Karrakatta Bay, wells were sunk without success. Here, Captain Wickham collected the type-specimen of *Acacia wickhamii*, later named for him by George Bentham at the Royal Botanic Gardens, Kew. Three 'Cygnet Bay' specimens of *Heliotropium paniculatum*, *Heliotropium diversifolium* and *Solanum cunninghamii*, attributed to Benjamin Bynoe the ship's surgeon, are listed in volume four of Bentham's *Flora Australiensis*. No other plants are known with certainty to have been collected on the Peninsula; many of Bynoe's specimens were simply annotated 'NW Australia'.

Collections 1851–1900

The first plant specimens labelled 'Roebuck's Bay' were collections made by Dr James Martin in May 1864. Martin was surveyor and botanist on a Government-sponsored expedition, led by Police Inspector F.K. Panter, whose main purpose was to assess the Camden Harbour area of the north-west Kimberley for its gold and pastoral prospects.

At least 14 Martin collections labelled 'Roebuck's Bay' are known to be in the National Herbarium of Victoria, Martin having sent his specimens there, to the great botanist Ferdinand von Mueller. The 'Roebuck's Bay' plant material was actually collected at, or east of, Cape Villaret (south of Roebuck Bay on present-day Thangoo Station) and includes four type-specimens. Remarkably little is known about Dr Martin himself, although he is commemorated in the shrub *Psoralea martinii*, a common plant around Broome.

The earliest known plant collections from Beagle Bay date from February 1869 and consist of at least seven specimens, lodged in the National

Herbarium of Victoria. Their collector, Allan Ramsay Cunningham Hughan, voyaged from Melbourne with his family in October 1868 aboard his 83-ton schooner, *Pilot*. They were on a pioneer pearling expedition to the Pilbara and Kimberley coasts, via Fremantle. After sailing from Port Walcott, landfalls and plant collections were made at Point Larrey (east of present-day Port Hedland at the mouth of the De Grey River), Lagrange, Beagle Bay, King Sound (probably on Yampi Peninsula), Collier Bay and Camden Harbour. The plant specimens were among the discharged cargo off-loaded at Melbourne in June 1869, even rating a mention in the *The Argus* newspaper: "1 case plants, Dr Mueller".

In February 1879, an eight-man expedition headed by Alexander Forrest, left the De Grey River with eight riding horses, 18 pack horses and six months' rations. Eventually, they would reach the Overland Telegraph Line near Katherine in the Northern Territory. In late March, the party crossed Roebuck Plains. Forrest wrote:

> "Magnificent country extends all round and to the eastward the great plains stretch out as far as the eye can reach."

Arriving at Beagle Bay on 10 April 1879, Forrest briefly visited the Lacepede Islands by lugger to inspect the guano deposits, which were rapidly being worked out. Forrest noted that:

> "the country along the south and east shore of Beagle Bay is very good, and abounds in permanent springs; nearly every mile surface water is to be found. The country is however rather densely wooded with cadjeput, red and white gum, and many species of acacia, as well as the palm tree, also the black wattle which would in course of time be a valuable article for export. The cadjeput tree here grows to an immense size, and would, when sawn, be suitable for building purposes and fencing."

The 'palm' to which Forrest referred is actually the screwpine (*Pandanus spiralis*); the 'black wattle' is probably wongai (*Acacia tumida*).

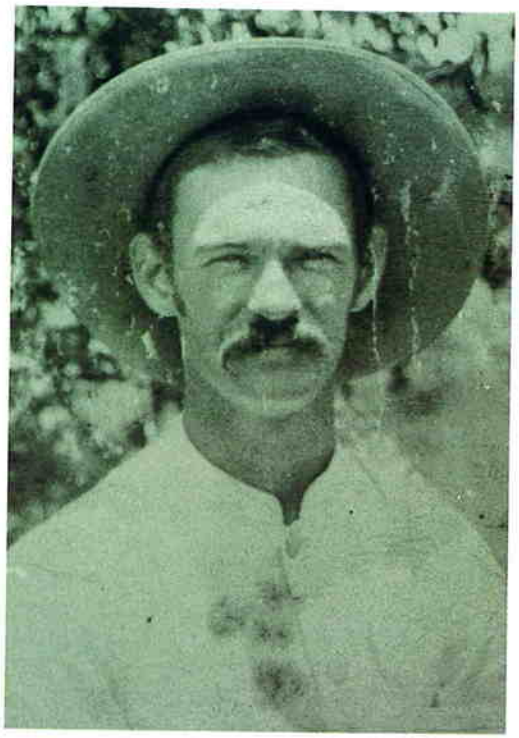
Of the plant specimens collected by Forrest on the Dampier Peninsula, 42 would eventually find their way to Mueller in Melbourne, including the type-specimen of *Calandrinia strophiolata*. A distinctive marshwort (*Nymphoides* sp.) collected by Forrest in a waterhole near Beagle Bay, would not be re-collected from the same locality until 1984. This interesting Kimberley endemic was described, in 1987, as the Beagle Bay marshwort (*Nymphoides beaglensis*).

Forrest's report stimulated a rapid influx of pastoralists to the West Kimberley, the first to come ashore at Beagle Bay being Julius Brockman on 17 November 1879. Brockman made notes on the vegetation of the Peninsula during a trip from Beagle Bay to the Fitzroy River, observing east from Beagle Bay, dense wattle thickets over "bamboo grass" (possibly a species of *Sorghum*). Brockman also noted that the country about 30 kilometres east of Beagle Bay was very dry, much of it burnt clean. Brockman made particular note of the dense vine thickets found behind the coastal sand dunes on the north end of the Peninsula:

> "We turned into the beach again at sunset . . . and had hard work to force our way through the jungle that skirts the sea hills, having to get out our knives to cut the tangled masses of creeper, often as strong as rope."

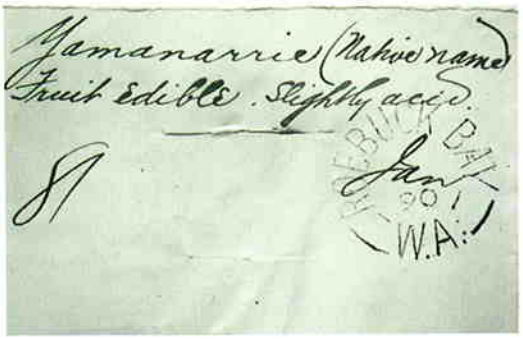
By May 1881, Brockman had lost as many as 12 horses to 'walkabout' poisoning from ingestion of *Crotalaria*.

The eminent South Australian naturalist, J.G.O. Tepper (1893) published two identical lists, in English and German, of 144 plant species collected by his son, J.W.O. Tepper, from the vicinity of Roebuck Bay during the years 1889–1891. The younger Tepper was assistant telegraphist at the Broome Post Office. Some of his specimen labels bear the



J.W.O. Tepper

A Tepper specimen mounted with stamp selvedges



Tepper's plant labels bearing the Roebuck Bay Post Office stamp

'Roebuck Bay' post office stamp and some are mounted using selvedge from stamp sheets. The elder Tepper forwarded the Roebuck Bay specimens for identification to Ferdinand von Mueller at the National Herbarium of Victoria, where the majority of the collection remains. Mueller apparently forwarded the *Acacia* spp. material to J.H. Maiden in Sydney. There are 66 duplicate Tepper specimens in the Western Australian Herbarium. At the time of collection, Tepper's plant specimens represented the largest single botanical collection of Dampierland material in existence. They include three type-specimens (*Gyrostemon tepperi*, *Polygala tepperi* and the enigmatic *Portulaca dubia*).

Tepper's specimens are all labelled 'Roebuck Bay', but some were actually collected at:

> ". . . Hancock's Cattle Station, about 25 miles inland; an excursion to a part of the coast some 7 to 10 miles southward, and on a telegraph-line-repairing trip of about 30 miles towards Derby."

A few Tepper specimens have not been re-collected in the area or are of uncertain identity.

In the early 1890s, marine biologist W. Saville-Kent visited Broome in connection with his investigation of the mother-of-pearl industry, on which he reported to the Western Australian Government. While in Broome, Saville-Kent stayed with Messrs Streeter and Male, the owners of the largest fleet of luggers operating from Roebuck Bay, thus giving Saville-Kent the opportunity to: "acquaint himself with the wealth of material derived from the district." In his book *The Naturalist in Australia*, published in 1897, he included photographs and comments on mangroves, boab trees and the bird flower (*Crotalaria cunninghamii*). He returned to England in 1896, and on 7 December 1897 addressed the Colonial Institute in London, delivering a paper entitled 'Australian Natural History Gleanings'. In this paper he supported Huxley's Continental Drift Theory to explain similarities between the Australian flora and fauna and those of South Africa and South America (Harrison, 1988).

Twentieth Century Collections

Daisy Bates, born Daisy May O'Dwyer, arrived in Broome in August 1900, on assignment to report on the condition of Aborigines for *The Times* of London. The Irish-born journalist proceeded to Beagle Bay Trappist Mission by schooner at the invitation of Bishop Gibney, and stayed there some three months. During this time she supervised a team of Aboriginal women tending fruit and vegetable gardens, assisted in a chain survey and visited the Disaster Bay Mission. Beagle Bay at this time consisted of a handful of paperbark huts and a chapel. Here, Daisy Bates began making ethnographic notes on Aboriginal culture, studies that would become a life's work. She later joined her husband Jack and son, Arnold, on Roebuck Plains Station. While living there for a year, she made a botanical collection of grass species, five specimens of which have been relocated in the Western Australian Herbarium.

The Swiss botanist, Benedict Pierre George Hochreutiner, visited Broome for a mere 12 hours on 4 February 1905. This brief shore excursion from the steamer *Paroo*, occurring on a voyage between Surabaya in Java and Fremantle, netted some 23 plant specimens that are now in the Geneva Herbarium. A further 10 collecting numbers within his Broome series (nos. 2822–2854) remain unaccounted for. Hochreutiner's specimens were written up by him in the Swiss botanical journal *Candollea*, and in its predecessor, at intervals between 1908 and 1936. From his Broome collections, he described two new species (*Adansonia stanburyana* and *Caesalpinia broomensis*) and three new subspecies (*Abutilon*

otocarpum var. *broomensis*, *Acacia bivenosa* var. *borealis* and *Bauhinia hookeri* var. *broomensis*). Unfortunately, none of these are currently accepted as valid taxa. The new boab species was named by Hochreutiner for the Broome Clerk of Courts, Thomas Herbert Stanbury (1864–1930). Stanbury apparently took Hochreutiner to admire the boab (which was in flower at the time) outside the old police station, a site now occupied by the Customs House and Wing's Restaurant. Two of Hochreutiner's Broome specimens have subsequently become valid types for *Bonamia oblongifolia* and *Gyrocarpus americanus* subspecies *pachyphyllus*.

In April 1905, William Vincent Fitzgerald was temporarily appointed to the Department of Lands and Surveys as naturalist to the Kimberley Trigonometrical Survey Expedition. The party was led by Charles Crossland, a contract surveyor. They departed Fremantle on board the *Bullara*, calling at north-west ports en route for Derby. Fitzgerald was able to collect 63 different species of plant while ashore at Broome 14–16 April. This included type-material of the Broome bloodwood (*Eucalyptus zygophylla*).

In July 1906, under the direction of the Minister for Lands, Fitzgerald again set out: ". . . for the purposes of examining and reporting on the cultivable capabilities of portions of the river valleys in the Kimberleys." Before returning to Fremantle in December, Fitzgerald also examined Sunday Island, Cygnet Bay and Swan Point. His Cygnet Bay collections include the type-specimen of *Amyema mackayensis* and a still undescribed *Pluchea* species.

A Swedish expedition led by the zoologist Dr Eric Mjöberg, arrived at Derby aboard the *Koombana* in October 1910; its object was to investigate the natural history and ethnography of the West Kimberley. In July and August of 1911, Mjöberg collected at least 42 plant specimens on the Dampier Peninsula: 40 at Broome and two at Beagle Bay. These were among his large West Kimberley collection, forwarded for identification to botanist Edwin Cheel at the National Herbarium of New South Wales, and described by him in 1916.

The Danish botanist C.E.H. Ostenfeld visited the Perth region of Western Australia in 1914. He left Fremantle in October aboard the steamer *Minderoo*, bound for Java.They made brief stops at a number of north-west ports. A few hours were spent ashore in Broome on 5 November, during which time Ostenfeld collected from within the townsite specimens of 10 common plant species (numbered between 1133 and 1162), two eucalypts (nos. 527 and 528), as well as seeds of *Psoralea martinii*. These were later grown in the Copenhagen Botanic Garden, enabling Ostenfeld to improve on Mueller's original description. A complete set of Ostenfeld's specimens is housed in the Copenhagen Herbarium, with other duplicates in herbaria at Kew, Perth and Dublin. Five of his Broome collections are known to be represented in Dublin.

Charles Edward Lane-Poole, Conservator of Forests for Western Australia, visited Broome, Roebuck Plains and Pender Bay in October 1919, in connection with the issue of licences to extract tannin from mangrove bark. At least 24 plant specimens, including the type-specimen of the mangrove mistletoe, *Amyema thalassia*, are known from this visit. Lane-Poole's collecting numbers (436–513) suggest a considerable number of further specimens may exist, possibly in the National Herbarium of New South Wales.

In the inter-war years, little botanical collecting took place on the Peninsula. Charles Gardner, botanist on the Easton Expedition of 1921, collected briefly around Broome. Gardner published his collections, which included 20 new species, and reviewed the Kimberley flora in 1923.

Frank Joseph Scott Wise (1897–1986) began his association with

Members of the Mjöberg Expedition, probably taken in October 1910. Eric Mjöberg the expedition leader is on the left

Charles Edward Lane-Poole

Western Australia in 1923, when he came from the Queensland Department of Agriculture to advise on tropical agriculture in the north-west. Wise made several plant collections around Broome in 1930 and 1933.

In the post-war decades, the first major plant collections on the Peninsula were made in September 1959 by botanist Mike Lazarides, in the course of a CSIRO Land Research Survey covering the West Kimberley. Plants were collected at Broome, along the Cape Leveque road and around Carnot and Beagle Bays. Specimens from 36 collections have been lodged in herbaria at Canberra and Perth.

Detailed floristic investigation of the Dampier Peninsula by professional botanists commenced in 1977 in the course of wildlife surveys. Fieldwork by Kevin Kenneally resulted in the publication in 1983 of a listing of 311 plant species for the Peninsula. Also presented were descriptions of the vegetation, its biogeography and detailed conservation proposals. The existence and significance of the Peninsula's vine thicket vegetation was confirmed scientifically for the first time.

Amateur botanists of the Broome Botanical Society have contributed important field collections during this period. Botanical Society members have been able to investigate less accessible areas of the Peninsula and collect ephemeral plants during the wet season. These vital collections have revealed a flora much richer than previously suspected.

In the period 1981–1985, anthropologist Moya Smith and ethnobotanist Arpad Kalotas undertook fieldwork and plant collections around Lombadina and One Arm Point, while conducting an ethnobotanical survey of the Bardi people.

The publication in 1987 of *Mayi: Some Bush Fruits of Dampierland*, by Merrilee Lands, marked a coming of age for Aboriginal ethnobotany in the region. For the first time, oral botanical information from elders was presented in book form by an Aboriginal author. That this was the first book published in Broome by Australia's first Aboriginal publishing house, Magabala Books (named after the bushfood *Marsdenia viridiflora*), made the event all the more remarkable.

TROPICAL EXOTICA IN BROOME

5

The diversity of tropical ornamental plants at Broome today is remarkable, given the town's relative isolation and size, and contributes greatly to its character and atmosphere.

Early Imports

The early residents of Broome planted tropical exotics for shade, fruit and ornament. They started a process that continues today, of creating an oasis of tropical lushness out of the relatively dry natural landscape.

Photographs of the Cable House (now the Courthouse) in Broome at the turn of the century show tobacco plants grown in rows and vegetable gardens within the grounds, as well as a boab tree (*Adansonia gregorii*), possibly transplanted live from Derby or its hinterland. Clearing of native vegetation in the spacious European Quarter appears to have been selective. Wattles (*Acacia* species) seem to have been removed, perhaps for firewood, and there is a remarkable absence of understorey, suggesting the impact of goat browsing. Goats are known to have been kept for milk. Species of native tree such as *Lysiphyllum*, *Gyrocarpus* and *Terminalia* were apparently retained for shade and dust control, creating a park-like landscape.

With the advent of artesian water, pearling masters and government officials were able to undertake ornamental planting, using Aboriginal and Asiatic labour. Gardens helped to shelter the pearlers' shuttered bungalows of wood and iron against the heat and glare of the sun and the red dust. Gardens also reflected a degree of social prestige.

By 1900, the front garden of the magistrate's Residency on Hamersley Street consisted entirely of coconut palms (*Cocos nucifera*). The botanist C.E.H. Ostenfeld, who visited Broome in November 1914 commented:

> "The few Adansonias (*Adansonia gregorii*) were said to have been planted. Amongst the foreign plants, *Poinciana regia* was the most conspicuous but in gardens (often artificially watered) grew *Nerium oleander*, *Cocos* sp., *Bambusa* sp., *Vinca rosea* etc."

The early establishment of exotic plants at Broome was undoubtedly facilitated by direct shipping and pearling links with Asiatic ports such as Singapore, Manila and Kupang. The wide variety in the gene pool of Broome's coconuts (*Cocos nucifera*) suggests diverse origins, pre-dating strict quarantine enforcement. Malays are sometimes credited with having brought in the tamarind (*Tamarindus indica*) and mango (*Mangifera indica*) to the area.

The scattered groups of towering Lontar palms (*Borassus sundaicus*), such as those behind Streeter and Male's and at the Broome Prison, are a feature of the Broome townscape unique in Australia. These were evidently an early introduction, probably brought from Timor by Koepangers or pearlers. On Timor's neighbouring islands, Roti and Savu, the palm is the mainstay of a remarkable traditional economy, founded on syrup extraction (Fox, 1977). Early photographs (for example, in Battye, 1915)

Freddy Redfearn with koepanger tree (Moringa oleifera)

Lontar Palm (Borassus sundaicus)

show that *Borassus sundaicus* has been in Broome since at least 1910. Palms from that era grew in the bungalow garden of the pearler Thomas Clarke. The local name of Koepanger tree for *Moringa oleifera* reflects its origins (Freddy Redfearn, personal communication); its edible pods and leaves are regarded as a delicacy in Asiatic cooking.

Development of public open space in Broome has been a relatively recent phenomenon. For many years the only town reserve was Bedford Park, which was opened in 1924 by the Governor whose name it bears.

With the appointment of Fred Lullfitz as North West Tree Adviser in 1968, a new and dynamic era of tree-planting commenced. Lullfitz was notable for his promotion of hardy native plant species. Avenues of river red gums (*Eucalyptus camaldulensis*), for example, on Robinson Street, as well as northern salmon gums (*Eucalyptus bigalerita*) on Herbert Street date from this era.

The Government Nursery at Broome, set up in 1964, was the first horticultural nursery in the Kimberley.

Tropical Paradise

Broome's tourism-driven development boom made Council, business people and householders increasingly conscious of promoting a lush tropical image. English developer Lord Alistair McAlpine pioneered the mass transplanting of large coconut palms to create instant landscapes. He also had boab trees, trucked in from Logue River, transplanted as street trees — a move that worried Derby residents, who regarded the boab tree as their symbol!

Reticulated lawns became a common sight, inadvertently encouraging the spread of newly-arrived weeds such as the grasses *Chloris barbata* and *Eleusine indica*, sedges (*Cyperus* species), *Gomphrena celosioides* and khaki weed (*Alternanthera pungens*). Numerous bores were sunk throughout the township, though many proved brackish. Concerns were raised about the long-term effects of this water usage on Broome's groundwater, with its minimal natural recharge. To many it seemed inappropriate for semi-arid Broome to project a 'coconut paradise and lawned verges' image.

Exotic Trees

Exotic plants are still very popular horticulturally. In recent years, Broome-based horticulturists have tested many novel species and broadened the range of ornamental material available.

Flowering trees are conspicuous at Broome. They include the poinciana (*Delonix regia*) and the golden shower (*Cassia fistula*), which make a spectacular contrast in red and yellow from November onwards. The poinciana's popularity has waned in recent years because it hosts looper caterpillars. Other notable flowering trees include the scarlet African tulip (*Spathodea campanulata*), yellow jacaranda (*Peltophorum pterocarpum*), orange *Cordia* species and *Colvillea racemosa*, as well as mauve and pink *Lagerstroemia speciosa*.

Yellow jacaranda (Peltophorum pterocarpum)

The boab (*Adansonia gregorii*), a symbol of the Kimberley with its immense trunk and striking silhouette, is well represented. Another curiosity is the African sausage or moon tree (*Kigelia pinnata*) with its strange flowers hanging on rope-like stalks, followed by bizarre sausage-like fruits.

Broome's largest trees include magnificent specimens of the slow-growing, cyclone-hardy tamarind (*Tamarindus indica*), valued for their shade and tasty sour pods. One popular fast-growing shade tree is the Malay almond (*Terminalia catappa*), with its striking tiered canopy of horizontal branches. Others include the African mahogany (*Khaya senegalensis*) and neem (*Azadirachta indica*), famous for its insecticidal

properties, as well as the powderpuff tree (*Albizia lebbeck*) with its fragrant creamy-green flowers.

Among palms, the coconut (*Cocos nucifera*) has always been pre-eminent. Unfortunately, Broome has been afflicted since late 1989 with the accidentally-introduced palm leaf beetle (*Brontispa longissima*), which gives fronds a scorched appearance. A tiny palm wasp introduced for beetle control is starting to have an effect.

Other widely planted palms include the slender Darwin palm (*Carpentaria acuminata*), a dwarf fan palm (*Sabal* species), golden cane (*Chrysalidocarpus lutescens*) and various *Phoenix* species. More recently, royal palms (*Roystonea regia*), foxtails (*Wodyetia bifurcata*), triangles (*Neodypsis decaryi*), various fan palms (*Bismarckia*, *Livistona*, *Pritchardia* species) and hardy doum palms (*Hyphaene* species) have become conspicuous. Other palm-like plants of note include the traveller's palm (*Ravenala madagascariensis*) and various screwpines (*Pandanus* species).

The most significant fruit tree in Broome is the mango (*Mangifera indica*). Large specimens with dense shady crowns are a feature of many established backyards. Other common fruit trees include pawpaw (*Carica papaya*), bananas (*Musa* species), guava (*Psidium guajava*), cashew (*Anacardium occidentale*), the thorny tailorfruit (*Ziziphus mauritiana*) and a range of *Citrus* species, especially grapefruit and lime. Newer arrivals such as sapodilla (*Achras sapota*), Barbados cherry (*Malpighia glabra*), custard apples (*Annona* species) and five corner (*Averrhoa carambola*) show potential for further horticultural use.

*Coconut palm (*Cocos nucifera*)*

Exotic Shrubs

Notable exotic shrubs in the Broome townscape include a broad range of species with colourful flowers in the following genera: *Adenium*, *Allamanda*, *Barleria*, *Bauhinia*, *Caesalpinia*, *Calliandra*, *Combretum*, *Hibiscus*, *Ixora*, *Jatropha*, *Nerium*, *Russelia*, *Tecoma* and *Thevetia*.

Exotic shrubs with colourful, variegated foliage include croton (*Codiaeum variegatum*), *Acalypha hispida*, *Graptophyllum pictum* and tapioca (*Manihot esculenta*). Highly regarded for their scent are frangipani (*Plumeria obtusa*), henna or Japanese boronia (*Lawsonia alba*), mock orange (*Murraya paniculata*), various *Jasminum* species and the climber *Quisqualis indica*.

Other conspicuous climbers include *Bougainvillea* hybrids with a range of spectacular colours, scarlet *Clerodendrum splendens*, mauve *Petrea volubilis*, orange *Pyrostegia venusta*, pink Mexican rose (*Antigonon leptopus*) and the bluish *Thunbergia grandiflora*.

Australian native plants have found widespread acceptance, including trees such as sheoak (*Casuarina* spp.), gums (*Eucalyptus* spp.), figs (*Ficus* spp.), paperbarks (*Melaleuca* spp.), dragon tree (*Sesbania formosa*), and nutwoods (*Terminalia* spp.). Common shrubs include a vast range of *Acacia* species, as well as *Callistemon*, *Cassia* and *Grevillea* species. Numerous Kimberley native plants, including rainforest species, hold promise for further horticultural use.

Battye Library, 24223P

Tobacco plants being cultivated at Cable House (now Broome Courthouse) in 1900. (Photo courtesy Royal WA Historical Society)

VEGETATION

This section describes the main vegetation types found on the Peninsula. It details the plants you might expect to find in the various habitats of the Peninsula, from the dry pindan to the lush mangal.

Bardi Perception

The Bardi Aborigines divide the northern Peninsula into two 'sides': the inland or bush 'side' (*bindan*) and the saltwater or coast 'side' (*gara*) (Smith & Kalotas, 1985). On the bush side are trees and shrubs covering the red or yellowish-grey sandplains, creeks, freshwater swamps and outcrops of Broome and Melligo sandstones. On the saltwater side are dunes, reefs, creeks, pools, the ocean itself, sandbanks, intertidal and supratidal mudflats, mangroves, paperbark thickets fringing the mudflats and rocky headlands of limestone, lime-cemented sandstone and Melligo Sandstone.

The Bardi describe both bush and saltwater sides with terms that relate to the thickness of the vegetation, distinguishing between them (where necessary) by the inclusion of the word *garadjun* (saltwater side). The bush has closed forests (*budan*), fairly open areas (*bindan*), areas where you can see right through the scrub (*djara*), open areas for camping (*baangga*) and creeks (*idara*). The coast has thick mangroves (*garadjun budan*), stands of mangroves where you can see from one side through to the other (*garadju djarara*), paperbarks fringing the mudflats (*garadjun bindan*), creeks (*garadjun idara*), pools (*yaga*), coastal dunes (*gara*) and mudflats (*biyanba*).

Plant Communities

Broome's natural vegetation is essentially a mixed assemblage of plants derived from two sources: the deserts to the south and the monsoonal Kimberley to the north. This transitional nature is emphasised by an apparent paucity of endemics, or strictly local species that are found nowhere else.

The interior of the Dampier Peninsula presents a relatively uniform environment, dominated by low-relief undulating sandplains with few creeks or hills. The overwhelming vegetation is pindan, a grassland wooded by scattered trees, generally eucalypts, with a variably dense middle layer of wattles.

The monotony of pindan country, especially inland from Broome, contrasts strongly with the diversity of the coastal habitats. We recognise eleven (10 terrestrial and one marine) plant communities on or around the Dampier Peninsula. They are:

- Pindan
- Fitzroy sandplains
- Rocky outcrops
- Creeks, wetlands and seepage areas
- Vine thickets
- Coastal dunes, beaches and limestone outcrops
- Saltwater paperbark thickets
- Samphire flats
- Saline grasslands
- Mangroves
- Seagrass meadows

Pindan

Typical pindan sandplain on the Cape Leveque Road

Fire in the pindan

*Woollybutt (*Eucalyptus miniata*) woodland at northern end of Peninsula*

Pindan is the ubiquitous vegetation that dominates the red sandplains of the Peninsula. It is grassland wooded by a sparse upper layer composed mainly of eucalypts with a dense, often thicket-forming, middle layer predominantly of wattles. Dahl (1926) described pindan variously as a "low crippled forest" and a "peculiar stunted forest". The term pindan is also applied to the red loamy soils, poor in nutrients, that support this vegetation type.

Pindan is an Aboriginal word that has been adopted for general local use. It has been defined by Mary Durack in her book *The Rock and the Sand* (1969 p. 292) as: "Common to most Dampierland tribes and variously rendered pindan, bindan, bindana and bindai, it means wild, arid or waterless country. *Binghi*, locally synonymous with Aboriginal, probably derives from the natives' describing themselves as being 'bindai' or 'pindai' meaning 'belonging to the bush or wild country'."

According to Moya Smith (1985) the Bardi consider that the northern Peninsula comprises two 'sides': the saltwater or coast 'side' (*gara*), and the inland or bush 'side' (*bindan*). The word *bindan* is also used for fairly open areas of bush.

Fire is the controlling agent of the pindan. The variable appearance and density of the vegetation, particularly of the wattles, relates directly to a fire-regeneration cycle, which often spans five to seven years. Stands of burnt wattle stems have a gaunt broomstick appearance, but recovery is rapid through rootstock suckering and/or prolific seedling regrowth. Other factors affecting the pindan include storm-associated winds, which flatten large stands of mature wattles, often weakened by termite and other insect attack. In the absence of fire, maturing acacias are often heavily infested by mistletoes (*Lysiana spathulata* and *Dendrophthoe acacioides*), which can cause their death.

In the southern half of the Peninsula, the wattle layer is dominated by the slender *Acacia eriopoda*. *A. tumida* is common on sand ridges and *A. platycarpa* is scarce. In the northern half of the Peninsula, *A. tumida* replaces *A. eriopoda* and *A. platycarpa* becomes more common. Disturbed areas, such as road margins, tend to be colonised by the silvery *A. colei*.

In the south of the Peninsula, scattered taller trees (8–12 metres high) are predominantly bloodwoods such as *Eucalyptus polycarpa*, *E. zygophylla*, *E. dampieri* and the grey box *E. tectifica*. Occasional majestic specimens of the white gum *Eucalyptus flavescens* and *E. bella* reach 15 metres high. Their hollow branches sometimes feature the hardy epiphytic orchid (*Cymbidium canaliculatum*). A few isolated groves of the red-flowering woollybutt (*Eucalyptus miniata*) occur on sand ridges immediately inland from Coconut Well. These are significant because they are the most southerly stands in the Kimberley. Pindan eucalypts host several mistletoes, including *Amyema bifurcatum* and *A. sanguineum*.

A wide range of other tree species lend variety to the pindan, notably bauhinia (*Lysiphyllum cunninghamii*), lemonwood (*Dolichandrone heterophylla*), the willowy *Ehretia saligna*, sandpaper fig (*Ficus opposita*), species of hakea (*H. macrocarpa* and *H. arborescens*) and grevillea (*G. pyramidalis* and *G. refracta*). Other species include ironwood (*Erythrophleum chlorostachys*), native gardenia (*Gardenia pyriformis*), medicine bark (*Ventilago viminalis*), kurrajong (*Brachychiton diversifolius*), cocky apple (*Planchonia careya*), desert poplar (*Codonocarpus cotonifolius*) and *Persoonia falcata*.

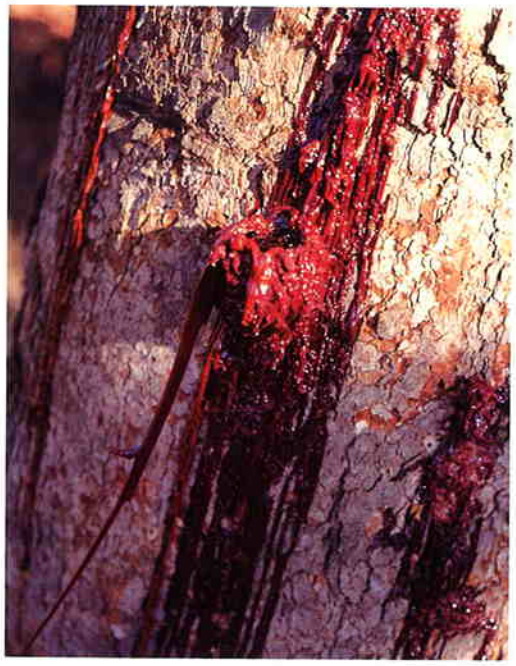
Understorey shrubs include conkerberry (*Carissa lanceolata*), *Distichostemon hispidulus*, *Trichodesma zeylanica*, *Acacia adoxa* and *Solanum cunninghamii*. Vine species are not common but include snake vine (*Tinospora smilacina*) and the magabala (*Marsdenia viridiflora*), whose fruit is a delicacy popular among Aborigines.

Principal pindan grass species include feathertop spinifex (*Plectrachne schinzii*), razorgrass (*Chrysopogon pallidus*), annual sorghum (*Sorghum stipoideum*) and black speargrass (*Heteropogon contortus*).

Proceeding north from Broome, a gradual change in the vegetation becomes noticeable after the first 30 kilometres. The tree layer begins to increase in height and density, so that eucalypt woodlands rather than pindan wattles tend to dominate the landscape. In the northern peninsula, the woollybutt *Eucalyptus miniata* becomes the dominant species, often on yellow sands, with *Eucalyptus dampieri*, *E. bella*, *Acacia tumida*, *A. platycarpa* and an understorey dominated by *A. hippuroides*, *Distichostemon hispidulus* and *Gossypium rotundifolium*.

Beard's 1977 vegetation map of the Peninsula, although informative, considerably underestimates the extent of the *Eucalyptus miniata* woodlands. A significant belt of the latter runs northwards from Barred Creek, occupying the western flank of the Peninsula. On the eastern side, stands of *E. miniata* can be encountered in the headwaters and on dune ridges of the Fraser River catchment.

A notable woodland of ironbarks (*Eucalyptus jensenii*), conspicuous by their black trunks, occurs on the Cape Leveque road some 50 kilometres north of Broome. At the northern end of the Peninsula, where the sand is loose, *Eucalyptus tectifica* is common, often with a dense grass layer of *Cymbopogon ambiguus*.



Kino (or gum) of Eucalyptus dampieri

Fitzroy Sandplains

North-east of Broome towards Derby on the Great Northern Highway, there is a noticeable change in the vegetation associated with the Fitzroy drainage basin, commencing near Nilli Bubbaca Well, 110 kilometres from Broome. The most obvious change is the appearance of scattered boabs (*Adansonia gregorii*). The south-east sector of the Peninsula is the only area where boabs occur naturally. The change in vegetation coincides with a change in the soil colour to mainly heavy yellow clay loams. Here the pindan vegetation is replaced by savanna (dominated by *Eucalyptus tectifica* and *Lysiphyllum cunninghamii*) and is generally heavily grazed and affected by cattle. Creek lines often feature *Acacia ampliceps*, *Carissa lanceolata*, *Melaleuca acacioides* and occasionally *Dichrostachys spicata*.

Other plants restricted to the area near the Logue River and the Jarrananga Plain include *Acacia synchronicia*, which forms a low dense (almost monospecific) shrubland, and beefwood (*Grevillea striata*). A natural feature of this area is the many large termitaria, which give rise to the local names 'Termite City' and 'Tombstone Flats'.

Termitaria on the Fitzroy Sandplains

Rocky Outcrops

Rocky outcrops are fairly rare on the Peninsula and fall into two main groups. The first, coastal limestone, is discussed later (see page 36). The other group includes sandstones, some of which are heavily ferruginised (that is, contain iron).

Broome Sandstone is exposed along the coast as mudstone and red eroding claystone. In the James Price Point area it supports a wind-pruned thicket of *Acacia tumida*, in which *Gyrocarpus americanus* and *Ficus opposita* are also common.

Extensive outcrops of Melligo Sandstone occur in the Mt Jowlaenga–Dampier Hill area in the south-eastern sector of the Peninsula. The vegetation of Dampier Hill is a low woodland to low open-woodland of *Eucalyptus flavescens* over a high shrubland comprising *Acacia stigmatophylla*, *A. colei*, *A. monticola*, *Atalaya hemiglauca*, *Calytrix exstipulata*, *Pterocaulon serrulatum* and an undescribed species of

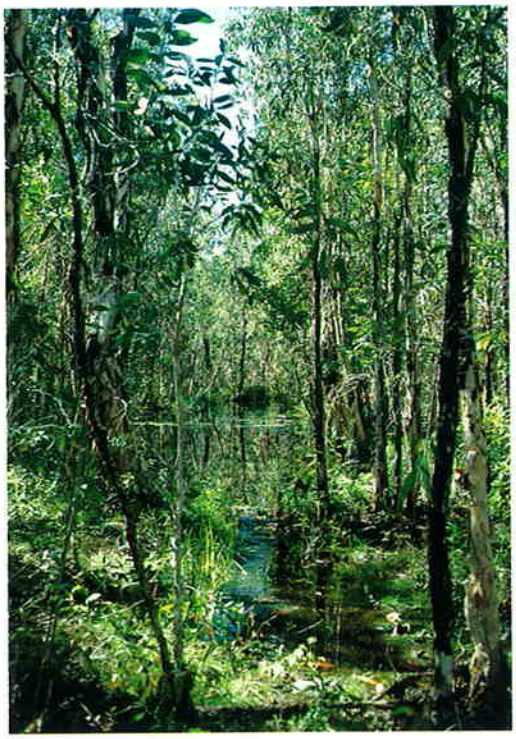
Melligo Sandstone at One Arm Point

Triumfetta. The understorey is a tussock grassland of *Cymbopogon ambiguus*. Surrounding the hills is a white clay drainage area, which supports an open woodland of *Eucalyptus tectifica*, with scattered *Lysiphyllum cunninghamii* over a grassland of *Sorghum stipoideum*. Termite mounds are very common.

Melligo Sandstone exposures around Cygnet Bay, near Deep Water Point and Karrakatta Bay, support a typical north Kimberley sandstone community, which includes *Acacia monticola*, *Canarium australianum*, *Exocarpos latifolius*, *Cochlospermum fraseri*, *Ficus opposita* var. *indecora*, *F. platypoda*, *Grevillea wickhamii*, *G. heliosperma*, *Pouteria sericea*, *Templetonia hookeri* and *Trachymene didiscoides*. The hummock grass *Plectrachne bynoei* is very common. The scramblers *Abrus precatorius*, *Flagellaria indica*, *Passiflora foetida*, *Sarcostemma viminale*, *Tinospora smilacina* and *Mukia maderaspatana* are also present.

Heavily ferruginised Emeriau Sandstone outcrops are only found at a few locations on the Peninsula and the best exposures can be seen in the Carnot–King Peaks area. These outcrops support an unusual plant community rich in vine thicket species. Trees include *Ficus platypoda*, *Capparis jacobsii*, stunted *Cupaniopsis anacardioides*, *Diospyros ferrea*, and the vines *Sarcostemma viminale*, *S. brevipedicellatum* and *Operculina brownii*. Both outcrops are ringed by dense thickets of *Acacia monticola*, a species often indicative of near-surface ferruginised sandstone and also lateritised gravels. Other gravel-associated species include *Terminalia canescens*, *Calytrix exstipulata* and *Myrtella retusa*.

Creeks, Wetlands and Seepage Areas



A permanent freshwater spring near Beagle Bay

Low-lying sandplains occur in the northern Peninsula, associated with broad sub-coastal drainage valleys and seasonally swampy areas. They can be found near Martins Well, just north of Pender Bay and just south of the Rumble Bay oyster lease. Their deep sandy dark-grey soils support woodlands of *Eucalyptus polycarpa*, *E. bella* and *Melaleuca viridiflora* over *Pandanus spiralis*, *Acacia neurocarpa*, *Grevillea pyramidalis* and *Planchonia careya*. The fern *Platyzoma microphyllum*, and the herbs *Drosera petiolaris* and *Xyris complanata*, occur frequently. Occasional areas of dark cracking clay are also present.

Topographically, the lowest sandplains are those of dark-grey alluvium over clay, found inland from both Beagle Bay and Pender Bay. These support grassplain of *Chrysopogon* species with scattered thickets of *Melaleuca acacioides* and sometimes *Verticordia verticillata*, such as at Bobbys Creek.

The best-developed riverine communities in the Peninsula are found in the Coulomb Point Nature Reserve. In estuarine situations they comprise low closed forests of *Melaleuca acacioides*, and along freshwater creeks, fringing woodlands of *Eucalyptus camaldulensis* and *Melaleuca viridiflora* over *Pandanus spiralis* var. *convexus* and *P. darwinensis*.

Where coastal dunes truncate drainage lines, freshwater swamps occur. They support low woodland of *Lophostemon grandiflorus* subsp. *grandiflorus*, with a fringe of *Melaleuca nervosa* and *M. acacioides*. When flooded following summer rain, the surface of these sub-coastal swamps is often covered with a dense bloom of the duck weed *Lemna aequinoctialis*. As the water level recedes, the damp areas support numerous ephemeral species such as *Byblis liniflora*, *Drosera indica*, *D. petiolaris* and *Goodenia sepalosa*. The grasses *Aristida hygrometrica*, *Digitaria bicornis*, *Echinochloa colona* and *Pseudoraphis spinescens* are common, as are the sedges *Cyperus bifax*, *C. pulchellus* and *Fimbristylis caespitosa*. Occasionally, climbers such as *Protasparagus racemosus*, *Capparis lasiantha* and *Gymnanthera oblonga* may occur among the *Lophostemon* woodland.

Small seasonal claypans and swamps occurring further inland support a fringing low woodland of *Lophostemon grandiflorus* and/or *Melaleuca acacioides* and belts of either *M. viridiflora* or *M. nervosa*, often with *Eucalyptus bella* and *Pandanus spiralis*, over numerous grasses. The aprons of these claypans support a rich ephemeral herb flora after good wet seasons.

Areas of permanent fresh water are rare on the Peninsula, but where they occur they support large groves of *Melaleuca cajuputi* and *M. viridiflora*. Associated open pools are the only places on the Peninsula where aquatics such as the blue waterlily (*Nymphaea violacea*) and the marshworts *Nymphoides indica* and *N. beaglensis* occur. The latter plant is apparently endemic to the Dampier Peninsula.

Interesting mound springs, sometimes raised two metres above the surrounding plains, occur within a few kilometres eastwards from the Beagle Bay community. These often support large fern colonies of *Cyclosorus interruptus* and *Lygodium microphyllum*. At one remarkable locality on a mudflat near Carnot Bay is a freshwater spring known as Bunda-Bunda. This feature, resembling an island, forms a large raised peaty swamp supporting a luxuriant closed forest of *Melaleuca cajuputi*, *Carallia brachiata*, *Timonius timon* and *Sesbania formosa* over a waist-deep understorey of the fern *Cyclosorus interruptus*. The climbing maidenhair fern (*Lygodium microphyllum*) forms dense trailing columns into the tree canopy. Clumps of the mangrove fern *Acrostichum speciosum* fringe the outer perimeter of the swamp.

Nimalaica Claypan is a unique, almost permanent, freshwater lake inland from Willie Creek. This is an important bird refuge, with dense surrounding beds of a tall sedge-like plant, *Eleocharis dulcis*, and a partially submerged forest of massive *Melaleuca cajuputi*, notable for their cable-like aerial roots. Associated springs are significant for the occurrence of *Philydrum lanuginosum*, and for one of the most southerly known stands of the mangrove fern, *Acrostichum speciosum*.

The Fitzroy River intersects the eastern boundary of the Peninsula. As it is one of the largest permanent rivers in the Kimberley, it supports dense riverine vegetation found nowhere else on the Peninsula. Tree species locally restricted to the banks of the Fitzroy River include *Barringtonia acutangula*, *Melaleuca argentea*, *Nauclea orientalis*, *Pandanus aquaticus* and *Terminalia platyphylla*. *Eucalyptus camaldulensis*, *E. flavescens* and *Planchonia careya* are also conspicuous on the riverbank and levees, with *E. tecifica*, *E.* aff. *microtheca* and *Eremophila bignoniiflora* prominent on the back flood plains.

Claypan near Point Coulomb

Mound spring vegetation at Bunda-Bunda

*Beagle Bay marshwort (*Nymphoides beaglensis*)*

Vine Thickets

Directly behind the coastal dune systems are discontinuous but discrete pockets of relatively dense vegetation. These are allied to rainforest, ranging from semi-deciduous vine thickets to closed semi-deciduous vine forest. They form one of the most interesting plant communities on the Peninsula, yet were not recognised as being present in the Kimberley until the 1970s. The fact that the Bardi language includes the word *budan*, meaning vine thicket, confirms the importance of this plant community to the local Aborigines.

The vine thickets contain a predominance of Indo-Malesian plants that are more typically encountered in the patches of monsoon forest (semi-deciduous vine thickets) in the wetter north-west Kimberley. Interestingly, about one quarter of the Kimberley flora occurs in rainforests — even though their total area is estimated at less than 8 000 hectares. In Western Australia, the association of vine thickets with coastal dunes is effectively

Coastal vine thicket near Cape Borda

Vine thicket near Weedong Lake

confined to the Dampier Peninsula; vine thickets further north invariably occur in association with rocky sites.

The vine thicket communities are best developed at the northern end of the Peninsula, especially along the western coastline. Progressing northwards from Broome towards Cape Leveque, vine thickets tend to become larger with a better structure and a greater diversity of species. Distinctive components of the vine thickets at Broome include the evergreen trees mangarr (*Pouteria sericea*) and *Exocarpos latifolius*, and semi-deciduous shrubs such as *Grewia breviflora*, *G. retusifolia*, *Pavetta kimberleyana*, *Bridelia tomentosa* and *Premna acuminata*. Large emergent *Terminalia* trees also occur, principally blackberry tree (*T. petiolaris*) and on the landward fringe, gubinge (*T. ferdinandiana*).

From Barred Creek northwards through Quondong to James Price Point, there is another significant belt of vine thickets notable for the evergreen trees *Diospyros ferrea* var. *humilis*, *Mimusops elengi*, *Celtis philippensis*, *Melaleuca dealbata* and, rarely, *Parinari nonda* and *Pittosporum moluccanum*. Shrubs include citrus-like *Glycosmis* species and the deciduous *Croton habrophyllus*. All of these species are at the southern limit of their range.

Vine thicket trees of note on the northern Peninsula include the banyan fig (*Ficus virens*) and the wild apple (*Syzygium eucalyptoides* subsp. *bleeseri*) with its popular edible fruit. Species confined to localised populations include *Cupaniopsis anacardioides*, *Diospyros bundeyana*, *D. maritima* and *Vitex glabrata*.

Widespread vines associated with Peninsula thickets include *Abrus precatorius*, *Gymnanthera oblonga*, *Jacquemontia paniculata*, *Passiflora foetida*, *Tinospora smilacina*, *Tylophora cinerascens* and more rarely, *Operculina brownii* and *Opilia amentacea*. Climbers confined to the extreme northern thickets include *Adenia heterophylla*, the yam *Dioscorea bulbifera*, the bamboo-like *Flagellaria indica*, *Gymnema geminatum* and *Tylophora flexuosa*. Vines featuring either prickles or thorns include *Caesalpinia major*, *Capparis lasiantha*, *C. sepiaria*, *Paramignya trimera* and *Protasparagus racemosus*.

Vine thickets are an important habitat for wildlife such as the great bower bird (*Ptilonorhynchus nuchalis*), rose-crowned fruit pigeon (*Ptilinopus regina*) and agile wallaby (*Macropus agilis*). Many vine thicket trees produce fruits that are attractive to birds and bats, so providing an efficient dispersal mechanism for their seeds. In addition, the edible fruits and berries represent an important traditional resource for the Aboriginal people.

In 1992, a vine thicket nature trail, funded from the National Rainforest Conservation Program, was opened at Gubinge Road near Cable Beach, to enhance public understanding of these vine thickets, which are the most southerly and accessible in the Kimberley.

Gubinge Road nature trail

Coastal Dunes, Beaches and Limestone Outcrops

Long sections of exposed white Holocene sand dunes run parallel to the coast, often forming extensive systems around the Peninsula. They can be seen at Cable Beach. In the northern Peninsula large areas of mobile dunes often encroach towards the hinterland. The foredunes are sparsely vegetated, predominantly with the coastal grass *Spinifex longifolius*, and more patchily with the sedges *Fimbristylis cymosa*, *F. sericea* and *Cyperus bulbosus*. These species are adapted to tolerate sand burial, salt spray and wind blast. Also present are the beach morning glory (*Ipomoea pes-caprae* subsp. *brasiliensis*), a creeper with long pliable stems, the hardy shrub *Salsola kali* and a prostrate herb *Euphorbia myrtoides*.

On more established dunes, where pockets of vegetation have gained a hold, other hardy shrubs such as the bluish-grey *Acacia bivenosa*, stunted bauhinia (*Lysiphyllum cunninghamii*) and the beach bean creeper

(*Canavalia rosea*) struggle for survival between bare intervening swales and blow-outs.

Behind dune crests, on backslopes and in hollows, the plant species already mentioned are joined by a diverse assemblage of plants, forming a dense shrub community. Notable species may include *Abutilon indicum*, *Clerodendrum tomentosum*, *Crotalaria cunninghamii*, *Hypoestes floribunda*, *Jasminum didymum*, *Mallotus nesophilus*, *Myoporum tenuifolium*, *Ptilotus exaltatus*, *Santalum lanceolatum* and the grass *Whiteochloa airoides*. These shrublands infrequently merge downslope into isolated pockets of vine thicket. North of Point Coulomb, isolated clumps of the screwpine *Pandanus spiralis* occur in the interdunal swales, and sometimes in the strand community behind beaches.

Pleistocene dunes, older and less exposed than the white Holocene dunes seen at Cable Beach, are characteristically pink and relatively stable. They commonly occur around Broome and good examples can be seen fringing Roebuck Bay, east of Port Drive. Although the two dune systems have many plant species in common, the Pleistocene dunes seem to have been invaded by pindan-type plants, giving their vegetation a more diverse aspect and some different dominant species. For example, the seaward face of the Roebuck Bay dunes has the familiar *Spinifex longifolius* and *Canavalia rosea*, but these are joined by two notable shrubs: the woolly-leaved *Psoralea martinii* and the introduced kapokbush *Aerva javanica*.

The pink Pleistocene dune crests are dominated by *Acacia monticola* with the low shrub *Gyrostemon tepperi* and, where unburnt, large clumps of the hummock grass *Plectrachne schinzii*. An open eucalypt community with several bloodwoods (especially *Eucalyptus polycarpa* and *E. dampieri*) is also locally important. Sheltered dune slopes and hollows have a very mixed plant community including suckering thickets of *Atalaya hemiglauca*, *Ehretia saligna* and *Clerodendrum floribundum*, together with the vines *Jasminum didymum* and *Tylophora cinerascens*.

More subdued beach dune systems usually merge into sandplain surfaces with pindan vegetation via a transitional zone of small pockets of vine thickets. In the north of the Peninsula, larger dune systems provide conditions suitable for closed vine forests along the base of their leeward slopes. Such dunes sometimes truncate coastal drainage areas, resulting in the formation of ephemeral swamps, as at Weedong Lake.

Coastal and sub-coastal limestone outcrops occur sporadically along the Peninsula. These are cemented dune cores that have been exposed. From Barred Creek southwards towards Coconut Well is an extensive limestone platform with low cliffs, sometimes masked by drift sand. Open scrub dominated by *Acacia bivenosa* is characteristic of these outcrops, with occasional stunted *Lysiphyllum cunninghamii*, *Ficus opposita*, *Mallotus nesophilus*, *Crotalaria cunninghamii* and *Fluggea virosa*. North of Barred Creek, *Acacia bivenosa* does not occur and the extensive limestone outcrops are poorly vegetated.

On Packer Island the limestone outcrops constitute a karst formation. Orange sand overlies much of the limestone and shrubs of localised strand species such as *Pemphis acidula* and *Scaevola taccada* occur. *Spinifex longifolius* is the most common grass species. Wind-pruned shrubs of *Acacia tumida* and *Crotalaria cunninghamii* are common in sheltered depressions. The coastal creepers *Canavalia rosea* and *Ipomoea pes-caprae* subsp. *brasiliensis* scramble over the rocky outcrops.

Mouth of Willie Creek

Limestone outcrops at Barred Creek

Weedong Lake

Saltwater Paperbark Thickets

Along the inner, landward margin of saline grasslands, there is a gradual or sometimes abrupt transition to seasonally inundated, fringing stands of the saltwater paperbark, *Melaleuca acacioides*. Growing in characteristic multi-stemmed clumps with a dense evergreen crown, these trees

Saltwater paperbark (Melaleuca acacioides) *thicket*

(which reach 4-10 metres high) scent the air with a pungent aroma derived from their volatile leaf oils. Occasional climbers such as *Cynanchum carnosum*, *Gymnanthera oblonga* and the hemi-parasitic *Cassytha filiformis* scramble among the canopies. Thickets degraded by fire can become rapidly invaded by the climbing wild passion fruit, *Passiflora foetida*.

The width and density of the paperbark community varies greatly, from a discontinuous line of trees to a closed-canopy thicket, half a kilometre wide with a deep layer of leaf litter and minimal undergrowth. The best-developed stands of paperbark close to Broome occur inland of Willie Creek and south of Coconut Well, at the northern end of Buckley Plains.

Such thickets, with their shade and shelter, form an important habitat for wildlife, from clustering butterflies to nesting birds. Around September, *Melaleuca acacioides* reaches its flowering peak. The creamy ball-like flower clusters attract numerous honeyeaters. Paperbark thicket is also a favoured refuge for cattle during midday heat.

The landward margin of paperbark thicket gives way to pindan, either gradually or abruptly, depending on slope. This transition zone often includes *Atalaya hemiglauca*, *Acacia colei*, *Lysiphyllum cunninghamii* and *Melaleuca nervosa*.

Saltwater paperbark has sometimes been used for fence-posts and building materials. Other paperbark species associated with fresh water are discussed in the section on wetlands.

Samphire Flats

Edge of saltmarsh at Beagle Bay

Broad tidal flats usually occur behind the mangroves, featuring expanses of bare mud devoid of vegetation because of hypersalinity. The seaward margins of the mud flat are often defined by dense stands of *Ceriops tagal* and *Excoecaria agallocha*. At the landward margins of the mud flat, a low saltmarsh shrub community is characteristic, dominated by succulent samphires, principally of the family Chenopodiaceae, such as *Halosarcia halocnemoides*, *Neobassia astrocarpa* and *Suaeda arbusculoides*, together with *Sesuvium portulacastrum*, *Hemichroa diandra* and *Muellerolimon salicorniaceum*.

Salt water couch grass (*Sporobolus virginicus*), rice grass (*Xerochloa imberbis*) and the halophyte *Frankenia ambita* are often present at the landward edge, indicative of the transition to saline grasslands. Near Broome, samphire flats can be found on the landward side of Willie Creek and along the marsh road to Crab Creek.

Saline Grasslands

Saline grassland at Curlew Bay

Tidal flats, above high-water mark, are dominated by extensive pastures of salt water couch (*Sporobolus virginicus*), a hardy perennial grass with creeping rhizomes. Near Broome, this community is best developed at Roebuck Plains, inland from Crab Creek. Important grasslands also occur inland from Fisherman's Bend and Dampier Creek, as well as south of Coconut Well at Buckley Plains and behind Willie Creek. Elsewhere this plant formation is widespread over the Peninsula, especially inland from tidal creeks. *Sporobolus* is readily grazed by cattle at all stages and is highly regarded by pastoralists for cattle fattening. Associated grasses include *Dicanthium fecundum*, *Eragrostis eriopoda* and the shrub *Salsola kali* in minor depressions.

The landward margins of saline grasslands sometimes feature scattered shrubs of *Flaveria australasica*, *Hibiscus panduriformis*, *Streptoglossa odora* and the mat-forming *Phyla nodiflora*. The grasses *Eragrostis falcata*, *Xerochloa barbata* and *X. imberbis* are often present. The latter two are both species of rice grass that provide excellent fodder

immediately after the wet season but are vulnerable to overgrazing.

Saline grasslands are subject to flooding and ponding following heavy periods of monsoonal rain. In the late dry season, they are a favoured location for mating brolgas (*Grus rubicundus*), which can often be seen dancing in the shimmering heat haze or feeding on the bulbs of the sedge *Cyperus bulbosus*.

Mangroves

Mangroves usually grow between high spring tide and mean sea level. They grow best in areas with a warm climate, protected shores, salt water, muddy substrates and a high tidal range. All of these attributes are found in tidal embayments throughout the Peninsula. Of the 17 mangrove species recorded for the State, 12 species are known from the Peninsula.

Mangrove species belong to a variety of plant families that have common features such as pneumatophores, which are roots modified to assist with aeration. The seeds are often viviparous, that is, they germinate while still attached to the parent plant. These features almost certainly are adaptations that assist the plants to survive in a harsh environment. The term mangrove refers to the individual species. A mangrove plant community is called a mangal.

The commonest mangrove, *Avicennia marina*, is a tree with greenish-grey foliage. It is readily recognised by its radiating network of cable roots and projecting pencil-like pneumatophores or 'breathing roots', historically referred to in Broome as 'cobblers pegs'. The scent of the orange flowers of *Avicennia* sometimes permeates the air and is particularly noticeable in near-coastal areas between November and January. *Avicennia* forms dense stands on both seaward and landward mangrove margins. On the seaward side it is often accompanied by *Sonneratia alba* and *Camptostemon schultzii*. On the landward fringe it is joined by *Aegialitis annulata*, *Aegiceras corniculatum* and *Ceriops tagal*. *Excoecaria agallocha* and the halophytic shrub *Batis argillicola* are sometimes common on the landward side. The innermost or central zones in mangrove stands generally feature *Rhizophora stylosa*, with characteristic arching stilt roots, and the tall columnar *Camptostemon schultzii*. The mangrove mistletoe *Amyema thalassia* occurs on *Avicennia marina*, whereas *Amyema mackayensis* is found on *Excoecaria agallocha* and *Rhizophora stylosa*. *Amyema dolichopoda* seems to be restricted to *Lumnitzera racemosa*.

Colonies of flying foxes (*Pteropus* spp.) can frequently be seen roosting in mangroves by day, emerging at dusk to forage on blossoms and fruit.

When pearling was at its peak around 1912, roughly 400 luggers worked out of Broome. At that time the mangrove belt on the seaward side of Chinatown, fringing Dampier Creek, was largely cut out, often by prison gangs, so that luggers could be beached for refitting. Traditionally, red mangrove (*Ceriops tagal*) was cut for firewood for cooking aboard luggers, because of its smokeless quality.

Tidal creek and mangroves

Prop-rooted mangrove (Rhizophora stylosa)

Seagrass Meadows

Seagrass meadows constitute a major component of our native plant resources, as they occupy large areas and are highly productive. Seagrasses are particularly interesting in that they are the only flowering plants to complete their life cycle, including flowering and fruiting, while totally submerged in a marine environment. Their pollen is specially adapted for underwater pollination.

The seagrass meadows of the Kimberley coastline lie between the diverse seagrass floras of temperate south-west Western Australia and the tropical seagrass beds of Papua New Guinea. This makes the Kimberley

Mixed seagrass meadow, Sunday Island

Dugong feeding trails through seagrass (Halophila ovalis)

meadows of considerable biogeographical interest. However, because of the relative isolation and low population of the Kimberley coastline there have been few observations and collections from the region (Walker and Prince, 1987). Temperature has been suggested as one of the major factors controlling the biogeographic distribution of seagrasses. The mean water temperature ranges from 24°C to 31°C at King Sound (Pearce, 1986). Around the coast of the Peninsula two families, seven genera and 11 species of seagrass have been recorded. The genera recorded are *Cymodocea*, *Halodule*, *Syringodium* and *Thalassodendron* in the family Cymodoceaceae, and *Enhalus*, *Halophila* and *Thalassia* in the family Hydrocharitaceae.

Around the Peninsula most species of seagrass seem to occur on a wide range of sediments, but *Halodule pinifolia* and *Halophila ovata* are only found inter-tidally or in shallow subtidal areas, more commonly on finer sediments. The soft-leaved *Halophila ovalis* thrives in situations where some standing water remains. *Halodule uninervis* is the more prominent species in the mixed stands in places where the substrate is fully exposed at low tide. The upper limits of the distribution of these seagrass stands seem to be within an area that is drained and then re-flooded within an hour or two on either side of low tide. The genus *Thalassia* is generally associated with coarser sediments. *Thalassodendron ciliatum* grows directly on reef or coarse shell grit, particularly in areas subjected to strong currents. This species often carries a large epiphyte population.

Extensive seagrass banks are found in Roebuck Bay where the substrate is a fine greyish mud. *Halophila ovalis* seems to be the major species present in the inter-tidal area, but *Halodule uninervis* also occurs in reasonable abundance. The upper inter-tidal limit of the most vigorous stands seems to be determined by the length of time of exposure and degree of drying at low tide of the tidal flats occupied by these seagrasses.

Along the Kimberley coastline and particularly around the Dampier Peninsula, seagrass meadows are important feeding grounds for large marine animals such as the dugong (*Dugong dugon*) and the green turtle (*Chelonia mydas*). These animals are reported to eat large quantities of seagrass, but in tropical regions only a small percentage of the total biomass seems to be grazed.

PRESERVING THE PENINSULA

7

The Dampier Peninsula has an immense history of Aboriginal settlement and a relatively recent one of European exploration and occupation. Its position straddling the arid areas to the south and the monsoonal tropics to the north has resulted in the development of the pindan soils and the unique vegetation that mantles them. The rich dune-associated vine thickets of the Peninsula occur nowhere else in Western Australia.

Human Impact

There is an increasing emphasis worldwide on preservation of habitats and conservation of the biodiversity of life on earth, yet unique natural environments like the Dampier Peninsula continue to be eroded and destroyed by human activities. There is a perception that areas suffer less from human disturbance if they are remote; but 'remote' does not necessarily mean pristine. At first glance, the size of these ancient Kimberley landscapes can mask their fragility. The Kimberley's vast savannas are sparsely settled, but have been exploited by humans for at least 40 000 years. During this period an entire fauna of great mammals disappeared. Other mammals have disappeared and some plant species have not been re-collected since European settlement began more than 100 years ago. Pervasive damage from cattle, feral donkeys, cats and inappropriate fire regimes are now apparent in many parts of the Kimberley, including the Dampier Peninsula.

Much of the Peninsula is networked with tracks, and frequently visited by tourists and fishermen. Aboriginal communities have established a tourist resort, Kooljaman, at Cape Leveque with guided tours of the area. The large tourist industry centred on Broome is growing rapidly and more extensive tourist use of the Peninsula is inevitable. Roadside populations of tree orchids (*Cymbidium canaliculatum*) have virtually disappeared within the past decade through illegal removal. One particularly ornamental tree species *Pittosporum moluccanum* is restricted, on the mainland Kimberley, to coastal vine thickets in the James Price Point area of the Peninsula, and has been gazetted as 'Declared Rare Flora'.

Tree orchid with seed pods

Representative Reserves

The World Conservation Strategy supports the idea of conservation reserves to protect representative areas and indigenous species. It is therefore imperative that adequate reserves are established on the Peninsula, capable of sustaining a broad cross-section of the wildlife. The existing Coulomb Point Nature Reserve contains only a small area of pindan and a correspondingly small population of the nail-tail wallaby (*Onchogalea unguifera*). The uncertain status on the Peninsula of the dalgyte (also commonly known as the bilby or rabbit-eared bandicoot, *Macrotis lagotis*) gives cause for concern.

There is a need to protect adequate areas of all of the features typical of the Dampier Peninsula. The report *Nature Conservation Reserves in the Kimberley*, published in 1991 by the Department of Conservation and

Migratory waders at Roebuck Bay

Land Management, recommended that several additional reserves be established and that the Coulomb Point Nature Reserve be expanded to create a 'Dampierland National Park'. This new national park would include coastal environments as well as protecting a greater number of the ephemeral lakes and freshwater springs (for example, Wonganut Spring) on the Peninsula. This would conserve examples of the Peninsula's riverine environments, as well as examples of pindan on low-level soils.

The proposed Jowlaenga Nature Reserve, presently part of the Waterbank pastoral lease, may still hold populations of the dalgyte. Proposed reserves in the northern part of the Peninsula, whose boundaries have been the subject of long negotiations between the Department of Conservation and Land Management and nearby Aboriginal communities, are expected to be declared in the near future. The proposed Borda Nature Reserve includes the largest single patch of vine forest on the Peninsula. This reserve and the proposed Cygnet Bay Nature Reserve contain a great variety of diverse coastal and near-coastal habitats. Cygnet Bay also has important historical significance because of its associations with Allan Cunningham's botanical collecting in 1822.

The proposed Roebuck Bay Marine Park has been selected primarily to conserve areas of intertidal flats and beaches: the landfall and feeding grounds for vast numbers of migratory wading birds. These arrive in Australia from their breeding grounds in the Arctic parts of east Asia in August and September, and leave in March and April. More than 850 000 waders use Roebuck Bay and Eighty Mile Beach at migration time. Australia has signed three international treaties protecting migratory wading birds and their habitats. Reservation of the Roebuck Bay area would be a major step forward in meeting obligations under these treaties.

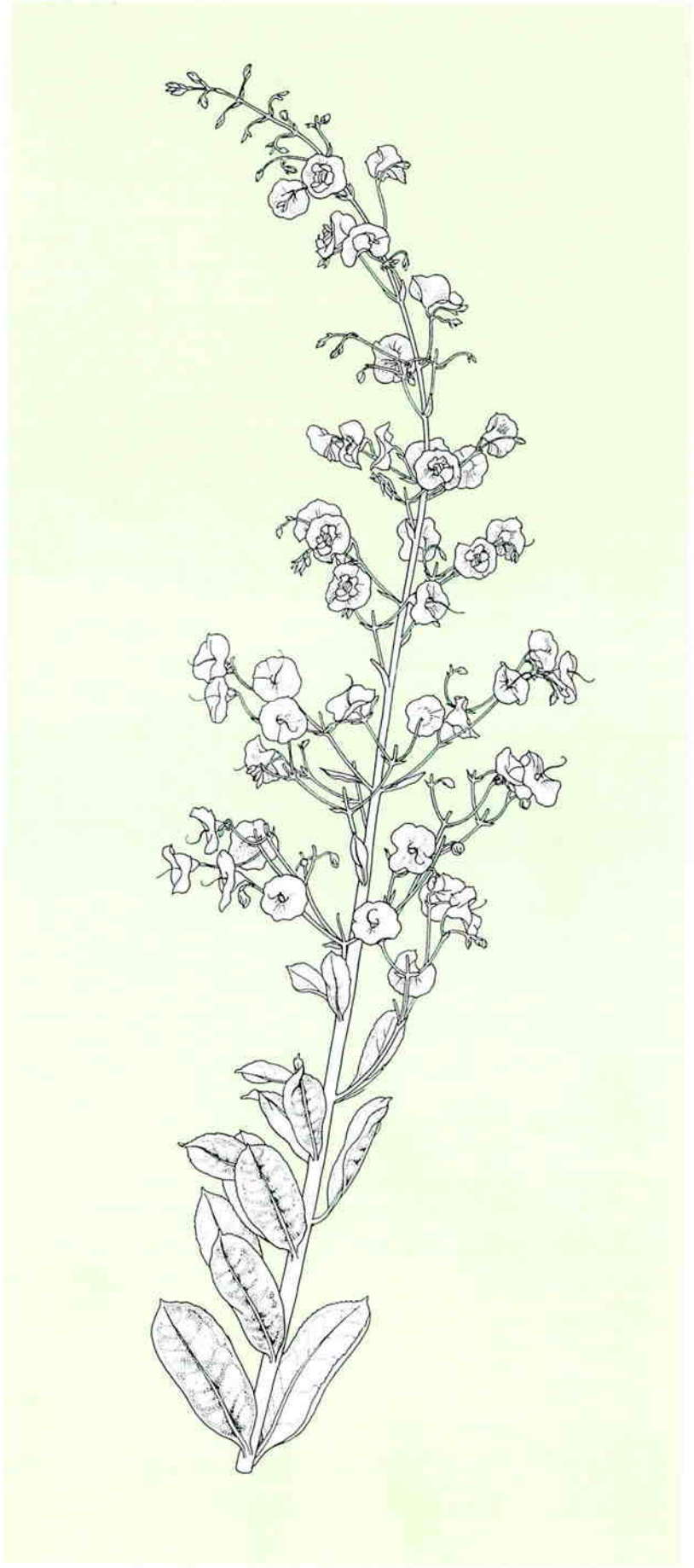
There are negotiations under way to establish a Coastal Park on the ocean side of Broome, to ensure proper management of fragile dunes, vine thickets, dinosaur footprints and trackways.

Future Potential

The world's forests and woodlands are shrinking at an alarming rate at a time when there is an unprecedented demand for their resources. In developing countries, it is seen as critical to expand the use of firewood and charcoal to avoid the expensive infrastructure needed for other energy forms, such as electricity. Australia has many trees and shrubs with characteristics useful for community forestry. It is logical that the search for species suitable for planting in the world's arid areas be centred upon Australia — the world's driest continent.

The Dampier Peninsula has important species of legume and wattle: plants that are capable of fixing nitrogen, tolerant of infertile sites and fast-growing. One such species, *Acacia tumida*, grown from seed collected at Cape Leveque, is regarded as: "appearing to possess nearly all of the attributes to make it a most useful food source for people living in subtropical/tropical dry zones" (House & Harwood, 1992). In the last decade, plants of *Acacia colei* and *Sesbania formosa*, grown from seed collected from the Broome area, have found widespread favour for regeneration projects in the Sahelian zone of West Africa. Other legume genera found on the Peninsula, such as *Vigna* and *Glycine*, have genes which may have an application in improving commercial seed crops like mung bean (*Vigna radiata)* and soy bean (*Glycine max* and *G. soja*). Non-legume genera with commercial potential include *Gossypium* for cotton (*G. hirsutum*) crop improvement. Examples such as these highlight the importance of reserves in maintaining the genetic diversity of all species, so that humanity may benefit from the great potential of nature.

*Woolly glycine (*Glycine tomentella*)*



*Northern tinsel flower (*Cyanostegia cyanocalyx*)*

PART TWO

PLANT LIST

INTRODUCTION

The families of plants from the Dampier Peninsula are arranged, for uniformity and easy cross-referencing, in the same sequence as in the *Flora of the Kimberley Region* (Wheeler *et al.*, 1992). The sequence is ferns, followed by angiosperms (dicotyledons and monocotyledons). Genera and species are arranged alphabetically within the families, which are themselves arranged alphabetically in each section. In addition, non-flowering plants such as the algae, fungi and lichens recorded for the Peninsula are listed in Appendices 1 and 2.

Keys to genera and species are available in the *Flora of the Kimberley Region*. The plant descriptions have been simplified to present a diagnosis of the most significant characters. Technical terminology has been kept to a minimum and a glossary of commonly used terms is provided. The descriptions are based both on dried material housed in the Western Australian Herbarium and on observations of living material made in the field. All species are represented by voucher specimens in the Herbarium. Whenever possible, material has been critically examined by plant specialists within Australia and overseas. Notes are provided on similarities and differences between closely related species.

Species that apparently do not have names have been designated A, B, etc. Kimb. Flora, where these entities have been recognised in the *Flora of the Kimberley Region*. Where they have not been recognised in that Flora they are designated A, B, etc. The abbreviation 'ms.' after a species indicates that it is a manuscript name and has not been formally published. It is not the purpose of this book to effect any taxonomic changes other than to indicate the placement of a name within a family. If any nomenclatural change has been made inadvertently, then it is to be regarded as not validly published in this book. Where species are new records they are designated 'Not recorded in Flora of the Kimberley'. Synonyms or misapplied names are given at the end of the description. Common names are those used in the *Flora of the Kimberley Region*, supplemented by Aboriginal and European common names in use on the Peninsula. No attempt has been made to select the most 'appropriate' common name, and where multiple names are in common use or have been recommended, they are all given. In view of the confusion that can arise from using common names alone, botanical names are recommended as the primary means of reference.

Distribution and habitat data are presented for specific localities on the Peninsula. Where a species is common on the Peninsula it is given as 'widespread'. Distribution in other Australian States and outside Australia is also given. For the more conspicuous elements of the flora, precise localities are given in and around Broome, where good examples can be seen. When plants are considered threatened or have been declared rare, it is Department of Conservation and Land Management policy that precise localities not be given.

Some plants are recorded as edible. However, the preparation and tasting of these traditional foods should only be carried out under the

guidance of those experienced in such matters, and when the plant has been correctly identified. Some plants are highly toxic and have caused serious illness. Species known to be toxic to humans and stock are recorded as such.

Where possible, Aboriginal names and uses have been included. We have drawn on the work of Smith & Kalotas (1985), Lands (1987) and Paddy & Smith (1987), supplemented by our own observations and extensive discussions with Aboriginal people. Names commonly used for plants at the Beagle Bay Aboriginal Community have been listed (for convenience) as of Nyul Nyul derivation, although the terminology may actually consist of 'loan' words from neighbouring language groups. It is difficult to record a 'correct' spelling for many Aboriginal words as these languages were previously only spoken, not written down. We have attempted to conform to an accepted orthography of spelling as used by Aboriginal groups on the Peninsula.

Flowering and fruiting times are given at the end of each species description and are based on data available from herbarium specimens collected from the Dampier Peninsula, supplemented by extensive field observations. However, flowering is often spasmodic or dependant on the vagaries of the wet season.

Plants not regarded as native to the Kimberley are indicated by an asterisk (*). Where possible the country of origin is given. It should be noted that some plants considered native to the Kimberley may not occur naturally in other parts of the State.

Since 1849, many species of plant collected from the Peninsula have been described as new to science. A list of these type-specimens is given in Appendix 3.

Most of the photographs of species described in this publication have been taken by Brian Carter or Kevin Kenneally. Each of the photographs is vouchered by a specimen lodged in the Western Australian Herbarium (PERTH). Additional photographs have been made available by Kevin Coate, Allen Lowrie and John Martin. The Agriculture Protection Board (APB) supplied the photographs of noogoora burr (*Xanthium occidentale*) and *Coccinia grandis*. Dr Robert Prince provided the seagrass photographs.

FLORISTICS

The Flora of the Dampier Peninsula describes 717 species of vascular plant, including 68 naturalised alien species. These species are arranged in 361 genera in 122 families.

TABLE 1
Total number of vascular plants recorded from the Dampier Peninsula

	Native	Alien	Total
Ferns and fern allies	10 [47]	0	10 [47]
Angiosperms			
Dicotyledons	489 [1421]	53 [72]	542 [1493]
Monocotyledons	150 [504]	15 [36]	165 [540]
TOTAL	649 [1973]	68 [108]	717 [2080]

Note: Numbers in square brackets refer to total numbers of species recorded in the *Flora of the Kimberley Region*.

TABLE 2
Number of species and genera in the larger families collected on the Dampier Peninsula, with examples of larger genera therein

	Number of Species	Number of Genera	
Poaceae	84 [259]	43	
Papilionaceae	50 [164]	25	
Cyperaceae	36 [156]	9	(*Cyperus* 10 spp., *Fimbristylis* 15 spp.)
Euphorbiaceae	30 [82]	14	
Myrtaceae	25 [91]	8	(*Eucalyptus* 13 spp.)
Mimosaceae	24 [103]	5	(*Acacia* 18 spp.)
Convolvulaceae	22 [43]	9	
Malvaceae	22 [57]	8	
TOTAL	293 [955]		

Note: Numbers in square brackets refer to total numbers of species recorded in the *Flora of the Kimberley Region*.

LIST OF PLANT FAMILIES

Genera and species arranged alphabetically within families

PTERIDOPHYTA
(Ferns and Fern Allies)

Non-flowering plants including ferns and fern allies that do not bear seeds but produce reproductive bodies known as spores.

Ceratopteris thalictroides

Cheilanthes caudata

ADIANTACEAE

Ceratopteris thalictroides (L.) Brongn. **Water Fern**

Submerged or emergent fragile aquatic fern, sometimes free-floating or rooted in substrate; stipes spongy; fronds erect and spreading, bipinnate to tripinnatifid; fertile fronds longer and more finely divided than sterile fronds; sporangia borne singly (not in sori) on the underside of segments and covered by revolute margins.

In shallow water and in peaty banks of spring near Beagle Bay. A pantropical species also occurring in NT and Qld.

Plantlets are produced from buds in the axils of fertile pinnae and when sufficiently developed break free and float away as separate plants. Spores germinate both when submerged and on wet mud.

Fertile June.

Cheilanthes caudata R. Br.

Rhizomatous fern; stipes erect, slender, often dark, covered with woolly hairs; fronds erect, densely tufted; pinnules blunt, both surfaces covered with a dense woolly tomentum of white hairs; sori separate but protected by the folded pinnule margin.

On the Peninsula restricted to rock crevices in cliffs at Fraser River. Also occurs in NT and Qld.

Fertile June.

Cheilanthes pumilio (R. Br.) F. Muell. **Dwarf Fern**

Rhizomatous fern; stipes very slender, glabrous; fronds erect, glabrous, thin-textured, pale green; sori marginal, rounded discrete but becoming confluent.

A dwarf species found under shady rock ledges in damp fissures on creek bank at Wonganut Spring. Also occurs in NT and Qld.

Fertile January.

Cheilanthes sieberi Kunze subsp. *sieberi* **Rock Fern** or **Mulga Fern**.

A rhizomatous rock fern; stipes slender, dark brown, shiny; fronds erect, broadly triangular in outline, glabrous, bi-tripinnate, pinnules narrow, blunt, sori terminal on veins, protected when young by reflexed leaf margins.

A common rock fern associated with seepage areas along scree slopes and cliffs, North Cliffs in Fraser River area. Previously the only record from the Kimberley was from the Edgar Range, south east of Broome. Scattered records through the South-west and Eremaean Botanical Provinces, south to Israelite Bay. Also occurs in all states and extends to New Zealand and New Caledonia.

Fertile March.

MARSILEACEAE

Marsilea hirsuta R. Br. **Short-fruited Nardoo**

Perennial fern with slender, rooted, branching rhizomes bearing erect leaves (sterile fronds) to 10 cm along their length; mature fronds consisting of 2 oblanceolate to obovate-cuneate, glabrescent to hairy leaflets at the apex of a slender stalk; leaflets held horizontally resembling a four-leaved clover; young developing fronds near each rhizome apex filiform with coiled tips; sporocarp more or less D-shaped consisting of a laterally flattened, hard, densely appressed, brownish hairy conceptacle or capsule attached at one end to a slender pedicel.

Plants either in seasonally wet claypans or on edges of grey sandy salt flats with *Sporobolus virginicus* at Hill Station (now Waterbank Station), Beagle Bay and Bobby Creek. Also occurs in all mainland states.

Fertile March-June.

Marsilea mutica

Marsilea mutica Mett. **Nardoo**

Perennial fern; mature fronds up to 20 cm long, glabrous; leaflets of 2 more or less equal pairs, green but usually with a prominent yellow basal portion separated by a brownish zone, broadly obovate-cuneate, veins often prominent; sporocarps solitary on branched pedicels, globular to ovoid and not compressed, densely shortly hairy.

Mostly favouring seasonally wet areas in spring country around Beagle Bay. Also occurs in NT, Qld, NSW and Vic.

Fertile August.

PLATYZOMATACEAE

Platyzoma microphyllum R. Br. **Braid Fern**

Caespitose fern; rhizome short-creeping, densely covered with golden-brown septate hairs; fronds erect, up to 50 cm long; stipes reddish brown; pinnules bluish green, very narrow, pinnate; pinnae up to 5 mm long, round or ovoid, globular, thick, the margins revolute, almost covering the midrib.

Often forming dense colonies in sandy low-lying areas that are seasonally wet and frequently burnt at Wonganut Spring, near Cygnet Bay, Cape Bertholet, Beagle Bay and Balk Creek. Also occurs in NT, Qld and NSW.

A species often found growing in areas totally exposed to full sunlight.

Fertile March-June.

Platyzoma microphyllum

PTERIDACEAE

Acrostichum speciosum Willd. **Mangrove** or **Swamp Fern**

A coarse fern that grows into large clumps; rhizome short-creeping, becoming massive in old specimens; fronds erect, up to 1.5 m long, pinnate; pinnae large, thick, leathery, dull green, the apices of sterile pinnae narrowly acuminate; sporangia continuous over the undersurface of some upper leaves as a dark mass.

Localised, especially fringing coastal swamp at Bunda Bunda Spring (south of Beagle Bay), on salt marsh fringe near Lolly Well (or Nurrembook), Beagle Bay and Nimalaica Claypan. Also occurs in NT, Qld, NSW and tropical Asia.

Fertile June.

Acrostichum speciosum

SCHIZAEACEAE

Lygodium microphyllum (Cav.) R. Br. **Climbing Maidenhair Fern**

Trailing and ascending fern, often forming dense, tangled curtains up to 10 m into the canopies of trees; sterile leaflets with entire or serrate margins; fertile fronds bearing narrow finger-like spore bodies projecting from the leaf margins.

In thickets surrounding springs of permanent water near Beagle Bay, Carnot Bay and Wonganut Spring. Common across northern Australia, extending from tropical Africa through south-east Asia.

Fertile June.

Lygodium microphyllum

THELYPTERIDACEAE

Cyclosorus interruptus (Willd.) H. Ito

Rhizomatous fern; rhizome long-creeping, sparsely clothed with narrow, hairy scales; fronds erect, up to 1 m long, pale green, pinnate-bipinnatifid; pinnae leathery, tough, lobed throughout, ending in a short tail, with scattered orange glands and with sparse to moderately dense erect eglandular hairs which are sometimes confined to the veins and margin; stipes about one-third the length of the frond, green-brown, tough; sporangia in continuous zig-zag sori close to the margins of the pinnae.

Dominant in peaty soil of island near Carnot Bay Spring, also at Wonganut Spring and Lolly Well. Also occurs in NT, Qld and NSW.

Fertile June-August.

Cyclosorus interruptus

ANGIOSPERMAE

Flowering plants characterised by having seeds that are completely enclosed in an ovary which forms part of the flower, and swells at maturity to form the fruit.

Dicliptera armata

Hypoestes floribunda

Nelsonia campestris

DICOTYLEDONAE - THE DICOTYLEDONS

The larger of the two divisions of the Angiosperms (or flowering plants) in which the embryo has two cotyledons that form the first seed leaves. This group includes trees, shrubs and woody herbs.

ACANTHACEAE

Dicliptera armata F. Muell.

Erect, sometimes decumbent, annual herb to 30 cm; branches 5-6 angled; leaves linear to narrowly ovate; inflorescences in all upper axils, compact, clusters often subtended by a pair of leaves; involucral bracts very broadly ovate or nearly orbicular, mucronate-acute; flowers pink within the bracts, usually solitary or rarely 2 or 3; fruit a small, flat capsule, eglandular hairy; seeds 1 or 2.

In river washed sand at Coulomb and One Arm Points.

Bardi name = *banggaljoon*. No recorded use.

An endemic Australian species, also found in NT and Qld.

Flowering April-May.

Hypoestes floribunda R. Br. var. *varia* R.M. Barker **Musk-scented Plant**

An erect branching perennial to 0.5 m, usually glabrous except the minutely glandular pubescent inflorescence; leaves ovate-lanceolate or almost linear, acutely acuminate, contracted into a rather long petiole; involucres usually numerous in dense axillary clusters or racemes or loose terminal panicles; flowers solitary, calyx thin, corolla mauve, slender, deeply two-lipped, the upper lip narrow entire or rarely notched, the lower three lobed; capsule exserted or included in involucre, glabrous or hairy.

In white coastal sand in dense thicket of *Acacia bivenosa* and *Adriana tomentosa* behind Cable Beach and from Hill 22 towards the Stables. Also occurs as understorey in vine thicket just north of Quondong Point. A highly variable species occurring throughout tropical Australia and extending into New Guinea.

It is found at the dune-bases and up into the valleys and hollows between the dunes, where its deep rooting habit is an important factor in helping to stabilize the sand. Although the flowers usually have minimal scent, on walking through a field of these plants or even crushing the leaves, an interesting perfume is given off. Baron Sir Ferdinand von Mueller, in 1891, described this plant from the Darwin locality, thus: "Arnhems Land. This perennial plant is pervaded by a singularly penetrating musk-scent, so that from the foliage a powerful cosmetic can be distilled".

This variety is mostly known from the northern tropical areas of the Northern Territory except for this disjunct occurrence.

Flowering June-August.

Nelsonia campestris R. Br.

Diffuse to prostrate herb to 10 cm; stems much branched, clothed as well as the foliage with long white silky hairs; leaves oblong or elliptical; flowers white, nearly sessile, not exceeding the floral leaves; capsule glabrous.

In mud surrounding billabong, Cape Bertholet and Bobby Creek. Also recorded from Beagle Bay by Alexander Forrest in 1879.

Flowering June-October.

Rostellularia adscendens (R. Br.) R.M. Barker subsp. *clementii* (Domin) R.M. Barker var. *largiflorens* R.M. Barker

Ascending herbs to 22 cm, lower branches often decumbent; stems

usually 6-angled; leaves petiolate or sessile, blade linear oblong or ovate; inflorescence a dense terminal spike; bracts usually with white margins; flowers pale purple with small white markings in throat; capsules glabrous.

In pindan at Bells Point, Pender Bay and in alluvium at Willare Bridge. A widespread species across northern Australia.

Flowering and fruiting February.

AIZOACEAE

Sesuvium portulacastrum (L.) L.

Prostrate to sub-erect, creeping, fleshy herb to 10 cm, rooting from the distant nodes; stems and leaves tinged red; leaves linear, lanceolate or oblanceolate, connate at base, smooth, fleshy, glossy green; flowers pink, solitary, axillary, pedicellate; fruit a circumscissile capsule, the upper part (operculum) ovoid, smooth; seeds black, comma shaped.

On landward edge of broad tidal flat behind mangroves at Packer Island, Broome, Cape Bertholet, Martins Well and One Arm Point. Also occurs in NT and Qld.

Flowering April-September, December; fruiting September.

Sesuvium portulacastrum

Trianthema oxycalyptra F. Muell. var. *oxycalyptra*

Prostrate or ascending glabrous herb to 10 cm; leaves fleshy, ovate, obovate or spathulate, petiolate, midrib prominent below; flowers large, light blue, solitary, distinctly pedicellate; operculum conic to hemispheric; seeds 2-8, usually completely covered with elongate papillae, which increase in size towards the ridge.

On ironstone south of Fraser River. Also occurs in NT.

Flowering January.

Trianthema pilosa F. Muell.

Procumbent herb with long stems and short branchlets, densely hispid, especially on young growth; stems and leaves a reddish purple colour; leaves ovate to obovate, obtuse or acute; flowers white to pink in clusters of 3 or 4, sessile; fruit a capsule, operculum cylindric, sometimes constricted near the apex; seeds 1 in base of fruit and 1 in operculum, comma-shaped, minutely tuberculate.

Common in orange sand at Broome, Packer Island, Coulomb and One Arm Points. Also occurs in NT, SA and Qld.

Flowering January-June.

Trianthema pilosa

Trianthema portulacastrum* L. **Giant Pigweed

Spreading, prostrate, fleshy herb to 10 cm; stems tinged reddish, ribbed, densely hairy but becoming glabrous; leaves distant, light green, tinged red around margins; flowers small, solitary, largely hidden in the leaf sheath, sessile, pale pink to white; operculum shortly cylindric, striate, truncate with a prominent raised denticulate rim; seeds 3-12, 1 or 2 in operculum, remainder in base, reniform or comma shaped, dull brownish black, rugose, not shiny.

In reddish sand of road verge at Broome and One Arm Point. Also occurs in NT, Qld and NSW. An introduced weed of cultivation, native of tropical Africa and Asia.

Flowering February-August.

Trianthema portulacastrum

Trianthema triquetra var. *triquetra*

Achyranthes aspera

Aerva javanica

Alternanthera angustifolia

Trianthema triquetra Willd. var. *triquetra* **Red Spinach**

Prostrate or ascending diffuse herb to 40 cm; stems reddish with short lateral branches, finely papillose or almost glabrous; leaves dark green, often tinged orange to reddish, terete to clavate or ovate to linear, often inrolled, acute; flowers green in clusters of 3-6, sessile; fruit a circumscissile capsule; operculum depressed obovoid, apex depressed with a sunken, fine translucent cover; seeds 1 in base of fruit and 1 in operculum, almost comma shaped, rounded on one side, flat on the other, finely papillose.

In grey-black clay marsh under *Melaleuca acacioides* thicket on Buckleys Plain, south of Coconut Well. Also occurs in NT, SA, Qld and NSW.

Flowering April, August.

AMARANTHACEAE

Achyranthes aspera L. **Chaff Flower**

Perennial herb to 0.5 m, much branched; stems ribbed; leaves elliptic, ovate or obovate, hairy; flowers green, glabrous, at first erect, but reflexed in fruit; midrib of bracteole thickened and extended into a rigid and somewhat curved spine.

In sand outside *Melaleuca* thicket and in disturbed areas around Broome, Carnot Bay, Cape Bertholet, One Arm Point and Beagle Bay. Also occurs in NT, SA, Qld and NSW.

A widespread pantropical noxious weed species often spread by cattle and troublesome in trousers and socks!

Flowering March-May; fruiting June-August.

Aerva javanica* (Burm.f.) Juss. ex Schultes **Kapok Bush or **Pillow Weed**

Erect much branched dioecious perennial herb to 1.5 m, with a dense indumentum of short hairs; leaves greyish-green, alternate, sometimes in clusters, subsessile to shortly petiolate, usually narrowly elliptic to narrowly obovate; inflorescence spicate, white woolly.

In red sand, Broome, Beagle Bay and One Arm Point. Also occurs in NT, SA and Qld.

An introduced species native from northern Africa to south-west Asia. An invasive weed of disturbed sandy soils, spreading from road verges near James Price Point into vine thickets.

Flowering February-October.

Alternanthera angustifolia R. Br.

Prostrate, slightly hoary-pubescent perennial herb; leaves opposite, linear; flowers small, white, papery; spikes sessile, solitary or rarely clustered, the rhachis more or less woolly; perianth segments lanceolate, acute, with long woolly hairs outside, the inner ones narrower than the outer; stigma capitate.

In moist shaded depression in sandy creek bed under *Pandanus* at Bobbys Creek. Also occurs in all Australian mainland states.

Flowering and fruiting April, August-October.

Alternanthera pungens* Kunth **Khaki Weed

Prostrate annual or perennial herb, often rooting at nodes, usually forming a mat; leaves elliptic, obovate or spathulate, the upper surface smooth, the lower surface rough; flowers white, bracts spinescent, straw-coloured, drying khaki; fruit an indehiscent, compressed utricle, almost circular in outline.

In lawn on pindan at Cable Beach, Broome and One Arm Point. Also found at popular picnic locations such as James Price Point and Barred Creek. Also occurs in all Australian mainland states.

A widespread noxious weed native to America. First noted in Broome in 1981 at Town Oval and now widely spread throughout settlements on the Peninsula. The stiff floral bracts are pungent and will penetrate the skin if trodden on. Spread on tyres and thongs and very difficult to eradicate.

Flowering May; fruiting March.

Alternanthera pungens

Amaranthus hybridus* L. **Wild Cabbage

Herb; flowers greenish.

A single record by J.W.O. Tepper (with the annotation: "Used as a vegetable by the natives") from Roebuck Bay in 1889, but not recollected from the Peninsula.

This specimen was examined by the late Dr Andrew Kanis, in 1985, at the Australian National Herbarium, Canberra. He commented that it was almost certainly an introduced species, most probably *A. hybridus* L., but it was difficult to be more precise because the inflorescence was young and without fruiting flowers.

Flowering January.

Amaranthus pallidiflorus F. Muell.

An erect or decumbent annual to 0.6 m; leaves pale green, thin, on long petioles, ovate, obtuse; flowers greenish, in dense spikes forming a terminal panicle, central spike long, laterals short; utricle shallowly rugose, usually circumscissile, with a short conic beak; seed a shiny black, flattened disc.

In sand beside creek and in mud on edge of coastal swamp at Moorak Bore, Cape Bertholet to Coulomb Point, Pender Bay and Broome. Also occurs in NT and Qld.

Flowering April, August.

Amaranthus viridis* L. **Green Amaranth

An erect or decumbent annual to 0.5 m; stems ribbed, tinged maroon; leaves petiolate, discolorous, ovate or ovate-lanceolate, obtuse, rather thin but with prominent pinnate whitish veins underneath; inflorescence greenish, forming rather loose or interrupted spikes; flowers green and small; seeds black.

Growing in disturbed areas within the Broome townsite and at One Arm Point. Also occurs in all Australian mainland states. An introduced species, probably native to tropical and subtropical America and the one most commonly used as a pot-herb throughout tropical Asia.

Bardi name = *booloorrbooloorr*.

Flowering and fruiting February-August.

Amaranthus viridis

Gomphrena brachystylis

Gomphrena celosioides

Gomphrena diffusa

Gomphrena flaccida

Gomphrena brachystylis F. Muell.

Spreading lax herb to 25 cm; stems hairy; leaves opposite, elongate, hairy; sepals pink; flowers white in globular heads.

Widespread in sand and on rocky ground at One Arm Point. Also occurs in NT.

Flowering March-July.

Gomphrena celosioides* C. Martius **Gomphrena Weed

Prostrate to ascending herb often forming a mat, the flowering spikes ascending to 10 cm; leaves green above, pale green below, shortly petiolate, narrowly obovate to narrowly elliptic; flowers greenish white, in solitary ovoid, but becoming cylindric spikes; bracteoles crested.

A weed in irrigated lawns at Broome, Cable Beach and One Arm Point. Also occurs in NT, Qld and NSW. A widespread weed species, native to South America. First observed in the Broome townsite in 1983 and now widely spread in settlements throughout the Peninsula.

Flowering and fruiting all year.

Gomphrena diffusa (R. Br.) Sprengel

Semi-erect perennial herb to 30 cm, often with reddish trailing stems to 1 m, the whole plant covered in long soft hairs; leaves shortly petiolate, hairy, narrowly elliptic; spikes solitary or clustered, ovoid at first but becoming cylindric; bracteoles white; tepals pale pink, hairy.

Widespread on coastal dunes with *Spinifex longifolius* between Cape Leveque and One Arm Point. Also occurs in NT.

Bardi name = *ngalil*.

A variable species. Typical *G. diffusa* has glabrous not hairy tepals (J. Palmer, Australian National Herbarium, Canberra - pers. comm.).

Flowering all year.

Gomphrena flaccida R. Br.

An erect annual to 1 m, simple or branched, the young parts

woolly, becoming glabrous with age; leaves linear or linear lanceolate, solitary or in a close cluster at the ends of the branches; flowers pink in dense terminal spikes.

Common in sand beside creek at Point Coulomb and in pindan throughout Peninsula. Also occurs in NT and Qld.

Flowering and fruiting March-August.

Gomphrena pusilla Benth.

Small annual herb, semi-prostrate or sprawling, up to 20 cm high; leaves linear-lanceolate or narrowly oblong, 1-4 mm wide, sparsely hairy, subsessile, margins recurved, mucronulate; flower spikes very similar to *Gomphrena tenella*.

On coastal sand dunes at Cable Beach and in pockets of sand over travertine outcrops at Barred Creek.

The type locality for this species is Foul Point, collected by Allan Cunningham in 1822.

Flowering and fruiting April-June.

Gomphrena tenella (Moq.) Benth.

An almost glabrous, slender, sprawling herb; stems reddish; leaves subsessile, linear-filiform, margins recurved, mucronulate, 0.5-1 mm wide; flower spikes white, tinged red, terminal, solitary, globular.

In sand under *Melaleuca* behind coastal dunes at Martins Well.

The type localities for this species are Cygnet Bay and Foul Point collected by Allan Cunningham in February 1822.

Flowering April-June.

Gomphrena sp. E (J. Palmer)

Much-branched often compact annual herb with long soft hairs, leaves subsessile, narrowly ovate to linear, up to 4 cm long, mucronulate; spikes solitary or clustered, hemispherical to globular, 10-18 mm across; tepals white or pink with a green centre, woolly in the lower half, obtuse or acute.

In pindan and damp sand surrounding Yulleroo Well, on the Broome-Derby road.

Recorded in the Kimberley Flora as *G. brachystylis* F. Muell., a species now considered to be restricted to the northern and eastern areas of the Kimberley, extending into the NT (J. Palmer pers. comm.).

Flowering and fruiting June-July.

Gomphrena sp. E

Gomphrena sp. O (J. Palmer)

Sprawling to sub-erect annual herb to 20 cm high; leaves linear 13-32 mm long, 1-2 mm wide, mucronate glabrous or rarely sparsely hairy below, margins ± recurved; spikes sessile, solitary and clustered together, ovoid to cylindrical, up to 20 mm long, c. 5 mm wide; tepals very light greenish cream.

Growing in sand under *Melaleuca* at Martins Well and on sandy clumps on edge of tidal mudflats, 4 km SSE Cape Bertholet.

A species with uncertain affinities and currently under taxonomic revision (J. Palmer, Australian National Herbarium, Canberra - pers. comm.).

Flowering and fruiting April, August.

Gomphrena sp. O

Guilleminea densa* (Humb. & Bonpl. ex Schultes) Moq. **Small Matweed

Perennial, mat-forming, prostrate, variously hairy herb, with a swollen, woody, carrot-like rootstock; nodes and stems woolly hairy; leaves radical and cauline (radical leaves shed early), bright green above, densely woolly hairy below, ovate to lanceolate, acute; inflorescences woolly, crowded towards the end of branches into dense axillary glomerules, usually 10-flowered; seeds light brown, 0.5 mm long.

Growing in reticulated lawn outside the Broome Airport terminal. Also occurs in SA, Qld and NSW. A native of southwest USA, Mexico and northwest South America.

A widespread and fast becoming naturalised weed species of mown disturbed areas, roadsides, caravan and camping areas, suggesting that it is spread by holiday makers.

Flowering and fruiting all year in watered lawns.

Guilleminea densa

Hemichroa diandra R. Br. subsp. A (J. Palmer)

Small, succulent, glabrous, much-branched shrub to 30 cm; leaves succulent, linear in outline, leaves and floral bracts opposite to sub-opposite; flowers white with reddish-pink centres; fruit an indehiscent utricle with a vertical, brown, obovoid seed.

On edge of tidal saline mudflats behind mangroves at Broome, Coconut Well, Cape Bertholet and One Arm Point.

This subspecies is endemic to WA, occuring along the coast from the Dampier Peninsula to Shark Bay on tidal saline mudflats and near mangroves.

Differs from subsp. *diandra* in having opposite to sub-opposite leaves and floral bracts.

Flowering February-August.

Hemichroa diandra

Ptilotus calostachyus (F. Muell.) F. Muell. var. *calostachyus* **Weeping Mulla Mulla**

Erect or spreading woody stemmed perennial herb to 1 m, glabrous apart from the inflorescence; leaves alternate, bright green, sessile, linear

Ptilotus corymbosus

Ptilotus exaltatus var. *exaltatus*

Ptilotus fusiformis var. *fusiformis*

Ptilotus lanatus var. *lanatus*

to filiform, somewhat thickened to more or less terete, mucronulate; spikes cone-like or cylindric, pink, on long slender peduncles.

In gravel of road shoulder, 3 km north of Broome. Also occurs in NT and Qld.

Not common on the Peninsula and more common in the Pilbara.

Flowering and fruiting April.

Ptilotus corymbosus R. Br.

Slender, erect, corymbosely branched herb 0.5 m; leaves sessile, linear, acute, the lowermost leaves shortly petiolate, narrowly elliptic; spikes white and pink, on slender peduncles arranged in corymbs at first semi-globular or ovoid but at length cylindric.

Occasional in grassland and in pindan behind coastal dunes at Quondong and One Arm Point. Also occurs in NT and Qld.

Flowering January-June, October-November.

Ptilotus exaltatus Nees var. *exaltatus* **Pink Mulla Mulla**

Erect perennial herb to 1 m; leaves dark green, fleshy, mucronate; spike pink, showy, cylindric, on long peduncles.

Common on sandstone plateau, Dampier Hill and on coastal sand dunes at Broome and One Arm Point. Also occurs in all Australian mainland states.

Yawuru name = *bardirl-bardirl.*

Eaten by early settlers as a native "spinach". This species is heavily grazed by cattle. An attractive ornamental with horticultural potential. Very common after fire or other disturbance.

Flowering April-September.

Ptilotus fusiformis (R. Br.) Poiret var. *fusiformis*

Slender perennial herb to 0.6 m, almost glabrous apart from inflorescence; leaves sessile, linear, acute; spikes solitary on long slender peduncles, globular or broadly ovoid, but at length cylindric.

In *Melaleuca acacioides* thicket at Coconut Well and One Arm Point. Widespread in pindan. Also occurs in NT and Qld.

Flowering January-July.

Ptilotus lanatus A. Cunn. ex Moq. var. *lanatus*

Erect, perennial herb to 0.6 m, sparsely hairy; leaves fleshy, sometimes tinged red, usually subsessile, linear, acute; spike white, tinged red, pendulous, on long peduncles.

In sand behind coastal dunes at Broome, Coulomb and One Arm Points, Packer Island and Martins Well. A Kimberley endemic extending south to the Radi Hills.

The type localities for this species are Point Cunningham and Cygnet Bay collected by Allan Cunningham in February 1822.

Flowering January-June, November.

Ptilotus polystachyus (Gaud.) F. Muell. var. *polystachyus* **Seedy Head** or **Green Mulla Mulla** (*see illustration page 59*).

Erect perennial herb to 1 m; leaves subsessile to petiolate, narrowly oblong to narrowly elliptic, often undulate, grey green and hairy; flowers in long spikes, green tinged red, cylindric, often on thick peduncles, style red.

In pindan at Broome, Coulomb and One Arm Points. Recorded for all Australian mainland states.

Flowering March-August.

**Pupalia lappacea* (L.) A.L. Juss.

Prostrate, scrambling or erect herb to 0.8 m, sparsely to densely hairy; leaves ovate to elliptic; spike slender, interrupted; fruit a burr; seeds black, shiny, almost circular to reniform in outline.

Occasional under *Mimusops elengi* in black soil at Hunter Creek and Pender Bay. An introduced and possibly naturalised weed species, widespread from Africa to south-east Asia.

Flowering and fruiting March, May.

Ptilotus polystachyus var. *polystachyus*

ANACARDIACEAE

Buchanania obovata Engl. **Wild Mango**

Small tree to 6 m; bark greyish-brown, slightly fissured; sap wood deep red; leaves oblong-obovate, obtuse, leathery; inflorescence axillary, flowers small, fragrant; fruit a green fleshy drupe, compressed ovoid to lenticular, shortly hairy.

Rare on Peninsula and restricted to skeletal soils on sandstone outcrops near Skeleton Point, but widespread N of King Sound. Also occurs in NT and Qld.

Bardi name = *gorrol*. Edible fruit, falls when ripe, available in Wet season.

Previously known as *B. muelleri* Engl. var. *pilosa* Engl. and *B. oblongifolia* W. Fitzg.

Flowering September; fruiting September-January.

Buchanania obovata

APIACEAE

Trachymene didiscoides (F. Muell.) B.L. Burtt. **Wild Parsnip**

Erect, glaucous green, mostly glabrous subshrub to 2 m; leaves palmatisect of 3-5 lobes, lobes oblong-cuneate, again divided in threes, lobes dentate or lacerate; petiole much longer than lamina; inflorescence an umbel; flowers numerous, white or cream; mericarps flattened, papillate, wingless; fruits green, turning yellowish when ripe.

In pindan, Broome and on sandstone at Deep Water Point and One Arm Point. Also occurs in NT.

A very variable species closely related to *T. microcephala* (Domin) B.L. Burtt. Collections from the Dampier Peninsula have particularly deeply divided leaves with narrow lobes and may warrant recognition as a separate species. A common species after fire.

Flowering and fruiting June-August, December-February.

Trachymene didiscoides

Trachymene microcephala (Domin) B.L. Burtt

Erect slender annual or short-lived perennial to 1 m; leaves more or less broadly ovate in outline but deeply 3-lobed, sometimes further divided with lateral lobes, with unbranched hairs particularly on the veins and petioles, margin dentate; inflorescence glabrous; flowers white; fruiting umbel 10-20 mm across; fruit a mericarp, almost smooth to indistinctly tuberculate; wing up to 0.5 mm wide.

In fine white sand in riparian woodland at Wonganut Spring. Also occurs in NT.

Flowering and fruiting June.

Trachymene didiscoides

Carissa lanceolata

Carissa lanceolata Right: *Parsonsia* sp. A

Wrightia saligna

Bidaria erecta

APOCYNACEAE

Carissa lanceolata R.Br. **Conkerberry**

Small spreading spinescent shrub to 1.5 m or small tree to 3 m; bark greyish brown, shallowly tessellated; leaves bright shiny green above, dull below, elliptical, acute or rarely obtuse; flowers small, white, strongly and fragrantly scented, mostly terminating short leafy branchlets; fruit a bluish black ovoid berry.

Scattered in pindan across Peninsula. Also occurs in NT and Qld.

Bardi name = *goonggara*; Nyul Nyul = *koongkurra*; Yawuru = *gungkara*. Edible sweet fruit eaten when ripe (black); medicinal, used for sores; smoke from burning wood repels mosquitoes. Green leaves also used as a smoke medicine to cure diarrhoea in infants.

Sometimes a dominant plant in overgrazed areas.

Flowering April-December; fruiting April.

Parsonsia sp. A Kimb. Flora

Sparsely pubescent climber; leaves discolorous, blade ovate to broadly ovate, apex acute or acuminate; cymes axillary, compound, shortly hairy; flowers pale yellow, in short axillary or terminal corymbose cymes; follicles not seen.

An apparently undescribed species only known in the Kimberley from a single collection from a vine thicket at Hunter Creek near Cape Leveque.

Flowering June.

Wrightia saligna (R. Br.) Benth. **Yellow Wax Flower**

Small glabrous tree to 5 m, but in the Broome area more often found as a stunted shrub; bark fissured, sap very sticky and white; leaves petiolate, pendulous, linear to narrowly falcate, coriaceous, gradually tapered towards the base; flowers yellow, waxy, in terminal cymes; follicles cohering, green to black with pale markings.

In pindan at Broome, Cape Bertholet, One Arm Point and SE of Country Downs, with *Eucalyptus jensenii*. Also occurs in NT and Qld.

Plants around Broome appear not to set fruit.

Flowering October-April; fruiting November-May.

ASCLEPIADACEAE

Bidaria erecta F. Muell.

Multi-branched subshrub to 1.5 m, often suckering from rootstock; stems grey, smooth; leaves very narrow-linear, flat or with recurved margins, up to 10 cm long; flowers small, yellow, in dense axillary clusters; fruit a tapering follicle up to 8 cm long.

Occasional in pindan around Broome. Also found as an understorey in

Eucalyptus miniata woodland between Broome and Lombadina. Also occurs in NT.

Treated in the Flora of the Kimberley as *Gymnema stenophyllum* A. Gray but this species is now regarded as endemic to Fiji. This plant is to be transferred to the genus *Marsdenia* and renamed *M. angustata* P. Forster.

Flowering March-June; fruiting June-July.

Calotropis gigantea* (L.) Ait.f. **Giant Calotrope

Woody, erect much-branched shrub to 4 m; stems glabrous, with glaucous white bloom; leaves petiolate, lamina elliptic to oblong, leathery, somewhat fleshy, glabrous; inflorescence a cyme up to 10 cm long with 1-3 fascicles of flowers; flowers campanulate, purple with a purplish crown in the centre, corolla lobes ovate, fleshy.

Naturalised on disturbed ground at the Broome Hospital where it forms a perimeter hedge and on dunes off Dampier Terrace. Also occurs in NT and Qld. Extends from Sri Lanka to Papua New Guinea.

C. gigantea (unlike *C. procera*) is sparingly naturalised in Australia and does not appear to represent a serious problem as a woody weed.

Flowering all year, but most abundantly during the summer months. Plants in Broome do not appear to set fruit.

Calotropis gigantea

Calotropis procera* (Aiton) W.T. Aiton **Calotrope or **Rubber Tree**

Coarse shrub to 3.5 m, all parts of the plant exuding copious milky latex when cut or broken; stems smooth, pale greyish-green; leaves large, grey-green, opposite, sessile, thick in texture, rounded at the base, shortly pointed at the tip; flowers waxy, in terminal clusters, white with a purplish crown in the centre; follicle green, ovoid-oblong, thick, succulent, inflated, slightly corrugated.

Usually on disturbed ground in the Broome townsite (near Streeters Jetty), Lombadina and One Arm Point.

A vigorous noxious weed, native of tropical Asia and Africa and now naturalised in a few areas across northern Australia.

Although containing toxic compounds the plant is regarded as unpalatable and no definite cases of livestock poisoning have been recorded. The milky latex can cause blistering and irritation in humans if brought into contact with sensitive parts of the body. The seeds are widely dispersed by wind.

Flowering January-September; fruiting April.

Calotropis procera

Calotropis procera – fruit

Cryptostegia madagascariensis* Bojer ex Decne. **Rubber Vine

Vigorous climbing shrub with a milky sap; leaves opposite, glossy green; flowers large, reddish-pink, in terminal trichotomous cymes; fruit a curved follicle.

An ornamental cultivated in Broome and now naturalised on vacant blocks in the townsite. Native to Madagascar (Malagasy).

A related toxic noxious species *C. grandiflora* has become a troublesome weed of northern Australia The WA material appears to be *C. madagascariensis* var. *glaberrima* (Hochr.) J.Marohasy & P. Forster. This species is a declared noxious weed in the Kimberley.

Flowering and fruiting all year.

Cryptostegia madagascariensis

Cynanchum carnosum

Above and right: *Cynanchum pedunculatum*

Cynanchum pedunculatum

Gymnanthera oblonga

Cynanchum carnosum (R. Br.) Schltr.

Glabrous twiner to 7 m; stems pale brown with prominent raised lenticels; leaves oblanceolate, lanceolate or linear, obtuse, mucronate or acute, rather thick, almost veinless; flowers yellowish-green, star-like in simple umbels; fruit a broad follicle up to 7 cm long.

Recorded from moist black saline soil at Cygnet Bay, in vine thicket behind coastal dunes at Beagle Bay and in *Melaleuca acacioides* thicket at Coconut Well, Curlew Bay and One Arm Point. Recorded for NT, Qld, NSW and extending into the Philippines and Indonesia.

Flowering November-June; fruiting March.

Cynanchum pedunculatum R. Br.

Vigorous, prostrate creeper; leaves discolorous on long petioles, deeply cordate, ovate, acuminate; flowers maroon, corona white; fruit a warty follicle, tinged maroon, up to 7 cm long.

In pindan near Cape Leveque and on edge of coastal vine thicket Gubinge Rd, Broome. Also occurs in NT and Qld.

Bardi name = *oongganjoon*. Edible fruit eaten raw or cooked.

Flowering February-March; fruiting March-April.

Gymnanthera oblonga (Burm.f.) P.S. Green **Harpoon Bud**

Climber to 2 m; stems with numerous lenticels; leaves petiolate, blade narrowly elliptic to elliptic, acute, abruptly acuminate or obtuse; flowers white, tubular; fruit of 2 divaricate, rather slender follicles, green turning brown.

In pindan at Broome and in sandstone country at Gallen Well, Moorak Bore, Coulomb and One Arm Points. Also recorded for NT and Qld.

Bardi name = *gargar*. Medicinal - warmed vine used to treat rheumatic pains, applied to affected area; string made from vine.

Previously known as *Gymnanthera nitida* R.Br.

Flowering and fruiting all year.

Gymnema geminatum R. Br.

Perennial, woody vine with clear latex, stems twining, to 2 cm thick at base; leaves opposite, large, petiolate, lamina ovate to ovate-elliptic, up to 90 mm long and 50 mm wide, base rounded, apex acuminate, pinnately veined, secondary venation prominent, upper surface somewhat glossy dark green to grey-green, paler to yellow green beneath, finely pubescent; flowers cream, borne at upper 2-10 nodes; cymes umbelliform, 1-many flowered; sepals 5, distinct, ovate to elliptic; follicles fusiform to narrowly ovoid, shortly pubescent; seeds oblong, tan with white coma.

On the Peninsula only known from coastal vine thickets between Cape Leveque and Swan Point. Also occurs in NT and Qld.

Flowering and fruiting April-July.

Marsdenia viridiflora R. Br. subsp. *tropica* Forster **Magabala** or **Bush Banana**

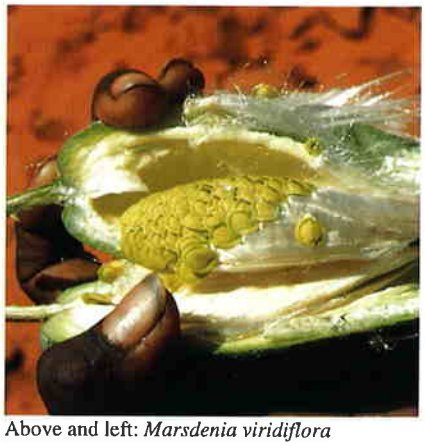
Annual scrambler or climber from a perennial rootstock to 2 m with copious white milky sap; leaves petiolate, broadly elliptic, lamina dull green above, greyish green below; inflorescence pedunculate, clothed in appressed golden hairs; flowers light greenish to pale lemon yellow; fruit large, fleshy, green, ovoid follicle up to 8 cm long. The green flattened seeds are tightly clustered at the bottom of the follicle, each attached to a tuft of silky hairs. When the follicle is ripe, it splits allowing the seeds to be wind dispersed.

Scattered throuout the Peninsula but common on coastal pindan around Broome where it is often found climbing on tall, usually dead, wattles. Also found in NT and Qld.

Bardi name = *kooloonkoonarr*; Nyul Nyul = *makapala*; Yawuru = *magabala*. The fruit is a popular food. The young tender follicle is best collected during the Wet (January-March) and eaten raw when moist and sweet. The texture is crisp and the immature seeds taste like young green peas. The young follicles exude copious amounts of sticky, white latex when picked. All of the young fruit is eaten but only the pith and seeds of older follicles are eaten, sometimes after warming in ashes.

Flowering January, April; fruiting March-June.

Marsdenia viridiflora subsp. *tropica*



Above and left: *Marsdenia viridiflora*

Sarcostemma brevipedicellatum P. Forster

Succulent leafless climber; stems greyish-green, cylindrical, succulent with milky latex; flowers white on sessile umbels; follicles narrowly ovate in outline.

In sandstone outcrops at Carnot Peak.

Flowering June.

Sarcostemma viminale (L.) R. Br. subsp. *australe* (R.Br.) P. Forster

Succulent leafless subshrub or scrambler, with white latex, stems silver green, cylindrical; flowers cream to cream green in a racemiform cyme; follicles fusiform; seeds oblong.

In sandstone at Coconut Well, Cape Leveque and Moorak Bore.

Bardi name = *ngamanangaman*.

Differs from *S. viminale* subsp *brunonianum* in that the stems do not twine or form a woody liane. The latex can irritate the skin.

Flowering January-July.

Sarcostemma viminale

Sarcostemma viminale (L.) R. Br. subsp. *brunonianum* (White & Arn.) P. Forster **Caustic Vine** or **Milkbush**

Succulent leafless twiner forming a woody vine; stems bright green to grey, cylindrical; flowers cream to green in a racemiform cyme; follicles fusiform; seeds oblong.

Climber forming dense tangled masses over *Ficus platypoda* and sand-

Tylophora cinerascens

Tylophora cinerascens

Tylophora flexuosa

Tylophora flexuosa

stone at Deepwater Point. Reported as possibly toxic to stock.

Bardi name = *ngamanangaman*.

Flowering September-April.

Tylophora cinerascens (R. Br.) P. Forster **Oyster-catcher Bill**

Liane to 4 m; stems with prominent lenticels, becoming elongated, forming linearly raised ridges; leaves yellowish-green on long petioles, elliptic to broadly elliptic, glabrous or shortly hairy, abruptly acuminate; inflorescence of simple umbel-like cymes; pedicels hirsute; flowers cream to green, more or less rotate; follicles very narrowly ovoid, often slightly curved, shortly hairy and deeply grooved down one side; tapered towards the apex, and terminating in an upturned point.

Prolific in canopies of vine thicket trees at Broome, James Price Point, Cape Bertholet, Weedong Lake and One Arm Point.

Bardi name = *gooloonggooloowarr*. A toxic species that has twice been incriminated in the Kimberley with the poisoning of children who had eaten all or parts of the fruit. After medical treatment the children fully recovered in 24 hours. Widespread in coastal localities in northern tropical Australia.

Previously known as *Marsdenia cinerascens* R. Br..

Flowering January-March, October; fruiting March-August.

Tylophora flexuosa R. Br.

Glabrous twiner; leaves large, narrowly ovate to ovate or somewhat elliptic, upper surface glossy green, pale green below, oblanceolate, obtuse, mucronate, base cordate; inflorescence minutely hairy, of sessile umbel-like clusters along a slender axis, flowers pink on slender pedicels; follicles narrowly ovoid, terete, smooth, glabrous, long-acuminate.

On the Peninsula restricted to vine thickets near Cape Leveque. Also occurs in NT, Qld, New Guinea and Indonesia.

Bardi name = *gooloonggooloowarr*.

Flowering February-December; fruiting May-December.

ASTERACEAE

Acanthospermum hispidum* DC. **Starburr

Sprawling to erect annual herb to 0.5 m; stems dichotomously branched, covered with spreading and appressed hairs; leaves sessile, ovate to spathulate, both surfaces hispid and glandular-punctate, base attenuate, margins sub-entire, serrate or serrulate, apex acute; flowers yellow with 5 or 6 outer involucral bracts; fruit a burr, cuneate in outline, covered with short hooked spines and with 2 straight or uncinate divergent apical spines.

In disturbed sand in Broome townsite. A weed of disturbed ground common across northern Australia. Native of South America, now widespread in tropical and subtropical Africa.

First sighted in the Broome townsite in May 1991, growing on the edge of a vine thicket. This colony was destroyed. The burrs are known to be troublesome in wool.

Flowering and fruiting May-June.

Bidens bipinnata* L. **Beggar's Ticks

Annual erect herb to 0.5 m, mostly glabrous; leaves discolorous, upper surface green, lower surface greyish green, pinnate or pinnatisect; flowers in terminal corymbose inflorescences; ray florets yellow; achenes retrorsely barbed with 2 awns.

In seasonally wet open woodland behind coastal dunes near Quondong

Point. A cosmopolitan species of warm areas also occurring in NT, Qld and NSW. A widespread species in the Kimberley and almost certainly spread by cattle.

Flowering and fruiting March.

Blumea integrifolia DC.

Sprawling annual, erect or branching from the base, pubescent or hirsute, the young shoots silky-woolly; leaves oblong-lanceolate, acute and bordered by distant acute teeth; flower-heads not clustered, the peduncles at first short but generally long and slender when the yellow flowers are fully out.

In seepage area over sandstone outcrop fringed by *Melaleuca acacioides* south of Hunter Creek, along Fraser River, Beagle Bay and Balk Creek. Also occurs in NT.

Flowering and fruiting July-October.

Blumea integrifolia

Blumea saxatilis Zoll. & Moritzi

Annual or perennial erect herb, villous woolly; leaves light green, alternate, mostly basally rosetted, up to 13 cm long, irregularly and acutely toothed; flowers pale yellow, (bright yellow in bud).

Common in sand at Willie Creek, Cape Bertholet and Beagle Bay, and in sandy soil under *Melaleuca acacioides* at Curlew Bay. Also occurs in NT and Qld extending into Indonesia, the Philippines and New Guinea.

Flowering April-August.

Blumea saxatilis

Calotis breviseta Benth.

An erect perennial herb 25-50 cm, diffuse with slender stems; leaves linear, obtuse, entire or some of the lower ones linear-cuneate and coarsely toothed; flowers yellow, outer florets white and very small on slender peduncles.

Occasional on fringes of *Eucalyptus-Acacia* woodland and grassland, in fine greyish-white sand, Bobbys Creek and Lake Campion. Also occurs in NT.

A specimen from Beagle Bay collected by A.Forrest in 1879 is in the Herbarium at the Royal Botanic Gardens, Melbourne.

Flowering and fruiting February-December.

Calotis breviseta

Centipeda minima (L.) A. Braun & Asch. **Spreading Sneezeweed**

Annual diminutive herb to 4 cm; leaves pale green, alternate, usually toothed, villous woolly; flowers yellow.

On damp sandy banks adjacent to pools, under *Melaleuca acacioides*, Beagle Bay and Langey Crossing. Occurs in all Australian states.

Flowering and fruiting July-October.

Centipeda minima

Eclipta platyglossa F. Muell.

Semi-prostrate to ascending subshrub to 50 cm, branching from base; leaves densely hispid, oblong-lanceolate, acute, margins crenate; flowers in axillary heads, ray florets yellow; seeds smooth or rugose.

In sand surrounding freshwater swamp and on grey sandy salt flat with *Sporobolus* at Hill Station (now Waterbank Station), Disaster Bay, Weedong Lake, Yaap Claypans and Beagle Bay. Only records for the State are from the Dampier Peninsula. Occurs in all mainland states.

Flowering March, May, June.

Epaltes australis

Epaltes australis Less

Annual or short-lived perennial aromatic herb to 10 cm; stems prostrate or ascending glabrous or sparsely hairy on the younger parts; leaves obovate to cuneate, glandular punctate, hairy, alternate and toothed; flowers green, heads solitary, axillary to 5 mm diameter.

In stony creek bed, Balk Creek. Occurs in all mainland states.

Flowering July, August.

Flaveria australasica

Flaveria australasica Hooker **Speedy Weed**

Erect glabrous annual herb or subshrub to 30 cm; stems maroon, quadrangular, branching more or less dichotomously towards the inflorescence; leaves yellowish green, opposite, clustered, narrowly ovate, 3-veined, entire or serrulate, acuminate; flowers deep yellow, clustered in dense axillary heads.

In *Melaleuca acacioides* woodland behind spring, Carnot Bay, and common on edges of saltmarsh amongst *Sporobolus* on Waterbank Station and Cape Bertholet among *Melaleuca acacioides*. Also occurs in NT, SA, Qld and NSW.

Flowering February-August.

Pluchea rubelliflora (F. Muell.) Robinson

Multi-stemmed straggling herbs or subshrubs to 50 cm; leaves narrowly obovate to broadly spathulate, margins entire to dentate; flowers white to pink in several heads.

On claypan under *Melaleuca acacioides*, Beagle Bay, Nimalaica and One Arm Point. Also occurs in NT, SA, Qld and NSW.

Flowering and fruiting January-September.

Pluchea rubelliflora

Pluchea tetranthera F. Muell.

Rigid perennial subshrub to 1 m; stems glabrous to glandular or tomentose; leaves petiolate, oblong-lanceolate, the upper ones sometimes linear, glabrous or glandular-viscid to densely tomentose, base attenuate, acutely and irregularly toothed, apex obtuse to apiculate; flower-heads small, several-many, often in sessile clusters, florets white to pinkish-purple.

In sand behind creek and behind coastal sand dunes in pindan at Roebuck Bay, Barred Creek and Coulomb Point Nature Reserve. Also occurs in NT, SA, Qld and NSW.

A variable species with four distinct variants recognised in the Kimberley. Material from the Peninsula appears closest to var. *tomentosa* Benth.

Flowering April-October; fruiting April.

Above and right: *Pluchea tetranthera*

Pluchea sp. A Kimb. Flora

Subshrub to 1 m; stems glabrous to sparsely glandular; leaves linear-lanceolate to very narrowly spathulate, acute; heads several in leafy panicles; flowers light violet.

Occasional with grasses on edge of saltmarsh at Willie Creek and Buckley Plain. An undescribed species. Only known from these collections on the Dampier Peninsula and from a bore near the Edgar Ranges, southeast of Broome.

Flowering September-January.

Pluchea sp. A

Pluchea sp. B Kimb. Flora

Straggling herb or subshrub to 1 m; leaves linear to very narrowly obovate, usually glabrous, the young leaves sometimes with scattered hairs, margins entire, apex acute to acuminate; heads in few-flowered cymes; flowers mauve.

On edge of saline flat, Cygnet Bay. A coastal species growing on saltmarshes, from Cygnet Bay to Eighty Mile Beach, south of Broome.

Flowering sporadically throughout year.

Pterocaulon serrulatum (Montr.) Guill. var. *velutinum* (Ewart & Davies) Guill.

Erect subshrub to 40 cm, densely woolly; leaves decurrent into usually serrate wings, apex acute; inflorescence of terminal compound heads, solitary, ovoid, sometimes gobular; florets pink to red.

In shallow soil over sandstone, Dampier Hill. Also occurs in NT, SA and Qld, extending into New Caledonia.

Flowering June.

Pterocaulon sphacelatum (Labill.) F. Muell. **Woolly Tobacco**

Erect subshrub to 2 m, covered with dense loose cream-coloured lanate hairs; stem wings entire; leaves dull mid-green to grey-green, sometimes discolorous and lighter below, narrowly obovate to elliptic to spathulate; compound heads terminal or opposite the upper leaves, usually solitary, globular or sometimes ovoid; flowers tinged mauve.

In grassland under *Eucalyptus tectifica* north of Bunda Bunda Mill, at Roebuck Bay and One Arm Point. Also occurs in NT, SA and Qld extending into Indonesia, New Guinea and New Caledonia.

Bardi name = *ngalil*. Used as a bush tobacco after lightly burning hairs off dried plants.

Flowering April-October; fruiting September.

Pterocaulon sphacelatum

Pterocaulon sp. A Kimb. Flora

Subshrub to 0.5 m; sparsely to densely covered with a mixture of short glandular hairs and lanate hairs; stems winged, leaves brownish green, ovate to elliptic, margins entire to serrulate, apex acute; compound heads terminal, solitary, globular; flowers purple.

Behind salt-marsh at interzone with pindan near Weedong Lake and 4 km south of Cape Bertholet. A Kimberley endemic.

An undescribed species closely related to *P. serrulatum* but specimens may be distinguished by their narrow entire stem wings, entire to serrulate leaves and globular compound heads.

Flowering June-August.

Pterocaulon sp. A

Streptoglossa macrocephala

Streptoglossa odora

Thespidium basiflorum

Tridax procumbens

Streptoglossa macrocephala (F. Muell.) C.R. Dunlop

Strongly aromatic perennial herb to 0.5 m; leaves bright green to brown-green, narrowly to broadly obovate to spathulate, base stem clasping, attenuate or cuneate, margins entire serrate or irregularly shallowly lobed, sometimes ciliate, apex acute to obtuse; heads disciform, solitary, often partially enclosed by upper leaves; flowers thistle-like, pinkish purple.

In pindan, near Broome Wharf and Collins Lagoon. Also occurs in NT and Qld.

Flowering August-October; fruiting September.

Streptoglossa odora (F. Muell.) C.R. Dunlop

Strongly aromatic, densely hispid perennial herb to 0.5 m; stems narrowly winged; leaves pale to yellowish green, linear to oblong or narrowly obovate, base decurrent, margin entire, dentate or serrate, apex acute, old leaves withered and curled but persistent; heads radiate, solitary on leafy branchlets; flowers pale pinkish mauve.

On edge of claypan at Taylors Lagoon, Barred Creek, Carnot Bay, Country Downs and Beagle Bay. Also occurs in NT and Qld.

The H.W. Townsend specimen collected between Barred Creek and Carnot Bay was cited by C.A. Gardner in 1923 as a reputed poison plant, but the toxicity has not been confirmed.

Flowering and fruiting August-November.

Streptoglossa tenuiflora C.R. Dunlop

Annual or perennial herb to 35 cm, covered with a mixture of sparse to dense pilose and villous hairs and short or subsessile glandular hairs; lower leaves oblanceolate, irregularly serrate, upper leaves smaller, linear to very narrowly obovate to spathulate; heads radiate, solitary, subtended by several small leaves, in loose corymbs; flowers pink-purple.

On edge of claypan among *Melaleuca acacioides* at Willie Creek. Occurs in the south west Kimberley extending into the Pilbara.

Flowering October.

Thespidium basiflorum (F. Muell.) F. Muell. ex Benth.

Densely tufted, rigid, hirsute perennial to 20 cm, with numerous diffuse or ascending stems, crowded on the stock with clusters of flower-heads; leaves linear or lanceolate, light green, acute, entire or with a few acute teeth, rarely above 2 cm long; flowers green, the heads small, often densely clustered in the axils of the leaves and at the base of the stem; bracts imbricate in several rows, dry, rigid and acute.

Occasional amongst grasses in *Melaleuca acacioides* forest near Coconut Well and Bobbys Creek. Common fringing Taylor's Lagoon and Lake Campion. Also occurs in NT and Qld.

A plant often favouring saline areas. The first records of this species for the State. Not recorded in the Flora of the Kimberley.

Flowering and fruiting May-October.

**Tridax procumbens* L.

Prostrate to ascending perennial; leaves dark green above, light green below, covered with stiff hairs, margins dentate to serrate, apex acute to acuminate; heads solitary; flowers with cream outer florets and yellow centres.

In pindan around Broome and One Arm Point.

A weed favouring wet and disturbed ground and now persistent in lawns and gardens in Broome. Widely naturalised throughout tropics and a common species of disturbed sites. A native of Central America.

Flowering February-June. Flowers all year in reticulated or permanently moist areas.

Vernonia cinerea Less.

Annual or forming a perennial rootstock, erect to 0.5 m, nearly glabrous, scabrous-pubescent, hirsute, hoary-tomentose or woolly on the young shoots; lower leaves petiolate, green above, pale green below, ovate-oblong or lanceolate, often irregularly toothed or sinuate, the upper ones few or narrow; flowers purplish-mauve on slender peduncles, forming a terminal leafless cymose panicle.

Often found in gardens in the Broome townsite, Coconut Well, and One Arm Point. A pantropical weed extending throughout northern Australia.

Flowering December-August. Flowers all year in reticulated or permanently moist areas.

Vernonia cinerea

Xanthium occidentale* Bertol. **Noogoora Burr

Herb or subshrub to 2 m with strigose stems; leaves dull green, rough to touch, alternate, petiole up to 10 cm long, blade irregularly 3-5-lobed, very broadly ovate, prominently veined, covered with short erect hairs with a bulbous base, dense on the upper surface, base cordate, margins irregularly serrate and with hairs similar but longer than those of the surface, apex acute; flower heads terminal or axillary, sessile, racemose, male heads globular, situated above female heads; female heads solitary or in clusters of 2-12 in leaf axils; mature fruiting heads brown, ellipsoid, sparsely to densely hairy; spines numerous, up to 3 mm long, hooked at apex; beaks 3-4 mm long, divergent; achenes grey, flat elliptic.

Naturalised along the banks of the Fitzroy and Ord Rivers.

Also occurs in all mainland States. Thought to be native to North America and the West Indies.

Xanthium occidentale

A declared noxious weed. The cotyledons are extremely toxic and the burrs are a serious contaminant of wool. The Agriculture Protection Board (APB) is anxious to prevent this plant spreading from the Kimberley to other parts of the State, especially to sheep country. Therefore all stations along the Fitzroy River have been placed in quarantine. No one may go into a quarantined area except for station staff and visitors using dedicated or access roads to station homesteads. Members of the public found in quarantine areas may be fined up to $1 000. A number of signs have been set up on main roads and major access points to the river. Certain places on the river have been set aside as public access areas and these are maintained free of Noogoora Burr by the APB. Signs have been erected at each access point to indicate its extent. If you find Noogoora Burr outside the containment area, do not disturb the plant, but mark the site and contact the APB as soon as possible.

Xanthium occidentale - mature fruits

Flowering May;
fruiting May-October.

Above: *Graham Donation collecting gubinge* *(see page 9)*

Left: *Mangroves at Roebuck Bay* *(see page 39)*

Above and right: *Avicennia marina*

Avicennia marina - mature fruits

Batis argillicola

Dolichandrone heterophylla

AVICENNIACEAE

Avicennia marina (Forsk.) Vierh. **Grey** or **White Mangrove**

Mangrove to 5 m; pneumatophores or breathing roots pencil-like, arising from radial cable roots; bark smooth, greyish white, flaking in patches; leaves dark glossy green on upper surface, light green below; flowers orange, fragrant.

On seaward and landward edges of mangal throughout Peninsula. Also occurs in all mainland states, North and South America, Africa, Asia and New Zealand.

Bardi name = *ngoorrngool*; Nyul Nyul; = *jamai*; Yawuru = *gundurung*, pneumatophores called *marrumba*. Fruit edible once toxins have been removed by soaking them in mangrove mud until they turn black (3-7 days), rinsing or boiling twice or roasting, until the skin and black colour have gone; without treatment it has 'rubbish taste'. This is the only mangrove fruit eaten by Aborigines. Branches used for shades; smoke of burning branches repels sandflies; native beehives found in hollow branches. The foliage is sometimes heavily grazed by cattle, possibly because of the salt on the leaves. The flowers produce excellent honey. Reported to regenerate rapidly after cyclones.

Flowering November-January; fruiting December-May.

BATACEAE

Batis argillicola van Royen

Much-branched but dense shrub to 0.5 m; leaves fleshy, green, linear, opposite; flowers white, dioecious, in spikes.

Common on landward edge of mangal with *Avicennia marina*, at Crab Creek, Dampier Creek, near Coconut Well, Hunter Creek, Curlew and Beagle Bays and Camp Inlet. Also occurs in NT, Qld and New Guinea.

Bardi name = *baljarr*.

Flowering August-September; fruiting January, February. August.

BIGNONIACEAE

Dolichandrone heterophylla (R. Br.) F. Muell. **Lemon Wood**

Tree to 12 m (often a gnarled shrub around Broome); bark silvery grey on surface, brown in furrows, shallowly tessellated; leaves dull green, pinnate; flowers white, tubular, sweetly scented; pods long, bean-like, drooping; seeds transversely oblong, the wing on each side as long as the seed itself.

Scattered throughout the Peninsula. Also occurs in NT and Qld.

A variable species in the size and number of leaflets. Some specimens

from the Peninsula are shrubby and have small leaflets. This may be due to regrowth resulting from frequent burning. The flowers have a distinct scent at night, reminiscent of carnations.

Yawuru name = *jumburru*.

Flowering April-July.

BOMBACACEAE

Adansonia gregorii F. Muell. **Boab**

A large, swollen stemmed, deciduous tree to 10 m with numerous spreading branches; leaves digitate; flowers large, white, stamens numerous; fruits large, woody and pendulous containing numerous black, kidney-shaped seeds embedded in white pith.

Indigenous only in the SE corner of the Peninsula on the Fitzroy floodplain and lower Fraser River, occasional to as far north as Disaster Bay, but commonly cultivated in and around the Broome townsite. Two old trees grow at Baldwin Creek Mill. Also occurs in the Victoria River area of NT.

Bardi name = *larrgid*. Sour white pith is sucked, tastes like sherbet and very refreshing. The seeds are ground into a white paste. The fruits are frequently carved by Aborigines as artifacts for sale to tourists.

The flowers are pollinated by hawkmoths (*Agrius convolvuli*).

A collection from Broome, described by B.P.G. Hochreutiner in 1908 as *A. stanburyana*, is now considered a synonym of *A. gregorii*. The trunk of a boab near Mt Clarkson was carved by Alexander Forrest's 1879 expedition. The tree was relocated by an expedition led by Dr W.J. Peasley in 1979, with the blaze F69 still just visible.

There are eight species of *Adansonia*: 1 in Africa, 1 in Australia and 6 in Madagascar.

Flowering November-February (May).

Adansonia gregorii

Adansonia gregorii

Camptostemon schultzii Mast. **Raft** or **Kapok Mangrove**

Columnar mangrove to 15 m, sometimes swollen at base; bark smooth; stems silver-grey, lenticels prominent; leaves alternate, lamina narrowly elliptic to lanceolate, apex obtuse to acuminate, upper surface dull, lower surface densely silvery lepidote; inflorescence of axillary umbelliform cymes; flowers white, densely lepidote outside; fruit silvery lepidote; seeds covered with long slender white hairs.

On white sandy banks within mangal with *Avicennia* and *Ceriops* at Pender Bay, Packer Island, Cape Bertholet and Hunter Creek. Common in coastal areas of NT, Qld and New Guinea.

Yawuru name = *biyal-biyal*. Bardi name = *joolboo*. Trunks used to make log rafts called *kalwar* by the Bardi. The rafts are made in two parts. Both parts are fan-shaped resulting from the pronounced taper of the logs used. The raft is constructed using 8-10 tapered mangrove poles between 1.5 m and 2 m in length. The poles are nailed together using split hardwood of *Acacia monticola*. The stern section is similarly constructed. The two sections of the rafts are joined by two wooden pegs with the narrow end of the stern section placed over the narrow part of the bow section. Depending on the size up to four people can travel on a raft. The rafts were used to hunt turtle and dugong and to visit island beaches to harvest turtle and seabird eggs. Tree trunks support edible oysters.

Flowering November, December.

Camptostemon schultzii

Camptostemon schultzii

Cordia myxa

Ehretia saligna

Ehretia saligna

BORAGINACEAE

Cordia myxa L. **Glue Berry**

Small tree to 6 m, glabrous or scabrous pubescent; leaves on rather long petioles, from ovate to orbicular, very obtuse or shortly acuminate, entire or toothed; flowers small, white, scented, in cymes, sometimes contracted into heads, at first terminal, but often becoming lateral by the growth of the branches; fruit a pale green ovoid drupe, becoming pearlescent white when ripe; seeds embedded in a sticky mucilage.

Localised behind large sand dunes north of Baldwin Creek in seasonally inundated area. Also occurs in NT, Qld and tropical Asia. Formerly referred to as *C. dichotoma* G. Forster.

Flowering and fruiting November.

Ehretia saligna R. Br. **Native Willow** or **Peachwood**

Weeping tree to 5 m, glabrous throughout; mature bark greyish brown, irregularly fissured, shedding in roundish chunky flakes, young bark grey, smooth; leaves pendulous, concolorous, dull green, with distinct yellowish green mid vein, long-lanceolate or linear, tapering to a fine point, quite entire, contracted into a rather long petiole, rather thick, very obliquely and prominently veined; flowers cream-green, in divaricately dichotomous shortly pedunculate cymes; fruit a small, red, globular drupe, seeds 4, light tan.

Common in fragmented deciduous vine thickets behind coastal dunes at Broome and One Arm Point and often extending into pindan. Also occurs in NT and Qld.

Bardi name = *jiimany*. Yawuru name = *miganiny*. Branches used as a fire drill, ripe fruits often eaten by Aboriginal children. Frequently suckers after fire. Fruits eaten and dispersed by birds.

Flowering April, May, September-November; fruiting November.

Heliotropium curassavicum L. **Smooth Heliotrope**

Prostrate, fleshy, glaucous annual to short-lived perennial; leaves ascending to spreading, narrowly elliptic to narrowly obovate; cyme simple to 4-branched; flowers pale mauve; mericarps ovate.

Presently only known from the Kimberley from the edge of Nimalaica Claypan, outside a *Melaleuca acacioides* thicket. Widespread throughout Australia and the world. This species is readily distinguished by its glabrous and more or less glaucous foliage.

Flowering and fruiting August.

Heliotropium diversifolium F. Muell. ex Benth.

Much-branched ?perennial to 30 cm; branchlets with appressed hairs; leaves crowded in the lower part of the stem, petiolate, ovate or ovate-lanceolate; flowers small, white, in long slender interrupted simple cymes; mericarps ovate in outline, with spreading macrohairs.

In sandy soil at One Arm Point. Also occurs in NT.

The type was collected from Cygnet Bay by Allan Cunningham in February 1822.

Flowering and fruiting March-October.

Heliotropium foliatum R. Br.

Compact, perennial, hispid subshrub to 0.5 m; leaves pale green, more or less petiolate, lanceolate, rather acute, narrowed at base, flat or the margins slightly recurved; flowers white in a simple cyme; mericarps oblong to ovate in outline, with papillose microhairs.

In pindan in Broome townsite and in grey clay on Buckleys Plain. Also occurs in NT and Qld.

Flowering and fruiting May.

Heliotropium glabellum R. Br.

Annual to short-lived perennial to 0.5 m; stems numerous from base, glabrous or with appressed to ascending hairs; leaves ascending, linear, with appressed to ascending hairs; cymes simple; flowers white, corolla tube light orange; mericarps ovate to broadly ovate to more or less circular in outline, with appressed microhairs.

In rocky ground near cliff top, One Arm Point. Also occurs in NT and Qld.

Previously known as *H. flaviflorum* W. Fitzg.

Flowering and fruiting June-October.

Heliotropium glabellum

Heliotropium leptaleum Craven

Annual to short-lived compact perennial to 0.6 m; stems with appressed hairs; leaves grey-green ascending to spreading, linear to oblong, with hairs appressed on the lamina and appressed to spreading-ascending on the margin; cymes simple; flowers white; mericarps circular to broadly elliptic.

Scattered throughout the Peninsula, occurring in pindan and in alluvium on edges of creeks.

Flowering and fruiting May-August.

Heliotropium ovalifolium Forsskal

Perennial herb to 0.5 m; leaves narrowly elliptic to obovate, apiculate, densely silky hairy; cymes simple to 3-branched; flowers white on long spikes; mericarps elliptic to ovate in outline, with appressed to ascending micro or macrohairs.

Frequent in couch grassland surrounding Lake Campion, Coulomb Point, Wibijakun Claypan, "Billabong" west of Karrakatta Bay and One Arm Point. Also occurs in NT, Qld, Africa and Asia.

Flowering and fruiting February-September.

Heliotropium ovalifolium

Heliotropium paniculatum R. Br

Annual to 30 cm; stems with appressed to ascending hairs; leaves ascending to spreading, linear to oblong, with appressed to ascending hairs; cymes simple; flowers white; mericarps broadly ovate in outline, with spreading to ascending macrohairs.

A rarely collected species only known from the Peninsula from an Allan Cunningham collection from Cygnet Bay in February 1822. Also occurs in NT and Qld.

Flowering and fruiting February.

Heliotropium tenuifolium R. Br. (complex)

Erect, branching herb, hard or almost woody at base, to 0.6 m; branchlets with appressed hairs; leaves linear, acute or almost obtuse, with revolute margins; flowers white, distant, forming interrupted once or twice forked cymes; mericarps broadly ovate to almost oblong in outline, with appressed micro or macrohairs.

In sand beside creek at Coconut Well, Cape Bertholet and One Arm Point. Also occurs in NT and Qld.

Flowering and fruiting February-August.

Heliotropium tenuifolium

Trichodesma zeylanicum (N.L. Burman) R. Br. **Camel Bush**

A coarse hard annual or perennial subshrub, usually erect, not much-branched, often up to 1.5 m, the indumentum very various; leaves alternate, linear, linear-lanceolate, or rarely broadly oblong-lanceolate; flowers pale blue in simple racemes.

On sandplain adjacent to creek, Cape Bertholet and common on coastal dunes throughout Peninsula. Common throughout Australia and extends through south-east Asia to India.

Trichodesma zeylanicum

Canarium australianum

Canarium australianum

Byblis liniflora

Caesalpinia major

The common name "Camel Bush" resulted from a report by Baron von Mueller who stated that the dromedaries of Giles' 1873-74 exploring party were found to be particularly partial to this plant. It is also eaten by cattle but has been suspected of poisoning stock, although there is no definite evidence of toxicity. The hairs can be highly irritant.

Known in the Broome area by the Aboriginal name *jilarga*.

Flowering and fruiting March-November.

BURSERACEAE

Canarium australianum F. Muell. var. *glabrum* Leenh. **Styptic Tree**

A large, spreading shade tree to 6 m; bark rough, silvery in appearance, with aromatic resin; leaves large, pinnate, glabrous; flowers dioecious, white, fruits ellipsoid, nut-like in clusters, turning purple-black when ripe.

In sand beside creeks and rivers, Cape Bertholet and One Arm Point. On the Peninsula it does not occur south of the Coulomb Point Nature Reserve. Also occurs in NT, Qld and New Guinea.

Bardi name = *jalgir*. Edible ripe fruit is cooked in warmed sand; edible kernel is eaten raw or warmed in ashes after smashing dried seed open; wood used for shields.

The seeds are spread by birds. A species with ornamental potential. Cultivated specimens can be seen in the garden at the Kimberley Regional Offices.

This species can be recognised by the glabrous or minutely and sparsely hairy undersurface of the leaflets.

Flowering and fruiting April, July-September.

Canarium australianum F. Muell. var. *velutinum* Hewson

Tree to 4 m; bark rough, silvery in appearance; leaves large, pinnate, with short erect hairs on the lower surface; flowers white; fruits ellipsoid, nut-like in clusters.

In alluvial sand beside creek at Coulomb Point and Gallen Well near Lombadina. Also occurs in NT and Qld.

This variety can be recognised by the velutinous indumentum on the undersurface of the leaflets

Bardi name = *jalgir.* Uses as for *C. australianum* var. *glabrum.*

BYBLIDACEAE

Byblis liniflora Salisb.

Erect glandular insectivorous herb to 40 cm; leaves linear-filiform, spreading; flowers in the upper axils, lilac, edges of petals fringed.

Common in damp sand of seasonally wet areas, often with *Drosera petiolaris* at Broome, Cape Bertholet, Beagle Bay and One Arm Point. Also occurs in NT, Qld and New Guinea.

Flowering February-August.

CAESALPINIACEAE

Caesalpinia major (Medikus) Dandy & Exell

Vigorous, climbing, robust shrub to 4 m, armed with straight or recurved prickles and with an indumentum of minute curved hairs, forming sprawling, tangled canopy; stems grey; leaves: pinnae 3-8 pairs, usually opposite, up to 15 cm long, rhachis 1-1.5 mm long; leaflets 8-14, opposite, bright green above, pale below, elliptic or rarely more or less ovate, minutely hairy particularly on the veins and near the margins; male and female

flowers on separate plants; flowers yellow on long axillary or supra-axillary racemes; pods stipitate, obliquely broadly oblong to obliquely broadly elliptic, dehiscent, with harsh bristles to 10 mm long; seeds 2 or 4, globular, hard, jade green to dark olive green, 15-18 mm across.

In patches of coastal vine thicket at Cape Leveque, Martins Well, Moorak Bore, Coulomb Point Nature Reserve and Cable Beach. Also occurs in NT and Qld. Extends from America and Madagascar, through India to south-east Asia, the Philippines, the Pacific Islands and New Guinea.

Bardi name = *goolyi*. Aboriginal children use the seeds to play marbles. The male Great Bower Bird collects the seeds and uses them to decorate his display bower.

A collection from Broome by B.P.G. Hochreutiner was described in 1925 as *C. broomensis*.

Previously misidentified as *C. globulorum* Bakh.f. & P. Royen. This genus is in need of taxonomic revision.

Flowering November-March; fruiting December-June.

Caesalpinia major

Cassia L.

- All species previously placed in *Cassia* L. have been transferred to the genera *Chamaecrista* Moench. and *Senna* Miller.

Chamaecrista absus (L.) Irwin & Barneby **Hairy Cassia**

Viscidly pubescent much-branched annual or short-lived perennial to 30 cm; leaflets in 2 pairs, obliquely and broadly obovate, obtuse, the common petiole rather long and slender; stipules narrow; flowers yellow, small, in short terminal, or at length lateral racemes; pods yellowish-green and up to 4 cm long; seeds 3-7, black, shiny, rhombic or obovate in outline, smooth.

In dense *Acacia monticola* thickets in pindan near Coconut Well and in pindan at Bells Point, Whimbrel Point, One Arm Point and Pender Bay. Also occurs in NT and Qld. A widespread plant in the tropics of the Old World.

This species is reported to contain a depressant alkaloid which could be harmful to livestock if grazed.

Previously known as *Cassia absus* L.

Flowering and fruiting February-April.

Chamaecrista absus

Chamaecrista mimosoides (L.) Greene **Five-leaf Cassia**

Erect annual herb to 30 cm; leaves pinnate, with 60-150 leaflets; leaflets very shortly petiolulate, obliquely narrowly oblong, almost glabrous, obtuse and sometimes mucronulate; flowers bright yellow, axillary or supra-axillary flowers, often up to 3 per axil in a sessile umbel-like cluster; pods narrowly oblong to linear, straight, minutely hairy, sutures thickened, with slight papery partitions between the seeds; seeds 12-18, brown, obliquely rhombic in outline, smooth.

In closed grassland and seepage areas beside Hunter Creek, Bobbys Creek, Curlew Bay and Martins Well. Also occurs in NT, Qld and NSW. Widespread in tropical regions from Africa to south-east Asia, New Guinea and Australia.

Previously known as *Cassia mimosoides* L.

Flowering and fruiting April-August.

Chamaecrista mimosoides

Chamaecrista pumila Lam.

A diffuse, more or less short-lived perennial, with a hard woody base, the stems rarely exceeding 30 cm, usually densely hairy with erect hairs; leaflets pale green, usually 8-12 pairs, sessile, overlapping, obliquely narrowly oblong and curved, hairy, with 2 prominent marginal veins, mucronate; flowers pale orange, axillary, solitary; pod narrowly oblong, flat with spreading hairs, sutures thickened, with papery partitions between

Chamaecrista pumila


Erythrophleum chlorostachys


Erythrophleum chlorostachys


Lysiphyllum cunninghamii


Lysiphyllum cunninghamii

the seeds; seeds 5-12, light to dark brown, obliquely rhombic, pitted with dark brown spots.

In open woodland in pink sand near Beagle Bay and in pindan near Broome.

The specimens from Beagle Bay are more slender than usual, have smaller flowers and will be described as a new species.

Previously known as *Cassia pumila* Lam.

Flowering and fruiting February-August.

Erythrophleum chlorostachys (F. Muell.) Hennings **Ironwood** or **Camel Poison**

Deciduous tree to 8 m, (but more often on the Peninsula a fire-stunted shrub); bark grey, tessellated, rough; leaves bipinnate, mid-green to yellowish green, divided into asymmetric large, rounded leaflets; flowers small, green, in long cylindrical spikes; pods broad, flat, brittle, semi-woody, bean-like, dark brown; seeds dark brown, flat and circular.

Widespread in pindan and throughout the northern Peninsula as dominant understorey in *Eucalyptus miniata* woodland. Also occurs in NT and Qld.

The plant is extremely poisonous to stock and deaths have been recorded in cattle, sheep, horses, goats and camels. Dry leaves remain toxic and sucker shoots are very poisonous.

Bardi name = *joonggoomarr*. Yawuru name = *jun'ju* and *bilamana*. Hardwood used to make fighting sticks.

Flowering August-November.

Lysiphyllum cunninghamii (Benth.) De Wit **Kimberley Bauhinia** or **Jigal Tree**

Dense shrub or semi-deciduous tree to 6 m; bark dark grey, rough; young leaves flushed red becoming soft green or yellowish green; mature leaves bluish grey to dull greyish green, butterfly-shaped; flowers red, somewhat tubular, nectar rich; pods large, pendulous, flat, reddish, somewhat papery, twisted.

Common with *Acacia tumida* on sandplain and in pindan, Lombadina, Cape Bertholet, One Arm Point and Broome. Exhibits a wide ecological tolerance throughout the Peninsula and the rest of the Kimberley. Also occurs in NT and Qld.

Bardi name = *jigal* or *joomoo*. Edible gum which is very sweet; nectar sucked from flowers; an excellent smokeless firewood; branches used in constructing windbreaks. The back-to-back positioning of the leaves gives rise to the Aboriginal common name *jigal* for this tree. *Jigal* means mother-in-law, but more, the relationship involving mother-in-law. According to Aboriginal custom, mother-in-law and son-in-law must not directly face each other.

A Broome specimen was described by Hochreutiner in 1925 as *Bauhinia hookeri* var. *broomensis*. The leaves are favoured by stock and are reported to be nutritious.

Flowering April-October; fruiting September, November, December.

Parkinsonia aculeata* L. **Jerusalem Thorn

Shrub or tree to 6 m, often with slender drooping zig-zag stems; stipules spinescent; leaves sessile, bipinnate, glabrous or with sparse fine appressed hairs; pinnae 1-4, crowded, 1.5-4.0 cm long; pinnae rhachis flattened, linear and somewhat winged; leaflets many, up to 100 or more, subopposite to alternate, oblong-elliptic; racemes very sparsely hairy; flowers fragrant, yellow, innermost petal with orange to brown markings; pod more or less linear in outline, only slightly compressed, greatly constricted between the seeds, somewhat glaucous, striate, straw-coloured when ripe,

tapered at apex; seeds few, longitudinal in pod, greenish brown, oblong-elliptic in outline.

Naturalised on the Peninsula at Willie Creek and Beagle Bay. Also occurs in NT, SA, Qld and NSW. A native of the southern United States, the Caribbean, Mexico and northern South America. Now widely naturalised in warmer regions of the world.

Possibly introduced to the Peninsula as a shade and ornamental shrub during the early 20th century and often planted around bores.

This species is a declared plant (noxious weed) north of the 26th parallel in Western Australia. It forms dense impenetrable thickets which are not browsed by cattle. *Parkinsonia* shades out other vegetation, hampers mustering, restricts grazing and blocks access to water points along rivers. The seeds are hard and will germinate years later, often after fire or in some cases after long immersion in water. The pods float and are spread by flood. Several large trees around Broome have been eradicated by the Agriculture Protection Board (APB). Other populations have been sighted at Nimalaica Claypan and at Beagle Bay.

Flowering and fruiting May-August.

Parkinsonia aculeata

Senna costata (J.F. Bailey & C. White) Randell **Ram's Horns**

Spindly shrub to 2 m, usually glabrous; bark grey, smooth; branchlets faintly ribbed; leaflets 6-10, light green, narrowly oblong-elliptic; racemes umbel-like, axillary, pedunculate, 4-7 flowered; flowers yellow; pods narrowly oblong, strongly curved, minutely hairy or glabrous, faintly reticulate, sutures thickened, grooved and indented between seeds, yellow with a tinge of orange; seeds black, shiny, broadly elliptic to circular in outline, persistent in pods following dehiscence.

In low-lying area with *Melaleuca nervosa* at Coulomb Point and common on the Peninsula in sandy areas. An uncommon species also recorded from NT and Qld.

Previously known as *Cassia costata* Bailey & C. White.

Flowering and fruiting February-October.

Senna costata

Senna goniodes

Senna goniodes (Cunn. ex Benth.) Randell

Erect, slender, multi-branched shrub to 1 m; glabrous or with short erect more or less pilose hairs; branchlets ribbed; leaflets 4 or 6, narrowly elliptic, acute to long-acuminate, pale green; flowers few, bright yellow; pods oblong to narrowly oblong, flat, usually slightly curved, reticulate, hairy or glabrous, sutures thickened, grooved and indented between seeds.

In deep orange sand at Gallen Well, and One Arm Point to Cape Leveque. Appears locally restricted to the northern end of the Peninsula. A Kimberley endemic.

Closely related to and sometimes included under *S. oligoclada* F. Muell. Previously known as *Cassia goniodes* Cunn. ex Benth.

Flowering April-November.

Senna notabilis

Senna notabilis (F. Muell.) Randell **Cockroach Bush**

Spreading shrub to 1.5 m, densely pilose with long spreading hairs and also short curved hairs; leaves up to 25 cm long, greenish grey, densely pilose, leaflets 14-24, ovate-lanceolate, acute, mucronate; flowers yellow; pods golden yellow, striped dark brown, flat, straight, glabrous, reticulate, sutures thickened; seeds 4-7, dark coloured, obovate in outline, rugulose.

Occurs in grader spoil on road verges and scattered throughout pindan in deep red soil at Broome, Beagle Bay and Cape Leveque. A common species after fire. Widespread in northern arid areas of NT, SA, Qld and NSW.

Shares with *S. venusta* the distinction of having foliar glands. The distinctive pods give rise to the common name.

Senna occidentalis

Senna occidentalis - mature fruits

Senna surattensis subsp. *sulfurea*

Previously known as *Cassia notabilis* F. Muell.
Flowering and fruiting July-September.

Senna occidentalis* (L.) Link **Coffee Senna

Annual or short-lived shrub to 1.5 m, glabrous or almost so; branches with an acrid smell when broken; leaves up to 17 cm long, dark green, discolorous, leaflets 6-14, ovate-elliptic, acuminate, the margins almost always ciliolate; racemes clustered in terminal panicles, with sparse appressed hairs, 2 or 3-flowered; flowers yellow; pods brown, the margins pale, up to 10 cm long, somewhat flattened with transverse partitions, straight or slightly curved; seeds 28-32, olive to greyish brown, obovate.

In disturbed sand at One Arm Point, Waterbank Station, Lombadina, Gnamagan Well, Beagle Bay and Broome. Also occurs in NT, SA, Qld and NSW. A pantropic weed believed to be indigenous to tropical America.

In Africa the seeds are roasted to give "mogdad" or "negro" coffee. Reportedly toxic to stock in the USA.

Previously known as *Cassia occidentalis* L.
Flowering March-September.

Senna oligoclada (F. Muell.) Randell

Shrub to 1 m, softly pubescent in all its parts; branchlets ribbed; rhachis with erect clavate glands between the pairs of leaflets; leaflets 4 or 6, oblong or obliquely oblong-elliptic, obtuse or rarely abruptly acuminate; racemes umbel-like, axillary, pedunculate, 3-5-flowered; flowers yellow; pods stipitate, oblong, usually slightly curved, sutures thickened, indented between seeds, reticulate, usually hairy; seeds 4-8, black, obovate in outline.

In pindan off Kavite Road and near Port Drive, 0.5 km inland from coastal dunes. Also occurs in NT and Qld.

Closely related to *S. goniodes* (Cunn. ex Benth.) F. Muell. which differs in having fewer flowers per raceme and narrower long-acuminate leaflets. Previously known as *Cassia oligoclada* F. Muell.

Flowering May.

**Senna surattensis* (Burm.f) Irwin & Barneby subsp. *sulfurea* (Colladon) Randell

A small tree to 4 m with long slender stems and an indumentum of more or less appressed yellow hairs; leaves up to 25 cm long; rhachis and petiole lacking glands; leaflets 22-30, discolorous, ovate to ovate-oblong, slightly unequal at the base, the top rounded or emarginate, green and glabrous above, glaucous and sparsely pubescent below with appressed hairs; flowers yellow in a condensed raceme from the upper leaf axils; pod dark brown, narrowly oblong, flat, straight, becoming glabrous, reticulate, sutures thickened, with a stylar tip; seeds 18-20, brown to black, shiny, ovate in outline, with a smooth areole on each face.

On the Peninsula only recorded as occasional in sand under eucalypt woodland around One Arm Point. Also occurs in NT and Qld. Previously recorded from tropical Asia and Malesia.

The natural distribution of this species is now obscured by cultivation as a drug plant, the pods and leaves used to extract a laxative.

Previously known as *Cassia surattensis* Burm.f. and *Cassia sulfurea* DC. ex Colladon

Flowering and fruiting May-September. In reticulated areas this species is known to flower all year.

Senna timoriensis (DC.) Irwin & Barneby

Small tree or shrub to 3 m, stems with two raised decurrent lines below insertion of the leaves, pubescent with appressed golden hairs; rhachis and

petiole lacking glands; leaflets 22-30, narrowly elliptic, subequal, almost glabrous above, with appressed hairs below particularly on the midrib; inflorescence in many-flowered racemes in upper axils; flowers bright yellow; pods stipitate, flat, straight, shiny rich reddish dark brown, reticulate, sutures only slightly thickened; seeds 9-14, dark to olive brown, shiny, ovate in outline, with a smooth areole on each face.

Only recorded in small isolated semi-vine thicket pocket in sandy hollow at Chimney Rocks off Emeriau Point. Also recorded for NT and Qld.

The type was collected from Timor. Previously known as *Cassia timoriensis* DC.

Flowering and fruiting March.

Senna venusta (F. Muell.) Randell

Spindly shrub to 2 m; stems ribbed, softly pubescent; leaves up to 30 cm long, olive green; rhachis with inconspicuous erect glands between pairs of leaflets; leaflets 18-28, oblong, obliquely rounded at base, mucronate; flowers yellow, numerous on stiff, long, terminal and axillary racemes; pod flat, golden brown, straight, glabrous or minutely puberulous, reticulate, sutures thickened; seeds 6-12, brown to black, ovate-oblong in outline, rugulose with a small elliptic areole on each face.

In stony ground at One Arm Point. Widespread in the Kimberley extending into arid areas of NT with a few collections from Qld.

Shares with *S. notabilis* (F. Muell.) Randell the distinction of foliar glands. Previously known as *Cassia venusta* F. Muell.

Flowering February-August.

Senna venusta

Tamarindus indica* L. **Tamarind

Tall tree to 10 m, with broad crown and wide-spreading branches, bark dark greyish brown, slightly tessellated; leaves abruptly pinnate, leaflets 10 to 20 pairs, oblong- linear, obtuse; flowers yellow in terminal racemes; pod cinnamon-brown, linear or oblong-linear, curved, thick, the epicarp crustaceous and fragile; the mesocarp pulpy.

Occasional in *Melaleuca acacioides* thicket behind Nimalaica Claypan and on Waterbank Station and One Arm Point. Also naturalised in NT and Qld.

A widely cultivated tree native to Asia and Africa, and grown throughout the tropics and in Broome as an ornamental and shade tree.

The acid fruit pulp is widely used to prepare a refreshing drink, chutneys, preserves, and also for medicinal purposes. The bark is used as a source of tannin for tanning leather.

Tamarind trees at coastal sites in northern Australia have often been associated with the visits of Macassans since c. 1700, seeking bêche-de-mer (also known as trepang or sea cucumber). Tamarinds were often planted at their campsites where catches were boiled down. Burges (1913) describes a Macassan fleet at Roebuck Bay in 1864-65. However, there is little evidence that Macassans established tamarind trees on the Dampier Peninsula as they did around Kalumburu on the north Kimberley coast.

Good examples of this tree can be seen in Broome at Bedford Park, the Courthouse and outside the Post Office.

Flowering and fruiting December-June.

Tamarindus indica – at Courthouse

Tamarindus indica

Wahlenbergia caryophylloides

CAMPANULACEAE

Wahlenbergia caryophylloides Carolin

Straggling herb to 30 cm; stems 1-3 from base, light green, lower parts more or less hirsute, upper parts glabrous; lowermost leaves opposite and elliptic, becoming alternate and narrowly elliptic up the stem, uppermost leaves smaller, linear and bract-like; inflorescence of terminal cymes; floral tube hemispheric or cylindric; sepals 5, narrowly triangular to subulate; flowers pale blue; capsule campanulate, hemispheric or obconic.

In sandy bank at Balk Creek and at Point Coulomb Nature Reserve. Also occurs in NT and Qld.

Flowering and fruiting July-September.

CAPPARACEAE

Capparis jacobsii Hewson

Shrub to 2 m; leaves shiny, elliptic or obovate, densely puberulous below; flowers white, solitary, pedicel stout and long; fruit hard, round, greenish on long stalks.

Growing with *Cupaniopsis anacardioides* and *Paramignya trimera* in fissures of outcropping ferruginised sandstone at Carnot and King Peaks. Appears restricted to these localities on the Peninsula. Also occurs in NT.

A potential ornamental species.

Flowering April-September; fruiting November.

Above and right: *Capparis lasiantha*

Capparis lasiantha R. Br. **Bush Caper**

Thorny, multi-stemmed, climbing shrub; stems greyish brown; leaves silvery yellowish green becoming olive green, lanceolate, the apex notched; flowers white, fragrant; fruit oval, warty, yellow when ripe with tasty, edible pulp.

Growing in sandstone crevice at Carnot Peak; common behind coastal dunes at James Price Point, Point Coulomb, One Arm Point and common in coastal pindan around Broome. Also occurs in NT, Qld and NSW.

Bardi name = *ngoorla*. Leaves medicinal, applied as a warm poultice for rheumatism.

Characterised by the prominent zig-zag stems. A large leaved form occurs at One Arm Point. Good examples can be seen near Rodeo Ground just outside Broome townsite.

Flowering July-November; fruiting November.

Capparis sepiaria

Capparis sepiaria L.

Scandent shrub to 6 m, sometimes climbing, spines paired, usually recurved; leaves discolorous, upper surface dark glossy green, lower surface paler, elliptic, ovate to obovate, apex usually notched; inflorescence

sub-umbellate on lateral twigs, of up to 25 flowers, petals white; fruit globose, yellow, turning orange.

On the Peninsula, restricted to vine thickets at Cape Leveque and One Arm Point. Also occurs in NT and Qld, extending from India to the Philippines and south to northern Australia.

Flowering October, November.

Capparis spinosa

Capparis spinosa L. var. *nummularia* (DC.) Bailey **Caper Bush**

Scrambling, glabrescent shrub to 1 m, spines rudimentary, recurved, glabrous; leaves ovate to orbicular; flowers white, wilting in the afternoon to purple-lilac, solitary, axillary; fruit succulent, orange to black, ellipsoid, strongly ribbed.

On the Peninsula restricted to limestone along coast south of Tappers Inlet near North Head and at Emeriau Point. This variety is endemic and widespread in Australia.

The pickled flower buds of *C. spinosa* are the capers used in cooking.

Flowering May.

Left and above: *Capparis umbonata*

Capparis umbonata Lindley **Wild Orange**

Shrub or tree to 8 m, glabrous; branches pendulous, juvenile shoots slender, spiny; leaves linear to narrowly oblong, sometimes curved, tapered at base and apex, apex obtuse or acute and sometimes mucronate; flowers white, solitary in the upper axils, or in axillary racemes; stamens more than 50; fruit an orange, globular berry, pericarp woody.

Appears localised on rocky outcrops, from south east of the Peninsula from Nilli Bubbaca Well and the south Fraser River Crossing.

The pulp of the ripe fruit is edible but the seeds are unpleasant tasting.

When young, this species is heavily grazed by cattle and appears to be declining in numbers along the Fitzroy floodplain.

Flowering and fruiting January.

Cleome cleomoides (F. Muell.) Iltis

Annual to perennial herb to 0.5 m, glandular-pubescent; leaves 3-5-foliolate; leaflets narrowly obovate to lanceolate or linearly lanceolate, acute; inflorescence a raceme; flowers large, yellow, zygomorphic, opening at sunset; fruit linear, curved, spreading, strongly glandular-pubescent; seeds ovoid, numerous.

In rocky ground at One Arm Point. Also occurs in NT and Qld.

Bardi name = *booloorrbooloorr*.

Flowering and fruiting March, April.

Cleome cleomoides

Cleome oxalidea F. Muell.

Glabrous annual to 20 cm; leaves radical, 3-foliate; inflorescence of solitary leafless scapes to 10 cm, flowers violet; ovary sessile, glabrous; fruit linear to fusiform, erect.

Cleome oxalidea

Cleome tetrandra

Cleome viscosa

Polycarpaea longiflora

On yellow ironstone creek washout at Fraser River. Also occurs in NT and Qld.

Flowering January.

Cleome tetrandra Banks var. *tetrandra*

Annual herb up to 0.5 m, with sparse stipitate glandular hairs; leaves usually 3-foliolate; flowers yellow, in racemes; stamens 4; fruit linear in outline, faintly longitudinally striate; seeds transversely rugose.

Common in pindan around Broome, in orange sand over travertine on Packer Island and in grassland at One Arm Point, Martins Well and Cape Bertholet. Also occurs in NT and Qld.

Bardi name = *booloorrbooloorr*.

Flowering January-August.

Cleome viscosa L. **Tick Weed** or **Mustard Bush**

Annual herb to 0.75 m, glandular pubescent; leaves 3-5-foliolate; flowers yellow; fruit linear, erect up to 10 cm long, valves longitudinally striate, seeds numerous, sub-orbicular.

Commmon in sand, Cape Bertholet, One Arm Point and common around Broome particularly in disturbed areas. Also occurs in NT, SA, Qld and NSW extending in to tropical regions from Africa to Australia.

Bardi name = *booloorrbooloorr*. The flowers are crushed by Aborigines and rubbed around the eyes as a fly repellant. A variable species.

Flowering and fruiting January-July.

CARYOPHYLLACEAE

Polycarpaea corymbosa (L.) Lam.

Papery-flowered, everlasting herb to 20 cm; leaves from narrow-linear to almost subulate, rarely linear-lanceolate, flat or with revolute margins; flowers light pink becoming light grey, numerous in dense corymbose cymes.

In pindan around Broome. Also occurs in NT, SA, Qld and NSW.

Yawuru name = *bilangool*.

Flowering May.

Polycarpaea longiflora F. Muell.

Papery-flowered, everlasting, pubescent herb to 0.7 m, erect and rigid, divided at the base into several erect branches; leaves narrow-linear, acute or ending in a hair-like point, rigid; flowers large, maroon, shortly pedicellate in dense terminal corymbose cymes or heads; outer perianth segments white with maroon ridge.

In pindan and orange sand beside track; and on sand dunes behind beach at One Arm Point, Cape Leveque, Coulomb Point and Broome. Also occurs in NT and Qld.

Following a good wet season plants often occur in dense patches where the massed colour is spectacular.

Flowering April-August.

CELASTRACEAE

Maytenus cunninghamii (Hook.) Loes.

Shrub or occasionally a tree to 7 m; bark greyish brown, very corky, fissured, foliage, sparse; leaves yellowish green, linear-lanceolate with acuminate tip; flowers pale green; fruits greenish-yellow, globular or ovoid capsules containing two black seeds, more than half enclosed in aril.

Occasional in coastal scrub on sandplain with *Myrtella* and *Santalum*; in coastal pindan around Broome and in *Eucalyptus miniata* woodland near Cygnet Bay, and Quondong area also in *Eucalyptus jensenii* woodland on higher part of Peninsula.

Also occurs in NT, Qld and NSW.

Flowering and fruiting September-March.

Maytenus cunninghamii

CERATOPHYLLACEAE

Ceratophyllum demersum L. var. *demersum* **Hornwort**

Submerged rootless, freshwater aquatic; stems flexuose; leaves whorled, bright green; flowers solitary, axillary, unisexual, monoecious with male and female at different nodes; fruit black, more or less ellipsoid, 4-5 mm long, with 3 spines.

In Nimalaica Claypan. Also occurs in all Australian mainland states. Cosmopolitan, native and widespread in North and South America.

Flowering August.

CHENOPODIACEAE

Atriplex elachophylla F. Muell. **Saltbush**

Erect perennial to 0.5 m, leaves varying from narrowly elliptic to elliptic, subsessile; male flowers in small glomerules in terminal axils, female flowers in scattered axillary clusters; fruiting bracteoles sessile, united into a swollen tube.

Collected from south of Broome and recorded by W.V. Fitzgerald from saline flats at Broome. Also occurs in NT, SA, Qld and NSW.

Flowering and fruiting July-August.

Dysphania plantaginella

Dysphania plantaginella F. Muell. **Crumbweed**

Annual with several prostrate to ascending stems to 15 cm; leaves yellowish green, elliptic to broadly elliptic, entire; flowers in dense globular clusters in slender erect spikes; seed ellipsoidal.

In limestone marl behind beach at Carnot Bay, Minari Creek, Willie Creek and Coconut Well. A widespread coastal species. Also occurs in NT, SA and NSW.

Flowering and fruiting June-September.

Halosarcia auriculata Paul G. Wilson **Samphire**

Spreading shrub to 0.5 m; articles barrel-shaped, glaucous; spikes terminal, constricted between articles.

On landward edge of broad tidal flat at Willie Creek. Found in seasonally waterlogged near-coastal saline flats from Broome south to Sandfire Roadhouse.

Fruiting August.

Halosarcia auriculata

Halosarcia halocnemoides (Nees) Paul G. Wilson subsp. *halocnemoides*

Dense, spreading or erect subshrub to 40 cm; articles globular to obovoid, often broadly so, entire; spikes terminal, undulate in outline.

In red soil on landward edge of broad tidal flat extending behind mangroves, Broome and Packer Island. Also occurs in all Australian mainland states.

Flowering and fruiting January-August.

Halosarcia halocnemoides (Nees) Paul G. Wilson subsp. *tenuis*

Subshrub to 40 cm; articles either orange or red, narrowly cylindrical to narrowly barrel-shaped; spikes slender, regular in outline.

On landward edge of broad tidal flat extending behind mangroves, Willie Creek, Packer Island, Curlew Bay and One Arm Point.

Flowering and fruiting January-August.

Halosarcia indica (Willd.) Paul G. Wilson subsp. *julacea* Paul G. Wilson

Subshrub; articles narrowly cylindrical; spikes narrowly cylindrical; fruiting spike with swollen articles and bulging fruitlets.

On edge of mud flat behind mangroves, Willie Creek and Cape Bertholet. Also occurs in NT and Qld.

Fruiting August.

Halosarcia indica

Halosarcia indica subsp. *leiostachya* (Benth.) Paul G. Wilson

Low, spreading semi-prostrate undershrub to 20 cm; stems woody, white; branchlets succulent, mostly reddish; articles cylindrical to obovoid, slightly lobed, ciliolate; spikes ellipsoidal to cylindrical, smooth in outline; fruiting spike leathery to corky.

On salt flats at Curlew Bay and Broome. Widespread in mainland Australia, along the coast and around inland salt lakes.

Flowering and fruiting March-December.

Neobassia astrocarpa

Neobassia astrocarpa (F. Muell.) A.J. Scott

Diffuse bluish shrub to 40 cm, with short silky pubescence; leaves pale green, tinged purplish, semi-terete, often S-shaped or recurved at the apex, apiculate; flowers bisexual, solitary in leaf axils; perianth shortly silky-pubescent outside, shortly lobed; white to pale green or pink; fruiting calyx hairy outside, cylindric, crustaceous to thinly woody, with 5 spreading spines arising from the base of the lobes that are joined below to form a saucer shaped rim.

On landward edge of broad tidal mud flats behind mangroves. Often associated with samphires *Sporobolus virginicus* and *Sesuvium portulacastrum* at Broome, Barred Creek, Packer Island and One Arm Point. Also occurs in NT.

The rust fungus *Puccinia dielsiana* P. Henr. has been recorded from plants growing at Barred Creek.

Flowering February-October.

Above and right: *Salsola kali*

Salsola kali* L. **Roly-poly, **Prickly Saltwort** or **Buck Bush**

Erect rounded annual to 1 m high, succulent when fresh; leaves linear-mucronate, decurrent; flowers inconspicuous, yellow, in open or condensed spikes, at first membranous but becoming cartilagenous, developing unequal obovate to reniform horizontal scarious wings; fruits congested into lateral and terminal globular to ovoid spikes.

A shrub of saline areas around Broome and One Arm Point. Occurs in all Australian mainland states.

Bardi name = *jilarr*. Yawuru name = *yandara*.

A native of Asia and sometimes considered to be a very early pre-European introduction to Australia.

Some authorities refer this plant to *S. australis* R. Br. and others to *S. kali* L. var *strobilifera* Benth.

Flowering and fruiting July-November.

Left and above: *Suaeda arbusculoides*

Suaeda arbusculoides L.S.Smith **Kimberley Seablite**

Decumbent to erect shrub to 1 m, glabrous; branches flexuose when young; leaves narrowly fusiform but flat above, acute; flowers bisexual, in axillary clusters of 1-3; calyx depressed-globose, deeply lobed, segments succulent, more or less circular; seed horizontal, circular, testa membranous, transparent.

On edge of mangal at Crab Creek, Cape Bertholet and Curlew Bay. Also occurs in NT and Qld.

Bardi name = *baljirr*.

Flowering and fruiting November-December.

CHLOANTHACEAE

Cyanostegia cyanocalyx (F. Muell.) C. Gardner **Northern Tinsel Flower**

A spectacular (when flowering) erect, much-branched, subshrub to 2.5 m; stem and leaves shiny, not viscid to touch; calyx purple; petals blackish purple; anthers prominent, bright yellow; style purple.

In loose red sand in cleared pindan near Goodjara Bore north of Broome. The Coconut Wells Road is almost its northern limit. Also occurs in NT. A species more commonly seen on the sand dunes of the Great Sandy and Gibson Deserts.

Yawuru name = *kambarryji-barryji*.

Although the type of this species is given as "Roebuck's Bay", it was almost certainly collected from east of Cape Villaret, south of the Peninsula by Dr James Martin in May 1864 and described by F. Mueller in 1865 as *Bunnya cyanocalyx*. The combination under *Cyanostegia* was made by C. A. Gardner in 1931.

A potential ornamental species, but attempts in Broome to germinate the seeds have been unsuccesful.

Flowering January, May-October.

Cyanostegia cyanocalyx

Parinari nonda

Parinari nonda

Hypericum gramineum

Cochlospermum fraseri

CHRYSOBALANACEAE

Parinari nonda F. Muell. **Nonda**

Tree to 3 m; bark greyish brown, corky, linearly fissured, tan in fissures; leaves dark green above, pale whitish green below, ovate, obtuse or obtusely acuminate, rounded or almost cordate at base, rough, leathery with prominent veins; flowers small, greenish cream in terminal panicles; fruit a pale yellow, ovoid, edible drupe.

Rare in *Eucalyptus polycarpa*, *E. bella* woodland in seasonal drainage area south of Beagle Bay; Kundandu Creek near Moorak Bore and One Arm Point. Localised along coastal cliffs north of James Price Point. One remarkable grove with over 50 tree sized specimens occurs in a patch of white sand with *Calytrix* and *Pouteria* near a permanent creek in the S.E. corner of the Point Coulomb Nature Reserve. Kundandu Creek appears to be the most southerly known locality for this species in the Kimberley. Also occurs in NT, Qld and extends to New Guinea and the Solomon Islands.

Not known to have been eaten on the Peninsula but recorded as a popular food of the Aborigines of Cape York Peninsula.

Flowering September, October; fruiting May.

CLUSIACEAE

Hypericum gramineum Forst.f. **Small St John's Wort**

Glabrous perennial to 40 cm; leaves pale green, closely stem-clasping, ovate to oblong-lanceolate, obtuse, with numerous pellucid dots; flowers bright yellow with orange tinge, three or more, axillary; capsule one-celled with numerous small seeds.

In woodland near spring in yellow sandy clay in the Coulomb Point Nature Reserve. Also occurs in all Australian mainland states, New Zealand and New Caledonia.

Flowering March-June.

COCHLOSPERMACEAE

Cochlospermum fraseri Planch. subsp. *heteronemum* (F. Muell.) Poppendeick **Kapok** or **Cotton Tree**

Tall, slender, deciduous (often leafless at time of flowering) shrub to 5 m; bark grey, smooth or slightly fissured; branchlets glabrous; leaves more or less circular in outline, palmately very shallowly to deeply 3-7 lobed, glabrous, lobes entire to serrulate, usually obtuse; flowers large, yellow in showy terminal panicles or racemes; fruit a large capsule, 3-5-valved; seeds kidney-shaped embedded in a dense indumentum of long cottony white hairs.

Localised on the Peninsula on sandstone near Deep Water Point and scattered on sandstone ridges west of Catamaran and Cygnet Bays. Also occurs in NT.

Bardi name = *gooloon*. Roots baked in ashes, available in wet season when easy to dig.

A very variable species. Material from the Peninsula with its glabrous branches and leaves approaches subsp. *fraseri*.

A showy species with ornamental potential, requiring excellent drainage.

Flowering June-September.

COMBRETACEAE

Lumnitzera racemosa Willd. **White-flowered Black Mangrove**

Mangrove to 3 m; bark dark grey, slightly fissured; leaves frequently clustered towards end of branches, alternate, sericeous when young but becoming glabrous, obovate, apex retuse with a small sub-terminal gland; inflorescence of short axillary racemes; flowers fleshy, petals white; fruit fleshy with thick style protruding.

On edge of mangroves along high tide mark, and lining creeks, Beagle Bay, Packer Island, Coulomb Point and in freshwater seepage area behind Willie Creek, Hunter Creek and at Beagle Bay. At Beagle Bay and Camp Inlet this species occurs on the landward side of saltflats as gnarled and contorted trees. In seepage areas, trees can grow in thickets, with long, straight, erect trunks. Willie Creek is the most southerly record for this species in Western Australia. Also occurs in NT and Qld extending from Africa through Asia to northern Australia and the Pacific Islands.

Bardi name = *ooloor*. Wood used for spears.

This species can be recognised by the light green, alternate leaves which often have a notched apex.

Flowering April, September, November.

Lumnitzera racemosa

Terminalia canescens (DC.) Radlk. **Wingnut Tree**

Shrub or small tree to 6 m; bark flaky, greyish brown; leaves silvery, spirally arranged, not crowded, glands inconspicuous, lamina coriaceous, concolorous, lanceolate to narrowly obovate, rarely elliptic, acute to obtuse; flowers creamish green, gathered in a flowering spike; mature fruit a nut, obovate to broadly elliptic, with a distinct wing continuous around the body, pubescent or pilose, glaucous.

Widespread on Peninsula particularly in the north. In pindan near Beagle Bay and on sandstone at Dampier Hill and Whimbrel Point. Occurs fringing *Acacia monticola* stands over lateritic gravel at Beagle Bay, Boolamon, Midlagon, Yellat. Also occurs in NT and Qld.

Bardi name = *joolal*; Nyul Nyul = *jilangen* or *joolangen*. Edible honey-coloured gum = *gim*. One of the most highly prized of edible gums. Often warmed in ashes before eating. Branches used in constructing shelters. The wood is resistant to termites. Regarded as a good firewood as it burns very hot. A fire sensitive species.

Flowering January-June; fruiting April, July, August.

Terminalia canescens

Terminalia canescens

Terminalia cunninghamii C.A. Gardner **Pindan Walnut**

Deciduous tree to 6 m; bark dark and light grey, corky and fissured, extending onto branches; branchlets markedly thickened at the crowded nodes; leaves bright lime green when young, spirally arranged, crowded on short thick branchlets, lamina coriaceous, concolorous, oblanceolate, obtuse or rarely retuse, markedly attenuate at base; flowers small, white, gathered in a spike; fruit large, tinged maroon becoming bluish black when mature; globular or ovoid with a distinct short beak, succulent, smooth. The large kernel is surrounded by a thick-walled, woody shell.

Scattered in coastal pindan around Broome, often on sandy rises and Beagle Bay. A Kimberley endemic extending south to the Radi Hills.

Bardi name = *jamdalngorr*. The seed is edible, tastes excellent, and is much valued by Aborigines.

In cultivation at CALM Nursery Arboretum, Broome.

Flowering and fruiting August-October.

Terminalia cunninghamii

Terminalia ferdinandiana

Terminalia ferdinandiana

Terminalia ferdinandiana

Terminalia hadleyana

Terminalia ferdinandiana Excell **Gubinge**

Deciduous tree to 14 m; bark orange grey, flaky (small flakes) in April, orange and flaky in September; leaves leathery, glaucous, pale green (bright lime green when young and often suffused pink) and clustered at ends of branches; petiole and main vein yellowish green, glands on petioles and primary veins; lamina concolorous, broadly elliptical to circular, obtuse, shortly attenuate or truncate at base, glabrous or with a few scattered hairs; flowers with strong nectar smell, in a glabrous spike, as long as or longer than the leaves; mature fruits large, whitish green, sometimes tinged with pink, fleshy, glabrous, ovoid, shortly or obscurely beaked, prominently laterally ridged and beaked when immature.

With *Eucalyptus miniata* and *E. polycarpa* in open woodland at Lombadina; in vine thicket behind coastal dunes at Broome, Pender Bay, Whimbrel Point and Cape Leveque. Fringing saltmarsh and claypans at Camp Inlet and Boolamon

Bardi names = *arungul*, *madoorr* or *gubinge*; Nyul Nyul = *kabiny*; Yawuru = *gabiny*. Edible fruit, eaten raw when ripe (pale whitish green); reported by researchers at Sydney University to be among one of the richest natural sources of vitamin C in the world - 50 times that of oranges (*The Lancet*, October 1982, p.873); edible seeds, taste like apricots, smash to retrieve the small kernels; edible red gum, cook with hot sand until 'burnt' and cracked; bark medicinal, applied as an infusion for rheumatism and sores; fruit also used to make a drink, pounded up and covered with water.

Harlequin Bugs can sometimes be found clustered on the undersurface of leaves. The horticultural potential of this tree is currently under investigation in the NT and Qld.

The best stands near Broome can be seen on the landward fringe of the Gubinge Road vine thicket towards Gantheaume Point. Also occurs in NT.

Treated by Kimberley Flora and Pedley (1990) *Fl. Australia* 18:286 as *T. latipes* subsp. *psilocarpa* Pedley. In subsp. *latipes* the fruit and outside of the calyx are densely hairy and in subsp. *psilocarpa* the fruit and outside of the calyx are glabrous, the fruit often pruinose and the leaves tend to be somewhat larger. See also *T. latipes*.

Flowering October-March; fruiting April, July, September, November. The main fruiting season is usually Jan/Feb, but this is dependant on rainfall.

Terminalia hadleyana W. Fitzg. subsp. *hadleyana*

Tree to 6 m, trunk and branches with yellow to grey, smooth bark, shedding in small patches; young branchlets hoary-pubescent; leaves spirally arranged, ovate to broadly elliptic or almost circular, hairy; sometimes becoming glabrescent; spike pubescent when young; fruit glabrous, ovoid, yellow-green, succulent, with short often curved beak.

Apparently restricted to low pindan cliffs on Crab Creek road overlooking Roebuck Bay. A Kimberley endemic.

The type specimen was collected from Sunday Island by W.V. Fitzgerald in 1906 and commemorates Sydney Montagu Hadley the Superintendent of Sunday Island Mission from 1899-1923 and a reformed blackbirder, pearler and beachcomber.

Flowering and fruiting March.

Terminalia latipes Benth.

Low spreading shrub or deciduous tree to 10 m; trunk and branches with grey smooth or finely fissured, tessellated or rugose bark, flaking often over small areas to reveal the smooth, yellow or orange inner bark; branchlets thick, glabrous or with a few scattered hairs; leaves spirally arranged, usually crowded on short thick branchlets, coriaceous, discolorous,

broadly obovate to broadly elliptic, obtuse or retuse, shortly attenuate or truncate at base, glabrous, sometimes slightly glaucous; glands on petioles and primary veins; inflorescence with both male and bisexual flowers; calyx densely pubescent; mature fruits densely pubescent, ovoid, with or without a short obtuse beak, succulent, yellowish green.

In sandy soil, often behind coastal dunes at Broome, Weedong Lake and Pender Bay.

This species loses its leaves in the late dry season but often retains the fruit into the new growing period. New leaves and flowers appear during October or November with or without the advent of the wet season.

Treated by Flora of Kimberley and Pedley (1990) *Fl. Australia* 18:286 as *T. latipes* Benth. subsp. *latipes*. In subsp. *latipes* the calyx and fruit are densely hairy outside. See also *T. ferdinandiana*.

Harlequin bugs on leaves of gubinge

Terminalia petiolaris A. Cunn. ex Benth. **Marool** or **Blackberry Tree**

Semi-deciduous tree to 10 m; bark fissured, dark brown to black; leaves green, often red to purplish before falling, glabrous, broadly ovate, shortly and obtusely acuminate, narrowed into a long petiole; flowers creamish white in long spicate inflorescence, smelling strongly of nectar; fruits ellipsoid, distinctly beaked at apex, green, turning maroon to purplish black on falling.

Common in vine thicket both on and behind coastal dunes along most of the western coastline of the Peninsula, from Broome to One Arm Point. A Kimberley endemic.

Bardi name = *marool*; Nyul Nyul = *marool*; Yawuru = *nawulu*. Edible fruit, eaten raw when ripe (purple-black), although they are often bitter, some trees yield sweet fruits; edible gum used fresh, roasted or boiled.

Marool is sometimes grown as a street tree around Broome and there are some big shady examples in Bedford Park. A tree that appears remarkably resistant to cyclone damage, retaining its foliage even after violent winds. A species that deserves wider cultivation.

The type localities for this species are Point Cunningham and Cygnet Bay collected by Allan Cunningham in 1822.

Flowering October-April; fruiting April-December.

Terminalia petiolaris

Terminalia petiolaris x ferdinandiana

Terminalia petiolaris x ferdinandiana **Red Gubinge**

Tree to 6 m, leaves similar to *T. petiolaris* but the petiole shorter, fruits reddish maroon.

Scattered occurences in Broome among the Gubinge Road vine thicket, extending along the coast to the north of the Peninsula.

Bardi name = *barragool* or *gariling*. This hybrid tree is not common but good examples are found in the Gubinge Road vine thicket. The fruits can be either bitter or sweet depending on the tree and the fruiting season. The fruit from the start of the wet season ripen quickly and can be bitter. Fruit formed at the end of the wet season ripen slowly, and are sweeter.

Fruiting June.

Terminalia petiolaris x ferdinandiana

Terminalia petiolaris x hadleyana

Tree 4-5 m; lower branches prostrate; young leaves tomentose; fruits green and purple-crimson when ripe.

Only known from a single tree on pindan cliffs overlooking Roebuck Bay.

Flowering and fruiting March.

Terminalia platyphylla F. Muell.

Tree to 10 m; deciduous or semi-deciduous; bark grey tessellated or longitudinally fissured; branchlets pubescent often pendulous; leaves spi-

rally arranged, sometimes crowded, discolorous, broadly ovate to elliptic, sometimes nearly circular, obtuse, attenuated or truncate at base; pilulose, glabrescent above but rarely glabrescent below; flowers small, white, in spike; mature fruit succulent, purple, glabrescent, oblong to broadly cylindrical or bullet-shaped with a distinct beak of varying length.

Along river bank from Willare to Langey Crossing on Fitzroy River. Also occurs in NT and Qld. Cultivated in Broome with a good example at the rear of the Customs House on Kennedy Hill. Capable of hybridising with *T. petiolaris*.

Flowering March.

Terminalia volucris R. Br. ex Benth.

Deciduous tree to 6 m; bark grey tessellated; leaves discolorous, new leaves (December) conspicuously bright green, spirally arranged, rarely crowded, glands present on the petiole or in the base of the lamina, obovate to broadly elliptic, obtuse or retuse; flowers small, white gathered in a spike; mature fruit a glabrous 2-winged nut, the wings nearly as wide as the nut.

Localised east of Broome and in southern parts of the Peninsula. In grey sand over sandstone. Recorded from Nilli Bubbaca Well to Deep Creek. Also occurs in NT and Qld.

Cultivated in Broome in the gardens of Kimberley Regional Offices.

Treated by Pedley (1990) *Fl. Australia* 18:271 as *T. oblongata* F. Muell. subsp. *volucris* (R. Br. ex Benth.) Pedley.

Flowering and fruiting October-January.

CONVOLVULACEAE

Bonamia linearis (R. Br.) H. Hallier

Bonamia linearis

Herb or undershrub, with erect, prostrate, trailing or twining stems, silky-pubescent or hirsute; leaves very shortly petiolate, oblong, linear or narrow-lanceolate, mostly acuminate; flowers white or light blue, axillary, solitary, the upper ones often forming a leafy spike; fruit a dry capsule; seeds dark reddish brown.

In sandy soil at Coulomb Point, Bobbys Creek, One Arm and Whimbrel Points. Also occurs in NT and Qld.

Bardi name = *langgoorr*.

A related species, *Bonamia oblongifolia* Myint was described from the Broome townsite from specimens collected by B.P.G. Hochreutiner in February 1905. This species is very similar to *B. linearis* from which it is said to differ by the subsessile slightly broader oblong-obtuse leaves and blue flowers with smaller acute to obtuse sepals. Further studies are needed to determine the relationships between *B. linearis* and *B. oblongifolia*.

Bonamia pannosa (R. Br.) Hallier

Spreading to prostrate woody annual or perennial herb, with a dense indumentum of ferruginous bifid hairs; leaves petiolate, broadly ovate-oblong, densely hairy above and below, base obtuse to cordate, apex obtuse and apiculate or abruptly acuminate; flowers solitary or in few-flowered cymes; peduncle absent; bracteoles at base of pedicel linear, 3-5 mm long; pedicel 2-6 mm long; sepals ovate, very unequal, densely hairy, acuminate; inner sepals long acuminate; flowers bluish purple, often with white or yellow fruit, truncate to scarcely irregularly lobed; capsule ovoid, valvate, sparsely hairy at apex; seeds 4, glabrous.

In pindan within Broome townsite. Also occurs in NT and Qld.

Previously known as *Breweria pannosa* R. Br.

Flowering and fruiting February.

Cressa cretica L.

A small branching perennial to 17 cm, sometimes almost woody at base, hoary silky-pubescent or villous all over; leaves sessile or the lower ones shortly petiolate, ovate-lanceolate; flowers white, sessile in terminal leafy spikes or heads; fruit an ovoid capsule.

In tidal salt flat with *Sporobolus* and samphire species on Roebuck Plains. Occurs in all Australian mainland states. A cosmopolitan species of tropical and temperate regions of the world.

Flowering and fruiting June.

Evolvulus alsinoides L.

Semi-prostrate plant with a short almost woody stock, with numerous slender prostrate or erect stems, the whole plant more or less silky-hairy; leaves usually oblong or lanceolate, sessile or very shortly petiolate, varying from ovate to almost linear, obtuse or acute; flowers small, light blue, centre white; capsule broadly ovoid to globular.

In river washed sand, Coulomb and One Arm Points and Broome. A highly variable pantropical species.

Bardi name = *langgoorr*.

Two varieties are recorded from the Kimberley. The var. *villosicalyx* occurs south from Broome and typically has peduncles up to 10 mm long and an indumentum of more spreading hairs compared to var. *decumbens* which has peduncles 10-35 mm long and an indumentum of appressed hairs.

Flowering all year.

Evolvulus alsinoides

Ipomoea coptica

Ipomoea coptica (L.) Roth.

Trailing or twining creeper; stems very slender, glabrous as well as the foliage; leaves digitate, with 3, 5 or rarely 7 linear or cuneate segments, acute and once or even twice pinnatifid and toothed; peduncles one or two-flowered; sepals muricate on the midrib, flowers small, white, campanulate; capsule depressed globular, glabrous; seeds 6, greyish, with minute appressed hairs.

In open grassland near Broome and Beagle Bay. Also occurs in NT and Qld.

Flowering and fruiting March-May.

Ipomoea macrantha

Ipomoea macrantha Roemer & Schultes

A tall scrambler, glabrous; stems slender exuding white sap when cut; leaves discolorous, petiolate, broadly cordate-ovate, acuminate, entire, the venation prominent on the undersurface of the leaf when dry; sepals obtuse, all nearly equal in length; corolla white, tubular to 10 cm long; capsule ovoid or globular; seeds brown, shortly hairy with brown hairs and with long sericeous hairs.

Scrambling on rocks above high tide mark. Also climbing on *Santalum lanceolatum* and *Thespesia populneoides* growing amongst rocks at Easton Point. Also occurs in NT and Qld. A pantropical species.

Flowering April-June; fruiting June-September.

Ipomoea muelleri

Ipomoea muelleri Benth. **Poison Morning Glory**

Glabrous rather slender twiner; leaves glaucous on rather long petioles, very broadly cordate-ovate, obtuse, with rounded basal auricles; flowers purple; capsule broadly ovoid, glabrous; seeds 4, densely brown-villous, sometimes with longer marginal hairs.

Nilli Bubbaca Well, Beagle Bay and One Arm Point. Also occurs in NT, SA and Qld.

The foliage is reported to be toxic to stock.

Flowering March-December.

Ipomoea pes-caprae

Ipomoea polymorpha

Jacquemontia paniculata

Jacquemontia pannosa

Ipomoea pes-caprae (L.) R. Br. subsp. *brasiliensis* (L.) Oostrstr. **Beach Morning Glory**

A glabrous perennial, with long prostrate, creeping or trailing stems; leaves on long petioles, oval, obovate or orbicular, broadly emarginate or very obtusely 2-lobed, rather thick with prominent nearly parallel oblique veins; peduncles often as long as leaves, bearing 1 or 2 large pink flowers on long pedicels.

Common in orange sand over travertine, Packer Island; growing in beach sand and coastal dunes at One Arm Point, Pender Bay, Rumbul Bay and Roebuck Bay. A pantropical species.

Bardi name = *goordayoon*.

I. pes-caprae subsp. *pes-caprae* from India has been cultivated in Broome gardens and can be distinguished by its smaller, more deeply lobed leaves.

Flowering March-August.

Ipomoea polymorpha Roemer & Schultes **Silky Cowvine**

Decumbent herb; stems reddish, slightly ascending, not twining; leaves petiolate, lanceolate or oblong, quite entire or bordered by close teeth or lobes, especially below the middle; peduncles very short or the flowers almost sessile; flowers purple to pale pink; capsule globular, glabrous; seeds 4, black, somewhat tuberculate, densely and minutely hairy.

In grassland at One Arm Point, Lombadina, Barred Creek and Broome. Also occurs in NT, SA, Qld and NSW. Extends through India and south-east Asia north to the Philippines.

Flowering February-August.

Ipomoea sp. A Kimb Flora

A rather slender twiner to 2 m, glabrous or scabrous pubescent, arising from an underground tuber; leaves on long petioles, lanceolate-hastate, acute; peduncles as long as the petioles; flowers lilac, funnel shaped, glabrous; sepals ovate, acuminate to apiculate, subequal, glabrous, outer with three raised verrucose veins; capsule globular, smooth; seeds 4, with a dense tuft of longer hairs around the hilum.

Scrambling on cane grass and burnt wattles, 81 km north of Broome on the Beagle Bay road.

The tubers of this species have been recorded as being edible.

Flowering and fruiting March.

Jacquemontia paniculata (N.L. Burman) H. Hallier

Herbaceous twiner, young parts mostly hairy; leaves petiolate, ovate or ovate-oblong, apex mostly acuminate, base cordate; flowers few to many in umbelliferous cymes, lilac; capsule broadly ovoid to globular; seeds glabrous, minutely papillose to reticulate, minutely winged.

Common in patches of vine thicket behind coastal dunes, Broome, Quondong, Martins Well and One Arm Point. Also occurs in NT and Qld.

A variable pantropical species, the Kimberley specimens probably belongs to var. *paniculata*.

Flowering March-June.

Jacquemontia pannosa (R. Br.) Mabb.

Prostrate creeper and climber to 1 m; leaves alternate, greyish green, tomentose, linear-lanceolate; flowers pale pink-purple to pale blue or white; capsule depressed-globular to globular, glabrous, 8-valved; seeds glabrous, minutely papillose to reticulate, not winged.

On *Lysiphyllum cunninghamii* in pindan at Coconut Well, at One Arm Point in disturbed sandy soil, in *Eucalyptus miniata* woodland at Pender

Bay turn-off on Cape Leveque Road, and Goolbiarla Creek south of Lombadina. Also occurs in Qld.

A very variable species. Previously known as *Ipomoea erecta* R. Br and *Jacquemontia browniana* Ooststr.

Flowering February-April; fruiting June. Flowering may occur after unseasonal rain.

**Merremia aegyptia* (L.) Urban

Vigorous perennial climber; stems slender, twining, covered like the petioles, peduncles and pedicels with fine yellowish spreading hairs; leaves green above, paler green below, digitate, segments 5, elliptic, acuminate at the apex, narrowing to the base, sparsely appressed-pilose; flowers white, on few or many-flowered usually long hairy peduncles; capsule about 1 cm in diameter, enveloped by the persistent densely hairy sepals; seeds 4, tan to light brown, glabrous.

In disturbed pindan in Broome and common in disturbed areas associated with settlements throughout the Peninsula.

A native of north Africa, now naturalised around Darwin with the potential of becoming an aggressive weed in the Kimberley.

Flowering and fruiting June-August.

Merremia aegyptia

Merremia davenportii (F. Muell.) Hall.f.

Scandent creeper, the whole plant hoary with a stellate almost woolly tomentum; leaves petiolate, divided to the base into 3 or 4 petiolate leaflets, mostly obovate and more or less lobed; peduncles larger than the leaves; flowers large, white; capsule glabrous; seeds 4, densely woolly with dark hairs.

Not common on the Peninsula, only being recorded from pindan at Coulomb Point Nature Reserve. More common south of the Peninsula. Also occurs in NT.

A species with ornamental potential.

Flowering March.

Merremia dissecta

**Merremia dissecta* (Jacq.) H. Hallier

Scandent creeper, stems twining, pale green and reddish, hirsute with long, yellowish, simple, erect hairs; petiole 20-30 mm long, reddish with a tuft of hairs in the axil; leaves green above, pale green below, palmately dissected almost to the base into 5-7 narrowly elliptic and pinnately lobed segments, glabrous; inflorescence of few-flowered cymes; buds creamish; flowers white with deep maroon centre; capsule globular, glabrous, drying brownish; seeds blackish.

Common in roadside vegetation at Broome and One Arm Point. An aggressive and invasive weed of disturbed pindan common around settlements on the Peninsula. Native to the southern U.S.A. and South America.

Flowering May-June.

Merremia hederacea

Merremia hederacea (Burm.f.) H. Hallier

Vigorous climber, occasionally rooting at the nodes, sparsely and shortly hairy with simple hairs; leaves discolorous on long petioles, blade ovate and sometimes 3-lobed, base cordate, apex obtusely acuminate and apiculate; inflorescence of several-flowered cymes; flowers yellow, campanulate, on long peduncles; capsule globular, dark brown; seeds 2-4, minutely hairy.

Growing in *Melaleuca cajuputi* swamp at Lolly Well near Beagle Bay. Mainly flowering at night through to about mid-day. This is the only record for the State. An apparently restricted species also occurring in NT and Qld and ranging from tropical Africa through Asia to China.

Flowering June, July.

Merremia sp. B

Operculina aequisepala

Operculina brownii

Polymeria ambigua

Merremia sp. B Kimb. Flora

Prostrate trailing or scarcely twining creeper, pubescent villous; stems slender exuding milky sap when cut, rooting at nodes; lower leaves broadly ovate-cordate and deeply and irregularly toothed or lobed, especially below the middle; upper ones oblong or lanceolate, hastate or almost digitate with one long central lobe and several short lateral ones; peduncles long and slender, bearing 1 or rarely 2 or 3 white flowers with yellow throats; sepals lanceolate or ovate lanceolate, acute or rather obtuse; corolla campanulate; capsule globular and smooth; seeds glabrous.

In burnt areas of stony rise with *Acacia translucens, Scaevola macrostachya* and *Cleome cleomoides* at One Arm Point. Also known from the King Edward River and near Lake Argyle.

This species belongs to a complex described by Robert Brown under the names *Ipomoea incisa* and *I. cinerascens*. Both are species of *Merremia* and may be conspecific (R. Johnson pers. comm., Queensland Herbarium)

Flowering and fruiting March-May.

Operculina aequisepala (Domin) R.W. Johnson

Vigorous, robust, sparsely hairy climber with narrowly winged stem; leaves on long petiole, usually shorter than blade; blade broad-ovate to almost reniform, glabrous; flowers white, tubular, usually solitary; capsule broadly ovoid to depressed-globular, 15-20 mm across; seeds black, globular, glabrous, 5-7 mm across.

In pindan behind Cable Beach, Broome and climbing in vine thicket, One Arm Point. Also occurs in NT and Qld.

Differs from *O. brownii* in having a narrowly winged stem, smaller capsules and seeds.

Flowering March-June.

Operculina brownii Ooststr. **Potato Vine**

Vigorous, glabrous climber with terete stem; leaves elongated, heart shaped on long petioles; sepals often reddish when dry; flowers large, white; capsule large, depressed-globular, slightly quartered, 30-40 mm across, smooth with transparent top; seeds 4, globular, black, 11 mm across.

In sandstone scree at North Cliffs near Fraser River and climbing on *Acacia colei* at One Arm Point and Bells Point. Also scrambling over sandstone rocks at Midlagon and Chimney Rocks. Also occurs in NT, Qld and south east Asia.

Flowering March-June.

Polymeria ambigua R. Br.

An annual (or ?perennial), with long, slender, creeping or trailing stems, occasionally rooting at the lower nodes and sometimes shortly twining at the extremities; leaves greyish green, petiolate, ovate or oblong, obtuse, often mucronate, cordate at the base, usually rugose, glabrous, sparingly pubescent or rarely villous above, more or less villous or silky-hairy underneath, variable in size; peduncles longer than the petioles, bearing 1-3 flowers; flowers mauve; capsule nearly as long as the calyx, ovoid, glabrous; seeds densely and minutely hairy.

One Arm Point and Cape Leveque. Also occurs in NT and Qld.

Flowering and fruiting March-August.

Polymeria distigma Benth.

Stems trailing, hoary tomentose, with the stature and aspect of some specimens of *P. ambigua*; leaves greyish green, linear, entire, narrowed into a short petiole; peduncles slender, shorter than the leaves; corolla mauve, stigmatic lobes 2; capsule globular; seeds minutely hairy.

In pindan on road verge in Broome townsite. Endemic to the south west Kimberley.

Very similar to *P. ambigua*, differing in having only 2 rather than 4-8 stigmatic branches.

Flowering and fruiting May.

Xenostegia tridentata (L.) D. Austin & Staples subsp. *hastata* (Desr.) Ooststr.

Scrambling climber; leaves shortly petiolate, blade narrowly triangular or rarely more or less linear, base hastate to auriculate with basal lobes 2-6 toothed, apex long-acute and apiculate; peduncle 10-40 mm long, slender, minutely hairy particularly in lower half; flowers pale creamy white with a purple to brown centre; capsule globular to broadly ovoid, glabrous; seeds ovoid to trigonous, glabrous.

In grassland over sandstone at King Peaks, One Arm Point and Goolbiarla Creek. Also occurs in NT and Qld. A pantropical species ranging from tropical Africa through tropical Asia to China.

Flowering and fruiting March-July.

Xenostegia tridentata

CUCURBITACEAE

Citrullus lanatus* (Thunb.) Matsumura & Nakai **Pie, Bitter, Wild or **Camel Melon**

Annual climbing or trailing herb; stems densely villous with long soft tangled multicellular hairs; tendrils few, simple or 2-branched; petiole 15-35 mm long; leaves densely villous, blade ovate in outline, palmately 3-5-lobed, dentate to pinnately lobulate with the central lobe longest, upper surface sparsely villous and sparsely hispid to glabrescent, particularly on the veins, lower surface moderately densely villous and hispid particularly near the margin , base cordate, lobes and lobules denticulate; male and female flowers separate on the same plant; flowers yellow with an orange centre; fruit green with paler markings, globular, glabrescent; seeds dull brown, ovate in outline, smooth or slightly rough.

In red sand at One Arm Point, Goodjara Bore and around Broome. Naturalised in disturbed areas throughout the Kimberley and in all mainland states.

A widely cultivated cosmopolitan species, native of tropical and southern Africa and tropical Asia. The fruit can be very bitter and has been suspected of poisoning stock.

Flowering and fruiting February-October.

Citrullus lanatus

**Coccinia grandis* (L.) Voigt

Vigorous, rank vine from tuberous rootstock, smothering trees and shrubs, often forming a dense blanket over the canopy; tendrils simple; leaves variable ovate to orbicular, cordate at base, lamina 5-angled to palmately 3-5-lobed, lobes shallow to deep and lobulate, minutely dentate, obtuse, mucronate, glabrescent above, hispid beneath, with 3-8 glands near attachment of petiole and major nerve branchings; male and female flowers borne on separate plants, white; male flowers solitary, rarely in fascicles of 2-3; female flowers solitary; fruit ovoid to ellipsoidal, 25-60 mm long, glabrous; seeds 6-7 mm long, margined, pale.

A single record from a presumed cultivated male plant blanketing a tree in pindan vegetation at Blackman Street in the Broome townsite collected by A.A. Mitchell and D. Dureau in June and August 1992. Also recorded for NT. A native of tropical Africa and Asia.

The young fruits and shoot tips are eaten in Asia. An aggressive coloniser recorded as a serious weed in Hawaii (see G. Linney *Hawaiian Botanical Society Newsletter* 25(1), 1986). Both the flowers and fruits are

Coccinia grandis

Momordica balsamina

Mukia maderaspatana

Cuscuta campestris

Cuscuta victoriana

attractive and this may entice people to import it as an ornamental. The Broome plant was eliminated by the Agricultural Protection Board (APB) as a preventative measure.

Flowering June-August.

Luffa graveolens Roxb. **Loofah**

Stems climbing or trailing to several metres; tendrils 2-5-branched; leaves ovate, cordate at base; flowers yellow; male flowers in 10-16-flowered racemes; female flowers on pedicels to 5 mm long; fruit ovoid, attenuate, covered in short spines, dehiscing by apical operculum, seeds dark brown, mottled black.

Common over outcropping ferruginous Emeriau Sandstone on King Peaks, 100 km north-north-east of Broome. Also occurs in NT.

Fruiting June.

Momordica balsamina L. **Balsam Apple**

Monoecious, short-lived glabrous perennial with simple tendrils, climbing to 4 m; leaves bright green, suborbicular, lobes sinuate-dentate to lobulate, acute; male flowers pale cream, bracteate; female flowers bracteate towards base; fruit ellipsoidal to fusiform, slightly ridged and sparsely tuberculate, orange-red, bursting irregularly; seeds 5 or 6, large, each one enveloped in a red pulp.

Growing up into *Mallotus nesophilus* behind coastal dunes at Weedong Lake, and in disturbed pindan on industrial blocks in Broome. A widespread species of northern Australia probably native to Africa and Asia.

Although not widespread in the Kimberley, this plant with its bright red pulp-embedded seeds is bird disseminated and has the potential to become a troublesome weed.

A close relative, the Balsam Pear (*M. charantia*), has been cultivated in Broome by Asiatic families for the young yellowish warty fruits which are cooked and eaten as a vegetable.

Flowering and fruiting June-July.

Mukia maderaspatana (L.) M. Roemer

Trailing or climbing creeper from perennial rootstock, with hispid stem; leaves lobed, sparsely hairy; male and female flowers yellow, in fascicles; fruits sub-globose, striped yellowish-green, becoming brilliant red with blackish stripes; seeds 3-8, pale buff-coloured or black, more or less ovate in outline, pitted to rugose or smooth.

In sand near mouth of creek at Cape Bertholet, Lombadina, Gallen Well, Pender Bay, Weedong Lake and Deep Water Point. Also occurs in NT, SA, Qld and in tropical Africa, Asia, Indonesia, the Philippines and islands of the south-western Pacific.

An extremely variable species widespread on the Peninsula. The fruits are frequently eaten by Bustards.

Flowering and fruiting February-October.

CUSCUTACEAE

**Cuscuta campestris* Yuncker

Dodder-like parasitic herb; stems leafless, thread-like, bright orange, drying to orange; flowers white, small, sessile or shortly pedicellate, in clusters; capsules unlobed.

Parasitic on scattered plants growing in rock crevices at One Arm Point, Emeriau Point and on grasses at edge of Gubinge Road vine thicket, Broome. Occurs in all mainland states. Native to north America but now naturalised throughout much of the world.

Flowering and fruiting February-April.

Cuscuta victoriana Yuncker (*see page 96*)

Dodder-like parasitic herb; stems leafless, thread-like, bright orange to yellow; flowers white, small, sessile or shortly pedicellate; capsule distinctly 3-or 4-lobed.

Parasitic on *Euphorbia alsiniflora* Baillon and occasional in grassland in pindan at Hill 22, Cable Beach and in Broome townsite. Occurs in all mainland states.

Flowering and fruiting March-April.

DROSERACEAE

Drosera burmanni M. Vahl

Insectivorous herb; stem very stout; leaves in a flat basal rosette, broadly cuneate-obovate; calyx tuberculate; flowers white on long scape.

Uncommon on the Peninsula being only recorded from a creek bed at Coulomb Point. Also occurs in NT and Qld. Ranges from India through south-east Asia to China and Japan and south to Australia.

Flowering October.

Drosera burmanni

Drosera indica L.

Erect, viscid, glandular insectivorous herb; stems simple; leaves green or maroon, cauline, scattered; lamina narrowly linear, acute, to 10 cm long, gradually narrowed to a glabrous petiole; inflorescences cauline and terminal; flowers brilliant metallic pink to pinkish red, sometimes yellowish on outer petals; seeds dark, reticulate.

In grassland at Martins Well and Beagle Bay, and in damp river washed sand beside creek in Coulomb Point Nature Reserve, Lake Campion and Priors Bore. Also occurs in NT, Qld and NSW.

A widespread and extremely variable species (in size and flower colour) ranging from Africa to China and south to Australia.

Flowering April-July.

Drosera indica

Drosera indica

Drosera petiolaris R. Br.

Insectivorous herb with very short stems; leaves greyish in a convex basal rosette, varying in size depending on age, often up to 15 cm across; petiole up to 6 cm long, flat, the margins silky-woolly; flowers white on long scape.

In damp white sand beside freshwater creeks in Coulomb Point Nature Reserve and common in grassland around Beagle Bay, especially on the verges of the *Eucalyptus, Melaleuca acacioides, Acacia tumida* woodland, also Curlew Bay. Also occurs in NT and Qld.

Drosera petiolaris is regarded as a complex containing a number of distinct species. Plants from the Broome area are to be separated and named *D. broomensis* (A. Lowrie - pers. comm.)

Flowering January-April.

Left and above: *Drosera petiolaris*

Diospyros bundeyana

Diospyros bundeyana

EBENACEAE

Diospyros bundeyana Kosterm.

Shrub to 3 m; trunk black; immature leaves discolorous, densely hairy, particularly on conspicuous venation on the undersurface; mature leaves membranous, glossy green above; dull green below, oblong, shortly acuminate, blunt, base broad-cordate or truncate; male and female flowers on separate plants; male flowers in small cymes, female flowers solitary on peduncles; fruit globose, smooth, green becoming yellow then scarlet with age.

Localised in vine thicket at Karrakatta Bay, Cape Leveque, Swan Point, One Arm Point and Gnamagun Well. Also occurs in NT, Qld and tropical Asia.

Bardi name = *goolarl*. Fruits considered poisonous.

Previously known in Western Australia as *D. montana* Roxb.

Flowering September-January; fruiting April-November.

Diospyros ferrea (Willd.) Bakh. var. *humilis* (R. Br.) Bakh. **Ebonywood**

Tree to 6 m; bark blackish grey and fissured; leaves dark green, glossy above, dull below, elliptical, retuse, shortly petiolate; male and female flowers on separate plants; flowers yellowish; fruit dark green, containing 1 or 2 seeds, becoming bright yellow in the pre-ripe stage, staying that way for quite a time. The fruits change to a tangerine colour when fully ripe.

Forming groves in patches of vine thicket behind coastal dunes at Martins Well, Quondong, Pender Bay, Packer Island, Cape Leveque and One Arm Point, but not extending south of Barred Creek. Also occurs in NT, Qld, Asia and Indonesia.

Bardi name = *birimbiri*. Edible fruit. Heartwood is black (ebony) and is used to make smoking pipes. The thin layer of orange flesh between the thin skin and the seed can be eaten, some fruits being quite sweet. Skins, seeds and pre-ripe fruits are bitter.

Stands of this timber do not occur in commercial quantities. However in October 1919 forester C.E. Lane-Poole wrote on labels accompanying herbarium specimens collected from Pender Bay that: "The heartwood is black and is similar in every way to the West African Ebony. It has been reported from various points along the coast between King Sound and Parry Harbour but up to the present has not been located as far south as Pender Bay and Chile Creek where I collected these specimens. Up to the present a market has not been found for this wood but there is no doubt if the right people are approached in England a market would be found."

An attractive, slow-growing ornamental, currently rarely cultivated. Previously known as *Maba humilis* R.Br. A taxonomically complex species.

Flowering March, April; fruiting April, June, September-December.

Above and right: *Diospyros ferrea*

Diospyros maritima Blume

Tree to 5 m; leaves petiolate, from oval-oblong to oblong-elliptical, usually broad, obtuse, coriaceous, shining bright green above, with a distinctive yellowish midvein, opaque underneath, almost always drying black; fruit a large globular berry becoming orange when ripe.

Localised in vine thicket and on crests of coastal dunes at Chimney Rocks to Emeriau Point and south to Midlagon Creek. Rare on the Peninsula but common in the north Kimberley. Also occurs in Qld and Indonesia.

An attractive species with horticultural potential. Previously known in WA as *D. nitens* W. Fitzg.

Flowering February-March; fruiting July-August.

Diospyros maritima

ELATINACEAE

Bergia ammannioides Roxb.

Much-branched erect or decumbent herb to 12 cm, pubescent or hirsute; stems light green; leaves opposite, from oval-elliptical to oblong or lanceolate, more or less serrate with mucronate or glandular teeth; stipules lanceolate; flowers very small, in dense axillary clusters, on very short filiform pedicels; capsule globular, 5-locular; seeds ellipsoid, faintly striate, light brown.

In swampy area at One Arm Point. Also recorded from NT, Qld, NSW and Vic. and extending into Africa and Asia.

Flowering and fruiting April.

Bergia ammannioides

Bergia pedicellaris (F. Muell.) F. Muell. ex Benth.

Small herb to 10 cm; stems reddish; leaves green to red, opposite, finely serrated, elliptic, pointed; flowers white, single or paired; pedicels long, slender, petals 5, tipped red; fruit globular capsule, 5-locular; seeds ellipsoid or slightly curved, smooth, shiny, light brown.

In pebbly bed at Balk Creek. Also occurs in NT and Qld.

Flowering and fruiting April, August.

Bergia pedicellaris

EUPHORBIACEAE

Adriana tomentosa Gaud.

Compact, much-branched shrub to 1.5 m; leaves coarsely toothed, discolorous, blade broadly ovate in outline but deeply 3-lobed, shortly stellate hairy above and below, margins coarsely crenate to obtusely shortly lobed; male and female flowers on separate plants; male inflorescence 30-25 mm long, flowers yellow, sessile or shortly pedicellate; female inflorescence, short, few-flowered, sessile or shortly pedicellate within floral bracts, flowers with deeply divided, crimson styles; fruit a dehiscent capsule, stellate hairy; seeds with a pitted outer seed coat.

In white coastal beach sand behind stable dunes at Cable Beach, and in *Melaleuca acacioides* thicket at Coconut Well.

Extends from the south-west Kimberley, south to the Peron Peninsula and Murchison River.

A common species of disturbed ground or after fire.

Flowering and fruiting March-August.

Adriana tomentosa

Breynia cernua (Poiret) Muell.-Arg.

Low shrub to 1.5 m, deciduous for part of year; leaves green with reddish tips, broad, almost orbicular, discolorous; flowers small and insignificant; male flowers axillary, female flowers on short pedicels, floral

Breynia cernua

segments in 1 whorl, perianth rather large when in fruit, spreading out quite flat; fruit globular, green, turning reddish pink.

At Beagle Bay found in spring country in black sandy clay with *Melaleuca acacioides, Acacia colei* and *A. neurocarpa.* Common in understorey of vine thicket at Broome (Gubinge Road), Quondong and One Arm Point. Also occurs in NT and Qld, extending north to New Guinea, Indonesia, the Philippines and islands of the western Pacific.

During the late dry season, the plants are often leafless and appear dead. Birds eat the fruits and distribute the seeds. Dense populations often occur under shady *Terminalia ferdinandiana* trees in the Cable Beach vine thickets, where birds perch. Plants frequently appear to sucker.

Sometimes confused with *Bridelia tomentosa* but distinguished by floral segments in 1 whorl, not differentiated into petals or sepals and the small but prominent stipules.

Flowering November-February; fruiting January-July.

Above and right: *Bridelia tomentosa*

Bridelia tomentosa Blume var. *glabrifolia* (Merr.) Airy Shaw

Semi-deciduous shrub to 2 m; bark greyish brown with prominent lenticels; leaves discolorous, elliptic-oblong to ovate-elliptical; flowers fragrantly perfumed; male flowers creamy yellowish green, densely clustered, sessile or nearly so, female flowers on short thick peduncles; floral segments in 2 whorls, sepals larger than the petals; fruit globular, turning purple-black when ripe, enclosing 1 or 2 hard-shelled seeds.

In vine thicket at Gubinge Road, Broome, Coulomb and One Arm Points. Also amongst sandstone rocks at King Peaks and extending away from coast into pindan woodland. Also occurs in NT and Qld extending from India and China throughout south-east Asia to New Guinea and Australia.

Bardi name = *amam.* Edible fruit, purple-black berry eaten raw when ripe.

Sometimes confused with *Breynia cernua* but distinguished by the floral segments in 2 whorls, the sepals larger than the petals and the stipules absent or caducous.

Flowering and fruiting March-July.

Croton habrophyllus

Croton habrophyllus Airy Shaw

Deciduous open shrub to 4 m, monoecious, with a sparse stellate indumentum of rather compact hairs; bark smooth grey; leaves alternate, elliptic to ovate, sparsely hairy to almost glabrous, thin, shallowly serrulate, acute to acuminate; mature leaves turning yellow to orange before shedding (July); racemes terminal and axillary; flowers cream to greenish yellow, in spikes; capsule greyish brown, depressed globular, sparsely stellate hairy.

Abundant in coastal vine thicket and scrub on coastal sandplain at

Moorak Bore, Gallen and Quondong, Cygnet Bay and One Arm Point. On the Peninsula does not occur south of Barred Creek. Also occurs in NT.

Bardi name = *ankoolmarr*. Medicinal with nice smell, used to treat rheumatism; leafy branches worn in ceremonies and tied through a hair waistbelt and used as a shark repellent when diving to retrieve turtle.

This species has been confused with *C. tomentellus* but differs from that species by the mature leaves being glabrous or sparsely stellate hairy.

Flowering January-December; fruiting October-May.

Croton habrophyllus

Euphorbia alsiniflora Baillon

Sprawling, robust herb; stems and leaves often tinged maroon; leaves pale greyish green, opposite, shortly petiolate, ovate to oblong but sometimes narrowly so, margin entire or serrate, apex obtuse or acute; flowers white, solitary or in loose few-flowered cymes; capsule glabrous; seeds dark, biconvex, smooth, caruncle absent.

In disturbed area transitional between pindan and coastal white sand at Broome, in *Melaleuca acacioides* thicket at Coconut Well and in sand at Cape Bertholet and One Arm Point. Also occurs in NT, SA and Qld.

A more robust plant than *Euphorbia myrtoides* Boiss. Previously known as *E. coghlanii* Bailey.

Flowering February-September.

Euphorbia alsiniflora

Euphorbia chamaesyce* L. **Red Caustic-creeper

Small, prostrate, villous to sparsely hirsute perennial herb; stipules usually small, 1-1.5 mm long, membranous, fimbriate; leaves opposite, dull green, the margins often tinged maroon, distinctly petiolate, petiole maroon, elliptic to oblong, hairy with short or long villous hairs, margins slightly dentate in the upper half; inflorescence of axillary, solitary or clustered shortly pedunculate flower heads; petal-like lobed appendages pink or red; capsule trigonous, sparsely hairy; seeds reddish brown, slightly rugose between ridges.

Naturalised in disturbed areas within the Broome townsite and in settlements on the Peninsula. An aggressive weed of reticulated areas throughout the Kimberley. Also occurs in all mainland states. Native to the Americas.

Previously known as *Euphorbia prostrata* Aiton and *Chamaesyce prostrata* (Aiton) Small.

Flowering and fruiting throughout year.

Euphorbia cyathophora* Murray **Dwarf Poinsettia or **Painted Spurge**

Erect often multi-branched perennial to 1 m; stems grooved, usually dichotomously branched on the upper part of the plant; branches glabrous or almost so; petiole deflexed, hairy; leaves opposite, upper surface dark green, lower surface light green; blades elliptic to obovate or fiddle-shaped, apex acuminate, base cuneate; uppermost leaves usually bright red towards the base; cyathia irregularly clustered at summit of stems and branches; fruits glabrous; seeds dark brown, ovoid without ridges, tuberculate.

Naturalised in disturbed pindan in Broome townsite. Also occurs un NT and Qld. A native of tropical America now widely naturalised.

Often confused with *Euphorbia heterophylla* L. but this species never has the red on the upper leaves. Not recorded in Flora of the Kimberley.

Flowering and fruiting October.

Euphorbia cyathophora

Euphorbia dallachyana Baillon

Glabrous prostrate herb; stipules connate between the petioles forming an interpetiolar fringe, conspicuous, c. 0.5 mm long, laciniate; leaves opposite, shortly petiolate, broadly elliptic to circular, base slightly

obliquely rounded, margin entire or serrulate, apex obtuse; flower-heads solitary and axillary; involucre shortly pedunculate; glands 4, small; appendages inconspicuous, less than 1 mm long, narrow, entire or very shallowly lobed; pedicel of female flowers expanded under ovary into a fringed receptacle; styles shortly 2-lobed; schizocarp glabrous; seeds grey, obtusely tetragonal, each face almost smooth to minutely rugulose; caruncle absent.

In alluvial sand at Langey Crossing on the Fitzroy River. Also occurs in NT, SA, Qld and NSW.

Previously known as *Chamaesyce dallachyana* (Baillon) Hassall.

Flowering and fruiting June-July.

Euphorbia drummondii

Euphorbia drummondii Boiss. **Caustic Weed** or **Mat Spurge**

Prostrate glabrous annual or perennial herb, with much-branched stems; stems reddish; leaves opposite, shortly petiolate, sometimes crowded, obovate, base obliquely rounded, margin serrulate but sometimes only towards the obtuse apex; flower heads solitary in the upper axils; seeds reddish brown, tetragonal, each face usually minutely rugulose, caruncle absent.

In alluvial sandy gravel at Balk Creek and Bobbys Creek. A very variable species, widespread throughout Australia and reported to be toxic to stock.

Flowering and fruiting October.

Euphorbia heterophylla

**Euphorbia heterophylla* L.

Erect, semi-woody herb to 2 m; the young shoots hairy with long purple multi-cellular hairs; stems green; petioles tinged maroon, upper surface of leaf dark green, lower surface dull green, alternate, petiolate; blade elliptic to narrowly elliptic; flowers creamish to light green, in dense terminal cymes; fruits green, glabrous or minutely hairy; seeds grey, almost globular, rough, tuberculate, caruncle absent.

Common behind shops in Chinatown, Broome, in coastal pindan behind Cable Beach, and uncommon in pindan under *Eucalyptus zygophylla*. Also occurs in NT, Qld and NSW. A weed of disturbed areas. Native of tropical America, now widespread and naturalised in many tropical and subtropical regions.

Flowering and fruiting May.

Euphorbia hirta* L. **Asthma Plant

Ascending subshrub; stems pilose; tinged slightly red, leaves all opposite, discolorous, upper surface dark green, often tinged maroon, shortly petiolate, hairy above and below, margin serrate; flowers greenish; seeds pinkish, more or less tetragonal.

Common on road verges and lawns in Broome, and growing beside billabong at Cape Bertholet, and behind dunes at One Arm Point. Widespread as a weed in tropical regions of the world, originating in Central America.

Used in folk medicine as a cure for asthma and bronchitis.

Flowering April-September.

Euphorbia mitchelliana

Euphorbia mitchelliana Boiss.

Erect herb to 40 cm high, sparsely hairy with more or less appressed curved hairs; stem red at base; stipules subulate to filiform; leaves opposite, shortly petiolate, linear up to 5 cm long; bases rounded, margin entire or minutely serrulate, apex usually acute; flower-heads solitary and axillary or in few-flowered axillary cymes; seeds dark brown to black, ellipsoid.

In alluvium at Point Coulomb and in sand in *Eucalyptus polycarpa* woodland at One Arm Point. Also occurs in NT, SA and Qld.

Flowering and fruiting January-May.

Euphorbia myrtoides Boiss. subsp. *myrtoides*

Slender sprawling plant; often stems and leaves tinged maroon, leaves opposite, discolorous, upper surface pale green, under surface greyish green, leaf margins finely denticulate, flowers white; seeds pale brown, obtusely tetragonal, rugose, caruncle absent.

Growing with *Euphorbia alsiniflora* in disturbed area transitional between pindan and coastal dune sands. Also in *Melaleuca acacioides* thicket at Coconut Well, Packer Island and Lombadina.

A variable species that may be better placed under *E. drummondii* Boiss.

Flowering August.

Euphorbia myrtoides

Euphorbia sp. A Kimb. Flora

Herb to 20 cm; stems maroon; leaves green, opposite, somewhat distant, very shortly petiolate, narrowly oblong, margin entire, apex obtuse or minutely mucronulate; flowers white, solitary or axillary or in few-flowered cymes.

In understorey of *Melaleuca acacioides* thicket, Coconut Well.

Flowering August.

Euphorbia sp. B Kimb. Flora

Erect glabrous herb to 10 cm, stems maroon, darker at base; leaves opposite, light to dull green, somewhat distant, very shortly petiolate, narrowly oblong, base obliquely rounded, margin entire, apex obtuse or minutely mucronulate; flower heads red, solitary and axillary in few-flowered cymes; schizocarp globose, green becoming pinkish, glabrous; seeds tetragonal, usually rugose, caruncle absent.

On rocky sandstone ridge near One Arm Point airstrip.

This species is similar to, and forms part of a complex with *E. drummondii* and *E. myrtoides*.

Flowering and fruiting April.

Excoecaria agallocha L. var. *ovalis* (Endl.) Muell.-Arg.
Blind Your Eye or **Milky Mangrove**

Semi-deciduous mangrove to 3 m; bark smooth, brown, lenticels numerous, latex milky, abundant and caustic; leaves elliptic; male and female flowers on separate plants; flowers in sessile axillary catkins, female catkins shorter than male; fruit of 3 loculicidally dehiscing cocci; seed globular with an aril.

Growing in creek with *Avicennia*, Coulomb Point, and on landward edge of mangal with *Aegialitis*, Cape Bertholet, Hunter Creek, Beagle Bay and Broome. Also occurs in NT, Qld and NSW. Ranges from southern India and Sri Lanka through south east Asia to Indonesia, New Guinea, the Solomon Islands and northern Australia.

Bardi name = *jolorr*. Yawuru name = *garl-garl*. Wood used for shields.

The white sap is poisonous and can cause temporary blindness. The foliose lichen *Ramalina celastri* is often found attached to the branches.

Flowering December-February.

Excoecaria agallocha

Flueggea virosa

Flueggea virosa (Roxb. ex Willd.) Voigt subsp. *melanthesoides* (F. Muell.) Webster **Snowball Bush**

Deciduous, dioecious, glabrous shrub to 2.5 m; leaves discolorous, dark above, lighter below, ovate, usually broad and sometimes almost orbicular, the numerous reticulate veinlets prominent underneath; male and female flowers on separate plants; flowers, in axillary clusters, male flowers yellowish, strongly and sweetly scented, female flowers less conspicuous; fruits creamy-white, capsule depressed-globular.

Flueggea virosa

In vine thickets behind, and on coastal dunes at Martins Well, Coulomb Point Nature Reserve, on coastal pindan, Quondong, Packer Island, and in sand beside creek, Barred Creek, Broome and One Arm Point. Also occurs in NT, Qld and NSW and is widespread through the tropics from Africa to south-east Asia, China, Japan, the Philippines, New Guinea.

Bardi name = *goorralgar*, Nyul Nyul = *koowal*; Yawuru = *goowal*. Commonly known in Broome as *goowal*. Edible fruit sweet, eaten raw when ripe and white; white bark and roots medicinal, used for rheumatism and infusions applied to cuts, sores and itchy bites, and especially used to soothe pain from catfish spike. Small pieces of bark and roots were soaked in water or boiled to make an infusion which was applied to the body. It was especially important for the various skin ailments that occurred during the high humidity of the wet season. The wood was often used for firesticks. In India the astringent bark is used to stun fish as well as for tanning and dyeing.

During the dry season the plants are leafless and often appear to be dead.

Superficially similar to *Phyllanthus reticulatus* Poir but differs in the floral morphology. Previously known as *Securinega melanthesoides* (F. Muell.) Airy Shaw. Orthographic variants of the spelling of the generic name include *Fluggea*.

Flowering December-April; fruiting January-June.

Jatropha gossypiifolia

Jatropha gossypiifolia* L. **Belly-ache Bush

A squat, thick-stemmed viscid shrub to 2 m, sparsely to densely villous and conspicuously glandular hairy; young leaves plum or purple red, older leaves glossy dark green, leaf blades palmately 3-5-lobed, the lobes more or less elliptic, villous, but sometimes sparsely so, acuminate, glandular ciliate; flowers reddish purple with yellow centres, female flowers larger than male flowers; capsule very obtusely trigonous, exploding to release seeds.

An aggressive persistent weed in sand around Lombadina capable of forming impenetrable thickets and on vacant blocks in Broome townsite where it was historically grown as a boundary hedge plant as it required little or no watering. Also recorded for NT and Qld. Native to tropical South America, now naturalised in many tropical and subtropical regions.

Belly-ache bush is a declared noxious weed in the NT and West Kimberley Any plants observed should be reported to the nearest Agriculture Protection Board or Department of Agriculture office.

It is an invasive weed well adapted to a range of soil types. Because it is usually unpalatable to stock it forms dense thickets on some pastoral lands, making that land unsuitable for grazing. Belly-ache bush is a particularly resilient, long-lived plant, able to survive periods of drought. It often drops its leaves to conserve moisture in dry conditions. A mature plant can produce more than 50 seed pods a month. The seeds are reportedly toxic to both humans and stock containing toxalbumin, a substance which causes gastro-enteritis when eaten.

Flowering and fruiting all year.

Leptopus decaisnei (Benth.) Pojark. var. *orbicularis* (Benth.) Airy Shaw

Woody annual or short-lived perennial, much branched, decumbent, up to 20 cm, the whole plant softly villous; leaves rhombic-obovate or orbicular, on rather long petioles; male flowers small, 2 to 3 together on very short peduncles; female flowers solitary in the same axils as the males; styles divided to the middle; capsule depressed, orbicular, villous;

seeds black and transversely rugose.

Abundant in pindan, at Coconut Well. Also occurs in NT and Qld extending into Indonesia and New Guinea.

Flowering and fruiting April.

Mallotus nesophilus Muell. Arg. **Yellow Ball Flower**

Dioecious tree to 5 m; bark rough, fissured; leaves alternate on long petioles, dark green on upper surface, very pale below, broadly ovate; male and female flowers on separate plants; inflorescence axillary; male flowers yellowish cream, pendulous, sweetly scented; female flowers small, yellowish cream; fruit a capsule of 2 globular mericarps, densely covered with yellow-orange glands, stellate hairs absent.

On leeward side of sand dunes at Cape Bertholet, Carnot Bay, Weedong Lake, Broome and One Arm Point. Widespread on the Peninsula in near coastal areas. Also occurring in NT and Qld.

Bardi name = *badarrbadarr* (tree) or *longayin* (fruit). Edible fruit, eaten when pearly and translucent, nice and sweet.

Flowering March-September; fruiting May-August.

Mallotus nesophilus

Mallotus nesophilus

Phyllanthus amarus* Schum. **Poinciana Weed

Glabrous herb with slender leafy branchlets to 15 cm; leaves dark green above, pale green below, shortly petiolate, elliptic to oblong or oblong-obovate, base rounded, entire, apex obtuse; flowers axillary, all turned to one side of the branch; pedicels short, slender; fruits green, pendulous, glabrous, depressed-globular, seeds with 5 or 6 longitudinal ribs and with indistinct striations.

A common weed invading gardens in Broome. A pantropical species, possibly native to tropical America.

Flowering and fruiting all year.

Phyllanthus maderaspatensis L. var. *angustifolius* Benth.

An erect woody subshrub to 40 cm; branches slender, virgate, somewhat angular; leaves discolorous, oblong-linear, cuneate obtuse or mucronate, contracted towards the base; flowers cream, dioecious; female flowers solitary or two together with short pedicels; perianth segments with white hyaline margins; capsule depressed-globular, smooth; seeds pale brown, muricate.

In sandy soil with *Melaleuca dealbata*, Moorak Bore south of James Price Point and One Arm Point. Also occurs in NT, SA. Qld and NSW. Widespread in tropical and subtropical areas from Africa to Asia.

Flowering and fruiting April.

Phyllanthus maderaspatensis

Phyllanthus reticulatus Poir.

Monoecious straggling subshrub, liane or small tree, to 2 m, usually glabrous; upper leaves light green, lower surface pale yellowish green, elliptic to broadly elliptic, lateral veins prominent; flowers in axillary clusters on axillary shoots, usually shortly pedicellate; fruits green to purple-black.

In vine thicket at One Arm Point and in *Melaleuca* thicket on Roebuck Plains. Noted for Swan Point by W.V. Fitzgerald in 1906. Also occurs in NT and Qld and possibly widespread in tropical regions outside Australia.

Bardi name = *goolal.*

A variable species greatly in need of revision. Superficially similar to, and sometimes confused with *Fluggea virosa*, but differs in the absence of a rudimentary ovary.

Flowering February, July-October; fruiting May-October.

Phyllanthus reticulatus

Phyllanthus trachygyne

Phyllanthus sp. C

Poranthera microphylla

Sauropus trachyspermus

Phyllanthus trachygyne Benth.

erennial herb or subshrub to 30 cm, decumbent or erect, the whole plant glabrous or slightly glaucous; stems reddish brown; leaves very shortly petiolate or almost sessile, oblong-lanceolate or linear, acute or obtuse, usually concave; male flowers minute; female flowers with pedicel thickened upwards, floral segments 6, styles slender, spreading, deeply 2-branched; capsule depressed-globular, slightly verrucose, the warts becoming less noticeable as the fruit matures; seeds 1-2 mm, more or less smooth.

In stony ground with *Acacia tumida* and *Terminalia ferdinandiana* at One Arm Point. Also occurs in NT.

Flowering and fruiting May-October.

Phyllanthus virgatus G. Forster

Diminutive, monoecious, glabrous herb with slender stems to 30 cm; leaves subsessile to very shortly petiolate, linear-lanceolate, obtuse; flowers minute, axillary; fruits green, globular, smooth; seeds minutely tuberculate.

In seepage area under *Eucalyptus polycarpa* at Boolaman Well and in grassland adjacent to Bobbys Creek. Also occurs in NT, Qld and NSW.

Flowering and fruiting April-June.

Phyllanthus sp. C Kimb. Flora

Erect, glabrous, monoecious subshrub to 20 cm; young stems reddish brown; leaves bluish green, shortly petiolate, oblong to obovate, lateral veins not prominent, gradually tapered at base, apex obtuse or apiculate; flowers small, white, usually solitary; fruits green, smooth; seeds brownish black, obscurely tranversely striate.

In deep red sand around Broome. Appears restricted to the south-west Kimberley.

Similar to *P. maderaspatensis* but with the leaves lacking the prominent lateral veins and the stamens free with globular anther cells.

Flowering and fruiting June-August.

Poranthera microphylla Brongn. **Small-leaved Poranthera**

Slender spreading annual herb to 5 cm, glabrous; stem reddish at base becoming light green; stipules white; leaves light green, subsessile, linear to very narrowly elliptic, glabrous, flat, gradually tapered at base; inflorescence cymose in small leafy corymbs; male and female unisexual flowers usually present, white; fruit a green schizocarp; seeds usually 6, brown, with conspicuous white tubercles.

On the Peninsula only known from moist grey sandy soil of inner bank at Balk Creek. Widespread throughout Australia, occuring in all States and in New Zealand.

Possibly toxic to stock.

Flowering and fruiting July.

Sauropus trachyspermus (F. Muell.) Airy Shaw

A glabrous, glaucous, subshrub with ascending branching stems to 0.5 m; leaves often shedding, bluish green, almost sessile, thin, glabrous, oblong, acute; female flowers light creamish-green, very small, shortly pedicelled; capsule ovoid, smooth, glabrous; seeds usually deeply sculptured.

In coastal pindan under *Eucalyptus bella* at Moorak Bore and in sand under *Melaleuca* at Curlew Bay. Occurs in all mainland states.

Flowering and fruiting January-October.

Sauropus sp. A Kimb. Flora

Slender annual sub shrub to 0.5 m, monoecious (but female flowers rare), glabrous; stems green, ridged; leaves elliptic to obovate elliptic, thin, slightly tapered at the base, obtuse; male flowers in clusters, pedicellate; floral segments 6, elliptic, connate only at base, apex at first inflexed, acute; stamens connate in a column, anthers 6, elliptic in outline, occupying the top third of the column; female flowers solitary, pedicellate, floral segments 6, somewhat clawed, elliptic to obovate, connate only at the base, acute, styles short, spreading, 2-branched towards apex; schizocarp globular, smooth, glabrous; seeds 2-3 mm long, rugose.

In *Eucalyptus/Acacia* woodland at Curlew Bay near Easton Point. Possibly a Kimberley endemic.

Flowering January-August.

Sauropus sp. A

Sebastiania chamaelea (L.) Muell.Arg.

Erect to spreading glabrous subshrub with many slender stems; leaves shortly petiolate, pale green, narrowly oblong to narrowly elliptic, midrib prominent but other veins indistinct, margin thickened and serrulate with pale teeth; male spikelets slender, with minute flowers in clusters of 1-3 per bract; female flowers cream, solitary or sometimes several together, at the base of the male spikes, sessile, larger than the male flowers; fruits green, ovoid; seeds dark grey, with a yellowish caruncle.

In pindan at Broome, Quondong, Coulomb Point and One Arm Point. Occurs in NT and Qld and extends from India and Sri Lanka to southern China, south-east Asia and the Solomon Islands.

Abundant in pindan after fire or other disturbance.

Flowering and fruiting February-October.

Sebastiania chamaelea

FRANKENIACEAE

Frankenia ambita Ostenfeld

Perennial spreading sub-shrub to 20 cm, sometimes rooting at nodes; stems with short, spreading hairs; leaves almost sessile, linear to lanceolate; revolute flowers pale pink, solitary; capsule opening by 2 or 3 valves; seeds ovoid to more or less cylindric.

On edge of saltmarsh with *Sporobolus virginicus* and *Muellerolimon salicorniaceum* fringing Barred Creek. Endemic to the south-west Kimberley.

Flowering October.

Frankenia ambita

GENTIANACEAE

Centaurium spicatum* (L.) Fritsch ex Janchen **Spike Centaury

Erect, glabrous, diminutive annual herb; leaves sessile, ovate-oblong, elliptic or lanceolate, the lower ones stem-clasping; flowers white or pink, in dichotomous terminal cymes; capsule sessile, narrowly ellipsoid to cylindric.

On sandy bank under *Melaleuca acacioides*, adjacent to ephemeral freshwater pool at Beagle Bay, Balk Creek and Coconut Well. In the Kimberley restricted to the Dampier Peninsula. Native to Europe, but now almost cosmopolitan and sometimes considered as native to Australia.

Flowering August.

Centaurium spicatum

Goodenia bicolor

GOODENIACEAE

Goodenia bicolor F. Muell ex Benth.

Erect annual to 20 cm, with an indumentum of erect glandular and non-glandular hairs; basal leaves in a rosette, pale green, petiolate, obovate-eliptic, hairy, toothed, with dense tufts of hairs in the axils; cauline leaves narrowly elliptic or linear, smaller and bract-like up the stem, hairy, entire or toothed; infloresence a cymose panicle or raceme; flowers yellow; capsule ellipsoid to narrowly obovoid, hairy; seeds numerous, circular, with a very narrow wing.

On the Peninsula recorded from seasonally damp sand surrounding Boolaman Well, 2 km east of Camp Inlet. Common on the damp edges of Lake Campion, Yulleroo Well and Taylors Lagoon on the Broome-Derby Road. Previously recorded in the Kimberley from Kalumburu south to Camballin. Also occurs in the Victoria River area of the NT.

The specimens from the Peninsula are very hairy and have yellow flowers not the yellow and purple (bicoloured) flowers typically described for this species.

Previously referred to as *G. propinqua* W. Fitzg.

Flowering and fruiting June-September.

Goodenia lamprosperma

Goodenia lamprosperma F. Muell.

Semi-woody herb to 0.5 m with basal rootstock, glabrous apart from the inflorescence; leaves fleshy, basally tufted, narrowly elliptic or rarely linear, rigid, prominently veined, gradually tapering to an indistinct petiole, distantly toothed, with tufts of hairs between the leaf bases; cauline leaves reduced to leaf-like linear bracts; inflorescence of panicles on leafy scapes; flowers yellow, numerous; capsule ellipsoid; seeds numerous, lenticular, wing very narrow, shiny.

In closed grassland in seepage area at Martins Well, Lake Campion and Beagle Bay. Also occurs in NT and Qld.

Flowering February-December.

Goodenia linifolia W. Fitzg. ex Krause

Straggly, erect herb to 20 cm, viscid or varnished, with glandular and sometimes simple hairs; basal leaves linear-terete, involute; cauline leaves sessile, linear, margins recurved to appear terete, with a tuft of eglandular hairs in the axil; inflorescence of terminal leafy racemes; corolla pale yellow; capsule globular to broadly ellipsoid or broadly obovoid; seeds circular, to broadly elliptic, with a broad wing, tuberculate with a prominent rim.

In pindan behind coastal dunes at Gantheaume Point and Gubinge Road, Broome.

Included in the Kimberley Flora under *G. armitiana* F. Muell. and often confused with *G. microptera* F. Muell. which usually has more densely hairy basal and lower cauline leaves.

Flowering and fruiting April-September

Goodenia scaevolina

Goodenia scaevolina F. Muell. subsp. *scaevolina*

Dense subshrub to 0.7 m, viscid-pubescent or hirsute; leaves obovate-oblong or oblanceolate; basal leaves petiolate, coarsely dentate to serrate; cauline leaves dentate or entire; inflorescence a leafy raceme; peduncles in the upper leaf axils, each bearing a cyme of 3 to 7 flowers with leafy bracts at the fork, or the uppermost short and 1-flowered, forming a broadly pyramidal leafy viscid-villous panicle; flowers deep mauve-purple; capsule narrowly ellipsoid to narrowly ovoid; seeds broadly elliptic, thick, wing narrow, obscure, body pitted.

Common in sand beside creek under *Eucalyptus miniata* at Cape Bertholet and Wonganut Spring, and in pindan behind beaches at Broome. Also occurs in NT.

Flowering February-November.

Goodenia sepalosa F. Muell. ex Benth.

Semi-prostrate viscid or hispid herb; leaves oblong-lanceolate or oblong-linear, coarsely and irregularly toothed or rarely entire, shortly petiolate; peduncles 1-flowered, axillary; flowers bright yellow; capsule broadly ellipsoid to globular to broadly obovoid; seeds elliptic, thick, body tuberculate with a smooth margin, wing obsolete.

Growing in sand near billabong and along creek at Broome, Cape Bertholet and One Arm Point. Also occurs in NT.

A variable species.

Flowering January-October.

Goodenia sepalosa

Scaevola macrostachya (Vriese) Benth.

Shrub to 0.6 m with numerous erect, much-branched stems, the entire plant covered with harsh hispid hairs; leaves sessile, with a tuft of hairs in the axil, oblanceolate to linear, the margins recurved; flowers white, in short, dense, terminal leafy spikes; fruit cylindric, glabrous, rugose and faintly ribbed.

Amongst pindan gravel at One Arm Point. A Kimberley endemic occurring in scattered, near coastal areas.

A variable species which includes *S. scabrida* W. Fitzg.

Flowering and fruiting all year.

Scaevola macrostachya

Scaevola parvifolia F. Muell. ex Benth. subsp. *parvifolia*

Erect, much-branched villous herb to 30 cm; leaves lanceolate or oblong-linear, obtuse, and mostly reduced to small bracts; inflorescence of solitary and axillary flowers on rigid bracteolate pedicels; flowers pale mauve to deep blue; fruit ellipsoid, dry, rugose, sparsely hispid.

Common in red soil in coastal areas around Broome and extending northwards on the Peninsula. Also occurs in NT, SA and Qld.

A variable species.

Flowering May-October.

Scaevola parvifolia

Scaevola taccada (Gaertner) Roxb. **Beach Cabbage**

An erect, compact shrub to 2 m with a thick, almost succulent stem; the branches, leaves and inflorescence nearly glabrous, but always with tufts of long silky or woolly hairs in the axils; leaves bright green, shiny,

Left and above: *Scaevola taccada*

Velleia panduriformis

Velleia panduriformis

obovate-oblong, rounded and very obtuse at the top, entire or rarely broadly crenate, narrowed at the base into a very short petiole; inflorescence of bracteolate axillary cymes; flowers white, densely hairy inside; fruit an obovoid to globular, succulent, glabrous drupe.

In sand over travertine with *Pemphis acidula* in mangroves, Packer Island and Chile Creek near Lombadina. A pantropical species often recorded on oceanic islands, coastal dunes and behind the strand line of sandy beaches.

Bardi name = *amanganan*. Branches used for shelters. Plant is considered poisonous. Pender Bay name = *nulul* (recorded by C.E. Lane-Poole in 1919).

A shrub with horticultural potential.

Previously referred to as *S. sericea* Vahl. For an account of the complex nomenclature surrounding this species see P.S. Green *Taxon* 40(1) 118-122, 1991.

Flowering and fruiting March-July.

Velleia panduriformis A. Cunn. ex Benth. **Pindan Poison**

Erect much-branched from base, glaucous subshrub to 1.5 m; leaves in a basal or ascending rosette; basal leaves obovate and toothed; flowers orange on tall scapes, with fused bracteoles; capsules ovoid to broadly ovoid but somewhat compressed, glabrous; seeds with a broad transparent wing, body pitted to almost smooth.

In sand beside river, Cape Bertholet, Broome, Logue River and One Arm Point to Cape Leveque area. Occasionally forming dense understorey in woodland at the northern end of the Peninsula. Also occurs in NT.

Bardi name = *liili*. Emu food. Reputed to be poisonous to stock but there is no definite evidence of toxicity.

The type localities for this species are Goodenough Bay and Point Cunningham. The basal leaves were described from plants grown in the Royal Botanic Gardens, England, from seed collected by Allan Cunningham in February 1822.

Good examples of this plant can be seen at Gantheaume Point and Riddell Beach, Broome.

Flowering July-October.

GYROCARPACEAE

Above and right: *Gyrocarpus americanus*

Gyrocarpus americanus Jacq. subsp. *pachyphyllus* Kubitzki **Stinkwood, Coolaman Tree, Helicopter Tree** or **Gold and Silver Tree**

Deciduous tree to 5 m; bark silver grey, often with metallic golden sheen, flaking off in irregular blocks, yellowish white underneath; leaves discolorous on long petioles, ovate, cordate at base; flowers creamy yellow, in terminal cymes; fruit ellipsoid, rugose with two long spathulate, papery wings.

Common in pindan and occasionally extending into coastal vine thickets, Cape Bertholet, One Arm Point, Lombadina, Cape Leveque and Broome. Widespread throughout the tropics, also occurring in NT and Qld.

Bardi name = *bilanggamarr*. Yawuru name = *mirda*. Leaves and bark medicinal, used for rheumatism (applied) and sores (bark only). The bark is mashed and soaked in water making an infusion, which is applied to old or partially healed cuts and sores. It was never used for fresh wounds. For this charcoal was prepared from burnt wood and after being powdered was applied directly to the wounds. This medicine was even used for the painful wound from a stingray barb. The wood is also used to make shields and for coolamans. The wood is not preferred for cooking as it imparts an unsavoury taste and because of this has been given the common names "Stinkwood" or "Shitwood".

The papery wings cause the fruit to spin and fly considerable distances, hence the common name "Helicopter Tree". The fruit contains a single bony seed which is used in India for the making of rosaries and necklaces. Near Quondong Point trees are often dwarfed and wind-pruned to almost prostrate. The dense canopies are favoured by birds for nest building. Foliage regularly stripped off trees (around February) at Broome by black and white striped caterpillars.

The type locality for this subspecies is Broome.

Flowering January-May, November, December; fruiting April, May.

Gyrocarpus americanus

GYROSTEMONACEAE

Codonocarpus cotinifolius (Desf.) F. Muell. **Desert Poplar**

Slender pyramidal shrub or tree to 5 m; bark smooth, pale grey-pink; leaves glaucous, narrowly ovate-elliptic to more or less circular, obtuse to acute; inflorescence unisexual or with both male and female racemes; male racemes 15-100 mm long, usually 7-20-flowered, pedicels commonly recurved; female racemes 30-120 mm long; fruit a pyriform schizocarp, mericarps flat; seeds black, compressed, almost reniform, rugose, aril whitish.

Widespread in pindan at Broome, Packer Island, Beagle Bay and One Arm Point. Also occurs in NT, SA, Qld, NSW and Vic.

Suspected of being toxic to stock.

Occurs commonly after fire, living for 5-10 years. A potential ornamental but difficult to germinate seed.

Flowering and fruiting April-September; fruiting January- September.

Codonocarpus cotinifolius

Gyrostemon tepperi (F. Muell. ex H. Walter) A.S. George

Dense erect, often slightly viscid shrub to 1 m, rarely to 2 m; stems greyish; branchlets orange to almost white; leaves usually spreading, soft, bright green, linear-terete, acute; male and female flowers on separate plants; male inflorescence with 1-3 flowers per axil; female inflorescence of solitary axillary flowers or rarely of small axillary racemes; stigmas petaloid, creamy white; fruit greenish yellow, spherical, ridged down centre, slightly rough; seeds reddish brown, compressed, oblong-elliptic or broadly elliptic, prominently rugose, aril large, enclosing the seed body, whitish, lacerate on margin.

Regenerating on sandplain beside creek, Cape Bertholet, and common in pindan around Broome, and One Arm Point-Cape Leveque area. Common after fire. Also occurs in NT and Qld.

The type locality for this species is Roebuck Bay. The name commemorates the naturalist father J.G.O. Tepper not the son J.W.O. Tepper who was the collector of the type specimen and postal telegraphist at Roebuck Bay.

Gyrostemon tepperi

Gonocarpus leptothecus

Basilicum polystachyon

Hyptis suaveolens

Ocimum basilicum

Previously known as *Didymotheca tepperi* F. Muell. ex H. Walter.

Flowering August-September; fruiting August-December.

HALORAGACEAE

Gonocarpus leptothecus (F. Muell.) Orchard

Erect annual herb or subshrub to 0.5 m; stems 4-ribbed, with long spreading hairs; stem leaves opposite and decussate, sessile or shortly petiolate, oblong or broadly lanceolate, margins thickened and distinctly acutely serrate; flowers shortly pedicellate, small, pink; fruits pedicellate, small, numerous, reddish, cylindric, glabrous, 8-ribbed with angular tubercles between the ribs.

Common on river washed white sand at Coulomb Point; in swampy areas at Lolly Well; and in sandy pindan at Lombadina and One Arm Point. Also occurs in NT and Qld.

Flowering April-October.

LAMIACEAE

Basilicum polystachyon (L.) Moench **Musk Basil**

Erect annual herb to 0.8 m; stem light green; leaves membranous, discolorous, hairy on veins of abaxial surface, petiole 20-30 mm long, blade ovate, base cuneate to obtuse, margin crenate-dentate distally, apex acuminate; inflorescence terminal; flowers mauve; mericarps laterally flattened, smooth.

On the Peninsula only known from seasonally wet sandy flats at Deep Creek on Broome-Derby Road. Also occurs in NT and Qld, extending from tropical Africa through Asia.

Used in Java for medicinal purposes.

Previously known as *Ocymum polystachyon* L. and *Moschosma polystachyon* (L.) Benth.

Flowering and fruiting June-July.

Hyptis suaveolens* (L.) Poit. **Mint Bush

Annual, erect, strongly aromatic herb to 1.5 m with glandular hairs; leaf blade broadly ovate, acute or obtuse, serrate-dentate, upper surface hairy, lower surface glabrous; inflorescence axillary, cymose; calyx strongly ribbed, glandular hairy, lobes needle-like to 2 mm; flowers mauve; seed light brown, ribbed.

Scattered in various localities on the northern Peninsula. An aggressive pan-tropical weed now naturalised throughout the Kimberley. Also occurs in NT and Qld. Native to tropical America and naturalised in all tropical regions of the world.

Flowering and fruiting March-August.

Ocimum basilicum* L. **Bush Basil

Erect, semi-woody, strongly aromatic herb to 0.5 m; leaves usually sparsely hairy at least on petiole and midvein, petiolate, narrowly ovate, acute; inflorescence axillary; calyx orbicular, strongly reticulate, straw coloured and enlarging at maturity; flowers pale mauve; mericarps dark brown.

Naturalised in coastal dune scrub south of Cable Beach and very common near where Crab Creek Road leaves the main highway. This is near the site of the old Broome dairy. Extends from tropical Africa through Asia to Australia.

Widely cultivated and used for a variety of medicinal purposes and as a culinary herb. The Broome plant has a much stronger flavour than the commonly cultivated form.

Flowering and fruiting February, June.

LAURACEAE

Cassytha capillaris

Cassytha capillaris Meissner **Slender Dodder**

Perennial parasitic, partly autotrophic twiner, resembling orange string, attached by small elliptic haustoria; stems green, drying green to reddish brown, young shoots glabrous or red pubescent, becoming glabrescent; inflorescence single, rarely paired spike; peduncles glabrous or with thick short red strigose hairs; flowers white, sessile, globose; fruit pearly pink, ovoid, glabrous or pubescent, red when dry.

On *Plectrachne schinzii* in deep pindan near Broome wharf and on hummock grasses on sandstone at One Arm Point. Also occurs in NT, Qld, New Guinea, Indonesia and Sri Lanka.

Differs from *C. filiformis* in having a slender almost glabrous stem and fruits which are smaller, ovate and red when dry.

Bardi name = *jirrwany*.

Flowering and fruiting February-June.

Left and above: *Cassytha filiformis*

Cassytha filiformis L. **Yugulu**

Perennial parasitic, partly autotrophic twiner, attached by small elliptic haustoria formed along stems at points of contact with the host; stems filiform, pubescent to glabrescent; leaves reduced to minute scales; flowers pale creamish green, sessile, globular-ovoid; fruit glabrous, ovoid to nearly globular, green becoming translucent, pearly white, drying black.

In canopies of paperbarks behind coastal dunes at Martins Well, Elephant and Coulomb Points, Beagle Bay; on *Celtis* on coastal dunes at One Arm Point and widespread in pindan and vine thickets at Broome. A pantropic species occurring in North and South America, southern Africa, Asia and islands of the Indian and Pacific Oceans.

Bardi name = *jirrwany*; Nyul Nyul = *goody goody*; Yawuru = *yugulu*. Whole plant medicinal; warm vine applied for rheumatic pains and general aches; edible pearly white fruit. Footwear was made by moulding a pad of the tangled stems into a sandal. The Bardi are reported to have used the dense mesh of stems as a net to catch fish.

Flowering and fruiting all year.

LECYTHIDACEAE

Barringtonia acutangula

Barringtonia acutangula (L.) Gaertner subsp. *acutangula* **Freshwater Mangrove**

Tree or shrub to 8 m, glabrous, with fissured bark; leaves, dark green, obovate to elliptic, gradually tapered at the base, minutely serrulate, obtuse or obtusely acuminate; racemes long, slender, many flowered; flowers deep pink to dark red; fruit ovoid to ellipsoid and longitudinally 4-angled to 4-winged.

Planchonia careya

Planchonia careya

Utricularia chrysantha

Utricularia gibba

Localised on the Peninsula to the banks of the Fitzroy River. Also occurs in NT and Qld, extending from Afghanistan to south-east Asia.

Flowering and fruiting all year.

Planchonia careya (F. Muell.) R. Kunth **Cocky Apple**

Semi-deciduous shrub or small tree to 8 m; bark rough, brown, fissured; leaves dark green, (often maroon tinged before shedding), shiny, obovate with acute tip, petioles narrowly winged; flowers white, with pinkish tinge inside throat, fragrant; stamens many, in numerous whorls, filaments joined at the base into a staminal ring; fruits green, obovoid to ellipsoid, smooth, not winged or angled; pericarp slightly fleshy and fibrous inside; seeds several.

In pindan at Coulomb Point, One Arm Point and Bunda Bunda Mill. Also occurs in NT, Qld and New Guinea.

Bardi name = *goolay*. Edible fruit, the centre squeezed out and eaten raw when soft; bark is medicinal - an infusion is applied to aches, rheumatism, cuts and sores; bark ashes are mixed with bush tobacco for chewing. Root medicinal, used as an infusion to wash itchy bites; red inner bark used as fish poison; branches used for firewood; bark containers made from protrusions on branch or trunk.

Flowers open near sunset and stay open through the night until approximately 3 hours after sunrise when the staminal rings are shed and form a dense white carpet under the trees.

The fruits are the preferred host of Jarvis' Fruit Fly *(Bactrocera jarvisi)*, a native species which sometimes attacks late-ripening mango varieties and, occasionally, pawpaws and guavas (Shirani Wijesuriya, entomologist, Dept. Agriculture, Broome - pers. comm.).

Flowering August-December; fruiting April-October.

LEGUMINOSAE

(SEE CAESALPINIACEAE, MIMOSACEAE AND PAPILIONACEAE)

LENTIBULARIACEAE

Utricularia chrysantha R. Br.

Slender erect terrestrial herb with scapes up to 30 cm; leaves usually absent at time of flowering; flowers golden yellow, usually numerous, but distant, rarely forming a compact spike, on exceedingly short pedicels, capsule globular, dehiscing by a narrow pore.

In seepage area adjacent to creek at Wonganut Spring. Also occurs in NT, Qld and New Guinea.

Flowering June.

Utricularia gibba L.

Floating aquatic, submerged annual or perennial; bladders black; leaves submerged, root-like, branching into numerous fine segments interspersed with globular bladders; inflorescence erect, up to 50 mm; scapes slender, filiform, short; flowers yellow, spur narrowly cylindric, with obtuse or bifid apex; capsule globular.

In *Melaleuca viridiflora* swamp area with the aquatic *Najas graminea* at Beagle Bay and in permanent springs inland from Carnot Bay. A pantropical species also occurring in NT, Qld and NSW.

Flowering April-November.

Utricularia kimberleyensis C.A. Gardner

Erect, slender, smooth annual or perennial terrestrial herb to 22 cm; leaves few, up to 9, basal, almost oval on long petioles; inflorescence erect; flowers large, lilac, 1-3, one on a much longer pedicel; capsule globular.

Uncommon in closed grassland at Hunter Creek, Pender Bay and Balk Claypan. Also occurs in NT.

Flowering April.

Utricularia kimberleyensis

Utricularia minutissima M. Vahl

Diminutive annual herb to 4 cm; leaves 1-2 at base of the scape, spathulate or linear on long stalks; inflorescence erect; flowers pale mauve, minute, distant on pedicels, scarcely 1 mm long; capsule ellipsoid when mature.

Not common on the Peninsula. Known only from a seepage area beside Wonganut Creek. Ranges from India through south-east Asia to Japan and Australia.

Flowering June.

Utricularia stellaris L.f.

Aquatic, submerged, possibly perennial; leaves numerous, conspicuous, much divided into root-like segments; bladder traps green; inflorescence an emergent raceme subtended by floats; flowers up to 8, yellow; pedicels erect at anthesis but becoming deflexed in fruit, filiform; capsule globular.

In *Melaleuca* swamp near Beagle Bay. Ranges from tropical Africa through India to south east Asia and Australia.

Flowering June.

Mitrasacme exserta

LOGANIACEAE

Mitrasacme exserta F. Muell.

Annual glabrous herb to 0.5 m; leaves basally rosetted, narrowly ovate to elliptic; flowers white with brown markings on the base of the tube, terminal, on long pedicels; capsule globular.

Occasional in grasslands adjacent to creeks, or in wet sand beside billabong, Barred Creek and Cape Bertholet. Also occurs in NT and Qld.

Flowering and fruiting March-April.

Mitrasacme hispida

Mitrasacme hispida W. Fitzg.

Annual hispid herb to 20 cm; leaves cauline, clustered near base, in 3-5 pairs, narrowly ovate to linear, glabrous or glabrescent, obtuse or scarcely acute; flowers white with orange-brown markings in throat, in dense terminal umbels; capsule globular.

In grey sandy clay at Bobbys Creek, Beagle Bay, Roebuck Bay, Pender Bay and Cape Bertholet. Also occurs in NT.

Flowering and fruiting February-July.

Mitrasacme lutea

Mitrasacme lutea F. Muell.

Annual glabrous herb; stems light green, reddish near base; leaves light green, few in the lower part of the stem, the 2 uppermost pairs often appearing whorled, linear, glabrous or glabrescent, acute; umbels few-flowered, with filiform pedicels; flowers yellow with orange-brown striations.

In moist sandy bank at Bobbys Creek. A poorly known species first described from Sturt Creek in the NT.

Flowering and fruiting March, April.

Mitrasacme nummularia

Amyema benthamii

Amyema bifurcata

Mitrasacme nummularia S. Moore

Small herb, stems prostrate or rarely weakly erect; in densely-branched hemispherical clumps to 6 cm diameter; leaves cauline, ovate or elliptic, glabrous, margin white-squamulose; pedicels clustered; flowers white, anthers bright yellowish orange.

Occasional in *Verticordia verticillata* woodland at Beagle Bay, Balk Creek and Priors Bore and under *Melaleuca acacioides* at Curlew Bay. Also occurs in NT.

Flowering May-July.

LORANTHACEAE

Amyema benthamii (Blakely) Danser

Stem hemi-parasite; leaves opposite, elliptic to almost orbicular, cordate or truncate at base, sessile or rarely minutely petiolate; umbels 1-3 per axil, with 2 rays; rays 3-flowered, the central flower sessile and lateral flowers usually pedicellate; perianth tube maroon-red, perianth segments green, tinged orange with age, reflexed; fruit ellipsoidal, white tomentose except at apex.

On *Acacia tumida* at Easton Point; on *Mallotus nesophilus, Hakea arborescens* and *Gardenia pyriformis* in pindan at Cape Bertholet; on *Ficus opposita* in dune swales at Beagle Bay; on *Grewia breviflora* and *Croton habrophyllus* in coastal vine thicket at James Price Point, and on *Exocarpos latifolius* and *Atalaya hemiglauca* in coastal pindan around Broome. Also occurs in NT.

Bardi name = *nyilinyil.* (This name is applied to all mistletoes on the Peninsula).

Flowering January-April, October, November; fruiting April-August.

Amyema bifurcata (Benth.) Tieghem. var *bifurcata.*

Stem hemi-parasite, plants pendulous; young shoots and flowers with rusty tomentum; leaves rusty green, linear to lanceolate, acute to rounded, often falcate, attenuate at base, with a distinct rusty margin, up to 27 cm long; umbels 1 or 2(3) per axil, with 2(3) primary rays; primary rays 2-flowered; flowers large, rusty tomentose, perianth segments reddish orange on inside of recurved segments, anther filaments pink or red, stigma reddish; fruit obloid- ellipsoid to globular, rusty hairy.

On *Eucalyptus dampieri, E. bella* and *E. zygophylla* in pindan around Broome and Lombadina. Also occurs in NT, Qld and NSW.

Bardi name = *nyilinyil.* Children suck sweet nectar from flowers.

Flowering November, June-August.

Amyema conspicua (Bailey) Danser subsp. *obscurinervis* Barlow

Stem hemi-parasite, erect or spreading, glabrous except for the young shoots, inflorescence axes and calyx white- or pale brown-tomentose; epicortical runners absent; leaves grey, elliptic to ovate or obovate, rounded, contracted at base into distinct petiole, venation obscure; inflorescence a pedunculate umbel of triads, the central flower sessile, the laterals pedicellate; peduncles slender; flowers yellow; fruit globose with a distinct neck.

Only known from one collection on *Lysiphyllum cunninghamii* growing on sandplain, 34 km from Broome in valley east of the Roebuck Roadhouse. Also occurs in NT.

Flowering December.

Amyema dolichopoda Barlow

Stem hemi-parasite on mangroves, erect, glabrous except stem apex and lower part of ovary white-tomentose; epicortical runners absent; leaves narrowly elliptic, succulent, rounded, attenuate at base into a very short petiole; inflorescence a pedunculate umbel of triads, the central flower sessile, the laterals pedicellate; flowers yellow or reddish orange; fruit ellipsoidal.

The only mangrove host recorded for the Peninsula is *Lumnitzera racemosa*, on landward edge of mangal, Beagle and Carnot Bays. A Kimberley endemic.

Flowering May-June.

Amyema mackayensis (Blakely) Danser

Stem hemi-parasite on mangroves; leaves leathery, elliptic to orbicular; umbels 1 or 2 per axil, with (2)3(5) rays; rays 3-flowered; perianth lobes green or yellow, orange or red at base; fruit ellipsoidal, glabrous.

Found at One Arm Point, Hunter Creek and Cygnet Bay. Recorded on the mangrove hosts *Excoecaria agallocha* and *Rhizophora stylosa*. A widespread species parasitic on mangroves extending to NT, Qld, NSW and New Guinea.

This species is conspecific with *A. gravis* from Java and *Loranthus cycnei-sinus* described by Blakely from material collected from Cygnet Bay by W.V. Fitzgerald in November 1906.

Flowering January, February, October-December; fruiting August.

Amyema miquelii (Lehm. ex Miq.) Tieghem

Pendulous stem hemi-parasite; haustoria simple; stems brownish black; leaves linear to more or less elliptic, somewhat curved, attenuate at base, up to 15 cm long; umbels 1 or 2 per axil; rays 3(4)-flowered; perianth tube yellow at base, reddish orange above, tip of perianth lobes orange; fruit brown, ellipsoid to pyriform, minutely brown-hairy.

On *Eucalyptus tectifica* and in *Eucalyptus miniata-E. bella* woodland at Beagle Bay and on *Eucalyptus bella* at One Arm Point. Occurs in all mainland states.

Flowering January, February, August-December.

Amyema sanguinea (F. Muell.) Danser var. *sanguinea* **Christmas Mistletoe**

Pendulous stem hemi-parasite; epicortical runners present; leaves pale green, thick, narrowly lanceolate to broadly elliptic, obtuse or rounded, up to 25 cm long and 2.5 cm wide; umbels 1-3 per axil, simple, with 2-4(6) pedicellate flowers; buds inflated at the apex, perianth ribbed; flowers erect, brilliant flesh red; fruits funnel-shaped.

Growing on *Eucalyptus bella* at Cape Leveque and One Arm Point; on *Eucalyptus polycarpa* at Curlew Bay; on *Eucalyptus dampieri*, *E. tectifica*, *E. zygophylla* and *Melaleuca* sp. at Dampier Hill. Occasional inland from Broome. Occurs in NT, SA and Qld.

Flowering all year.

Amyema thalassia Barlow

Hemi-parasite of mangroves; leaves fleshy, obovate to orbicular, rounded, contracted at base into distinctly winged petiole; inflorescence a pedunculate umbel of triads, the central flowers sessile, the laterals pedicellate; perianth tube red, lobes green; fruit more or less ellipsoid, often distinctly 4-angled, glabrous.

Restricted to mangrove communities. Recorded growing on *Avicennia marina* at Packer Island, Broome, One Arm Point and Beagle Bay. Also occurs in NT.

Amyema mackayensis

Amyema miquelii

Amyema sanguinea

Amyema thalassia

Amyema villiflora

Dendrophthoe acacioides

Lysiana spathulata

Bardi name = *nyilinyil*. Nectar sucked from flowers.

The type locality for this species is Pender Bay, collected by C.E. Lane-Poole in October 1919.

Flowering January-April, September, December; fruiting April.

Amyema villiflora (Domin) Barlow subsp. *villiflora*

Pendulous hemi-parasite, red-brown to white tomentum on young shoots; epicortical runners absent; leaves grey or light green, leathery, elliptic to ovate, rounded; inflorescence a pedunculate umbel of triads, the central flowers sessile, the lateral flowers pedicellate; corolla in mature bud slender; flowers yellow; fruit dark brick red when ripe, ellipsoidal, tomentose.

Occasional on *Terminalia ferdinandiana* in coastal pindan at Coulomb Point, Gallen Well and One Arm Point. Also recorded on *Terminalia cunninghamii* in coastal marsh fringe near old Beagle Bay settlement. Also occurs in the NT, Qld and the Torres Strait Islands.

Flowering December-February.

Dendrophthoe acacioides (Cunn. ex Benth.) Tieghem subsp. *acacioides*

Pendulous, glabrous stem hemi-parasite with epicortical runners; leaves glaucous, lanceolate to narrowly obovate, up to 8 cm long; inflorescence usually 2-flowered, flowers yellowish orange or red; fruit obovoid, distinctly warted, yellow to red.

Common on *Acacia tumida* and *Brachychiton diversifolius*, Cape Leveque, Beagle Bay, Nilli Bubbaca Well, Broome and One Arm Point on *Terminalia ferdinandiana*. Also occurs in NT.

Bardi name = *nyilinyil*. Nectar sucked from flowers.

Flowering and fruiting all year.

Dendrophthoe odontocalyx (F. Muell. ex Benth.) Tieghem

Pendulous, glabrous, spreading stem hemi-parasite; epicortical runners present; leaves displaced opposite or alternate, lanceolate to broadly elliptic, obtuse or rounded, leathery, up to 9 cm long; inflorescence of 3-8 flowers; calyx prominently toothed; flowers pale orange with slight reddish tinge on anther filaments; fruit ovoid, smooth, yellow to red.

On *Melaleuca cajuputi* in swamp at Lolly Well near Beagle Bay. Also occurs in NT.

Flowering June.

Lysiana spathulata (Blakely) Barlow subsp. *spathulata*

Pendulous stem hemi-parasite; haustoria simple; bark smooth, brownish; leaves slightly yellowish, opposite, flat, obovate to spathulate, rounded at apex, 5-8 cm long, often falcate; inflorescence a pedunculate 2-flowered umbel; perianth tube yellow to red, reflexed lobes green; fruit ellipsoid, with a distinct collar formed by calyx limb.

Very common on *Acacia eriopoda*, *A. colei*, *A. neurocarpa*, *A. tumida*, *Persoonia falcata*, *Santalum lanceolatum*, *Erythrophleum chlorostachys* and *Grevillea striata*, occasionally on *Amyema benthamii* and *Exocarpos latifolius* at Easton Point and the mangrove *Lumnitzera racemosa* near Broome, Coulomb Point, Beagle Bay and One Arm Point. Also occurs in NT and Qld.

Bardi name = *nyilinyil*. Nectar sucked from flowers and fruit eaten.

Flowering January-November.

LYTHRACEAE

Ammannia baccifera L.

Erect, rhizomatous ?perennial, glabrous herb to 0.6 m tall; stems light green, turning red; leaves opposite or whorled, discolorous, upper leaf dark green, lower leaf pale green, turning red with age, mostly subsessile, oblong-linear to lanceolate, acute, the base attenuate; flowers creamy green, in crowded axillary cymes or clusters; peduncle to 1 mm long; petals absent; capsule red, globose.

Common in Nimalaica Claypan and in seepage area behind tidal flats, Hunter Creek and One Arm Point. Widespread through Africa, Europe and Asia.

Flowering and fruiting April-August.

Ammannia baccifera

Ammannia multiflora Roxb.

Herb, erect, to 40 cm tall; stems reddish near base; leaves light green, sessile, oblong-linear or oblanceolate, acute, the base cordate-auriculate; flowers inconspicuous, 4-12 in short dense cymes or clusters; petals obovate; capsule reddish, globose.

Common in damp areas at Cape Bertholet, Balk Creek, Nilli Bubbaca Well, Cape Leveque and One Arm Point. Widespread from Africa east through Asia to Australia.

Flowering and fruiting April-September.

Ammannia multiflora

Nesaea muelleri Hewson

An erect, glabrous, annual herb to 25 cm; sub-succulent, usually glabrous; stem red at base; leaves opposite, linear-terete to 1.5 cm long, narrowed at base; peduncles axillary, slender, often 1-flowered; flowers lilac; fruit a globular capsule, dehiscence irregular.

In moist alluvial sand on edge of claypans and creeks at Beagle and Pender Bays. The most widespread of *Nesaea* species in Australia. Also occurs in NT and Qld.

Formerly identified as *Lythrum arnhemicum.*

Flowering April-July.

Nesaea muelleri

Pemphis acidula J.R. and G. Forst.

Dense shrub to 2 m, much-branched and sprawling; leaves opposite, sparsely sericeous, narrowly elliptic, apex obtuse and gland tipped, base narrowly cuneate, passing into a very short petiole; flowers solitary in upper leaf axils, pedicels slender, calyx maroon, pubescent, petals white; capsule globular.

Localised in orange sand and in sand behind mangroves at Packer Island. Also occurs in NT and Qld, ranging from Africa to the Pacific Islands.

A strand plant often associated with mangroves abutting sandy beaches. This species can be recognised by the small opposite leaves which are covered by a tomentum of fine hairs, and by the small solitary white flowers.

Flowering March, April.

Pemphis acidula

Rotala diandra (F. Muell.) Koehne

Erect herb to 15 cm; stems sometimes creeping and rooting at the nodes; stem leaves sessile, orbicular, very obtuse, cordate at base, the floral ones often very close, forming imbricate decussate spikes; flowers solitary in the axils, sessile or nearly so; calyx small, reddish, very thin and membranous, somewhat 4-angled, with 4 acute lobes shorter than the tube; petals rudimentary; capsule opening in two valves.

Rotala diandra

Abutilon andrewsianum

Abutilon indicum

Abutilon otocarpum

In moist clay of creek bed, Bobbys Creek, north-east of Beagle Bay. Also occurs in NT and Qld.

Flowering and fruiting May-July.

Rotala occultiflora Koehne

Annual herb; stems simple or branched, sometimes creeping and rooting at nodes, erect above, to 15 cm high; upper leaves decussate or in whorls of usually 3, sessile; lower leaves elliptic to lanceolate, ovate to linear; flowers inconspicuous, petals absent; capsule ellipsoidal.

In damp areas 60 km east-north-east of Broome. Also occurs in NT, Qld and India.

Flowering and fruiting May-August.

MALVACEAE

Abutilon andrewsianum W.V. Fitzg. **Andrews Lantern Flower**

Erect shrub to 2 m; stems and petioles very shortly and densely velvety with stellate hairs; leaves ovate to broadly ovate, densely stellate-hairy, margins crenate, apex subacute to acute; flowers orange-yellow to 2 cm diameter; seed pods flat-topped, longer than the fruiting calyx; mericarps 8-12, not readily separating at maturity, stellate-hairy, outer edge awned; seeds usually 2 per mericarp, brown, smooth or tuberculate, glabrous or minutely and sparsely hairy.

In grey sandy clay on edge of saltmarsh near Broome. Also occurs in NT and Qld.

Flowering January-April.

Abutilon indicum (L.) Sweet subsp. *albescens* (Miq.) Borss. var. *australiense* Hochr. **Indian Lantern Flower**

Subshrub to 1 m, clothed with a whitish tomentum, usually very close and short; leaves ovate to broadly ovate, margin irregularly crenate, apex long-acuminate or acute; pedicels usually shorter than leaves; flowers yellow-orange; capsule as long as the fruiting calyx; mericarps 15-20, readily separating at maturity, stellate-hairy; seeds 2 or 3 per mericarp, brown, glabrous or minutely hairy.

Common in sandy soil behind coastal sand dunes near Broome and at One Arm Point. Also occurs in NT and Qld. Widely distributed in the tropics.

Collected by Allan Cunningham at Point Cunningham and Cygnet Bay in February 1822.

Previously known as *A. cunninghamii* Benth.

Flowering January-August.

Abutilon otocarpum F. Muell. **Desert Chinese Lantern**

Shrub to 1 m, densely clothed with soft velvety stellate hairs; leaves greyish green above, whitish below with prominent venation, very broadly ovate to more or less circular, base deeply cordate, margin crenate; flowers pale yellow; schizocarp ovoid, shorter than the fruiting calyx, mericarps 10-20, more or less readily separating at maturity but enclosed by the calyx; seeds 3 per mericarp, brown, deeply rugose, glabrous.

In pindan around Broome and One Arm Point. Also occurs in all Australian mainland states.

Described by Hochreutiner in 1912 as *A. otocarpum* var. *broomensis*.

Flowering March-September, December.

Fioria vitifolia (L.) Mattei

A coarse, erect, woody herb to 1.2 m, usually shortly tomentose; leaves broadly cordate, usually broadly 3-5 lobed, very densely and softly villous-tomentose; flowers on short pedicels, rather large, lemon to yellow with reddish brown centres; capsules depressed-globular, hairy, winged.

Frequent behind mangroves in white sandy soil at Hunter Creek, Gallen Well and One Arm Point. Also occurs in Qld, Indonesia, the Philippines, New Guinea and islands of the western Pacific.

Previously known as *Hibiscus vitifolius* L. A monotypic genus occurring in tropical and subtropical regions and separated from *Hibiscus* by the expansion of the margin of the valves on the capsule into transversely veined wings.

Flowering February-October.

Fioria vitifolia

Gossypium australe F. Muell. **Native Cotton**

Much-branched shrub to 2.5 m, hoary with dense but short tomentum; stems greyish brown; leaves dull green, prominently veined underneath, broadly or narrowly ovate, obtuse, entire; flowers rather large, on very short pedicels, pink with reddish purple centre; capsule obovoid-oblong, shortly acuminate, tomentose; seeds numerous, woolly.

In orange soil and common in patches regenerating from rootstock after fire at Coulomb Point, James Price Point and in pindan at Broome. Also occurs in NT and Qld.

Flowering and fruiting April-November.

Gossypium australe

Gossypium hirsutum* L. **Commercial Cotton

Shrub to 3 m; leaves petiolate, blade more or less circular in outline, 3-5 lobed, apex acuminate; flowers pale yellow to white, sometimes tinged purple, axillary; epicalyx bracteoles broadly ovate, free or almost so, laciniate into 7-12 narrowly triangular lobes; capsule broadly ovoid, coriaceous, 3-5-celled, glabrous, coarsely pitted, acuminate; seeds surrounded by dense lanate floss.

Naturalised around Broome and around settlements on the Peninsula. Also recorded for Qld. Native to tropical America, the Caribbean and Pacific Islands.

Previously grown commercially in the Ord River irrigation area. Cotton seeds and cottonseed meal obtained from the crushed seeds can be toxic to stock.

Flowering and fruiting May-August.

Gossypium hirsutum

Gossypium rotundifolium Fryxell, Craven & J.M. Stewart

Prostrate creeper; stem minutely pilose; leaves on long petioles, cordate, long-acuminate, entire; pedicels more or less at right angles to the stem; calyx with black punctate dots; flowers large, white or pink with deep maroon centre; capsule globular; seeds brown to dark brown, 6-15 per capsule.

In *Eucalyptus miniata* woodland with *Acacia hippuroides* at Willie Creek, James Price Point, Beagle and Pender Bays, Martins Well, Broome and One Arm Point. A Kimberley endemic.

The type locality for this species is just north of Broome on the Cape Leveque Road.

A species with horticultural potential as an attractive ground cover.

This species was previously confused with *G. populifolium* (Benth.) F. Muell. ex Tod.

Flowering January-June.

Gossypium rotundifolium

Herissantia crispa

Hibiscus leptocladus

Hibiscus meraukensis

Hibiscus panduriformis

Herissantia crispa (L.) B.D. Jackson

Woody undershrub to 30 cm with slender spreading branches, closely tomentose, with long spreading hairs; leaves cordate, acuminate, crenate, softly tomentose, distinctly veined on under surface, upper ones on short petioles or quite sessile; flowers small, pale yellow; fruit nearly globular, hispid with scattered hairs; carpels 10-15, distinctly separating from the axis, very thin, with a pearl-like lustre, almost always one-seeded.

In pindan near Broome, Coconut Well and One Arm Point. Also occurs in NT. A widespread species occurring through tropical America and also found in east India and tropical Africa.

Flowering and fruiting March-August.

Hibiscus geranioides Cunn. ex Benth.

Prostrate or straggling subshrub, with an indumentum of large stellate hairs; leaves usually palmately 3-foliate or deeply 3-lobed; uppermost leaves unlobed or deeply 3-lobed; flowers solitary and axillary, often apparently racemose; petals white to pink with darker pink to purple base; capsule broadly ovoid to globular; seeds black with patches of brownish microscopic scales.

In pindan near Point Coulomb. Also occurs in NT.

There may be some confusion between collections bearing only the uppermost unlobed leaves and the narrow-leaved variant of *H. leptocladus*.

Flowering and fruiting December-August.

Hibiscus leptocladus Benth.

Sprawling herb or subshrub with slender branches, rough with short, rigid stellate hairs; leaves on rather long petioles, ovate-lanceolate, lanceolate or oblong, irregularly toothed, narrowed or rounded at base, roughly pubescent on both sides with rigid stellate hairs; flowers purplish blue with deep purplish centre, on rather long pedicels in the upper axils; capsule nearly globular; seeds black, kidney-shaped usually with short or long hairs (see note below).

In pindan at Broome, Gallen Well, Coulomb and One Arm Points, Beagle Bay to Pender Bay. Also occurs in NT and Qld.

A very variable species. Some specimens from the Peninsula have linear leaves and may be confused with *H. geranioides*. Some specimens have seeds with long woolly hairs and may be a distinct species.

Flowering all year.

Hibiscus meraukensis Hochr. **Merauke Hibiscus**

Erect subshrub to 1 m; stems glabrous or prickly, rarely pubescent; leaf shape and size variable, often shallowly to deeply palmate, 3-5-lobed; flowers white with dark red centres; capsules broadly ovoid, beaked, glabrous; seeds greyish brown with irregular patches of minute hairs.

In seepage area over sandstone outcrop, fringed with *Melaleuca acacioides* at Hunter Creek, and in woodland at Vincent and Bernards Well near Beagle Bay. Also occurs in NT, Qld, New Guinea and the South Molucca Islands.

Previously sometimes misidentified as *H. cannabinus* L. or *H. radiatus* Cav.

Flowering April-September.

Hibiscus panduriformis N.L. Burman var. *australis* Hochr. **Yellow Hibiscus**

Subshrub to 2 m, densely covered with a tomentum, usually thick and velvety on the upper side of the leaves, closer and whiter on the underside and on the petioles and branches, where it is often intermixed with long spreading bristly stellate hairs; leaves bluish green, broadly cordate and irregularly crenate; flowers conspicuous, bright yellow with bright red at

base of petals, on very short pedicels in the axils of the upper reduced leaves; capsules ovoid-globular, very hispid; seeds black with concentric striations and short brownish hairs.

Common in understorey of regenerating *Melaleuca acacioides* thicket, and on sand ridge on landward edge of tidal mud flat at Cape Borda, Coconut Well and Broome; occasional under *Melaleuca dealbata* at Karrakatta Bay. Also occurs in NT and Qld. Ranges from Africa through Asia to Indonesia, the Philippines and northern Australia.

A highly variable species with ornamental potential.

Flowering January-August.

Hibiscus sabdariffa

Hibiscus sabdariffa* L. **Rosella

Annual herb to 1 m, stems reddish, glabrous; leaves petiolate, blade ovate and unlobed or broadly ovate to circular in outline and deeply 3-lobed, glabrous, lobes elliptic, base obtuse, margin serrulate, apex more or less acute; flowers yellow with reddish brown base, solitary and axillary or apparently in a terminal leafy raceme; calyx deep red, succulent and enlarging in fruit, sparsely pilose; capsule broadly ovoid, beaked; seeds brown with scales.

Naturalised in disturbed sites around Broome, old lugger camps and other settlements on the Peninsula. Also recorded for NT. Thought to be native to Africa, now widely naturalised in tropical and subtropical regions.

The succulent calyces can be used to prepare jam and preserves. Also used in India, south-east Asia and Indonesia as a substitute fibre for jute.

Flowering and fruiting May-June.

Lawrencia viridi-grisea

Lawrencia viridi-grisea Lander

Erect shrub to 0.5 m, hermaphroditic; stems, stipules, leaves and adaxial surfaces of calyces densely tomentose giving the plant a distinctive grey-green appearance; leaves alternate or clustered on reduced branches with distinctly petiolate basal leaves merging into subsessile floral leaves; stipules green and leaf-like, filiform or narrowly triangular; leaf blade narrowly linear, narrowly elliptic to elliptic and sometimes falcate, or obovate, flat, becoming coarsely dentate towards the apex, sometimes merely 3-lobed; flowers bisexual, sessile, axillary, solitary, often crowded in leafy fascicles; corolla white or pale yellow; fruit of 5 mericarps; seeds triquetrous, brown, smooth.

On sandy bank on edge of tidal flats growing with *Acacia ampliceps* and *Hemichroa diandra*, 2 km south of Cape Bertholet.

A variable species extending from north of Perth to the Dampier Peninsula and east into the Northern Territory, where it occurs on subsaline sand and clay soils, inland playa lakes and saline depressions. Not recorded in the Flora of the Kimberley.

Flowering and fruiting August (possibly flowers throughout the year).

Sida acuta

Sida acuta* Burm.f. subsp. *carpinifolia* (L.f.) Borss. **Spinyhead Sida

Herb or shrub to 0.5 m, indumentum stellate-pubescent; stems eventually glabrous; leaves yellowish green, ovate to triangular-ovate, apex acute or tapered into blunt point, base rounded to sub-cordate, margin serrate; flowers yellow, solitary or clustered in axils; calyx 10-ribbed basally; schizocarp more or less ovoid, domed in the centre; mericarps 6, separating with time, glabrous, strongly rugose on the outer edge, conspicuously awned, sides reticulate; awn up to 2 mm long, glabrous.

Very common under *Melaleuca* in sandy soil near Martins Well and One Arm Point. Also occurs in NT and Qld. A widespread weed of tropical regions, possibly native to tropical America and Africa.

Flowering and fruiting April-September.

Sida cordifolia

Sida hackettiana

Sida intricata

Sida rohlenae

Sida cordifolia L. **Goat's Horns**

A rather coarse branching subshrub to 1 m, more or less clothed with a soft stellate tomentum of velvety hairs, the branches also hirsute with spreading hairs; leaves on rather long petioles, broadly cordate or almost orbicular, or rarely ovate-lanceolate; flowers small, creamish yellow with reddish orange centres, on short axillary pedicels or clustered into short leafy racemes; calyx 10-ribbed basally; schizocarp more or less ovoid; mericarps 8-10, readily separating at maturity, sparsely stellate-hairy, faintly rugose on the outer edge, conspicuously awned, sides reticulate; awns c. 3 mm long, retrorsely barbed with simple hairs.

Frequent in pindan scrub on edge of saltmarsh near Rodeo Ground, 6 km from Broome. Also occurs in NT and Qld. A pantropical weed.

Flowering April.

Sida hackettiana W. Fitzg. **Golden Rod**

Erect shrub to 1.5 m, with a pale dense stellate indumentum; leaves dark green above, pale green below with the veins prominent, cordate-ovate to lanceolate, densely stellate-hairy above and below, margin crenulate; flowers small, orange, sub-sessile in dense axillary clusters which form terminal or axillary leafy spike-like racemes, the spikes sometimes compound; calyx not ribbed, densely stellate-hairy; schizocarp ovoid to conic, greatly domed in the centre, shortly stellate-hairy; mericarps 5, slow to separate at maturity, faintly rugose on outer edge, faintly reticulate on sides.

Recorded from around the Broome area, in Kundandu Creek near Moorak Bore, James Price Point, Lombadina and One Arm Point. Also occurs in NT, Qld and NSW.

The species name commemorates Sir John Winthrop Hackett (1848-1916), proprietor and editor of the *West Australian* newspaper and first Chancellor of the University of Western Australia.

The type collection was made in 1905 from Wingrah Pass (= Windjana Gorge in the Napier Range) by William Vincent Fitzgerald, the naturalist attached to the Charles Crossland trigonometrical survey.

Referred to in the Kimb. Flora under *S. subspicata* F. Muell. ex Benth.

Flowering February-August.

Sida intricata F. Muell.

Small woody stemmed prostrate to spreading undershrub to 0.5 m; leaves small up to 25 mm long, 6 mm wide, narrow oblong, crenate, golden stellate hairy, more so on the undersurface, apex truncate; flowers solitary, small, axillary on recurved pedicels up to 8 mm long; calyx not ribbed; fruits globular, pubescent; mericarps 5, wrinkled on back, honeycombed on sides.

Rare in *Eucalyptus/Acacia* woodland, north of Curlew Bay near Easton Point. Also occurs in NT and SA.

The first record from the Kimberley and not recorded in the Flora of Kimberley.

A species currently under taxonomic revision and most closely related to a taxon from sand dunes to the south and Central Australia and *Sida* sp. B Kimb. Flora (R. Barker, State Herbarium of S.A. - pers. comm.).

Flowering and fruiting January-August.

Sida rohlenae Domin var. *mutica* (Benth.) Fryxell

A spreading to erect subshrub to 0.5 m, with an indumentum of very short and very dense stellate hairs and long simple spreading hairs; leaves lanceolate or linear oblong, crenate or dentate, dark green above, lighter

green below; flowers axillary, solitary or in few-flowered clusters, yellowish orange; calyx 10-ribbed basally; schizocarp more or less ovoid, not greatly domed in the centre, glabrous; mericarps 8-10, readily separating at maturity, rugose on the outer edge, not awned, sides reticulate.

Common on red sand dunes near Gantheaume and One Arm Points. A species also occurring in NT, SA, Qld and NSW. The var. *mutica* is recorded from the Kimberley and NT.

Flowering February-October.

Sida spinosa L. **Spiny Sida**

Spreading shrub to 1 m, with a short dense stellate indumentum; leaves ovate to lanceolate, margin crenate; flowers axillary, rich yellow to orange, solitary or in clusters of 2-5 flowers; calyx 10-ribbed basally, not greatly enlarged in fruit, with a prominent midrib; schizocarp more or less ovoid, glabrous except for some short stellate hairs at the apex; mericarps 5, readily separating at maturity, rugose on the outer edge, shortly awned, sides more or less smooth; awns less than 1 mm long, erect at first but soon divergent, pubescent.

In pindan and alluvial soil beside billabong at Cape Bertholet and Broome. Also occurs in NT and Qld.

Flowering April-May.

Sida sp. B Kimb. Flora

Much-branched subshrub to 0.5 m, the whole plant covered in a rusty indumentum of short dense felted stellate hairs; leaves greyish green, densely stellate-hairy above and below, margin serrulate to serrate; flowers small, yellow, solitary and axillary; calyx not ribbed, densely hairy; schizocarp ovoid, gradually domed in the centre but not grooved between the mericarps, minutely stellate-hairy; mericarps 5, smooth to slightly rugose on the outer edge, sides reticulate.

Common in pindan around Broome townsite. Appears endemic to the pindan soils of the south-west Kimberley.

Flowering and fruiting June-December.

Sida sp. B

Thespesia populneoides (Roxb.) Kostel

Shrub or tree to 5 m, the young parts and underside of the leaves sprinkled with minute rust-coloured scales, otherwise glabrous; leaves broad-cordate, acuminate; flowers yellow with purple centre, turning pink as they age, on axillary pedicels usually shorter than petioles; capsules hard and woody, globular to depressed-globular, covered with minute scales, indehiscent or opening longitudinally when dry.

A common strand species at Pender Bay, Packer Island, Gnamagun and One Arm Point. Also occurs in NT and Qld and on coasts of the Indian Ocean, Malaysia, Indonesia, the Philippines and New Guinea.

Bardi name = *loorrood*. Wood good for axe handles.

The non-splitting fruits fall when ripe and are dispersed by floating in the sea, the seeds capable of surviving for several months.

Previously confused with the closely related Portia-Tree (*T. populnea* (L.) Sol. ex Correa), a native of the Old World Tropics and cultivated in Broome. It can be distinguished from *T. populneoides* by the shorter articulate pedicels and leaves with a more acute basal sinus.

Flowering March, April.

Thespesia populneoides

Owenia reticulata

Owenia reticulata

Owenia reticulata Right: *Owenia vernicosa*

Owenia vernicosa

MELIACEAE

Owenia reticulata F. Muell. **Desert Walnut**

Spreading shade tree to 14 m; bark brownish, glossy, platy, shallowly fissured; young shoots viscid or gummy; branchlets thickened, gnarled in appearance; leaves clustered at the end of the branches; dark green on upper surface, pale green below, leathery, leaves paripinnate; leaflets 6-12, sessile, narrowly to broadly elliptic, venation strongly reticulate; male and female flowers on separate plants; male inflorescences very divaricate; flowers white, small; fruit a large, globose drupe, the epicarp fleshy, becoming reddish brown, the endocarp hard and very rugose.

Usually in sandy soil or sand ridges in eucalypt woodland and behind coastal dunes at Martins Well, One Arm Point, Disaster and Beagle Bays, inland of Willie Creek, Roebuck Plains and Broome. Also occurs in NT and Qld.

Bardi name = *lambilamb*; Nyul Nyul = *limbalim*. Fruit apparently not eaten on the Peninsula, though popular when roasted by the desert people inland (see pp. 39-45 in P. Lowe & J. Pike *Jilji* (1990) Magabala Books:Broome). Leaves, bark and fruit are reputed to be the strongest medicine, infusion applied to rheumatism, cuts and sores. The sweet gum is also favoured by the desert people.

Has horticultural potential. Difficult to germinate. The seed appears to have very long viability. Termites eat woody nut and this may assist germination.

Differs from *O. vernicosa* in the prominently raised veins and the 6-12 leaflets.

Flowering May-October; fruiting June-November.

Owenia vernicosa F. Muell.

Deciduous tree to 10 m, glabrous, the young shoots often viscous or gummy; bark brown, papery and layered; leaves paripinnate in terminal clusters; leaflets 12-28, sessile, lanceolate, acuminate, dark green glossy above, paler below; venation reticulate, not prominently raised, margin entire; male and female flowers on separate plants; flowers small, in axillary panicles; fruit ovoid, green, turning reddish as they ripen, smooth but wrinkled with age.

Restricted to a sandy rise near sandstone outcrop, 2.5 km south-east of Gallen Well near Skeleton Point at the northern tip of the Peninsula. Found throughout the Kimberley, often on sandstone. Also occurs in NT and Qld.

Flowering November; fruiting June.

Xylocarpus moluccensis (Lam.) M. Roemer **Cedar Mangrove**

Semi-deciduous, glabrous mangrove to 20 m; pneumatophores cone-

shaped, plate-like buttresses present; bark blackish brown, longitudinally fissured or flaking in small pieces; leaves compound, glossy green, turning reddish orange before shedding, leaflets 2, 4 or 6, shortly petiolate, narrowly elliptic to elliptic, becoming leathery, entire, acute or obtuse; flowers cream, in slender terminal thyrses; fruit a spherical leathery capsule, opening irregularly by 4 valves at base and apex; seeds 8-16 large and angular, testa smooth and corky.

Apparently localised on the Peninsula to mangals at Disaster Bay in King Sound. Also occurs in NT and Qld. Extends from south east Asia, Malaysia, Indonesia and New Guinea.

Fruits buoyant and dispersed by currents and tides.

Previously known as *X. australasicus* Ridley.

Flowering and fruiting June-December.

Xylocarpus moluccensis

MENISPERMACEAE

Tinospora smilacina F. Muell. **Snake Vine**

Vigorous, glabrous, deciduous climber from underground rootstock; base of stems becoming thick and woody; bark paper thin, shedding easily from the stem; branches somewhat succulent, stems brown with prominent lenticels; leaves dark green on upper surface, pale green below, ovate, deeply and broadly cordate at the base; male and female flowers on separate plants; inflorescence pseudo-racemes of fascicles, with usually 3 flowers per fascicle, sometimes appearing when the plant is leafless; flowers small, greenish, anthers bright yellow, prominent; fruit a drupe, usually 2 or 3 per flower, ellipsoid, clustered, green, turning bright red on ripening; seed embedded in a sticky, mucilaginous pulp.

Tinospora smilacina

Common in vine thicket behind coastal dunes at Martins Well, and on sandstone plateau of Dampier Hill, Cape Leveque, One Arm Point, Pender Bay and Broome. Common throughout the Peninsula. Also occurs in NT, Qld and NSW.

Bardi name = *oondal*. Yawuru name = *kalalamburr*. Young plants, leaves and stems medicinal, for rheumatism, warmed and applied to affected area; used as rope and worn as a headband in ceremonies.

The fruits are often eaten and dispersed by Mistletoe Birds. Aerial stems severed during the wet season produce roots which may reach the ground.

Flowering February-November; fruiting April-September.

Tinospora smilacina

MENYANTHACEAE

Nymphoides beaglensis H.I. Aston **Beagle Bay Marshwort**

Floating aquatic or more commonly rooted in mud at edge of pools; petioles maroon; floating leaves broadly ovate to more or less circular in outline, deeply cordate, entire; upper surface of leaf dark green, lower surface pale green tinged light maroon; inflorescence subtended by a floating leaf; flowers white with pale mauve centre and white fringe, with deep maroon in the throat, 5-partite, heterostylous or possibly tristylis; capsule ellipsoid to broadly ellipsoid; seeds 33-64 per capsule, dark grey-brown-black, more or less globular, bearing spaced clusters of 1-8 obtuse tubercles on and near the edge.

Only known in the Kimberley from Bunguaduk waterhole near Beagle Bay and in drainage basin and seasonal claypans at Lake Campion and near Yulleroo Well where it appears endemic.

This species was first collected by A. Forrest in April 1879 from the Bunguaduk locality and described from a collection made by K.F. Kenneally in August 1985.

Flowering March-August.

Nymphoides beaglensis

Nymphoides indica

Nymphoides indica

Acacia acradenia

Acacia adoxa

Nymphoides indica (L.) Kuntze **Snowflake Marshwort**

A robust floating perennial aquatic, or rooting in mud at edge of pools; stems from a submerged tuft, simple, resembling a petiole, becoming a single terminal floating leaf; leaves orbicular, or broadly oval, deeply cordate, usually entire or sometimes slightly crenate; inflorescence subtended by a floating leaf; pedicels usually numerous, tightly clustered; flowers white, yellow or orange in the throat, strongly fringed on the margins, finely hairy on the inner face and bearded at the base, (4)5(7)-partite, heterostylous; capsule broadly ellipsoid to more or less globular; seeds 1-50(80) per capsule, creamish to dark grey, more or less globular, smooth or variously tuberculate.

An uncommon aquatic in shallow water or creeping on mud at edge of Bunguaduk waterhole near Beagle Bay and at Lake Campion and Taylors Lagoon. Also occurs in NT, Qld and NSW.

A highly variable pantropical species. In its most easily recognised form it is a robust plant with large thick-textured leaves and densely hairy corolla lobes.

Flowering March-September.

MIMOSACEAE

Acacia acradenia F. Muell.

Shrub to 3 m, with grey or brown smooth bark; branchlets more or less terete to angular, usually with minute appressed hairs, rarely scurfy or almost glabrous and viscid; phyllodes alternate, more or less erect, narrowly elliptic to elliptic, up to 8 cm long and 1.5 cm wide, flat, more or less symmetric to slightly asymmetric, straight to very slightly curved, glaucous, thickly coriaceous, usually minutely hairy, with 4-6 prominent longitudinal veins, marginal veins also prominent, apex prominent and obtuse; inflorescence of axillary heads, sometimes arranged in racemes with the development of short axillary flowering shoots; peduncles 1-3 per axil, hairy; heads yellow, cylindric, axis minutely hairy; pods narrowly compressed cylindric, thick, usually slightly curved, only very slightly constricted between seeds, glabrous, scurfy or minutely hairy; seeds longitudinal in pod, elliptic in outline, with enlarged funicle and aril.

On the Peninsula restricted to gravel road verges in the Logue River area where it forms scattered stands. Also occurs in NT and Qld.

The seeds of this species have been utilized by Aborigines for food. Sometimes previously referred to as *Acacia curvicarpa* W. Fitzg.

Flowering March-July; fruiting July-October.

Acacia adoxa Pedley var. *subglabra* Pedley

Spreading shrub to 0.5 m; branchlets terete, usually densely or sparsely hairy with soft white erect to slightly retrorse hairs; phyllodes mid-green in regular whorls of 6-10, sessile, linear-terete or slightly recurved towards the apex, moderately to sparsely hairy or glabrous, apex with a very short mucro; infloresence globular; peduncles 1 per axil, heads yellow; pods dark brown at maturity, more or less sessile with viscid glabrous valves, with a thickened margin, raised over but scarcely constricted between seeds, dehiscing along one suture; seeds transverse in the pod, broadly oblong to square in outline; aril whitish, with pale green tinge.

A common species in the pindan on the southern half of the Peninsula. This variety is restricted to the Kimberley extending south into the Pilbara.

Edible grubs occur in the rootstock (Paddy Roe-pers. comm.).

Seeds harvested by ants.

Flowering May-November; fruiting October.

Acacia ampliceps Maslin **Salt Wattle**

Dense glabrous shrub, or rarely a tree to 6 m; branchlets yellowish, more or less terete but faintly ribbed; stipules caducous; phyllodes variable, normally linear to narrow-elliptic, flaccid, light green, midribs and marginal nerves yellowish; inflorescence of axillary racemes of heads; peduncles 1 or 2 per axil; flower-heads globular, white to cream; pod pale grey, linear, straight or slightly curved, raised over and constricted between the seeds, hard and brittle and sometimes breaking between the seeds, glabrous, longitudinally striate; seeds shiny grey-black, longitudinal in pod, compressed ellipsoid, with a bright red to orange funicle and aril.

In light brown sand behind coastal dunes in mixed scrub of *Melaleuca nervosa* and *Grevillea pyramidalis* and a ground cover of *Cymbopogon procerus* at Cape Bertholet. In grey sandy loam along creek with dense stand of *Melaleuca acacioides* at Chattur Bay; on saltflat margins inland from Carnot Bay, occasionally on creek banks in Coulomb Nature Reserve, Roebuck Plains, Deep Creek and Logue River. Also occurs in NT.

Acacia ampliceps

Left and above: *Acacia ampliceps*

In the Kimberley, seeds have been used by Aborigines for food.

This species is amongst the most salt tolerant of acacias and is a useful fodder tree. Cultivated in Broome and being tested overseas.

Flowering April-September; fruiting September.

Acacia bivenosa

Acacia bivenosa DC. **Cable Beach** or **Dune Wattle**

Large, bushy, glabrous shrub to 2.5 m; bark greyish brown, shallowly longitudinally fissured; branchlets often glaucous or pruinose, somewhat angular with decurrent ribs; phyllodes bluish green, alternate, usually subsessile, with 2 prominent, divergent, longitudinal veins, obovate to oblong-lanceolate, obtuse and with a callous recurved point; new growth maroon with yellow tips; inflorescence of axillary racemes of heads, sometimes the racemes leafy and the heads appearing solitary, 1 per axil; heads bright yellow, globular; pods elongated, nearly straight, flat, constricted between seeds, coriceous, somewhat brittle and sometimes breaking between seeds, wrinkled, margins thickened, light brown when ripe, dehiscing by the valves reflexing; seeds shiny greyish black, longitudinal in pod, oblong-elliptic in outline; aril bright red.

Common in calcareous sand near Willie Creek and Cable Beach. Not found north of Barred Creek. Occurs south to around Exmouth. Also occurs in NT and Qld.

Yawuru name = *nirliyangarr.*

Immature pods attract flocks of Red-winged Parrots which extract the seeds.

A variety was described from Broome by Hochreutiner in 1925 as *A. bivenosa* var. *borealis*.

Flowering June-October; fruiting September, October.

Acacia bivenosa

Acacia colei

Acacia colei

Acacia eriopoda

Acacia eriopoda

Acacia colei Maslin & Thomson **Candelabra, Soap** or **Cole's Wattle**

Open shrub 5 m tall; branchlets apically acutely angular, together with phyllodes densely puberulous or minutely sericeous (sometimes glabrous); phyllodes silvery, obliquely narrow-elliptic; spikes not dense, light golden; pods clustered on receptacles, curved to coiled, somewhat bony, constricted between and raised over seeds, mature pods pale brown to reddish brown to black, dehisced pods dark reddish brown, often persistent in loose spherical clusters; seeds ovoid, shiny black, arils bright yellow.

In red sand in tall dense mixed scrub of *Acacia*, *Eucalyptus* and *Pouteria sericea* and growing with *Acacia neurocarpa* around edge of a samphire-mangrove tidal flat at Cape Borda and One Arm Point. An especially common wattle of disturbed areas and widespread throughout the Peninsula. Also occurs in NT and Qld. A widespread species of tropical Australia.

Bardi name = *noomoorrgoordood*; Nyul Nyul = *numornagudgud*; Yawuru = *lirrirngin*. Stems used to make spears if nothing else available. Sticky unripe pods moistened and rubbed between palms to produce a greenish lather which removes dirt and cleans hands. The green seeds are roasted within the pods, while the ripe seeds are ground to a flour for making damper, or even into a paste for use as a traditional baby food. Traditionally seeds were collected, wrapped in paperbark and stored underground, for use when times were lean. There is a report however, on a 1913 Queensland Agricultural chemical test, that the seeds contained a saponin, which is potentially poisonous. It is possible that this test may have been conducted on green seeds.

This tree has been introduced to dry tropical Africa and India where it is considered to be one of the most promising fuelwood species. The seeds of this species are highly nutritious containing 21% protein, 10% fat and 57% carbohydrate (including fibre) and have great potential as a human food source. It is also used for windbreaks and revegetating areas devastated through overgrazing. Its dense wood is well suited to charcoal conversion.

This taxon was previously referred to as *A. holosericea* A. Cunn. ex G. Don from which it has now been segregated.

Acacia colei appears to have evolved as an allopolyploid from *A. neurocarpa* (diploid) and *A. cowleana* (tetraploid).

The type specimen was collected from the Broome townsite by Tim Willing in 1991.

Flowering June-September; fruiting August, September.

Acacia eriopoda Maiden & Blakely **Broome Pindan Wattle**

Tall resinous shrub to 5 m with straight, erect trunks; bark grey, finely fissured at the base of the trunk; branchlets angular, glabrous; phyllodes alternate, erect, linear, glabrous, not rigid, ascending, pale green, finely multi-striate with central nerve more evident, not reticulate, variable in width; inflorescence of 1-4 cylindrical heads per axil, yellow; pods light brown, linear-terete and raised over and distinctly constricted between seeds, cartilaginous, longitudinally wrinkled; seeds brownish black, longitudinal in pod, ellipsoid; arils whitish, tinted green.

In red sand in tall, dense mixed scrub of *Acacia*, *Eucalyptus* and *Pouteria sericea* at Coulomb Point. The dominant species of the pindan on the southern Peninsula.

Bardi name = *irroogool*. Yawuru name = *yirragulu*. Stems used for making spears.

The gum is rich in protein (42%) and has an unusually high arabinose content of potential value in the food industry (Anderson, D.M.W. *et al. Phytochemistry* 22(11) pp. 2481-2484, 1983).

Flowering April-July; fruiting September, October.

Acacia farnesiana* (L.) Willd. **Sweet Mimosa Bush

Intricately branched shrub or tree to 2.5 m with brown smooth bark; branchlets glabrous, shiny reddish brown with prominent lenticels; stipules harsh prominent spines to 35 mm long; leaves alternate, petiolate, bipinnate; petioles with gland at or above middle, rounded and conspicuous; rhachis with 1-4 pairs of pinnae with 8 plus pairs of leaflets; heads yellow, globular in axillary clusters on pubescent peduncles; pods indehiscent, dark brown, often white flecked, narrowly cylindric, slightly curved, glabrous, not constricted between seeds, filled with pith; seeds obliquely transverse in pod with no aril.

Common throughout the Kimberley but possibly introduced to the Broome township area and restricted to a few plants. Also occurs in NT, SA, Qld and NSW. A widespread commonly cultivated species throughout tropical and subtropical America, Africa and Asia.

Probably introduced to Australia prior to European settlement from Central America where it is native.

Acacia farnesiana is favoured for its fragrant flowers and is used in Mediterranean countries to manufacture perfumes.

Flowering May-July; fruiting September-November.

Acacia farnesiana

Acacia hippuroides Heward ex Benth.

Low diffuse shrub to 1 m tall and 1.3 m in diameter; branchlets terete with yellowish hairs; phyllodes light bright green, in whorls of 12-15, sessile, linear-terete, slightly curved upwards, abscissing from lower branches (scars prominent), hairy; heads globular, golden yellow; pods narrowly oblong, flat, usually curved, raised over but not constricted between the seeds; sticky, glabrous or with greyish yellow hairs; seeds dull black, transverse in pod, elliptic to almost circular in outline; aril enlarged, whitish, tinted green.

In light brown sand with spinifex and *Acacia eriopoda* at Cape Bertholet and Lombadina. On the Peninsula not found south of Willie Creek and usually an understory species associated with *Eucalyptus miniata* and *Acacia tumida*.

Bardi name = *balalagoord*.

An attractive ornamental. The seeds are harvested by ants.

Flowering March-September; fruiting June-September.

Acacia hippuroides

Acacia monticola J.M. Black **Red Wattle**

Tall viscid shrub or small tree 5-7 m in height, mostly single-stemmed, with reddish brown, minni-ritchi bark; branchlets, phyllodes and peduncles minutely and finely puberulous; stipules triangular; phyllodes slightly asymmetric, elliptic to obovate, sometimes almost circular, with 3-5 longitudinal nerves; heads globular or obloid; pods narrow-oblong, sticky, flat but raised over, but not constricted between seeds; seeds dull brown, transverse or transverse-oblique in pod, elliptic in outline; arils whitish, thickened.

Scattered throughout the Peninsula. Often forming dense, impenetrable, monotypic stands in areas not burnt for long periods such as at Deep Water Point. In coastal situations, such as at Gantheaume Point, this species often favours rocky outcrops and may be a low, dense, domed, wind-pruned shrub to 1 m tall. This is an uncommon growth form for this species. Also occurs in NT and Qld.

Bardi name = *galirrin*. Nyul Nyul = *galarrajen*. Yawuru = *warraka*. Wood used to make digging and clapping sticks, boomerangs, spear heads and raft pegs to nail together the Bardi kalwa or double raft. The tree was used medicinally, an infusion of leaves being applied to bruised and painful areas of the body.

Acacia monticola

Acacia monticola

Acacia affin. *monticola*

Acacia neurocarpa

Acacia nuperrima

Acacia pachyphloia

Often an indicator of surface or subsurface lateritic gravel deposits.

Flowering April-June.

Acacia affin. *monticola* J.M. Black

Tree to 5 m; bark reddish, minni-ritchi, phyllodes and peduncles distinctly hispid, phyllodes unequally narrowed towards base.

In sand behind coastal dunes in heavily wooded area on edge of vine thicket, 3 km east of Cape Leveque.

Closely related to *A. monticola* and possibly an undescribed subspecies (B.R. Maslin-pers. comm.).

Flowering May-July; fruiting September-October.

Acacia neurocarpa Cunn. ex Hook.

Mature plant 8 m tall, with a neat, ascending habit; branchlets angular and ribbed; phyllodes glaucous, blunt with erect hairs confined to the 2-3 prominent veins; heads rod-like, bright yellow, single or in pairs in the upper axils; pods dark brown, 2-4 cm long, tightly coiled, hairy; old pods glabrescent, in spherical clusters; seeds shiny black, arils bright yellow, smaller than *A. colei*.

Favours shady positions and seems restricted to seasonally wet creeks with *Melaleuca acacioides* at Chattur Bay and in spring country around Beagle, Carnot and Disaster Bays. Widespread in the Kimberley. Also occurs in NT.

Bardi name = *noomoorrgoordood*; Nyul Nyul = *noomoorrnagoodood*. Used for making spears similar to *A. colei*.

Previously, plants from the Peninsula were erroneously called *A. pellita* O. Schwarz, but they are now regarded as a distinct species related to *A. holosericea* and *A. colei*. This species may hybridise with *A. colei* in spring country (near Beagle Bay) where they both occur. *Acacia neurocarpa* is distinguished from its closest relatives by its stout, acutely angled branchlets, silvery sericeous new shoots (not pale yellow when first initiated as in *A. colei*), large phyllodes with gland-bearing apices, long, linear bracteoles and tightly coiled pods.

Flowering and fruiting June-August.

Acacia nuperrima E.G. Baker (?)subsp. *cassitera* Pedley

Densely branched spreading shrub to 1 m, glabrous and rather resinous; branchlets prominently ribbed; phyllodes glabrous, broadest in the lower half, down-curved or sigmoid; heads yellow, cylindric; pod narrowly oblong, curved, not raised over or constricted between seeds, woody, glabrous, obliquely striate, gradually tapered to the base, margins greatly thickened, apex uncinate; seeds oblique in pod, narrowly obloid-ellipsoid, with a narrowly conic funicle and aril.

Localised on rocky eroded creek banks of Wonganut Creek and also on slopes of North Cliffs in Fraser River area.

The taxonomic status of this entity is uncertain and currently under review.

Flowering January-April.

Acacia pachyphloia W. Fitzg. ex Maiden

Slender shrub or small tree to 5 m; bark grey, soft, corky, with deep vertical fissures; branches and foliage pendulous; leaves alternate, petiolate, bipinnate, minutely sparsely hairy, gland below lowest pair of pinnae small and inconspicuous; pinnae in 6-9 pairs, leaflets opposite, 30-60, sessile, narrowly oblong to narrowly elliptic, sometimes slightly curved, almost glabrous, obtuse to subacute; heads globular, large, cream to pale yellow; pods narrowly oblong, flat, slightly curved, not raised or constricted

between seeds, glabrous, coriaceous, longitudinally wrinkled, margins slightly thickened; seeds 7, more or less longitudinal in pod, almost circular in outline, glabrous, with a thickened funicle and a very small aril.

On the Peninsula, only recorded from *Eucalyptus polycarpa* woodland 10 km south of Lombadina but widespread north of King Sound. Also occurs in NT.

Leaves of some specimens have been reported to contain small amounts of the cyanogenic glycoside proacacipetalin (see Maslin, B.R., Conn, E.E. and Dunn, J.E. 1985 Cyanogenesis in *Acacia pachyphloia*, *Phytochemistry* 24(5):961-963) but there have been no documented cases of stock poisoning.

Flowering and fruiting January-April.

Acacia platycarpa F. Muell. **Ghost Wattle**

Shrub or small tree to 5 m, glabrous apart from the flowers; bark on main trunk maroon and flaking in an almost minni ritchi fashion; extreme branchlets pruinose; phyllodes alternate, broadly and obliquely falcate, subglaucous with 3-4 prominent longitudinal veins which coalesce into the abaxial margin, strongly reticulate, the outer or upper margins often very shallowly lobed, apex obtuse; heads pale cream to white, in axillary and terminal racemes, sometimes paniculate; pods narrowly oblong, straight, flat to slightly biconvex, scarcely raised over and not constricted between seeds, rather woody, reticulate, margins thickened and expanded into a narrow wing; seeds dark brown, transverse in pod, large, flattened, elliptic, with a bronze becoming brown hat-like aril.

In reddish brown soil in *Eucalyptus miniata-Acacia tumida* woodland at Beagle, Chattur and Pender Bays and common north of Willie Creek. Also occurs in NT and Qld.

Bardi name = *irroogool*. Used for spears when nothing else is available.

Flowering April-May; fruiting August.

Acacia platycarpa

Acacia stigmatophylla A. Cunn. ex Benth.

Much-branched shrub to 2.5 m, bark reddish brown, smooth; branchlets somewhat angular and ribbed, glabrous or sometimes slightly scurfy; young shoots viscid; phyllodes alternate, narrowly elliptic to elliptic, flat, leathery, 3-5 prominent longitudinal veins, marginal veins also prominent; apex a prominent callus; heads cylindric, yellow, slender, solitary or in clusters towards ends of branches, on short peduncles; pods reddish brown, narrowly oblong-obovate in outline, erect, rigid, sub-woody, glabrous, narrowed at base, exploding when ripe; seeds oblique in pod, narrowly elliptic in outline with an enlarged light brown funicle and aril.

On the Peninsula localised on sandstone scree at Dampier Hill and throughout the Fraser River area. Also occurs in NT.

Flowering and fruiting June. In cultivation this species will flower two or three times a year.

Acacia stigmatophylla

Acacia synchronicia Maslin

Shrub or small tree to 3 m, often straggly; branchlets glabrous, often pruinose; stipules spiny, deciduous with age; phyllodes light green, variable, linear to elliptic, glabrous, midribs evident; flowering peduncles normally twinned in phyllode axils or along raceme axis; heads pale yellow, small and numerous; pods oblong, flat, raised over seeds, chartaceous, yellow to light brown; seeds brown, persistent on papery halves of pods; arils pale olive, slightly flattened and pear shaped.

Localised on lateritised areas along drainage lines, Fraser River Bore and Logue River and forming a dense shrubland on Jarrananga Plain.

Acacia synchronicia

Acacia translucens

Acacia translucens

Acacia tumida

Acacia tumida

Confined on the Peninsula to the south-east corner.

A species previously confused with *A. victoriae* Benth. The two species are most reliably distinguished by their inflorescences. In *A. synchronicia* the inflorescences are initiated on the new shoots where 1 or 2 peduncles arise from within the axils of juvenile phyllodes. In *A. victoriae* the inflorescences are usually all or mostly racemes and this species is more floriferous than *A. synchronicia*. The west Kimberley specimens of *A. synchronicia* have thinner phyllodes and pale yellow flowers (a character of *A. victoriae*). The specific name refers to the simultaneous initiation of phyllodes and inflorescences on new shoots.

Flowering April-July.

Acacia translucens A. Cunn. ex Hook. **Poverty Bush**

Low, spreading, glabrous shrub to 2 m; branchlets angular and ribbed; phyllodes shiny, resinous, dark green, alternate, obliquely elliptic-obovate, and curved to somewhat sigmoid, flat, asymmetric, not coriaceous, glabrous, longitudinal veins usually 3 but obscure, acute to obtuse with a blunt callus; heads globular, yellow; pods narrowly oblong-obovate, erect, tapered towards base, flat, sub-woody, obliquely striate, margins greatly thickened; seeds small, brown, oblique in pod, obloid-ellipsoid often narrowly so, with a conic light brown aril and funicle.

On the Peninsula localised in deep red sand at One Arm Point and Riddell Point. Also occurs in NT.

Bardi name = *balalagoord*.

Commonly cultivated in Broome. Pods explode when ripe.

Flowering February-November.

Acacia tumida F. Muell. ex Benth. **Wongai** or **Spear Wattle**

Open spreading shrub or tree to 8 m, capable of regenerating by coppice or root suckers; bark grey, smooth but fissured at base of trunks; branchlets yellow, more or less terete, sometimes pruinose, glabrous; phyllodes light green, alternate, narrowly elliptic, flat, falcate, tapered towards the end, sometimes glaucous or more rarely pruinose, both ends with 3 or more prominent longitudinal ribs and fine reticulate venation, marginal ribs prominent, apex more or less acute with a blunt callus; inflorescence normally racemose and growing out; heads bright golden yellow, cylindric, heavily and fragrantly scented; pods narrowly cylindric, straight to slightly curved, raised over and slightly constricted between seeds, thick, woody, glabrous, longitudinally wrinkled; seeds shiny dark brown to black, occasionally light tawny brown, longitudinal in pod, compressed ellipsoid, with a prominent hat-like aril.

A common wattle dominant in the north of the Peninsula often forming dense thickets in red sand with spinifex, *A. colei* and *A. eriopoda*. An uncommon prostrate form occurs on coastal red loam cliffs north of James Price Point. Also occurs in NT.

Bardi name = *djarbayi* or *wanggay*. Trunks of young trees used to make spears and boomerangs; green pods cooked in hot ashes and seeds eaten. These are notorious for causing flatulence and bad breath. Mature black seeds are pounded into flour, mixed with water and eaten as a paste, or cooked as a damper. Edible gum; bark used to make short-lived string; small green twigs with ends squashed used to spoon out honey from native beehives.

The common name Wongai is an anglicised form of the Aboriginal dialect for spear wattle.

Acacia tumida is reported as possessing nearly all the attributes to make it a most useful food source for people living in subtropical/tropical dry zones. *A. tumida* is the fastest growing Australian wattle in the Sahelian

zone of West Africa, typically averaging more than 1 metre per year height growth in early years. Many of these plants have been grown from seed collected at Cape Leveque.

A somewhat variable species. The most common form on the Peninsula has non-pruinose branches and green phyllodes unlike specimens occurring east along the Fitzroy River which commonly have pruinose stems and bluish phyllodes.

When mass flowerings occur the air is heavily scented with a sweet perfume. The pollen can cause hay fever.

Flowering April-August; fruiting September, October.

Acacia wickhamii Benth.

A compact, spreading resinous shrub to 1 m; bark grey, smooth or finely fissured; young shoots sticky, often glaucous; phyllodes alternate, sub-sessile, somewhat obliquely narrowly ovate-elliptic, flat, somewhat asymmetric, slightly curved and often undulate, glabrous, with 3 prominent longitudinal veins, marginal veins also prominent, apex a conspicuous oblique point; flowers yellow cylindric; pod narrowly oblong, straight, flat, scarcely raised over and not constricted between seeds, viscid at least when young, glabrous, obliquely striate, gradually tapered towards the base, margins thickened, opening elastically by coiling back of valves from top; seeds oblique in pod, with a thickened straight funicle and conic aril.

On the Peninsula, restricted to outcrops of Melligo Sandstone near Cape Leveque and One Arm Point. Also occurs in NT and Qld.

Bardi name = *balalagoord*. Seed and leaves medicinal, used for rheumatism and sores and possibly colds; branches worn tied through hair belt when swimming, said to be an effective shark repellant, especially when recovering turtle.

The type locality for this species is almost certainly south of Swan Point behind Karrakatta Bay, collected by Captain J. C. Wickham in 1838.

Flowering March-June. Possibly sporadic throughout year.

Acacia (? *A. adoxa* x *A. hippuroides*)

Straggling subshrub to 1 m.

In pindan with *A. adoxa* and *A. hippuroides* north of Black Tank from Willie Creek.

Flowering September.

Acacia (? *A. monticola* x *A. eriopoda*)

A more or less infundibular shrub to 4 m tall; bark grey sometimes exfoliating in a minni ritchi fashion; branchlets reddish or yellow; phyllodes dark green, ascending; flower-heads obloid, light golden-yellow. Never observed to set fruit.

Often growing with *A. monticola* and *A. eriopoda* at Cable Beach, Broome and 46 km north of Broome on Cape Leveque Road and One Arm Point.

Flowering June.

Acacia (? *A. monticola* x *A. tumida*)

Erect shrub to 3 m; flowering in abundance. Never observed to set fruit.

Gantheaume Point and Riddell Beach area and elsewhere on the Peninsula where both parents occur.

Flowering June.

Acacia (? *A. tumida* x *A. eriopoda*)

Sprawling shrub or small tree to 5 m tall; phyllodes bright green, con-

Acacia tumida – prostrate form

Acacia tumida

Acacia wickhamii

Acacia (? A. monticola x A. eriopoda)

sistently uniformly narrow and slightly falcate.

Scattered plants seen growing with *A. eriopoda* (very common) and *A. tumida* (not common), 20 km south of Beagle Bay turnoff on Cape Leveque road, Port Drive, Broome, Carnot and King Peaks and along Broome-Derby Road.

Fertile hybrids set fruit intermediate in character.

Flowering June.

Albizia canescens

Albizia canescens Benth.

A beautiful deciduous spreading tree to 3m; bark corky, light grey becoming smooth on upper branchlets, young shoots silvery silky pubescent; leaves twice-pinnate to 35 cm long; pinnae bluish green, usually 2 pairs, leaflets 5 to 8 pairs, very obliquely obovate and unequally narrowed at the base, apex obtuse with a prominent point; flowers-heads small, cream, numerous on short peduncles in dense terminal panicles, much shorter than the leaves; pods (not seen), reported to be stipitate, broad, very thin and flat; seeds flat, orbicular, along the centre of the pod. Deciduous in September.

Localised on the Peninsula in open pindan woodland near Weedong Lake, north of Bobbys Creek and 18 Mile Gully south of Beagle Bay.

Flowering January-February.

Albizia lebbeck

Albizia lebbeck (L.) Benth. **Indian Siris, Powder-puff Tree, Broome Rain Tree**

Spreading deciduous tree to 20 m, with brownish grey, fissured and platy bark, branchlets without lenticels; leaves glabrous or with sparse spreading hairs particularly on axis; glands elliptic to circular and raised; pinnae in 2-4 pairs; upper surface mid-green, lower greyish green, leaflets in 6-10 pairs, very shortly petiolulate, discolorous, obliquely oblong, midrib slightly excentric, usually glabrous, occasionally with minute hairs near margin, obtuse; inflorescence of clusters of pedunculate globular heads; flowers with numerous brush-like stamens, cream at base, tinged lime(?) green at top; pod straw-coloured, narrowly oblong, chartaceous-coriaceous, flat, or slightly twisted, raised over but not constricted between seeds, glabrous, strongly reticulate, margins thickened; seeds brown, broadly elliptic in outline.

Widely cultivated as a fast-growing shade tree in Broome and in settlements on the Peninsula. Also occurs in NT and Qld. A pantropical species probably native to tropical Africa, Asia and Australia.

This species is native to the north Kimberley but the cultivated material may have been introduced from seed obtained outside Australia. Trees may flower 2 or 3 times a year. The flowers are highly sweetly scented and this is often more noticeable at night, a time when the leaves collapse and fold together. During October the trees are a mass of flowers. The flowers and pods are high in protein and the annual leaf fall and flowering provides exceptionally useful feed sources as stock fodder (W. Ralph, *Rural Research* 143, Winter 1989).

The common name Rain Tree is usually applied to *Samanea saman* Merr., a species native to Central America and the West Indies and cultivated in Broome. It can be distinguished from *Albizia lebbeck* by its light crimson brush-like flowers. A good example of *Samanea saman* can be seen at Emerald Park in Broome.

Albizia lebbeck

Albizia procera (Roxb.) Benth.

Small deciduous (in December) tree to 8 m, bark smooth, young shoots silky pubescent, at length glabrous; pinnae usually three pairs, distant along a common petiole often up to 11 cm; leaflets 9 pairs, obliquely ovate-ob-

long, usually obtuse, very unequally narrowed at base, penniveined but not prominently so, minutely hoary-pubescent or glabrous above; inflorescence a loose terminal panicle, each bearing a globular head of 15 to 20 sessile, pale yellow flowers; pod brown, narrowly oblong, very flat and thin, not raised over and not or scarcely restricted between seeds, glabrous, scarcely reticulate; seeds light brown, elliptic in outline.

On the Peninsula restricted to patches each of some 40-50 trees in pinkish white sand between Boolaman and Goolyaroot Lakes and in black soil fringing Camp Inlet. Not common and appearing to be always associated with near-surface ground-water. Also occurs in Qld. A tropical species extending from India through south-east Asia to southern China and New Guinea.

Flowering January-February.

Dichrostachys spicata

Dichrostachys spicata (F. Muell.) C. Gardner **Chinese Lantern**

Shrub or small tree to 4 m, with a minute sericeous indumentum; bark grey, fissured; short branchlets often spinescent; leaves sometimes clustered at the nodes; abruptly bipinnate, with a stipitate gland between the pinnae; leaflets small, pale green, 4-6 pairs, oblong, linear; flowers sessile, in dense cylindrical spikes, either terminal or apparently axillary by the shortness of the branchlet, the upper flowers of the spike hermaphrodite and yellow, the lower ones neuter and pink; pods reddish brown, sessile, brittle, indehiscent, narrowly oblong but curved to coiled in twisted clusters to 8 cm, not or scarcely restricted between seeds, thick, more or less woody, glabrous, obliquely veined; seeds oblique in pod, smooth, reddish brown, broadly elliptic in outline.

Isolated individuals have been recorded from behind Cable Beach and near the former town meat works (closed 1994), but it appears introduced to Broome, possibly by cattle. Also found on the banks of the Logue River. Also occurs in NT and Qld.

Flowering and fruiting April.

Dichrostachys spicata

Leucaena leucocephala* (Lam.) De Wit **Sneaky Tree

Dense shrub to 3 m; branchlets densely sericeous with small curved hairs; leaves bipinnate, pinnae in 4-6 pairs; leaflets in 10-18 pairs, subsessile, narrowly oblong, midrib slightly excentric, acute; inflorescence a pedunculate dense globular head; flowers white; pods stipitate up to 18 cm long, pendulous, brown, narrowly oblong, chartaceous, margins thickened; seeds brown, elliptic in outline, compressed.

A prolific seeding, naturalised weed of disturbed sites in the Broome township. Also recorded for NT, Qld and NSW. Native of tropical America and widely cultivated as a fodder plant; the plant can be toxic to animals if eaten in large quantities.

Flowering and fruiting May-June.

Leucaena leucocephala

Neptunia dimorphantha Domin

Herb, perennial, prostrate or weakly ascending; stipules persistent; leaves bipinnate, glabrous or pubescent, usually bearing one conspicuous gland; pinnae in 2-5 pairs; leaflets in 10-24 pairs, narrowly oblong, glabrous to sparsely hairy; inflorescence a congested spike, pedunculate, borne solitary in the axils of the leaves; spike globoid to nearly ellipsoid in bud; pod ovoid, flat, membranous, distinctly pubescent, reticulate, margins thickened, apex obtuse and abruptly acuminate; seeds one per pod, dark brown, orbicular-compressed.

In black soil areas adjacent to Fraser River and Langey Crossing on the Fitzroy River. Also occurs in NT, Qld and NSW.

Flowering January-March.

Neptunia dimorphantha

Glinus oppositifolius

Ficus leucotricha var. *megacarpa*

Ficus opposita var. *indecora*

MOLLUGINACEAE

Glinus oppositifolius (L.) A. DC.

Prostrate spreading annual herb, with inconspicuous simple hairs on the young stems and leaves, otherwise glabrous; stems light green with reddish tinge, radiating from the base of the plant; leaves green, small, whorled or sometimes opposite, obovate to broadly obovate, obtuse, often apiculate; pedicels several per leaf whorl; sepals green outside and usually white inside, keeled; flowers white to blue (sometimes bright blue); fruit a capsule, green with reddish tinge, releasing many seeds; seeds reddish brown, somewhat reniform.

In grey clay at Bobbys Creek and in *Melaleuca* swamp west of Karrakatta Bay. Occurs in all Australian mainland states extending into Africa and Asia.

Previously known as *Mollugo spergula* L.

Flowering and fruiting November-May.

MORACEAE

Ficus leucotricha (Miq.) var. *megacarpa* F. Muell. ex Corner **Hairy-fruited Rock Fig**

A sometimes deciduous tree to 4 m, the flowering branches and petioles hirsute with spreading white hairs; leaves shortly petiolate, ovate, broadly oblong or elliptic, rounded or scarcely cordate at base, rigidly coriaceous, with 14-18 pairs of prominent lateral veins; pubescent, but the hairs often absent on the upper surface, remaining soft and dense underneath; bracts 2 at base of fig, ovate, hairy, sometimes shedding; figs yellow turning red, axillary, pedunculate, globular, very softly hairy.

Restricted to outcrops of Melligo Sandstone in the One Arm Point Area. Also occurs in NT and Qld.

Bardi name = *goorrir*, *gurir*. The figs are eaten raw.

Flowering and fruiting August.

Ficus opposita Miq. var. *indecora* (Miq.) Corner **Sandpaper Fig**

Shrub or small tree to 3 m, bark brown, slightly fissured; twigs hairy; leaves opposite and/or alternate, ovate or elliptic to almost circular, coriaceous, scabrid, minutely pitted beneath with puberulous or mainly villous stomatal pits; male and female flowers in figs on separate plants; figs green becoming purplish black when ripe, axillary, scabrous or glabrescent, globular to urceolate.

Common around wells (where birds congregate and drop seeds), and in coastal vine thickets near Broome. Also occurs in NT and Qld.

Bardi name = *ranyji*, *ranya*, (*ranja*); Nyul Nyul = *jirrib*; Yawuru = *ngamarnajina*. Edible sweet black fruit, warmed in hot ashes and eaten; leaves used as sand-paper for smoothing the rough edges of spears (=*irrol*), boomerangs (=*irrikil*) and surface of pearlshell (=*kuwarn*); leaves warmed and used as poultice for the treatment of bruises, swellings and rheumatism; wood used for shields; bark ash mixed with bush tobacco (*Stemodia lythrifolia*) for chewing.

Flowering and fruiting April-June.

Ficus opposita Miq. var. *micracantha* (Miq.) Corner **Sandpaper Fig**

Shrub or small tree to 3 m; bark brown, slightly fissured; branchlets and petioles puberulous to hispid-villous; leaves harshly aculeate (prickly) on the upper surface and along the margin; villous-glabrescent beneath; figs green becoming purplish black when ripe, axillary, densely white hispid-villous.

Common in alluvial soil and in coastal vine thickets near Broome and One Arm Point.

Flowering and fruiting April-October.

Ficus platypoda (Miq.) Cunn. ex Miq. **Common Rock Fig**

Spreading tree to 4 m, often with aerial roots; bark grey, smooth; leaves on broad petioles, ovate, obtuse, entire, coriaceous to thickly coriaceous, smooth, usually glabrous, usually with 12-20 pairs of closely spaced lateral veins, rounded or slightly cuneate at base, apex obtuse to acute; figs axillary, yellow becoming orange to red at maturity, globular, usually glabrous.

On Emeriau Sandstone at King Peaks, Carnot Peak, on Melligo Sandstone at Catamaran Bay and Jowlaenga Hills. Also occurs in NT, SA, Qld and Indonesia.

The figs are reportedly edible but are not recorded as having been eaten on the Peninsula.

Flowering and fruiting August.

Ficus virens Aiton var. *dasycarpa* Corner **Hairy-fruited Banyan**

Deciduous tree to 12 m, buttressed with aerial roots; bark grey; leaves glabrous with long petioles, blades ovate to elliptic, apex acute, base cuneate; figs yellow-green, hairy.

In vine thicket behind coastal dunes at Martins Well and Lombadina. Also occurs in NT, Qld and NSW. Widespread from India to China, south-east Asia and south to Australia.

Fruiting April.

Ficus virens Aiton var. *virens* **Banyan** or **Strangler Fig**

Deciduous tree, buttressed with aerial roots, sometimes at first an epiphytic strangler but becoming a tree to 15 m, bark grey; branchlets glabrous or minutely puberulous; leaves glabrous with long petioles, blades ovate to elliptic, coriaceous, smooth, glabrous, with usually 7-9 pairs of lateral veins, base obtuse to subcordate, apex obtuse to acuminate; figs shortly pedunculate, bracts 3 at base of fig, creamish green, smooth, sometimes tinged maroon.

Common in vine thicket behind coastal dunes at Hunter Creek near Cape Leveque, Cygnet Bay, Martins Well and Lake Weedong. Also occurs in NT, Qld and NSW. Widespread from India to China, south-east Asia.

Bardi name = *albay*. Edible fruit, string made from aerial roots, wood used for shields.

A particularly fine specimen can be seen adjacent to the D'Antoine

Ficus opposita var. *micracantha*

Ficus platypoda

Ficus virens var. *dasycarpa*

Left and above: *Ficus virens* var. *virens*

family graveyard at Hunter Creek (Bulgin). This tree formerly shaded the forge and workshop of Harry Hunter, a remarkable English-born blackbirder, beachcomber and boatbuilder who resided with the Bardi c. 1880-1920.

Fruiting April-September.

MYOPORACEAE

Eremophila bignoniiflora (Benth.) F. Muell.

Eremophila bignoniiflora

Spreading, weeping shrub or small tree to 3 m; bark greyish brown, slightly tessellated; branchlets with prominent lenticels; leaves mid-green, slightly discolorous, all alternate but some sub-opposite; blade linear to very narrowly ovate, to 12 cm, attenuate at base, entire or slightly toothed towards apex, acuminate; inflorescence of solitary axillary flowers; flowers white, bell-shaped, with purplish mauve spots inside extending onto the lobes, outer tube creamish white; stamens included; fruits globular, indehiscent.

On the Peninsula restricted to alluvium near the Fitzroy River. Also occurs in all mainland states.

Suspected of being toxic to stock. Cultivated material can be seen in the grounds of the Broome CALM nursey.

Flowering and fruiting July-October.

Myoporum tenuifolium G. Forster subsp. A **Gawar** or **Boobialla**

Myoporum tenuifolium

An erect glabrous shrub to 3 m; bark greyish brown, rough, slightly tessellated, smooth light greyish brown on young branches; foliage clustered at ends of branchlets; leaves alternate, varying from elliptical-oblong to lanceolate or linear, more or less acuminate, much contracted towards the base; pedicels 0.5 cm long, in axillary clusters; flowers white with prominent glands on perianth tube and lobes, anthers mauve; fruit globular, green becoming burgundy at maturity.

Common in coastal pindan and in coastal vine thickets near Broome, James Price Point and Packer Island. Also occurs in coastal NT and Qld.

Known in the Broome area by the Aboriginal name *gawar*. *Myoporum* is a recorded stock poison. The plant seems to be distateful to stock, under normal conditions, but under stress or drought or droving, sheep and cattle may eat sufficient to cause death. Tests have shown that a third of a kilogram of leaves is fatal for sheep.

Recorded in the Kimberley Flora as *M. acuminatum* R. Br. a species now regarded as restricted to the coastal ranges of eastern Australia (R. Chinnock-pers. comm.).

Flowering March-August.

MYRSINACEAE

Aegiceras corniculatum (L.) Blanco **Horned Mangrove**

Aegiceras corniculatum

Much-branched dense mangrove to 3 m; bark brown to grey, smooth; leaves alternate, glabrous, elliptic, apex round to obtuse, base cuneate passing into a short petiole; inflorescence of umbels, sub-sessile on very short knob-like axes; flowers white, with a scent reminiscent of apple cider, in umbels, terminal or on axillary branchlets; fruits maroon, cylindrical, curved, tapered to a long acute apex.

On edge of mangal with *Ceriops tagal* at Pender Bay, Rumbul Bay, Willie Creek, Lombadina, Packer Island and One Arm Point. Also occurs in NT, Qld and NSW. Extends from Sri Lanka and southern China through south-east Asia to Australia and the Pacific Islands.

Bardi name = *oorroolboorr*. Leaves, bark and wood used as a fish poison.

Flowering September-April; fruiting April.

MYRTACEAE

Calytrix exstipulata DC. **Kimberley Heath** or **Turkey Bush**

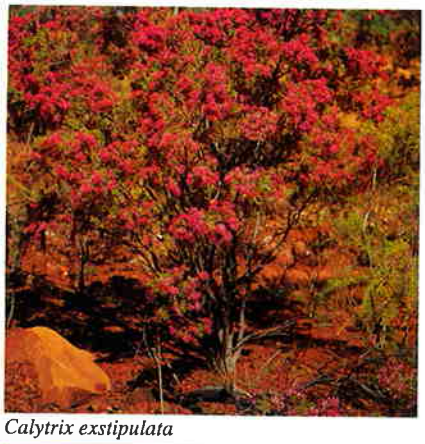
Shrub to 3.5 m; bark dark grey, fissured, stringy; leaves pale green, scale-like, imbricate, densely packed; flowers massed, star-like, papery, off-white, pale pink or reddish.

A widespread species on the Peninsula sometimes forming dense thickets on areas of lateritised gravels as at Coconut Wells and on outcropping Melligo Sandstone at One Arm Point. Also occurs in NT and Qld.

Bardi name = *gidigid*.

A species with horticultural potential.

Flowering April-September.



Calytrix exstipulata

Calytrix exstipulata

Corymbia - A genus recently segregated from *Eucalyptus* which includes the bloodwoods and ghost gums (see K.D. Hill & L.A.S. Johnson (1995), Systematic studies in the eucalypts 7. A revision of the bloodwoods, genus *Corymbia* (Myrtaceae) - published in *Telopea* 6(2-3):185-504).

(Eucalyptus) Corymbia bella Hill & Johnson **Weeping Ghost Gum**

Tree to 12 m; bark white, very smooth; leaves pale green, very narrowly ovate, the new shoots silvery; flowers creamy white in axillary, usually compound umbels; fruits cup shaped to shortly cylindric, often with a definite, rather broad neck, thin-walled, usually finely ribbed.

Widespread but localised near the coast, often fringing salt flats, occasionally behind dunes in sands that are seasonally flooded. A very attractive tree with smooth white bark and weeping foliage. Good examples can be seen at Cape Leveque and One Arm Point.

Bardi name = *marroolal*. Red gum medicinal, applied to sore teeth; bark is burnt to provide ash for mixing with chewing tobacco; containers made from bark.

The principal reason why Kimberley eucalypts have been so little exploited for timber and why sawmills have been absent from the region is that nearly all large trees have been eaten ("piped-out") by the giant termite *Mastotermes darwinensis*. In 1919, forester C.E. Lane-Poole commented on a herbarium label that "No use is made of the wood by pastoralists as the white ants attack it in less than 2 years". However, Ghost Gum timber was occasionally used for stem and stern posts in pearling lugger construction. It was also favoured for rudders.

A species with horticultural potential.

This species and *E. flavescens* were formerly included under *E. papuana* which is now regarded as being restricted to New Guinea.

Flowering October-May.

(Eucalyptus) Corymbia bella

Eucalyptus bigalerita F. Muell. **Northern Salmon Gum** or **Poplar Gum**

Tree to 10 m, with a widely branched crown; bark smooth throughout, varying according to season from yellow to pink to pure white; leaves large, triangular and bright yellowish green, thick; flowers white to cream in axillary umbels; fruit thick, pedicellate, turbinate.

A widely distributed Kimberley species not indigenous to the Broome area but commonly cultivated as a street tree. Also occurs in NT.

Flowering and fruiting July, August.

Eucalyptus bigalerita

(Eucalyptus) Corymbia cadophora

(Eucalyptus) Corymbia cadophora

Eucalyptus camaldulensis

Above right and above: *Eucalyptus (Corymbia) dampieri*

(Eucalyptus) Corymbia cadophora ssp. *cadophora* Hill & Johnson **Twinleaf Bloodwood**

Tree to 4 m; bark more or less tessellate or fibrous throughout, grey; stems of inflorescences often with tubercle-like hairs; mature leaves opposite, sessile, with the leaves of each pair joined at the base, slightly discolorous or concolorous, dull green to glaucous, ovate to narrowly ovate, lateral veins at 15-20 degrees to midvein; umbels in a terminal panicle; flowers creamy yellow; capsule narrowly turbinate to turbinate and with a short neck, not ribbed, outer rim level or almost level; valves 4 or 5, included; seeds compressed with a terminal wing.

Only known on the Peninsula from a single stand in sand on lateritised areas at Bungarra Ridge, 16 km west of Willare.

Previously known as *E. perfoliata* R. Br. ex Benth. and *E. lamprocalyx* Blakely. Listed in the Kimberley Flora as *Eucalyptus* sp. J.

Flowering January-March; fruiting all year.

Eucalyptus camaldulensis Dehnh. var. *obtusa* Blakely **Red River Gum**

Tree to 15 m; bark white; leaves pendulous, alternate, petiolate-lanceolate to narrow-lanceolate; flowers white, simple, axillary; fruits pedicellate, ovoid or truncate-globular.

More common on the east side of the Peninsula. Restricted on the western side to the larger creeks between Coulomb Point and Carnot Bay.

Commonly cultivated as a street tree in Broome and as an ornamental throughout the Peninsula but from where the seed was obtained is not known. A very variable species widely cultivated in temperate and tropical countries.

Flowering and fruiting August but sporadic throughout year.

Eucalyptus (Corymbia) dampieri D.J. Carr & S.G.M. Carr **Dampier's Bloodwood**

Tree to 11 m; bark persistent on lower trunk, flaky, white or cream under flakes of grey, red or orange, smooth and white or greenish on upper trunks and main branches; leaves large, ovate-lanceolate or falcate-lanceolate; smooth, glossy; flowers creamy white; fruits urceolate on pedicels of medium length.

Common in pindan throughout the Peninsula.

Bardi name = *biilal*; Nyul Nyul = *bilawal*. Edible inner part of insect gall; leaves and red gum medicinal; Nyul Nyul = *geenjba* for the red gum or kino. Gum applied to sore teeth; preferred firewood for night fires as it burns slowly; bark ash is mixed with bush tobacco for chewing.

Hybrids between *E. dampieri* and *E. polycarpa* have been recorded from pindan within the Broome townsite.

Flowering February-July; fruiting October-November.

(Eucalyptus) Corymbia dendromerinx Hill & Johnson

Tree to 6 m; bark rough, persistent at base, smooth and grey on upper branches; young branches and often the foliage more or less rusty pubescent, or the branches hispid with a few stiff hairs or bristles, but sometimes quite glabrous; leaves large, sessile, opposite, cordate-orbicular or oblong; flowers white and rather large, the umbels in a dense terminal corymbose panicle; fruit ovoid.

On the Peninsula restricted to sandstone scree slopes of Dampier Hill.

A species related to, but now separated from, *E. confertiflora* F. Muell.

Flowering May, December.

(Eucalyptus) Corymbia flavescens Hill & Johnson **Apple, Cabbage** or **Bastard Ghost Gum**

Tree to 11 m; new bark attractive creamy colour, fading to white and then pale grey, slightly roughish at base, smooth on most of trunk; leaves yellowish green, broad, leathery, almost deciduous during dry season; buds powdery; flowers pale cream in axillary umbels; fruits on short pedicels, cup shaped, thin-walled, smooth.

On edges of sandstone scree at Dampier Hill (with *E. tectifica*) and occasional in pindan on the southern Peninsula.

Yawuru name = *gunurru*

This species and *E. bella* were formerly included under *E. papuana*.

Flowering sporadic November-June.

Eucalyptus jensenii Maiden **Wandi Ironbark**

Tree to 8 m; bark hard, blackish, rugged, deeply and coarsely furrowed; mature leaves small, alternate, shortly petiolate, sub-glaucous, oblong to lanceolate; inflorescences in axillary umbels of 3-7 flowers; buds ovoid, sessile to very shortly pedicellate, glaucous; fruits sessile or shortly pedicellate, very glaucous.

In deep pindan on high ground in the central-southern area of the Peninsula. Also occurs in NT.

Bardi name = *gardogardo*.

Flowering February-June; fruiting June.

Eucalyptus miniata A. Cunn. ex Schauer **Manowan** or **Woollybutt**

Tree to 15 m with spreading canopy; bark rough and persistent, short fibred and somewhat stringy at base of trunk, smooth and white on upper branches; leaves glaucous, alternate, petiolate, broad-lanceolate to narrow-lanceolate; flowers orange-red; fruit large, very shortly pedicellate, strongly ribbed.

Common at northern end of Peninsula forming open woodland on sandy soils. On the Peninsula does not occur south of Coconut Well. Also occurs in NT and Qld.

Bardi name = *manowan*. Seed and nectar edible; lower bark used for shelter roofs; native bees frequently found in trunks and branches; harpoons made from young tree trunks; wood used for making boomerangs and shields.

A highly ornamental species but currently little cultivated.

Flowering June-August, but the amount of flowering is extremely variable from year to year.

(Eucalyptus) Corymbia paractia Hill & Johnson **Cable Beach Ghost Gum**

Tree or occasionally a mallee to 12 m, trunk stout, somewhat knobbly; bark often persistent on the lower trunk, greyish brown, flaky, smooth and white on the upper trunk and branches; branchlets thickened, often pendulous; leaves large, almost opposite, ovate-lanceolate or broad-lanceolate,

Eucalyptus jensenii

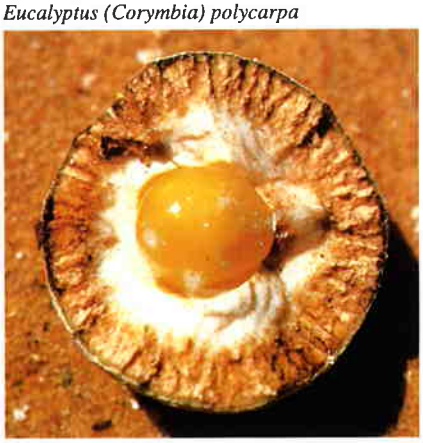
Eucalyptus jensenii

Eucalyptus miniata

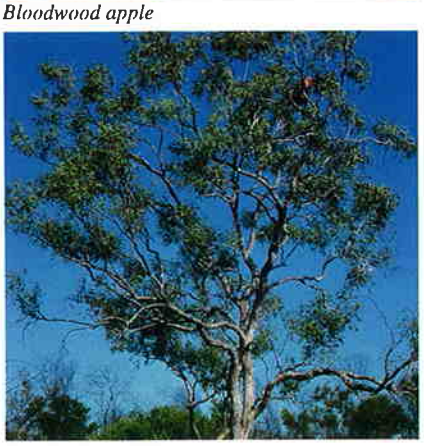
(Eucalyptus) Corymbia paractia

Eucalyptus (Corymbia) polycarpa

Eucalyptus (Corymbia) polycarpa



Bloodwood apple



Eucalyptus tectifica

the margins often undulate or distinctly twisted, flowers white, borne laterally on leafless lengths of branchlets, mature buds pyriform; fruits ovoid, glabrous.

Common between Gantheaume Point and Cable Beach. Apparently restricted to a narrow coastal zone in the Broome area where beach dunes merge into pindan soils.

Populations of this species exhibit variation in leaf shape, often developing intermediate-phase leaves in the canopy. This species can be almost leafless when flowering.

Flowering and fruiting October-December.

Eucalyptus (Corymbia) polycarpa F. Muell. **Long-fruited Bloodwood**

Tree to 10 m; bark rough, thick, platy, brownish grey, extending onto branches; leaves alternate, petiolate, lanceolate to narrow-lanceolate, sometimes broad-lanceolate; buds scurfy; flowers cream, strongly caramel scented, in large, terminal many-flowered corymbose panicles; fruits narrow, oblong, contracted below opening.

On sandplain with *Eucalyptus miniata* at Cape Bertholet and on dunes fringing Roebuck Bay, also at One Arm Point, Rumble Bay and Lombadina. Common, often as large, big-boled trees, in sands, from Wonganut to Beagle Bay, sometimes with large *Melaleuca dealbata*. Also occurs in NT, Qld, NSW and New Guinea.

Bardi name = *gaardga* or *ngalngoorroo*. Yawuru name = *kardgu*. Red gum medicinal, applied directly to sore teeth; edible seed, tastes like coconut. This species was important to traditional Aborigines as it was used to collect water. This was achieved by grooving the trunk and placing a U-shaped termite-hollowed branch against the groove to be filled by rain during the wet season.

Bloodwood Apples are commonly found on this gum. They are a nut-like growth which are caused by the combined action of nematodes of the genus *Fergusobia* and the larvae of a small fly (*Fergusonina nicholsoni*). The bloodwood apple is called *dardaw* in Yawuru, *dordor* in Bardi and *dakoorr* in Nyul Nyul. Bloodwood Apples are roundish and greyish in colour, slightly larger than a golf ball and with a hard, outer woody layer. Inside the woody layer is a sac of sweet fluid, and the larva of the insect. The hard outer layer is not eaten but the inner matter which has a mild eucalypt flavour is regarded as a bush delicacy.

Also found on the leaves of these trees is a manna-like substance that is formed by tiny sucking bugs called lerps. These insects build a minute waxy house formed largely from anal excreta (honey-dew). This has a high carbohydrate content which is sweet and candy-like in flavour. The sugar lerp is known as *gawajal* in Yawuru, *korrjor* in Bardi and *kawajirr* in Nyul Nyul. Aborigines would gather the bloodwood branches and allow them to dry. The branches would then be shaken over paperbark sheets and the sugar lerps rolled into balls for eating later.

Good examples of Bloodwood Apples can often be seen on the Long-fruited Bloodwood outside the Ansett Airlines office in Broome and on the traffic island between Charlie Carters and the Tropicana Hotel.

Flowering April-June; fruiting August.

Eucalyptus tectifica F. Muell. **Grey Box** or **Darwin Box**

Tree to 10 m; bark shortly fibrous, somewhat tessellated; leaves greyish green, lanceolate, pendulous; flowers white, in terminal panicles; fruits pedicellate, truncate-ovoid to cupular.

In pindan and behind coastal dunes near Broome to One Arm Point (especially Beagle Bay to Balk), and on floodplain area of Buckleys Plain. Also occurs in NT and Qld.

Bardi name usually *oolarda* but this refers to the bark as used for containers. The Bardi claim that once the weather 'hots up' the bark 'gets stuck' and is difficult to remove. Yawuru = *ngarrban.*

Flowering June, December.

Eucalyptus (Corymbia) zygophylla Blakely **Broome Bloodwood**

Tree to 6 m; bark rough and persistent; mature leaves opposite, sessile, dull green, discolorous, stem-clasping, oblong, to lanceolate, moderately thick, coriaceous, smooth and quite glabrous, venation very fine and almost transverse; flowers white, large, in lateral umbels, or short terminal corymbose panicles; fruits large, sessile, broadly urceolate to globose, thick, woody.

In pindan in the Broome area.

Yawuru name = *jugudany*. Often contains sugarbag (bush honey).

The type locality for this species is Broome. Superficially similar to *Eucalyptus setosa* but differing in being strictly glabrous, in the totally different venation, and in the different shaped fruits.

Good examples can be seen growing in the Japanese and town cemeteries.

Flowering December-February; fruiting April-May.

Eucalyptus (Corymbia) zygophylla

Eucalyptus (Corymbia) zygophylla

Lophostemon grandiflorus (Benth.) Peter G. Wilson and J.T. Waterhouse subsp. *grandiflorus* **Lardik**

Tree to 7 m; bark dark grey, with finely convoluted fissures; leaves densely and minutely white-hairy to glabrous, narrowly elliptic to obovate, white-pubescent; inflorescence several-flowered axillary cymes; flowers large, white, up to 1.5 cm in diameter, capsule almost hemispheric to shortly cup shaped.

Common in ephemeral swamps and around permanent waterholes at of Beagle Bay, Gregory Well and south to Moorak Bore and Lake Campion. Also occurs in NT.

Nyul Nyul name = *lardik*. Used for making containers. A good specimen can be seen by the telephone boxes, at the Broome Tourist Bureau.

Formerly known as *Tristania grandiflora* (Benth.) Cheel and *T. suaveolens* (Gaertner) Sm. var. *grandiflora* Benth.

Flowering March-June, December; fruiting June.

Lophostemon grandiflorus

Melaleuca acacioides F. Muell. subsp. *alsophila* (Cunn. ex Benth.) Barlow **Saltwater Paperbark**

Paperbarked tree to 5 m, occasionally reaching 7 m, nearly glabrous or the young shoots and inflorescence pubescent; bark white or creamy grey, papery; leaves pale green, alternate, from broadly oblong to lanceolate or almost linear, obtuse or scarcely mucronate, narrowed at base; flowers small, white to cream, in small dense sessile to sub-sessile globular heads, 9-many flowered, mostly axillary or lateral, the rhachis and calyces pubescent; capsule 2.5 mm long.

Recorded from Nimalaica Claypan, Beagle Bay, Coulomb Point, Packer Island and widely distributed throughout the Peninsula forming dense thickets fringing supratidal margins of saltmarsh areas and claypans. Recorded from the Eighty Mile Beach in the south to the Victoria River in the NT.

Bardi name = *loonyjoomard*. Trunks used for framework of huts and shelters; native beehives found in trunks and branches; water can be extracted from large trunks; bark burnt to repel mosquitoes; leaves medicinal, infusion for 'cold sick'; rolls of bark burnt and used for night fishing. The plants exude a distinctive volatile oil which pervades the air. An examination of the volatile leaf oils of *M. acacioides* subsp. *alsophila* (Brophy *et al.*, Volatile leaf oils of two subspecies of *Melaleuca acacioides* F. Muell.

Melaleuca acacioides

Melaleuca argentea

Melaleuca argentea

Melaleuca cajuputi

Melaleuca dealbata

J. Proc Roy. Soc. NSW 120 (1987) pp.135-139) has shown that subsp. *alsophila* is almost entirely monoterpenoid and contains high terpinen-4-ol and citral (neral/geranial) suggesting that it may constitute a more fragrant alternative to the oil of the commercial Medicinal Tea Tree *M. alternifolia*.

Flowering March-August.

Melaleuca argentea W. Fitzg. **Silver Cadjeput**

Large, spreading, shady, weeping paperbarked tree to 12 m, with a dense silvery indumentum of fine short-appressed hairs on young stems and leaves; bark whitish to pale brown; branchlets tinged reddish; leaves alternate, silvery white at first, becoming dark green, narrowly ovate, usually with 5 main veins, acute or apiculate; inflorescence of 1-4 terminal spikes and solitary spikes; spikes to 15 cm long, becoming interrupted, many-flowered, flowers in triplets on alternating sides of axis, the axis growing out in flowering or sometimes fruiting stage; flowers white to creamish; floral tube densely silvery-hairy outside; capsule to 3.5 mm long.

On the Peninsula restricted to the alluvial banks of the Fitzroy River.

In Broome good examples can be seen in the gardens of the Kimberley Regional Office. When in flower the air is full of honey-scent and attracts numerous birds such as Friar Birds and Rainbow Lorikeets.

Flowering April-July.

Melaleuca cajuputi Powell subsp. *cajuputi* **Cadjeput**

Tree to 17 m, with thick, matted, rope-like aerial roots occasionally present; bark papery, whitish or pale brown; usually much-branched with dense canopy; petioles compressed to 1 cm; leaves pubescent to glabrescent, straight or curved, shortly pubescent; coriaceous to thinly coriaceous, broadly to narrowly elliptic, prominently nerved; inflorescence of 1-3 terminal spikes and solitary axillary spikes, spikes up to 16 cm long, many flowered or at least of more than 20 flowers, interrupted or quite dense, the flowers in triplets on alternating sides of axis, the axis growing out before fruiting stage; flowers white to cream occasionally tinged greenish; capsule 3.5 mm long.

On landward edge of the mangrove *Ceriops tagal* where it forms pure stands, and in spring country at Packer Island, Carnot Spring, Nimalaica Claypan and Beagle Bay. Also occurs in NT, Qld and from south-east Asia to New Guinea.

Often produces aerial roots and flowering root suckers and will coppice after felling. The straight trunks have been used as fence posts and for constructing jetties at Broome. Daisy Bates noted in 1900 that all the buildings at the Beagle Bay Mission were constructed of long, heavy, cadjeput logs. The cadjeput tree, Bates noted, "resists to a greater extent than any other the ravages of the white ant".

In the early pearling era, luggers were often built from cadjeput timber (e.g. by Harry Hunter at Bulgin near Cape Leveque).

Flowering April-September.

Melaleuca dealbata S.T. Blake subsp. *glabrescens* Barlow **Garnboorr**

Tree to 15 m, with short trunks and distinctive broad, weeping crown; bark papery, mottled brownish white; petioles to 1 cm; leaves coriaceous, almost glabrous, lanceolate to oblanceolate, oblique; inflorescence of 1-6 terminal spikes and solitary axillary spikes, spikes up to 19 cm long, many-flowered, interrupted, the flowers in triplets on alternating sides of axis, the axis growing out in flowering or fruiting stage; flowers creamish white; capsule 4 mm long.

Growing in loose sandy soil on landward edge of claypan near Cable

Beach, Gnamagum Well, Lombadina, Coulomb Point, Pender Bay and One Arm Point. This species is common, often as isolated large trees throughout the Wanganut Land System, including Beagle Bay, Pender Bay, Carnot Bay and Disaster Bay drainage basins. Also occurs in NT, Qld and New Guinea.

Bardi name = *garnboorr*. Bark sheets used in roofs of shelters, in cooking and as blankets to wrap bodies for burial; tree trunks were used in the construction of pearling luggers.

At dusk, the air is filled with the sweet honey-scent of the flowers. At night, the Black Flying Fox (*Pteropus alecto*) feeds on the blossoms.

A species with considerable horticultural potential, although presently not often grown.

Flowering September.

Melaleuca nervosa

Melaleuca nervosa (Lindley) E. Cheel subsp. *crosslandiana* (W. Fitzg.) Barlow

Straggly, small tree to 5 m; bark usually pale grey; leaves alternate, lanceolate, acute; young leaves densely silky-hairy; inflorescence of 1-4 terminal or sometimes axillary spikes, spikes up to 9 cm long, with flowers in triplets on alternating side of the axis, the axis growing out usually before fruiting stage; flowers scarlet, pinkish, yellow or lime green; capsule 4 mm long.

In areas which are seasonally inundated. Widespread on the Peninsula. Also occurs in NT, Qld and New Guinea.

Bardi name = *biido*. Leaves medicinal, an infusion of soaked and crushed leaves is drunk for 'cold sick', considered a potent medicine.

Previously known as *M. crosslandiana* W. Fitzg.

Flowering February-September.

Melaleuca nervosa

Melaleuca viridiflora Solander ex Gaertn. **Broad-leaved Paperbark**

Paperbarked tree to 15 m, root suckers to 24 cm; bark white or cream to pale brown; petioles to 1 cm long and flattened; leaves thick, coriaceous, alternate, typically broad-elliptic or more or less obovate, straight and symmetrical, with 5-9 prominent main veins; inflorescence of 1-4 terminal spikes and solitary axillary spikes, spikes up to 19 cm long, usually becoming interrupted, many-flowered, the flowers in triplets on alternating sides of axis, the axis growing out in flowering or fruiting stage; flowers white, some yellowish green and or dull red; capsule 6 mm long.

Very common on river-washed sand banks, and fringing freshwater pools and seasonal claypans; often forming a secondary tree layer behind *Melaleuca acacioides* at Bernard Well, Beagle Bay, Coulomb Point, Kelk Creek and Repulse Point. Also occurs in NT, Qld and New Guinea.

Bardi name = *nimalgoon*.

In areas of permanent water the 'swamp forest biotype' of Barlow occurs.

Flowering January-July.

Melaleuca viridiflora

Myrtella retusa (Endl.) A.J. Scott

Much-branched, open, wispy subshrub to 1.5 m, occasionally reaching 4 m, more or less invested with a close white tomentum; leaves petiolate, green above, opposite or rarely in whorls of 3, whitish below, oblong to narrow-oblanceolate, rounded at the apex; flowers pink to almost white, on slender pedicels; young fruits green, becoming deep burgundy as they ripen, more or less globular, crowned by the persistent hairy (especially at base and apex) sepals.

In coastal pindan, often associated with *Caltrix exstipulata* in lateritic gravel and in near coastal areas where it occurs in the transitional zone

Myrtella retusa

Osbornia octodonta

Syzygium eucalyptoides subsp. *bleeseri*

Syzygium eucalyptoides subsp. *bleeseri*

Verticordia verticillata

between *Acacia eriopoda* and *A. monticola* at James Price Point, Deep Water and Coulomb Points. Also occurs in NT and Qld.

A fire sensitive, showy species with horticultural potential but seemingly hard to germinate.

Previously known as *Fenzlia phebalioides* W. Fitzg. and *M. phebalioides* (W. Fitzg.) A.J. Scott.

Flowering March, April; fruiting June-August.

Osbornia octodonta F. Muell. **Myrtle Mangrove**

Mangrove shrub or tree to 9 m; bark brown, papery, fibrous at base; stem smooth, white-grey on young branches, branchlets red; leaves bright green, tinged red, aromatic when crushed, opposite, with numerous small translucent oil glands, obovate, apex rounded, base cuneate passing into short petiole, margins minutely crenulate; flowers small, white, 1-3, sessile in axils of terminal leaves; fruit indehiscent, enclosed within enlarged calyx tube, very densely white-hairy inside.

Common on landward edge of mangal at Cape Bertholet, Packer Island, Beagle Bay, Camp Inlet, Barred and Willie Creeks and One Arm Point. Also occurs in NT and Qld and extends north to the Philippines.

Bardi name = *alarga*. Branches used for making shelters.

Essential oil in the leaves has been investigated and found to contain at least 67 compounds of which three monoterpenes accounted for approximately 70% of the oil [Brophy, J.J., Goldsack R.J. & Clarkson J.R. (1993) The essential oil of *Osbornia octodonta* F. Muell. *J. Essent. Oil Res.* 5:1-5].

Flowering December-February; fruiting December-March.

Syzygium eucalyptoides (F. Muell.) B. Hyland subsp. *bleeseri* (O. Schwarz) B. Hyland **Wild Apple**

Rounded tree to 5 m; bark greyish, smooth; leaves broadly obovate to orbicular, very obtuse, on a rather long petiole, leathery; flowers large, cream in a short terminal cyme; fruit pale green, occasionally with a tinge of red, depressed-globular, faintly ribbed, crowned with the persistent calyx, pericarp white, succulent; seed 1.

Often forming clumps on coastal sand dunes, occasionally in vine thickets, at Cape Leveque, Elephant Point and Sunday Island. Also occurs in NT.

Bardi name = *iilarr*. A highly favoured edible fruit. The outer flesh is eaten raw when ripe and tinged red.

Previously known as *Eugenia bleeseri* O. Schwarz, *E. eucalyptoides* F. Muell., and *E. stokesii* C. Gardner.

Flowering October-December; fruiting January.

Verticordia verticillata N. Byrnes **Kimberley Featherflower**

Shrub or small tree to 4 m, not prominently glandular-punctate; leaves in whorls of 3, without a clearly defined petiole, linear or filiform in outline, more or less triquetrous, glabrous, 1-3 cm long; flowers white, strongly scented with a vanilla-like fragrance, axillary on pedicels to 1 cm long; style 1-1.2 cm long with hairs below the apex; fruit a nut, crowned by the persistent sepals.

In damp white sand at Wonganut, and in pindan on edge of claypan at Coulomb Point Nature Reserve and Beagle Bay. Also occurs in NT.

An ornamental species with horticultural potential but requiring a very specific soil type.

Previously known as *V. cunninghamii* Schauer var. *longistyla* C. Gardner.

Flowering September-November.

NYCTAGINACEAE

Boerhavia burbidgeana Hewson

A delicate perennial prostrate herb; leaves pale green, narrowly lanceolate to narrowly ovate, up to 3 cm; petioles to 1 cm; upper leaves sessile; inflorescence axillary and terminal, often compound and tending to zig-zag; basic inflorescence with a solitary flower or a few-flowered glomerule; flowers pink; fruit fusiform with 5 prominent ribs.

In grey sandy clay at One Arm Point and Langey Crossing on Fitzroy River. Also occurs in NT.

Flowering and fruiting February-November.

Boerhavia burbidgeana

Boerhavia coccinea Miller

Annual or perennial herb, sprawling or ascending, usually densely glandular-hairy; leaves ovate or oblong, obtuse or shortly acute; inflorescences terminal and lateral; flowers pink; fruit fusiform or narrowly clavate.

Common in pindan around Broome. Also occurs in NT, SA, Qld and NSW.

Flowering January-May.

Boerhavia dominii Meikle & Hewson

Perennial herb, prostrate or decumbent, sub-glabrous or sparsely glandular hairy; leaves lanceolate to broadly ovate; inflorescences axillary and terminal; flowers white, pink or mauve; fruit fusiform with 5 ribs.

Common in pindan around Broome, Pender Bay and One Arm Point. Also occurs in all Australian mainland states.

Bardi name = *noowanyj*.

Flowering February-November.

Boerhavia dominii

Boerhavia gardneri Hewson Tarvine

Perennial prostrate subshrub, glandular-hairy; stems branching almost at right angles; leaves ovate or elliptic, often broadly so, margins irregular, undulate; inflorescence a terminal, erect, repeatedly branched, diffuse cyme; basic inflorescence unit usually a solitary flower, sometimes a few-flowered glomerule, flowers pink; fruit fusiform, somewhat glandular-hairy.

Common in sandy soil at Packer Island and in pindan at Broome, Gallen Well and One Arm Point. Also occurs in NT.

Bardi name = *garrinyjarn*. Edible root baked in hot sand and ashes.

Flowering February-August.

Boerhavia gardneri

NYMPHAEACEAE

Nymphaea violacea Lehm. **Blue Waterlily**

Emergent aquatic; leaves pale green on upper surface, maroon underneath, thick textured, round to broad-ovate, strongly cordate or cleft at base, the margin entire to crenate or crenate-dentate; flowers large, blue; fruit a globular to ellipsoid to urn-shaped spongy berry containing numerous seeds, the pedicels coiling spirally to pull the developing fruit under water.

Restricted to semi-permanent pools near Beagle Bay, and as far south as the S.E. corner of the Point Coulomb Nature Reserve.

Corm and fruits eaten raw or warmed in hot ashes.

Flowering May-September.

Nymphaea violacea

Jasminum didymum

Jasminum molle

Ludwigia octovalvis

Ludwigia perennis

OLEACEAE

Jasminum didymum G. Forster subsp. *didymum*

Subshrub to 0.6 m, glabrous or puberulous; leaflets 3-foliate, dark green, broad, terminal leaflet ovate to broadly ovate or broadly elliptic, less than three times as long as broad; flowers white, small, in dense heads, perfumed.

In woodland at One Arm Point. Also occurs in NT and Qld. Similar in all respects to *J. didymum* subsp. *lineare* but differing by the terminal leaflet being less than 4 cm and broadly elliptic.

Previously known as *J. parviflorum* Decne.

Flowering and fruiting May.

Jasminum didymum G. Forster subsp. *lineare* (R. Br.) P.S. Green

Slender climber to 1 m, glabrous or puberulous; leaflets 3-foliate, pale yellowish green, opposite or the upper ones alternate, the common petiole short; leaflets usually lanceolate or linear, obtuse or acute; flowers white, tubular, scented, in axillary trichotomous panicles; mature fruit purplish black ovoid berry.

In deciduous vine thicket on red sandy calcareous soils behind coastal dunes at Broome and One Arm Point and in eucalypt woodland in pindan at Beagle Bay, Quondong and James Price Point. Also occurs in NT, SA, Qld and NSW.

Differs from subsp. *didymum* by the narrow leaflets with the terminal leaflet narrowly ovate to narrowly oblong, more than four times as long as broad.

Previously known as *J. lineare* R. Br.

Flowering January-August, November; fruiting May-August and September.

Jasminum molle R. Br.

Slender shrub to 1.2 m; leaves opposite (occasionally whorled), simple, mostly ovate, shortly acuminate but varying from broadly ovate-cordate to ovate-lanceolate or oblong-elliptical; flowers white, highly perfumed, tubular, in terminal trichotomous cymes; fruit an ovoid berry.

Common in *Eucalyptus jensenii* woodland in pindan at Cape Leveque and Quondong. Also occurs in NT and Qld.

Previously known as *J. simplicifolium* G. Forster var. *molle* (R. Br.) Benth.

Flowering January-February.

ONAGRACEAE

Ludwigia octovalvis (Jacq.) Raven **Willow Primrose**

Robust, woody, erect perennial to 0.7 m; leaves linear-lanceolate, dark green above, pale green below, sub-glabrous to densely hairy; flowers yellow, solitary in axils; capsule long, thin-walled; seeds numerous.

In *Melaleuca* woodland surrounding freshwater springs near Beagle Bay. Also occurs in NT, Qld, NSW and throughout tropical regions of the world.

Possibly toxic to stock.

Flowering April-August.

Ludwigia perennis L.

An erect or diffuse glabrous annual to 0.6 m; lower stem papery, grey then reddish becoming green; leaves discolorous, pale green, alternate, lanceolate to linear; flowers yellowish orange, very small, solitary in the axils,

sessile or very shortly pedicellate; capsule green turning reddish, containing numerous very fine seeds.

In sandy bed of Bobbys Creek and in seepage area behind tidal flats, Hunter Creek. Also occurs in NT and Qld and is widespread throughout tropical Africa, Asia and New Caledonia.

Flowering and fruiting April-July.

Opilia amentacea

OPILIACEAE

Opilia amentacea Roxb.

Scrambling, half-climbing shrub to 4 m; bark greyish brown; aerial branchlets often pendulous; leaves yellowish green, shiny on top, dull below, leathery, petiolate, ovate, ovate-lanceolate, acute or acuminate; racemes before flowering resembling little cylindrical cones, flowers small, greenish yellow, highly fragrant; fruit pale yellowish cream, ovoid or globular, covered in a close velvety tomentum.

Localised in coastal thickets near Broome and extending north to at least Beagle Bay. Also occurs in NT and Qld and extends to tropical Africa, India, Sri Lanka, south-east Asia and the Solomon Islands.

Fruits are sweet and edible. A potential ornamental. Seeds only germinate if placed on, but not below the soil surface (Ian Foulkes - pers. comm.).

Flowering September-October; fruiting December- January.

Opilia amentacea

PAPILIONACEAE

Abrus precatorius L. **Crabs Eye Bean**

Slender perennial, sometimes deciduous, vine with woody base, glabrous or slightly pubescent; stems usually trailing or twining; leaves abruptly pinnate, with several pairs of small leaflets; leaflets sub-glaucous, oblong-elliptic or rarely obovate, usually about 1 cm long; inflorescence a terminal or axillary raceme; flowers mauve; pods oblong in outline, up to 4.5 cm, somewhat turgid, smooth and appressed-hairy, apex uncinate, the valves twisting at maturity with the seeds remaining attached for some time; seeds scarlet and black, shiny.

Widespread in light brown sand behind coastal dunes in mixed scrub of *Melaleuca nervosa* and *Grevillea pyramidalis*. Common in sandstone at King Peaks, Pender Bay, Cape Leveque, One Arm Point and Broome. A pantropical species occurring in NT, Qld and NSW.

Bardi name = *ngaming-ngaming*. Yawuru name = *jinjalgurany*. Red and black seeds are made into necklaces and rosary beads. The seeds are extremely poisonous. One seed contains more than enough toxin to kill an adult, but if the coat remains unbroken the poison is not released.

Flowering December, February-April; fruiting December-August.

Abrus precatorius

Aeschynomene indica L. **Jointvetch**

A diffuse or erect annual to 1 m, usually glabrous; leaflets 40-60, linear-oblong, obtuse; stipules lanceolate, acute; racemes shorter than leaves; loosely 2- to 4-flowered, and often bearing a pinnate leaf below the flowers; flowers cream or green; pods on long stipes, the upper suture straight, the lower slightly indented between the seeds; the segments smooth or more or less warted in the centre.

On river bank at Langey Crossing on Fitzroy River, Beagle Bay, Broome and Lake Campion. Possibly native to South America, now a widespread pantropical weedy species almost always associated with wet areas.

Used as a fodder for sheep and cattle.

Flowering and fruiting March-May.

Aeschynomene indica

Alysicarpus vaginalis* (L.) DC. **Alyce or **Buffalo Clover**

Spreading, prostrate, dense subshrub; leaflets dark green above, pale green below, ovate, oblong, oblong-elliptic, acute to emarginate and mucronulate at apex, sub-cordate at base, glabrous to puberulous, reticulately veined; flowers pink, inconspicuous; pods deep maroon, sub-cylindrical; seeds brown, sometimes mottled, ellipsoid-obloid.

Growing in watered lawn surrounding the Broome Government offices. Widely distributed through the tropics from Africa to south-east Asia and New Guinea.

Flowering and fruiting March-May.

Aphyllodium glossocarpum

Aphyllodium glossocarpum Pedley ms.

Spreading or erect subshrub, 2 m with numerous reddish brown, hairy, slender, erect stems, arising from ground level; branchlets fragile, breaking easily; leaflets 3, light green, complanate, narrowly obovate to ovate or narrow-elliptic to linear, acute to obtuse at the apex, cuneate to rounded at the base, glabrous to appressed-hairy above, hairy beneath; inflorescence terminal and axillary; flowers lilac pink to purple; fruits sessile or shortly stipitate, slightly indented above at the necks, deeply indented beneath, reticulately veined and covered with minute hooked hairs; seeds brown, elliptic to reniform in outline, smooth.

In pindan sand in *Eucalyptus polycarpa-Acacia tumida* woodland near Beagle Bay. A Kimberley endemic apparently restricted to the Dampier Peninsula. The type collection is from near Beagle Bay.

Previously misidentified as *Dicerma biarticulatum* (L.) DC. or *Desmodium biarticulatum* (L.) F. Muell. Not recorded in Flora of the Kimberley.

Flowering and fruiting April-October.

Aphyllodium parvifolium Pedley ms.

Spreading prostrate subshrub with ascending branchlets to 10 cm; stems hairy; leaflets 3, shortly petiolate, greyish green, complanate, broadly elliptic, up to 5 mm, moderately pilose above and below, apex rounded; inflorescence in terminal and axillary racemes; bracteoles prominently ribbed, long ciliate; flowers mauve with deep mauve on keel; fruits not seen.

Growing in greyish sand under *Eucalyptus bella* at Barred Creek.

Distribution not known. The type was collected from the McLarty Hills in the Great Sandy Desert.

Not recorded in the Flora of the Kimberley.

Flowering April.

Cajanus marmoratus

Cajanus marmoratus (R. Br. ex Benth.) Maesen **Marbled Pigeon Pea**

Prostrate trailing or twining plant, pubescent or hirsute; leaves pinnately 3-foliolate; central leaflet very broadly obovate to broadly rhombic, coriaceous, thinly pubescent and prominent yellow glands on both sides, green above, slightly duller green below, obtuse or emarginate, lateral leaflets oblique; racemes axillary; peduncles solitary or 2 together, often slightly exceeding the leaves, either 1-flowered or bearing 1 or 2 pairs of flowers; flowers yellow; pods mottled maroon on green and thinly hairy, flat-oblong, transverse reticulate venation apparent, rounded truncate at both ends; seeds usually 2 or 3; aril horseshoe shaped.

In red sand behind coastal dunes at Gantheaume and One Arm Points and Cape Bertholet. Also occurs in NT and Qld.

Previously known as *Atylosia marmorata* R. Br. ex Benth.

Flowering February-September.

Canavalia rosea (Swartz) DC. **Coastal Canavalia, Jack** or **Beach Bean**

Prostrate or trailing creeper, shortly hairy with white, more or less appressed, hairs, sometimes glabrescent; leaflets broadly obovate or orbicular to almost circular, shortly hairy above and below, very obtuse or retuse and rather thick, obscurely acuminate; inflorescence axis hairy, nodes swollen and glabrous; pedicels 1-3 mm, more or less erect in flower; flowers pink-purple; pod narrowly oblong in outline, up to 12 cm, with an additional rib c. 2-3 mm from upper suture; seeds brown, elliptic in outline.

Common on travertine at Packer Island and behind coastal dunes at Cape Bertholet, One Arm Point and Broome. Also occurs in NT, Qld and NSW. A pantropical species.

Bardi name = *goordayoon*. Yawuru name = *windi*. Vine medicinal; warmed and applied to joints affected with rheumatism; seeds not eaten. The name *goordayoon* is also applied to *Ipomoea pes-caprae*.

Flowering and fruiting January-November.

Canavalia rosea

Clitoria ternatea* L. **Butterfly or **Darwin Pea**

Sprawling or climbing perennial herb often forming dense tangled hedges; leaflets usually 5, very shortly petiolulate, elliptic to ovate-elliptic, sparsely hairy, obtuse and sometimes emarginate or apiculate; inflorescence of solitary or paired flowers; flowers blue, the standard with a greenish yellow basal blotch; pod sub-sessile, narrowly oblong in outline, up to 7 cm long, sparsely and shortly hairy, the valves twisting after dehiscence; seeds dark brown to black, more or less obloid.

Also recorded for NT and Qld. A pantropical weed, probably native to tropical America.

Grown as an ornamental and now naturalised around the Broome townsite and spreading throughout the Peninsula.

Flowering and fruiting April-June.

Clitoria ternatea

Crotalaria brevis Domin.

Perennial subshrub to 20 cm high; stems dark green, covered with appressed hairs; leaves silvery-green to 1.5 cm, shortly petiolate, simple, hairy, oblong-elliptic, the young leaves often densely hairy; racemes terminal, short; calyx 2-lipped, densely hairy, slit almost to the base; flowers yellow; pod sub-sessile, erect, obloid-ellipsoid, glabrous, minutely pitted, purplish, ripening to dark grey; seeds 6, light brown, heart-shaped.

Amongst grasses on sandy bank at Bobby Creek and under *Melaleuca acacioides* at Curlew Bay. Also occurs in NT and Qld.

Not recorded in the Flora of the Kimberley. Previously misidentified as *Crotalaria montana* Roth. which is an erect, spindly plant, with linear to narrowly oblong leaves and long terminal racemes.

Flowering and fruiting April-July.

Crotalaria brevis

Crotalaria crispata F. Muell. ex Benth. **Walkabout Poison** or **Kimberley Horse Poison**

Diffuse, straggly, much-branched, softly villous to sub-glabrous subshrub 0.5 m, foliage concentrated towards ends of branchlets; leaves pale green, obovate-oblong to narrowly oblong-cuneate, or broad-linear, very obtuse, villous on both sides; flowers deflexed prior to anthesis, yellow, few, in short loose terminal racemes; pod ovoid, villous, scarcely exceeding the calyx; seeds usually solitary.

In light brown sand behind coastal dunes dominated by *Melaleuca nervosa* and *Grevillea pyramidalis* or in pindan soil in *Eucalyptus/Acacia* woodland. Also occurs in NT and Qld.

Bardi name = *boondoogara*. Considered to be snake habitat and should be avoided.

Crotalaria crispata

Crotalaria cunninghamii

Crotalaria cunninghamii

Crotalaria medicaginea

Crotalaria verrucosa

A variable and widespread species in areas of lower elevation on the Peninsula.

Flowering February-November.

Crotalaria cunninghamii R. Br. **Parrot Pea** or **Green Birdflower**

Erect shrub to 1.5 m, with softly tomentose, terete or slightly angular branches; petiole articulate and geniculate; leaves 1-foliate; greyish green, ovate, usually broad, very obtuse, densely and softly tomentose-pubescent or villous on both sides; inflorescence a terminal raceme, usually short and dense, sometimes reduced to a sessile cluster; flowers green, bird-shaped, very large, standard with brown stripes; pods stipitate, narrowly obovoid, up to 5 cm, shortly and densely hairy; seeds c. 20.

Very common on, and behind, coastal sand dunes and inland on loose sand throughout the Peninsula. Also occurs in NT, SA, Qld and NSW.

A species which regenerates rapidly after fire or disturbance.

Bardi name = *oorlgoo*. Yawuru name = *minmin*. Water and nectar can be sucked from flowers.

The type locality for this species is Cygnet Bay, collected by Allan Cunningham in February 1822.

Flowering and fruiting February-November.

Crotalaria medicaginea Lam.

Erect subshrub to 0.5 m, with pubescent stems; leaves with 3 leaflets; leaflets medium olive green, narrowly obovate, emarginate at the apex, glabrous above, pubescent beneath; flowers yellow, in short dense racemes; fruits ovoid or sub-globose, acutely beaked.

In light brown sand behind coastal dunes dominated by *Melaleuca nervosa* and *Grevillea pyramidalis* and a ground cover of *Cymbopogon procerus* at Broome. Also recorded from James Price Point, Cape Bertholet, Beagle Bay and One Arm Point. Also occurs in NT, SA, Qld and NSW extending from India to China and through south-east Asia to Australia.

An extremely variable species previously misidentified as *C. trifoliastrum* (a species with larger flowers that does not occur in Australia). Reported as possibly toxic to stock.

Flowering February-November.

Crotalaria verrucosa L. **Blueflower Rattlepod**

Annual herb to 1 m, with an indumentum of short-appressed or erect hairs; branches 4-angled; leaves shortly petiolate, dark green above, dull green below, simple, ovate to broadly ovate or elliptic to broadly elliptic, appressed-hairy above and below, obtuse or mucronate; racemes terminal or leaf-opposed; flowers blue to mauve, standard and wings with deep mauve striations, outerside very pale mauve; pod stipitate, pendulous, cylindric to narrowly obovoid, to 5 cm, shortly hairy; seeds 12-20, kidney-shaped.

On the Peninsula restricted to alluvial sand at Langey Crossing on the Fitzroy River. Also occurs in NT and Qld.

Widespread in Asia and sometimes cultivated as green compost. Occasionally cultivated in Broome.

Flowering and fruiting April-October.

Desmodium filiforme Zoll. & Moritzi

Prostrate, ascending or sub-erect herb with hairy stems to 0.5 m; leaflets 3 or occasionally some basal leaves with 1 leaflet, narrowly elliptic, oblong-elliptic or obovate, rounded to emarginate at apex, rounded at base; flowers red to purplish blue, in terminal and axillary-branched or simple lax hairy inflorescences; fruits 1-2 cm long, the upper margins straight or

slightly constricted, the lower margins indented, both thickened, divided into 3-5 articles.

In sandy pindan by saltmarsh at Crab Creek and Goolbiarla Creek. Also occurs in NT and Qld extending to Indonesia and New Guinea.

Flowering April.

Desmodium filiforme

Erythrina vespertilio Benth. **Bat-wing Coral Tree**

Glabrous tree to 4 m, usually leafless at time of flowering; bark smooth, slightly corky; trunk and branches often with thorns; leaves alternate, 3-foliate; leaflets pinnately veined, the lateral ones usually smaller than the central leaflet and asymmetric; inflorescence of axillary and terminal pseudo-racemes, usually many-flowered; flowers large, showy, in clusters of 1-5, reddish orange to deep red; fruit a stipitate dehiscent pod, narrowly oblong in outline, up to 15 cm, coriaceous to woody, slightly constricted between seeds; seeds red to orange, ovoid or ellipsoid, with a black or white hilum, exarillate.

In alluvium at the headwaters of the Fraser River, scattered on Deep Creek and a single specimen recorded from Buckley Plains near Broome. Also occurs in NT, SA, Qld and NSW.

Suspected of being toxic to stock. The seeds are used by Aborigines for decoration.

An ornamental species, occasionally cultivated. A good specimen can be seen by priest's residence, adjacent to the Catholic Church in Broome.

Flowering and fruiting June, August, October, November.

Erythrina vespertilio

Flemingia lineata (L.) Roxb. ex W.T. Aiton.

Erect, slender, much-branched shrub to 1.5 m, the young parts and inflorescence minutely rusty tomentose, the foliage at length nearly glabrous; leaflets 3, mid green, discolorous, elliptic oblong or broadly lanceolate, obtuse or acute; stipules and bracts small, usually persistent; flowers small, secund and loosely racemose along the branches of small irregular axillary or terminal panicles; calyx pale green, minutely hairy; standard translucent creamy pink with short radiating magenta stripes, wings bright magenta; pod very oblique, very slightly compressed to inflated, with glands, glandular hairs and tuberculate-based hairs; seeds 1 or 2, mottled, obliquely ovoid.

In peaty soil forming an understorey to *Melaleuca viridiflora* ('Swamp Forest Biotype') at the southern margin of the Beagle Bay Aboriginal Reserve. Also occurs in NT and Qld.

Previously known as *Moghania lineata* (L.) Kuntze

Flowering June.

Galactia tenuiflora (Klein ex Willd.) Wight & Arn.

Perennial from a thickened rhizome, usually with slender pubescent to velvety stems; leaflets 3, ovate to oblong, rounded or emarginate and mucronulate at the apex, pubescent above, pubescent to velvety beneath; pseudoracemes slender, rarely reduced to single flowers or a pedunculate cluster; flowers reddish purple; pod linear-oblong, finely appressed-pubescent, shortly beaked; seeds 7-8, with black mottling on grey, maculae longitudinally arranged in irregular lines.

In pindan at Broome, Gallen Well and One Arm Point. Also occurs in NT, SA, Qld and NSW.

Flowering and fruiting January-May.

Galactia tenuiflora

Glycine pindanica Tindale & Craven **Pindan Glycine**

Prostrate perennial, non-rhizomatous and non-stoloniferous, with wiry, trailing or twining climbing stems, more or less hirsute with reflexed hairs;

Glycine pindanica

Glycine tomentella

Glycine tomentella

Indigofera colutea

leaves digitately 3-foliate, the terminal one inserted close between the lateral ones and narrow-lanceolate or linear, pinnules sub-glaucous; flowers mauve in racemes in the upper axils; pods sub-sessile, narrowly oblong to linear, straight, sparsely appressed-hairy, sutures slightly thickened, with a minute terminal straight or hooked point; seeds 3-5, more or less obloid, muriculate to alveolate.

Growing on roadside in reddish brown sand in mixed pindan woodland between Broome and Beagle Bay. Only known from the Dampier Peninsula where it is scattered to locally common.

Opportunistic amphicarpy occurs in *G. pindanica.* The phenomenon of amphicarpy (the production by a plant of both aerial and subterranean flowers and fruit) is known to occur in certain species of *Glycine. G. pindanica* (along with *G. hirticaulis*) has a prostrate stem and under certain circumstances produce, in leaf axils of these stems, specialised branches bearing cleistogamous flowers. These vegetative colourless branches develop when the stems are covered with leaf litter or soil. Subterranean cleistogamous fruits have been recorded in late May-June.

Previously recorded as *Glycine* sp. A Kimb. Flora.

Differs from *G. tomentella* by the much longer, very narrowly elliptic to linear leaflets. Its closest relative is *Glycine hirticaulis* Tindale and Craven which occurs in a few localities in the Northern Territory.

Flowering and fruiting February-September.

Glycine tomentella Hayata **Woolly Glycine**

Twining or trailing perennial herb with several sparsely to densely, often rusty pubescent stems arising from a thick rootstock; leaves pinnately 3-foliate, light green to bluish green, central leaflet usually elliptic to obovate or ovate-elliptic, sparsely sericeous to strigose above and more densely so below, lateral leaflets slightly smaller; inflorescence axillary, usually clustered, many-flowered and pedunculate; flowers dark purple; pod sub-sessile, linear-oblong, up to 2 cm long, single or in groups of four, often with brownish hairs, sutures slightly thickened, shortly beaked; seeds 1 or 2(3), black, transversely ellipsoid, muriculate to alveolate.

In pindan around Broome, Beagle Bay and in woodlands at One Arm Point.

Previously known as *G. tomentosa* Benth.

The ancestors of modern soybean cultivars *(Glycine max* and *G. soja)* trace back to only seven to ten introductions from the wild. An outbreak of pests or disease for which no resistant soybean germplasm is available could be catastrophic. To extend the range of usuable germplasm and, thus, to broaden the genetic base of soybeans, scientists have been investigating the possibility of exploiting germplasm of wild perennial *Glycine* species. Research into breeding fertile soybeans containing genes from *G. tomentella* cultivated from seed collected from Brampton Island, Queensland, was succesfully carried out in 1993 by Dr Theodore Hymowitz, of the University of Illinois in the U.S.A. (Singh, R.J. Kollipara, K.P. and Hymowitz, T. *Crop Science,* 33(5):1002-1007). Kimberley *Glycine* species are currently being cultivated by Dr Hymowitz for use as possible source of germplasm.

Flowering and fruiting February-June.

Indigofera colutea (Burm.) Merr. **Sticky Indigo**

Erect or spreading annual or short-lived perennial herb to 20 cm, covered with white branched hairs and also glandular hairs; leaves with leaflets which are elliptic-oblong; flowers light red in racemes; pods spreading, almost cylindric, covered with white branched hairs and glandular hairs; seeds mostly 8-10.

Frequent in sandy pindan scrub by saltmarsh at Crab Creek, Broome and One Arm Point. Also occurs in NT, SA, Qld and NSW extending from southern Africa through Asia to Vietnam and New Guinea.

Previously known as *I. viscosa* Lam.

Flowering April-July; fruiting May-July.

Indigofera hirsuta L. **Hairy Indigo**

Erect or spreading annual herb to 1 m; stems tinged maroon and covered with stiff brown or white spreading hairs; leaflets 5-7, elliptic-oblong, hairy; racemes dense and many-flowered, very hairy, stalked; flowers bright salmon-pink; pods straight, strongly reflexed, more or less cylindric, with well-developed margins, densely spreading hairy, many of the hairs being brown; seeds mostly 6-8.

In sand behind coastal dunes at Martins Well, and on edge of swamp at Coulomb Point and Crab Creek, and in seepage area over sandstone at Hunter Creek, and at One Arm Point in disturbed ground. Also occurs in NT, Qld, NSW and throughout the tropics.

Flowering and fruiting February-April, August.

Indigofera hirsuta

Indigofera linifolia (L.f.) Retz.

Small annual herb to 0.5 m, sometimes with a woody base and very numerous branches which are 2-ribbed and whitish due to close appressed hairs; leaves simple linear, densely covered with appressed hairs; flowers brilliant red with pinkish red keel, in small axillary clusters; pods ovoid-globose, more or less pointed, 1-seeded, densely white appressed-pubescent; seed solitary.

Growing in sand at Beagle Bay, Weedong, Crab Creek, Cape Bertholet and One Arm Point. Also occurs in NT, SA, Qld and NSW. Widespread from north eastern Africa through Asia to southern China and New Guinea.

Flowering February-July; fruiting June-July.

Indigofera linifolia

Indigofera linnaei Ali **Birdsville Indigo**

Semi-prostrate shrub to 30 cm, with several appressed white hairy stems from a woody rootstock; leaflets 5-9, alternate, oblanceolate-oblong, covered with appressed hairs; flowers burgundy, drying mauve, in sessile clusters; pods shortly cylindric, appressed-hairy, shortly pointed at the apex; seeds usually 2.

In light brown sand at Crab Creek, Cape Bertholet and One Arm Point. Also occurs in NT, SA, Qld and NSW. Extends from Pakistan to Indonesia, Vietnam and New Guinea.

This plant has been reported as poisonous to horses, causing what is known as "Birdsville Disease".

Previously known as *I. enneaphylla* L.

Flowering March, April.

Indigofera linnaei

Indigofera monophylla DC.

Subshrub to 1 m, the branches and foliage very hoary or white with minute hairs; leaves grey or greyish green, 1-foliate, lanceolate to broadly obovate, acuminate, the parallel veins prominent underneath; flowers purple, in shortly pedunculate racemes; pods cylindric, terete, with a pointed apex, tomentose; seeds 5-7.

In brown sand over ironstone near the coast at Quondong and One Arm Point. Not common on the Peninsula. Also occurs in NT.

Flowering February-June; fruiting March-July.

Indigofera monophylla

Isotropis atropurpurea F. Muell. **Poison Sage**

Bushy shrub to 0.5 m, densely clothed with a short, rusty or white tomentum; leaves of a single leaflet, nearly orbicular-ovate; inflorescence a loose terminal raceme; flowers orange to dark red to deep purple; pods sessile, oblong in outline, densely felted, the valves twisting after dehiscence; seeds 8-20.

Recorded by Tepper from Roebuck Bay. However, as this plant has not been re-collected from the Peninsula, Tepper's original collection may have been made well south of Broome where this species is more common on the red sand dunes. Also occurs in NT.

When flowering and fruiting this species has caused heavy mortalities in cattle and sheep.

Flowering July.

Macroptilium atropurpureum

Macroptilium atropurpureum* (DC.) Urban **Purple Bean or **Siratro**

Trailing perennial creeper with pubescent to velvety stems which root at the nodes; leaflets ovate to rhomboid, usually but not always lobed, the laterals oblique with a single lobe on the outer side, obtuse or more or less acute at the apex, rounded at the base, pubescent above, silvery velvety beneath; flowering spikes erect, flowers deep purple-black; fruits linear, appressed-pubescent, with a narrow twisted beak, valves tightly twisting to release seeds; seeds 12-15, mottled brown and black, reniform to elliptic in outline.

Common in pindan at Cygnet Bay, Broome Government Nursery and townsite. A native of tropical America now widely cultivated and naturalised throughout the tropics and subtropics.

Widely cultivated in the Kimberley for fodder. An aggressive weed commonly colonising wire fences in the Broome townsite.

Flowering June-September.

Psoralea badocana (Blanco) Blanco

Shrub to 1.8 m, softly tomentose or silky-villose all over; leaflets single, ovate to lanceolate, obtuse or scarcely acute, softly villous on both sides and usually silky underneath; flowers mauve to blue, in dense heads; pods sub-sessile, elliptic or ovate to reniform in outline, densely glandular, sometimes hairy, particularly in upper half.

Rare in transition area between eucalypt woodland and spring country behind Baldwin Creek Mill. Also occurs in NT and Qld extending north to New Guinea and the Philippines.

A variable species. C. Stirton, Psoraleae In: *Advances in Legume Systematics* Part 1 (1981) Royal Botanic Gardens, Kew, suggests splitting *Psoralea* into 6 genera. Of the species occurring in WA only the introduced species would be maintained as *Psoralea*, all the native species would belong to the genus *Cullen* Medik. and *P. badocana* would become *Cullen badocanum* (Blanco) Verdc. However, as all the necessary new combinations have not been made, the species are here retained within *Psoralea.*

Flowering May.

Psoralea martinii

Psoralea martinii F. Muell.

Erect shrub to 2 m, covered with greyish white wool, old stems woody, bark light brown, fissured; leaves ovate, tomentose, denticulate; flowers in globular axillary heads on short peduncles, compact and usually reduced to an umbel-like single whorl of 6-12 flowers which is subtended by a single bract; flowers: column pale mauve with deep mauve throat, standard white with deep mauve striations in throat; pods stipitate, ovate to reniform in outline, glandular and densely hairy.

Common in pindan behind Mangrove Hotel at Broome, at Coulomb

Point and scattered throughout the Peninsula. Also occurs in NT.

Seeds, collected at Broome by C.E.H. Ostenfeld in 1914 were grown in Copenhagen Botanical Gardens. Named for Dr James Martin, surgeon, surveyor and botanist who visited Roebuck Bay in 1864.

Similar to *P. badocana* but differs in its denser indumentum, reduced inflorescences, longer pedicels and denticulate leaves.

Flowering April-November.

Psoralea walkingtonii F. Muell.

Much-branched shrub to 2 m, glabrous or puberulous, with sessile orange glands; leaves 1-foliate or pinnately 3-foliate, leaflets petiolulate, narrowly elliptic, glabrous or puberulous, entire, apex with a long soft mucro; pseudoracemes axillary, slender, showy with 2 or 3 flowers per node; flowers white; pod more or less ovoid, densely glandular.

Only known from one plant growing in pindan at One Arm Point. Also occurs in NT.

Similar in many respects to *P. leucantha* but with much larger flowers. Possibly introduced to the Peninsula.

Flowering and fruiting August and October.

Psoralea sp. A

Psoralea sp. A Kimb. Flora

Much-branched erect shrub to 2 m; stems minutely hoary-tomentose; leaves yellowish green above, pale green below, pinnately 3-foliate or some of them 1-foliate; leaflets oblong or lanceolate, mucronate or otherwise obtuse, entire or bordered by small crenatures or prominent glands; flowers creamish with purple spot on standard, in rather loose pedunculate racemes, often clustered along rhachis; pod glabrous, stipitate, exceeding calyx, very oblique, dark, much-wrinkled.

Common in pindan with *Acacia eriopoda*, 12 km NE of Broome on the Derby road. Restricted to the south-west Kimberley and extending south to the McLarty Hills.

Possibly only a variant of *P. leucantha* F. Muell. but differing in its ovate-elliptic leaflets, densely puberulous branchlets, glabrous and flexuose raceme axis and strongly recurved bracts.

Flowering August-September.

Psoralea sp. A

Rhynchosia minima (L.) DC.

Slender, trailing or twining creeper, minutely tomentose or nearly glabrous; leaflets broadly ovate-rhomboidal; flowers in racemes, standard deep yellow, back with deep reddish brown striations, keel cream, wings deep yellow; pod falcate, shortly acuminate or acute, narrowed at base, shortly tomentose-pubescent; seeds mottled brown and cream.

In *Melaleuca acacioides* thicket after burn at Coconut Well, in pindan at Crab Creek, in Broome townsite and One Arm Point. Also occurs in NT, SA, Qld and NSW. Ranges from tropical and subtropical America and Africa through Asia to the Pacific Islands.

A very variable species.

Flowering March-November.

Rhynchosia minima

Sesbania cannabina (Retz.) Poir. var. *cannabina* **Sesbania Pea**

Slender annual to 2 m; leaves pinnate; leaflets in 12-30 pairs, usually narrowly oblong, glabrous or sparsely hairy, obtuse to truncate and apiculate; racemes axillary, usually 1-4-flowered; flowers yellow or yellowish orange; pods stipitate, long, subterete, straight to slightly curved, glabrous, transversely septate between the ellipsoidal-rectangular seeds.

On seasonally waterlogged sand flats at Cape Bertholet, and behind coastal dunes at Beagle Bay, Martins Well, Broome and One Arm Point.

Sesbania cannabina

Sesbania erubescens

Sesbania formosa

Stylosanthes hamata

Templetonia hookeri

Also occurs in NT, SA, Qld and NSW. A pantropical species extending from Africa and India to China and south to the Pacific Islands.

Flowering March-June.

Sesbania erubescens (Benth.) N. Burb.

Slender glabrescent herb or shrub to 2.5 m; stem bottle-shaped at base (often underwater); leaflets in 7-13 pairs, narrowly oblong, obtuse to truncate and apiculate; racemes 6-15-flowered; flowers white with purplish-mauve to pink markings, fading with age; pods linear in outline, more or less terete to flattened; seeds obloid to cylindric.

Common, often forming dense stands as claypans dry out, at Lake Eda on Roebuck Plains, Lake Campion and in Boolaman and Goolyahroot Lakes near Beagle Bay. Also occurs in NT and Qld.

Flowering March-May.

Sesbania formosa F. Muell. **Swamp Corkwood** or **White Dragon Tree**

Tree to 10 m, bark fissured, corky; young stems light brown, tan in fissures; leaves bright green; leaflets 10-30 pairs, oblong or elliptical, obtuse and often mucronate; flowers creamish white, very large in short racemes; pods up to 30 cm long.

In wet black mud of seasonal swamps at Coconut Well, Willie Creek, Hunter Creek and Carnot Bay Spring. Also occurs in NT and Qld.

Bardi name = *rirrwal* or *arninyban*. Yawuru name = *rirrwal*. Shade tree.

Often heavily grazed by cattle. A fast growing species being used overseas for rehabilitating areas devastated by overgrazing. A related species *S. grandiflora* Pers. from Asia with pink flowers is sometimes cultivated in Broome.

Flowering June-August.

Stylosanthes hamata* (L.) Taubert. **Caribbean Stylo

Rhizomatous much-branched perennial; leaflets elliptic, puberulous; infloresences dense, about 3-10-flowered, the bracts with long bristly hairs; flowers yellow; pods mostly 1-jointed, the article oblong, ridged and hairy with a long curved hairy beak clearly poking out of the inflorescences.

In seepage area over sandstone outcrop at Hunter Creek and One Arm Point. Also occurs in NT and Qld. Native to the islands of the West Indies and the Caribbean and in near coastal areas of Venezuela and Colombia in South America and in coastal areas of southern Florida in the USA.

An introduced fodder plant widespread on the Peninsula.

Flowering July-August.

Templetonia hookeri (F. Muell.) Benth.

An elegant slender wispy shrub to 2 m with straight, ascending, light brown slightly striate branches; leaves petiolate, 1-foliate or digitately 2-5-foliate; leaflets soft, bright green, sub-sessile to shortly petiolulate, linear to filiform, apex recurved; flowers usually 1 per axil; yellow or greenish yellow (wing and standard yellow, keel greenish); pods stipitate, straw-coloured, more or less obloid, margins thickened, valves twisted after dehiscence; seeds oblong to obovoid, somewhat compressed.

Reasonably common in sandstone with spinifex at Deep Water Point, Waterlow and Valentine Islands in King Sound. Also occurs in NT and Qld.

Bardi name = *rooroo*.

An attractive ornamental shrub.

Flowering January, June, September.

Tephrosia crocea R. Br. ex Benth.

Semi-prostrate shrub to 1 m; stems or branches diffuse or ascending, softly silky-villous; leaves dark green, alternate and pinnate on long stems, obovate to narrow-oblong, obtuse or mucronate, nearly glabrous above, softly silky underneath; flowers reddish orange; pods incurved, narrowly oblong in outline, softly velvety with spreading hairs; seeds 5 or 6.

Frequent in woodland in sandy soil at Balk Creek, Rumbul Bay and Wonganut Spring. Possibly endemic to the Dampier Peninsula.

Bardi name = *banyjoord.* Roots are the most commonly used fish poison, its effectiveness varying seasonally; green roots medicinal, used for itchy bites (applied), small young roots are strongest.

Flowering and fruiting. January-April.

Tephrosia crocea

Tephrosia leptoclada Benth.

Annual or short-lived perennial to 30 cm, much-branched at base, loosely pubescent; leaflets either single with a pair of stipules or 3 digitate at the end of the petiole, linear, acutely acuminate, glabrous above, pubescent underneath; inflorescence a long, slender, raceme with very small flowers in distant pairs; flowers purplish blue; pods long, narrow, straight, sometimes curved, pubescent; seeds 6-9, orbicular.

In sandy pindan on edge of saltmarsh along road to Crab Creek, Broome; in eucalypt woodland at "Milligun" south of Lombadina airstrip and amongst grasses in stony gravel at edge of airstrip, One Arm Point. Also occurs in NT and Qld.

Sometimes confused with *T. simplicifolia* F. Muell. ex Benth. which has orange to apricot flowers and 1-3 leaflets.

Flowering and fruiting March-August.

Tephrosia remotiflora F. Muell. ex Benth.

Sprawling subshrub to 40 cm, sericeous; leaves pinnately 11-17-foliate, the axis not extended beyond the distal pair of leaflets; leaflets obovate to elliptic-obovate, sericeous above and below, rarely glabrescent above, with prominent often reddish veins, apex obtuse to truncate or emarginate and mucronulate; pseudoracemes slender, loose, sericeous or rarely almost glabrous; flowers pink, few, distant; pods narrowly oblong to linear, often curved, with short appressed or spreading hairs; seeds 6 or 7.

In light brown sand at Crab Creek, Cable Beach, Cape Bertholet, One Arm Point and Beagle Bay. Also occurs in NT and Qld.

Flowering February-September.

Tephrosia remotiflora

Tephrosia rosea F. Muell. ex Benth var. *rosea* **Flinders River Poison**

Erect rather open shrub to 2 m; foliage quite sparse and concentrated towards the ends of branches; leaflets large, 5-11 pairs, oblong-cuneate or obovate-oblong, very obtuse or retuse, green and slightly pubescent above, silky underneath; racemes terminal; buds dark purple, flowers dark pink-mauve; pods silky hairy.

In light brown sand on coastal dunes or shellgrit areas at Broome, Quondong, Cape Bertholet, One Arm Point and Cape Leveque and on travertine at Barred Creek. Also occurs in NT and Qld.

Bardi name = *ilngam.* Root used as fish poison. An extremely variable species.

Flowering February-June, September.

Tephrosia rosea var. *rosea*

Tephrosia rosea F. Muell. ex Benth. var *clementii* Domin

Bushy, compact, dense shrub to 1 m; leaflets small, 5-9 pairs, upper leaflets green, lower surface silver green; flowers dark pink to red and purple.

Tephrosia rosea var.*clementii*

Tephrosia simplicifolia

On the Peninsula restricted to gravelly sandstone ridges at One Arm Point.

Bardi name = *biding*.

Flowering February, June-October.

Tephrosia simplicifolia F. Muell. ex Benth.

Perennial subshrub to 30 cm, with a sericeous indumentum of extremely short hairs; leaves 1-3-foliate, the axis sometimes extended beyond the distal pair of leaflets; leaflets linear or very narrowly elliptic, with prominent pale veins below; pseudoracemes slender, sericeous; flowers orange to apricot; pod linear, 40-45 mm; sericeous; seeds ±14, squarish, tan or reddish brown, blackish around the hilum.

In rocky sandstone at One Arm Point. Also recorded for NT and Qld.

Sometimes confused with *T. leptoclada* Benth. which has mauve to pink or deep red flowers and (1) 3-5 (7) leaflets.

Flowering and fruiting February-June.

Tephrosia sp. D Kimb. Flora

Sprawling subshrub with branches c. 0.5 m long; stems with erect to spreading hairs; leaves pinnately 7-11-foliate, the axis not extended beyond the distal pair of leaflets; leaflets linear or very narrowly elliptic to narrowly oblong, often folded longitudinally, densely hairy above and below with spreading to appressed hairs, obtuse and mucronulate; pseudoracemes densely hairy, leaf opposed, loose; flowers apricot; pod linear in outline, with erect hairs; seeds 9 or 10.

In pindan north of Broome and Wongayiargan near Balk Bore.

Bardi name = *ilngam*. Root crushed and used as fish poison.

Appears endemic to south-west Kimberley extending south into the Great Sandy Desert.

Flowering June.

Uraria cylindracea Benth.

Subshrub with decumbent or ascending stems, loosely pubescent or rusty villous; leaflets 3 or rarely 1, ovate-oblong, obtuse; racemes dense; calyx lobes densely hairy, flowers pink; pod a loment (a pod contracted between the seeds and falling apart at the constrictions when mature into one-seeded articles) of 1-3 articles, articles circular to broadly elliptic in outline, reticulate; seeds greenish brown, ellipsopid, smooth.

The only records for the Peninsula are Roebuck Bay (Tepper) and Beagle Bay. Also occurs in NT and Qld.

Flowering February-April.

Vigna lanceolata var. *filiformis*

Vigna lanceolata Benth. var. *filiformis* Benth. **Maloga Bean**

Glabrous or slightly pubescent, twining perennial herb; leaves 3-foliate, stipellate; leaflets entire, very narrowly ovate to linear; flowers pale yellow, on very short pedicels, in clusters of 2 or 3 on lateral nodes in the upper portion of long axillary peduncles; pods narrowly cylindric, terete or slightly flattened, with minute appressed hairs; seeds 6, ovate to reniform, smooth, mottled black on pale brown, aril obsolete.

On sandy bank at Bobbys Creek and under *Melaleuca acacioides* at Curlew Bay. Also occurs in NT, SA, Qld and NSW.

A variable species. Subterranean cleistogamous flowers have been recorded from plants collected at Curlew Bay in May.

Australia's native *Vigna* species are very adaptable. Their genes, in particular those that relate to hard-seededness, seed protein, disease resistance and flowering times, will have a ready application in improving seed crops like mung bean and the various species exploited as forage (W. Ralph,

Rural Research, 157, Summer 1992/93).

Flowering and fruiting March-May.

Vigna radiata (L.)* Wilczek **Mung Bean or **Green Gram**

Vigorous trailing or climbing perennial herb; stems with yellowish harsh retrorse strigose hairs; leaves pinnately 3-foliate, lateral leaflets inaequilateral, terminal leaflets ovate in outline, sparsely strigose above and below, subacute; lateral leaflets smaller and somewhat oblique; inflorescence axillary, a slender pseudo-raceme of umbel-like clusters; flowers yellow, keel incurved and pouched on one side; pod narrowly cylindric, more or less terete, up to 6 cm long, sparsely strigose with brown harsh hairs; seeds up to 13, obloid, with a characteristic pattern of raised ridges.

On edge of tidal flat scrambling into *Melaleuca acacioides* at Curlew Bay and in *Melaleuca dealbata* swampland at "Billabong" west of Karrakatta Bay. Also recorded for NT, Qld and NSW. A tropical weed widespread in Africa and Asia, possibly originating from India.

Naturalised in disturbed areas throughout the Kimberley.

Flowering and fruiting March.

Vigna radiata

Vigna vexillata (L.) A. Rich. var. *angustifolia* (Schum. & Thonn.) Bak. **Wild Cowpea**

Trailing perennial subshrub, stems sparsely strigose with harsh, brownish hairs; leaves pinnately 3-foliate; leaflets lanceolate, acute, up to 11 cm long; buds apricot; flowers pale mauve on long peduncles; pods nearly terete, prominently strigose with harsh brownish hairs; seeds 15-18, more or less reniform in outline, smooth, aril obsolete.

In *Melaleuca* swamp at Lolly Well near Beagle Bay and One Arm Point. Also occurs in NT, Qld and NSW. Widespread in tropical regions.

Bardi name = *irrilm* or *aanyjoo*. Edible root, baked in hot sand or ashes.

A very variable species with several described varieties. The specimens from One Arm Point with broader leaflets which have an acute base may be referable to var. *youngiana* Bailey.

Flowering June.

Zornia chaetophora F. Muell.

Erect, much-branched perennial subshrub; stems glabrous or sub-glabrous with dense pellucid dots; leaflets variable. ovate, elliptic, linear-oblong or narrowly eliptic, apex acute or mucronate; flowers yellow; pod a loment of 1-5 articles, exserted, prominently reticulate veined, covered with long, filiform, numerous hairy bristles.

In pindan at Broome and Lombadina. Also occurs in NT.

Flowering and fruiting February, August-October.

Zornia muellerina Mohl. subs. *congesta* S. Reyn. & Holland

Creeping, prostrate groundcover rising to 12 cm; stems densely hairy with glandular dots; leaflets 2, obtuse, retuse or truncate at the base; peduncles short; flowers bright yellow; pod a loment of (1)2-5-artcles, hidden by the bracts, usually pale with conspicuous reddish brown reticulate venation, glabrous or sometimes finely hairy, usually hairy especially near tip.

Common in grassland or sparse eucalypt woodland in grey sand at Beagle Bay and Barred Creek. Also occurs in NT and Qld.

Flowering March.

Zornia prostrata

Adenia heterophylla subsp. *australis*

Passiflora foetida var. *hispida*

Josephinia eugeniae

Zornia prostrata S. Reyn. & Holland var. *prostrata*

Prostrate herb; stems pubescent to glabrous; leaflets 2, elliptic or ovate, obtuse or sub-acute and mucronate at apex; inflorescences erect; flowers yellow; pod a loment of 2-6 articles, prominently reticulate, finely hairy and with several hairy bristles.

In pindan at Broome and in grassland surrounding billabong at Cape Bertholet and One Arm Point. Also occurs in NT and Qld.

Flowering April-June.

PASSIFLORACEAE

Adenia heterophylla (Blume) Koord. subsp. *australis* (DC.) de Wilde

Woody vine, climbing by means of axillary and simple tendrils; leaves large, alternate, palmately 3-7-veined, orbicular to ovate with 2 prominent auriculate glands at base of the blade, margins sometimes undulate, apex obtuse; male and female flowers on separate plants or on the same plant; cymes terminating in a tendril; flowers greenish cream to white; capsule, pendulous, ellipsoidal to narrowly obovoid, yellowish green becoming bright red, splitting on maturity into 3 segments; seeds circular to ovate in outline, pitted, with a greyish membranous to succulent aril.

In vine thicket behind coastal dunes at Martins Well, One Arm Point and Cape Leveque. There is an Allan Cunningham collection from Cygnet Bay, collected in February 1822. On the Peninsula does not occur south of Pender Bay. Also occurs in NT and Qld and ranges from south-east Asia to Australia and the Solomon Islands.

Bardi name = *garrgarr*. The plant is reportedly toxic.

Flowering and fruiting September-May.

Passiflora foetida* L. var. *hispida* (DC. ex Triana & Planch.) Killip **Wild Passionfruit

Rampant climber with a pungent, sometimes unpleasant smell and simple tendrils, tomentose or softly villous all over; stems yellowish; leaves palmately 3-lobed often yellowish, densely hairy with soft erect hairs and ciliate with slender glandular hairs, base cordate, apex acute; bracts deeply bipinnately dissected into linear gland-tipped segments; flowers white to purple, solitary, pedicellate; styles 3; fruits globose, enclosed by the feathery bracts, becoming yellow-orange when ripe, containing mucilaginous pulp.

Common behind coastal dunes at Martins and Thompsons Wells and throughout the Peninsula. Now widespread (by birds and bats) across northern Australia. Native to South America and the West Indies but now widespread in tropical regions.

Ripe fruits of *P. foetida* are edible but vegetative material and unripe fruits may be toxic.

Flowering and fruiting February-August.

PEDALIACEAE

Josephinia eugeniae F. Muell. **Josephinia Burr**

Stems procumbent, ascending or erect to 0.6 m, unpleasantly aromatic, every part of plant densely villous; lower leaves on long petioles, mostly divided into 3-lobed, petiolulate segments, the segments as well as the upper simple leaves oblong or lanceolate, coarsely toothed; flowers large, greatly widening upwards, purple, axillary, on short pedicels; fruit ovoid, very hirsute with blunt prickles.

In disturbed ground near Beagle Bay and One Arm Point. Also occurs in NT, SA and Qld.

This species may be the same as *J. imperatricis* Vent. which occurs in Indonesia. Previously known as *J. papillosa* W. Fitzg.

Flowering February-May.

PITTOSPORACEAE

Left and above: *Pittosporum moluccanum*

Pittosporum moluccanum (Lam.) Miq.

Tree to 6 m, bark pale grey, smooth; branchlets densely hairy; leaves spirally arranged or crowded in terminal clusters, discolorous, dark shiny green above, pale below, ovate-orbicular to obovate, glabrous, entire, acute or obtuse; inflorescence of axillary and terminal panicles or fascicles; flowers white, strongly scented; capsule orange, compressed-globular, 2-valved, coriaceous, valves strongly recurved when ripe; seeds black, numerous, irregular, sticky.

In vine thicket of coastal sand dunes south of James Price Point. In the Kimberley this species is only known from Maret and Berthier Islands and the Dampier Peninsula. Also occurs in NT and extends to Indonesia, the Philippines, Malaysia and Taiwan.

An excellent ornamental with considerable horticultural potential. A good example can be seen cultivated at the Broome Government Offices.

This species is gazetted as Declared Rare Flora (DRF) by the Department of Conservation and Land Management (CALM).

Flowering February, March, August; fruiting October.

PLUMBAGINACEAE

Aegialitis annulata R. Br. **Club Mangrove**

Slender mangrove to 1 m; stem club-shaped at base; bark dark grey and marked by closely spaced annular leaf scars; leaves alternate, on long, winged, sheathing petioles, lamina very broadly ovate to circular, glabrous, leathery, marked by a series of fine longitudinal depressions parallel to the midrib; flowers sessile or shortly pedicellate; fruits narrow cylindrical curved, 5-angled capsule.

On edge of tidal creek at Cape Bertholet, Packer Island and One Arm Point. Widespread in mangals throughout the Peninsula. Forms dense swards on mudflats in King Sound. Also occurs in NT, Qld, Indonesia and New Guinea.

Bardi name = *oorroolboorr*.

This species is commonly known as the Club Mangrove because its stem is swollen and club-shaped at the base. It is readily recognisable by its almost circular leaves with winged leaf-stalks which clasp the stem and leave annular scars when they fall off.

Flowering November-February; fruiting April.

Aegialitis annulata

Aegialitis annulata

Muellerolimon salicorniaceum

Plumbago zeylanica

Polygala tepperi

Calandrinia quadrivalvis

Muellerolimon salicorniaceum (F.Muell.) Lincz.

Glabrous, perennial, erect, much-branched subshrub to 30 cm; stems and branchlets apparently leafless, articulate, greyish green, glaucous; leaves reduced to sheathing scales; inflorescence of distichous spikes terminating branchlets; flowers white, small, 2 together hidden for most of their length by 3 tightly sheathing obtuse bracts; fruit an achene completely enclosed by the persistent calyx.

On mudflat edge behind mangroves growing with *Acacia ampliceps*, *Frankenia ambita*, *Sporobolus virginicus* and *Hemichroa diandra* at Barred Creek and Cape Bertholet. On the Peninsula does not occur south of Barred Creek.

A monotypic genus endemic to WA and confined to near-coastal mudflats and margins of inland salt lakes.

Flowering August-October.

Plumbago zeylanica L.

Erect, or sprawling to spreading, sparsely-branched shrub to 1 m, glabrous apart from the inflorescence; stems often reddish tinged, ribbed, more or less glabrous; leaves petiolate, ovate, obtuse-acute or acuminate, the petiole somewhat dilated and stem-clasping; calyx with prominent glandular, viscid bristles; flowers white, tubular with spreading lobes; capsule cylindric, enclosed in the persistent calyx, circumscissile near the base.

Common in forest behind coastal dunes at Martins Well, and in sandstone surrounding King Peaks, and on cliff top at Whimbrel, Easton and One Arm Points. On the Peninsula does not occur south of Quondong Point. Also occurs in NT, Qld and NSW. A species widespread in tropical regions from Africa, Asia and Indonesia to the Pacific Islands and Hawaii.

This species has horticultural potential as an attractive groundcover plant.

Flowering March-August.

POLYGALACEAE

Polygala tepperi F. Muell.

Erect to sometimes-branched herb to 0.5 m, minutely hairy with somewhat curved hairs; leaves narrowly oblong to linear, glabrous or sparsely hairy, mucronulate; flowers pea-like, purplish mauve, axillary or lateral, either solitary or 2 or 3 together representing a much reduced raceme; capsule more or less symmetric, obovate-elliptic, sparsely hairy, not winged, acutely and deeply 2-lobed; seeds ovoid but slightly compressed, densely hairy; caruncle ridged, shortly 3-lobed.

Occasional in eucalypt woodland at Beagle Bay and in pindan around Broome and One Arm Point. Also occurs in NT.

The type locality for this species is Roebuck Bay, collected by J.W.O. Tepper in January, 1890 and named after him by Ferdinand von Mueller.

Flowering January-April, August; fruiting March-May.

PORTULACACEAE

Calandrinia quadrivalvis F. Muell.

A prostrate to ascending glabrous annual with flowering stems to 30 cm; leaves small oblong-spathulate, fleshy, basal, soon disappearing; several decumbent or ascending stems, sometimes much-branched; flowers brilliant pink, petals 6-7, outer side of petals yellow, in loose racemes often branching into panicles; capsule longer than the calyx, ovoid, 4-valved, dehiscing to the base; seeds many, reddish brown, obovoid, shiny, smooth

or with minute rounded elevations, without a caruncule.

Under *Melaleuca viridiflora* on edge of swamp with *Lophostemon grandiflorus* in Coulomb Point Nature Reserve, in pindan at One Arm Point, Beagle Bay and Broome. Also occurs in NT and Qld.

Bardi name = *bidan*.

Previously known as *C. tepperiana* W. Fitzg.

Flowering and fruiting March-October.

Calandrinia strophiolata (F. Muell.) Ewart, B. Rees & B. Wood

Prostrate to ascending glabrous annual, with flowering stems to 0.5 m; leaves long, linear, fleshy, basal; flowers pink, petals 11-12, outer side of petals yellow; capsule broadly obovoid to transversely obovoid when open, 6-valved, valves recurved at the apex, slightly longer than the calyx, dehiscing to base; seeds many, dark reddish brown to almost black, globular-obovoid, shiny, smooth, carunculate.

On sand under *Melaleuca* at Coulomb Point, in closed grassland at Lombadina, Cape Bertholet and Gnamagun Well. One of the type localities for this species is Beagle Bay. A Kimberley endemic.

Bardi name = *gumbin*. Edible root, eaten raw or warmed in hot ashes or boiled.

Flowering March-August.

Portulaca bicolor F. Muell.

Very small, prostrate annual herb with srems creamy white, tinged pink, rooting at nodes and with no axillary hairs; leaves dark green with reddish tinge, opposite, subsessile, broadly ovate to circular, obtuse; inflorescence a few-flowered cyme, flowers sessile; petals 6, yellow; capsule obconic, operculum flattened or broadly ovoid; seeds black, compressed, snail-shaped, tuberculate.

On the Peninsula only recorded from skeletal sand over sandstone, 6 km NW of One Arm Point township. Also occurs in NT, Qld and NSW.

Flowering and fruiting March-April.

Portulaca filifolia F. Muell.

Stout erect annual herb, with stems to 20 cm; axillary hairs conspicuous, 5-15 mm long, confined to axil; leaves alternate, sub-sessile or with a petiole, linear to filiform and more or less terete; inflorescence a head of 2-10 sessile flowers, somewhat woolly due to the conspicuous axillary hairs of the surrounding bracts; petals yellow, narrowly obovate to obovate; stamens 12-30; stigmas 3-7 on a common style twice as long as the stigmatic arms; capsule ovoid to globular; operculum rounded to dome shaped, about twice as long as the base; seeds grey or black, obovoid to globular, shiny, tuberculate, with each tubercle star shaped at base and pointed at apex.

Common in pindan around Broome. Also occurs in NT, SA, Qld and NSW.

P. filifolia is sometimes reduced to one of several infraspecific taxa of *P. pilosa*.

Flowering October-March.

Portulaca ?napiformis F. Muell. ex Benth.

Tuberous perennial succulent herb to 10 cm with long pilose axillary hairs; stems reddish brown; leaves pale green, alternate, shortly petiolate, blades narrow-elliptic, apex acute or obtuse; flowers yellow, occasionally the edges of petals tinged reddish orange, terminal in axillary clusters of 1-3, encircled by axillary hairs; capsule ovoid, circumscissing shortly above middle, vertically costate; seeds circular, black, shiny, testa rugulose.

Growing in pindan on sandstone ridge at One Arm Point, Gallen Well,

Calandrinia quadrivalvis

Calandrinia strophiolata

Portulaca bicolor

Portulaca filifolia

Above and right: *Portulaca ?napiformis*

Portulaca oleracea

Portulaca pilosa

Portulaca sp.

Cape Bertholet and in pindan at Broome townsite.

Bardi name = *ngoorrarr*. Edible tuberous root traditionally baked in hot sand and ashes; these days boiled for a few minutes in water, tastes like potato.

Flowering February-April, November.

Portulaca oleracea L. **Pigweed** or **Purslane**

Low, prostrate, or spreading annual to 30 cm with thick, fleshy taproot, somewhat succulent and quite glabrous; stems reddish; leaves light green, often tinged reddish, alternate, sometimes opposite, cuneate-oblong, obtuse; flowers yellow, terminal and sessile; style short with 4-6 linear stigmatic lobes; capsule sessile, ovoid; operculum (including fused sepals), shortly oblong, obtuse, laterally compressed, apex oblique, notched, longer than the base; seeds black, globular to more or less obovoid, shiny to dull, with rounded or pointed tubercles especially on the margin.

In sand at Packer Island, also at One Arm Point, and in pindan on Crab Creek road. Common in reticulated lawn at Broome.

Nyul Nyul = *grassawassa*. The plant is eaten as a vegetable.

A cosmopolitan weed occurring in temperate and tropical regions of the world. A common weed of reticulated lawns. A very confusing species that requires more collections, especially flowering and fruiting material preserved in spirit.

Flowering and fruiting February-April, August, November.

**Portulaca pilosa* L. subsp. *pilosa*

Succulent herb more or less prostrate, with stems to 25 cm; axillary hairs conspicuous, usually 6-10 mm long, confined to the axil; leaves usually alternate, blades narrowly ovate, apex acute or obtuse, base tapered; flowers purple or crimson, occasionally yellow, terminal in sessile clusters of 1-6 encircled by axillary hairs; stigmas 3-7 on a common style shorter than the stigmatic arms; capsules sub-globose, operculum rounded to dome shaped, longer than the base; seeds black, reniform, tuberculate, with each tubercle star shaped at base and usually rounded at apex but the marginal tubercles pointed at apex.

Recorded from Gantheaume Point and Hunter Creek. Also occurs in NT and Qld. A naturalised weed, native of America.

A very complex species which requires further study.

Flowering March.

**Portulaca* sp.

Prostrate to ascending perennial herb, with long pilose axillary hairs; leaves greyish green, alternate, shortly petiolate, blades narrowly elliptic, apex acute or obtuse; flowers bright pink, terminal in sessile clusters of

1-6, encircled by axillary hairs; capsule sub-globose, with a distinct horizontal rim below the middle at the point of cicumscission; style base persistent; seeds black, reniform, distinctly tuberculate.

Naturalised in pindan soils around Broome particularly in gardens and reticulated areas. Thought to be an introduced species related to *P. pilosa* L.

Not recorded in the Flora of the Kimberley.

Flowering and fruiting throughout the year.

PROTEACEAE

Grevillea heliosperma R. Br. **Rock Grevillea**

Open tree to 5 m, the young shoots minutely silvery or fibrous-pubescent, the adult foliage glabrous or more or less glaucous; bark brownish black, finely tessellated; leaves dark green above with prominent venation, pale green below, once- or twice-pinnate, the segments not very numerous, oblong-lanceolate, obtuse, flat, tapering at the base and often petiolulate; flowers reddish pink, in loose terminal or lateral racemes; fruit large, globular and woody.

On the Peninsula restricted to outcropping Melligo Sandstone south east of Lombadina, Hunter Creek and One Arm Point. Also occurs in NT and Qld.

Bardi name = *jamoordoo*. Edible seed, eaten when fruit splits open to expose mature seed; edible gum, red flowers chewed (nice and sweet); branches used to make windbreaks.

The name *heliosperma* is derived from the Latin *helios* = sun and *sperma* = seed; the seed body and the surrounding whitish membranous wing have a sun-like aspect. A species with horticultural potential.

Flowering April-June; fruiting August-September.

Grevillea heliosperma

Grevillea heliosperma

Grevillea pyramidalis R. Br. **Maangga** or **Caustic Tree**

Small slender tree to 4 m; bark greyish brown, corky; leaves pale greyish green, once- or twice-pinnate, the segments not numerous, linear-cuneate or oblanceolate, obtuse; inflorescence large and spectacular, terminal, of 1-several simple or compound panicles of 7-many racemes; flowers cream, small; follicle coated black with a sticky, caustic resin, thin-walled.

Widespread in pindan understorey at Coulomb Point, Beagle Bay, Cape Leveque and One Arm Point. Also occurs in NT.

Bardi names = *maangga* (tree), *maarroo* (this word applies to any flower) and *iiling* (bark). Yellow paint obtained from chewing and spitting out the inner bark. The paint is used for ceremonial purposes and turns white when applied to the body. The sticky resin on the seed pods is caustic and has been recorded in the Kimberley as having caused second-degree burns.

A variable species with at least two leaf forms (a broad-lobed form and a narrow-lobed form) being recognised on the Peninsula. Some specimens of the narrow-lobed form from the Peninsula may be referrable to *G. leucadendron* A. Cunn. ex R. Br. (see McGillivray, D.J. & Makinson, R.O. (1993) *Grevillea*. Melb. Univ. Press:Carlton, Victoria).

Flowering May-July; fruiting August-September.

Grevillea pyramidalis

Grevillea pyramidalis

Grevillea refracta R. Br. **Silverleaf Grevillea**

Slender shrub or small tree to 4 m, the young branches tomentose; leaves mostly pinnate with 3 to 11 segments, linear-lanceolate, or the terminal one broader, or sometimes reduced to a single oblong-cuneate leaf, the segments acute or obtuse when broad, tapering at the base and sometimes petiolulate, the margins usually recurved, nearly glabrous above and

Grevillea refracta

Grevillea striata

Grevillea wickhamii

Above and right: *Hakea arborescens*

penninerved with numerous very oblique and nearly parallel primary veins, densely silky-pubescent underneath, with the midrib prominent; flowers reddish orange in short nearly sessile racemes, the rhachis hoary-tomentose; perianth silky-pubescent outside; follicle very dark brown to nearly black, very thick-walled and nearly globular.

Common along roads and on edge of creeks at Broome, Cape Bertholet, Cygnet Bay (recorded by Wickham) and One Arm Point. Also occurs in NT and Qld.

Bardi name = *jamoordoo*. Used as for *Grevillea heliosperma* to construct windbreaks but regarded as superior as the leaves do not fall off.

This plant has horticultural potential.

Flowering and fruiting March-December.

Grevillea striata R. Br. **Beefwood**

Small tree to 4 m; bark greyish brown, slightly corky and deeply fissured; leaves simple, linear, medium to dark green on the upper surface, paler below, often curved, pendulous, obscurely veined above with prominent white striations underneath; inflorescence a terminal panicle of 2-10 racemes; flowers small, creamish white, tinged reddish; follicle black, very compressed, thin-walled.

In alluvial sandplain, more common towards Derby on the Jarrananga Plain which forms part of the Fitzroy River floodplain. Also occurs in NT, SA, Qld and NSW.

The wood is used to make boomerangs.

Flowering June.

Grevillea wickhamii Meissner subsp. *wickhamii* **Wickham's Grevillea**

Dense shrub to 3 m; young leaves bronze in colour, mature leaves pale glaucous-green, petiolate, ovate, angular or sinuate, with prickly-pointed angles or teeth, cuneate at the base; flowers on short axillary peduncles or terminating short branches, the rhachis glabrous; perianth red, often becoming black towards the tips, glabrous outside; fruit very obtuse.

A widespread Kimberley species confined on the Peninsula to sandstone scree at Deepwater Point. Also occurs in NT and Qld.

Highly ornamental with horticultural potential. The flower colour is variable.

The name commemorates John Clements Wickham (1798-1864), 1st Lieutenant on HMS *Beagle* 1831-36 (Charles Darwin's expedition); commanded the ship in WA waters 1837-38; later Government Resident at Moreton Bay, Qld.

Flowering June.

Hakea arborescens R. Br. **Yellow Hakea** or **Tree Hakea**

Shrub or small tree to 4 m; bark blackish brown, deeply fissured and corky; branchlets densely hairy becoming glabrous; leaves linear-lanceo-

late, with faint parallel venation, entire obtuse to acute, young leaves with bronze tips; flowers small in axillary racemes, pale yellow-cream; follicle large and broadly ellipsoid, brownish, woody, pustulate, with an excentric terminal beak.

In sand at Cape Bertholet, Nilli Bubbaca Well, Broome and One Arm Point. Also occurs in NT and Qld.

Bardi name = *irrgil*. Wood of bent branches used for boomerangs.

A fire-tolerant species.

Flowering December-March, May, July, August; fruiting April-August.

Hakea macrocarpa A. Cunn. ex R. Br.

Gnarled tree to 5 m; bark dark grey, corky, linearly fissured; leaves light green, linear-lanceolate, mostly obtuse, tapering at the base; flowers in loosely cylindrical axillary racemes, tomentose-pubescent; perianth and style creamy white, disk deep crimson red to purple; follicles large and woody, narrowly ovoid to ovoid, granulate.

Common in pindan around Broome and in woodland adjacent to vine thickets at Hunter Creek. Widespread on the Peninsula. Also occurs in NT and Qld. The type locality for this species is Cygnet Bay.

Bardi name = *jarridiny*. Wood used to make boomerangs.

A fire-tolerant species.

Flowering May-September.

Hakea macrocarpa

Persoonia falcata

Persoonia falcata R. Br. **Wild Pear** or **Geebung**

Usually a small tree to 6 m, the new growth flushed bright pink to maroon; leaves alternate, glabrous, linear or lanceolate, falcate, obtuse or acuminate, contracted into a petiole; flowers yellow, sometimes all axillary but more frequently forming a long leafy raceme with the lower floral leaves reduced to bracts and growing out at the end into a leafy shoot; fruit green turning black on a short stipe, the style incurved.

Common in pindan around Broome and widespread throughout the Peninsula. Also occurs in NT and Qld. There is an A. Cunningham collection from Cygnet Bay.

Bardi name = *gamooloon*; Nyul Nyul = *wongatt* or *wankid*; Yawuru = *ngaliwany*. Edible fruit usually collected from ground and eaten raw when ripe (yellow); edible seed pounded, mixed with water to make a black custard.

A potential horticultural species but seeds do not germinate readily.

Flowering August-October; fruiting December-February.

Ventilago viminalis

RHAMNACEAE

Ventilago viminalis Hooker **Medicine Bark** or **Supplejack**

Tree to 5 m, bark dark brown, fissured, flaking off in irregular chunks; leaves dark olive green, linear-lanceolate with prominent creamish midvein on the undersurface; flowers yellowish green borne at the ends of the branchlets; fruit a nut, globular at the base and extended upwards into an oblong or linear coriaceous, bright yellowish green wing, contrasting markedly with the dark green leaves. This two-tone coloration can be seen at a distance, making them easy to identify.

Common in pindan at Repulse Point and Poinciana Well. Localised on the southern half of the Peninsula. Also occurs in NT, SA. Qld and NSW.

Bardi name = *bandarang*. Wood used for boomerangs (*djiwa*); bark and root boiled and used to make medicine. The bark of this tree is considered to be one of the most important bush medicines. A decoction was prepared, often using root bark which was mashed, then soaked in water. These days the mixture is often boiled to speed the process. The finished infusion is like a dark purple tea and was applied externally for sores, swell-

Ventilago viminalis

Bruguiera exaristata

Carallia brachiata

Ceriops tagal

Ceriops tagal

ings, skin rashes, bruises, sprains, insect bites and rheumatism. It has even been claimed to be a hair restoring agent. The bark contains anthraquinone derivatives and some of these may be responsible for the bactericidal properties. The bark was also burnt to form ash which was then mixed with native tobacco and chewed, making the mixture "cheeky".

Ventilago viminalis is regarded as one of the best native fodder trees in inland Australia, very palatable to stock with a moderate nutritive value. The only recorded toxicity has been in experimental sheep fed on *Ventilago*. The toxic compound was identified as tannin (14% tannin dry matter basis).

The species appears to be both fire-tolerant and drought-resistant. The young plants often start as wiry scramblers with several stems twined around one another.

Flowering and fruiting July-October.

RHIZOPHORACEAE

Bruguiera exaristata Ding Hou **Rib-fruited Orange Mangrove**

Mangrove to 7 m, often buttressed at the base, with knee-like pneumatophores; bark grey-brown, smooth, with noticeable horizontal marks on stem; leaves petiolate, elliptic to obovate-elliptic, margin sometimes recurved; calyx creamy white; flower reddish brown, solitary in the upper leaves; fruit a coriaceous turbinate 1-celled berry, large and pendulous; seed 1, viviparous, hypocotyl ribbed.

In mangal with *Avicennia* and *Ceriops* at Packer Island, Cape Bertholet, Pender Bay and One Arm Point. Also occurs in NT, Qld, New Guinea and Indonesia.

Bardi name = *moonboorroonool* or more specifically as *goongoonyoo* when refering to tall dense stands with long, straight stems suitable for making spears and/or harpoons. Wood used to make fishing boomerangs. Yawuru name = *lanyji-lanyji*.

The bark contains 46% tannin.

Flowering January-October; fruiting April-November.

Carallia brachiata (Lour.) Merr.

Tree to 20 m, occasionally buttressed or with aerial roots; bark creamish grey, very corky at base; leaves petiolate, glossy green, with small black dots below, elliptic to obovate, often broadly so, entire, obtuse or obtusely acuminate; cymes shortly pedunculate, often resinous; flowers sub-sessile to shortly pedicellate, inconspicuous, greenish cream to pink; fruit globular, succulent, yellow becoming red at maturity, crowned by the persistent sepals; seed 1.

Restricted on the Peninsula and a dominant tree in Bunda Bunda Spring at Carnot Bay with *Melaleuca cajuputi* and *Timonius timon*. A pantropical species also occurring in NT and Qld.

An ornamental tree with horticultural potential.

Flowering December; fruiting June-October.

Ceriops tagal (Perr.) C.B. Robinson **Yellow-leaved Spurred Mangrove**

Mangrove to 4 m; basal part of stem flanged or buttressed with short plate-like protruberances; bark smooth, grey-white to orange-brown; leaves opposite on long petioles, glossy and sometimes yellowish green, obovate, apex rounded, base cuneate, margins often slightly recurved; stipules lanceolate, slightly resinous, clasping terminal bud, soon shedding; flowers small, white to pink, resinous in dense axillary cymes; fruit ovoid, the persistent sepals more or less reflexed; hypocotyl narrowly cylindric, terete or ribbed to angular; seeds 1 or 2, viviparous.

Common on landward edge of mangals throughout the Peninsula. Also occurs in NT and Qld and ranges from eastern Africa to south east Asia, New Guinea and islands of the western Pacific.

Bardi name = *goorril*. Yawuru name = *lanyji-lanyji*. Wood used to make fishing boomerangs and sometimes spears; bark soaked in water makes a reddish-pink clothes dye. Bark contains 35-40% tannin.

At the height of the pearling industry (c. 1920) the wood was favoured for cooking on luggers. The bark was stripped and the wood was easily cut into short lengths, burning with a minimum of smoke. This was important because the cooking pot on luggers was situated close to the air intake of the divers' pump.

Flowering September-January; fruiting November-March.

Rhizophora stylosa

Rhizophora stylosa Griffith **Stilt-rooted Mangrove**

Mangrove to 12 m, with long, arching, stilt and forked aerial roots; leaves petiolate, opposite, clustered towards the ends of branches, elliptic, leathery, thick and brittle in texture, glossy green above with reddish brown glands on the undersurface, prominently apiculate, at least when young; calyx yellow, recurved in fruit; flowers white in sub-terminal axillary cymes on slender recurved peduncles; petals broadly ovate, equal to the sepals, long silky pilose on margins; fruits ovoid to pyriform; hypocotyl narrowly cylindric, pendulous; seed usually 1, viviparous.

On edge of mangal forming a dense stand with scattered *Avicennia marina* at Broome, Lombadina, Packer Island, Coulomb Point Nature Reserve and One Arm Point. Also occurs in NT, Qld and NSW and ranges from south east Asia to New Guinea, Australia and the Pacific Islands.

Bardi names = *biindoon* (whole tree), *jinbirr* (curving part of prop roots). Wood sometimes used to make fishing boomerangs and spears, also used for ceremonial objects and shields; considered good firewood.

Flowering and fruiting February-October.

Rhizophora stylosa

RUBIACEAE

Canthium sp. A Kimb. Flora

Small tree to 4.5 m; bark slightly corky, becoming smooth grey to light brown, upper branches smooth; leaves pendulous, bright green, glabrous, narrowly elliptic to elliptic and often curved, gradually tapering at base, entire, acute; flowers creamish white, fragrant, in showy axillary clusters; fruit a globular drupe, green becoming purplish black.

Forming thickets in pindan around Broome and occasional in *Eucalyptus miniata* woodlands throughout the Peninsula.

A potential ornamental but seed does not readily germinate.

Similar to, but reportedly distinct from *C. attenuatum* R. Br. ex Benth. which occurs south of the region (S. Reynolds, Queensland Herbarium - pers. comm.). The name *C. attenuatum* has been previously misapplied to collections from the Kimberley.

Flowering February-December; fruiting January-June.

Canthium sp. A

Dentella misera Airy Shaw var. *misera*

Compact creeper, forming a prostrate mat; stems minutely hispid, leaves sub-sessile to shortly petiolate, glabrous, linear, mucronate; floral tube densely hairy; flowers white or pale pink; fruit dry, indehiscent, capsule-like, with dense ascending slender acute hairs, crowned by a persistent calyx.

In damp sand behind coastal dunes at Coulomb Point, sometimes on gravel shoulders of roads and on apron fringing Taylors Lagoon, 65 km NE Broome. Also occurs in NT.

Flowering June-August.

Dentella misera

Gardenia pyriformis

Gardenia pyriformis

Nauclea orientalis

Nauclea orientalis

Gardenia pyriformis Cunn. ex Benth. subsp. *keartlandii* (Tate) Puttock **Turpentine Tree**

Small, straggling, stunted shrub or erect tree to 5 m; bark smooth with mottled orange tinge (the colour tends to be seasonal); the young shoots often exuding a resinous gum; leaves glossy green, minutely hairy to subglabrous, elliptic to obovate; floral tube with shallow ridges; flowers large, white, scented; fruit a drupaceous berry resembling a pomegranate in shape, green and hard, becoming striate when dry, indehiscent, crowned by the persistent calyx; seeds numerous, lenticular, embedded in a soft placental mass.

Scattered throughout the Peninsula. Recorded from Broome, Gantheaume Point (as a stunted shrub), Curlew Bay, James Price Point, Wonganut and Beagle Bay.

Bardi name = *moondoorrj* (tree) and *dalwarr* (fruit); Nyul Nyul = *daloorr*; Yawuru = *wudarr*. Bark is medicinal, an infusion is drunk for 'cold sick' and applied to aches and sores. The Bardi "place the green leaves on a rock and rub their feet on them; the effect is like that of a balm, giving some protection against cuts from the reef and stonefish stings" (Lands 1987, p.21).

The subspecific name commemorates George Arthur Keartland (1848-1926), a Victorian ornithologist and naturalist accompanying the ill-fated Calvert Expedition (1896-97) across the Great Sandy Desert to the Kimberley. The type material was collected from along the Fitzroy River.

Flowering February, March, May, September; fruiting May-July.

Nauclea orientalis (L.) L. **Leichhardt Pine**

Broad, spreading, shady tree to 20 m, with horizontal branching; bark brown to dark brown, tessellated or corky; stipules prominent, elliptic; petioles yellowish green, leaves opposite, elliptic to broadly elliptic or ovate-elliptic, discolorous, dark green, glabrous or glabrescent above and lighter green, puberulous below, veins yellowish, very prominent; inflorescence terminal on short branchlets; heads globular, dense; fruits joined by their calyces into an indehiscent succulent syncarp, strongly smelling at maturity; seeds numerous, sometimes compressed.

On the Peninsula restricted to the alluvial banks of the Fitzroy River. Several trees have been planted on the Peninsula. A single tree at Nimalaica Claypan may also have been introduced.

Yawuru name = *marrgurda*, a loan word from Nyigina.

Good examples can be seen in Broome behind the Westpac Bank and in Louis Street. The fruits are reported to be edible.

Previously known as *N. coadunata* Roxb. ex Smith, *Sarcocephalus coadunatus* Druce and *S. cordatus* Miq.

Flowering and fruiting May-November.

Oldenlandia corymbosa L. var. *corymbosa*

Low, spreading herb; branches ribbed and glabrous; leaves dark green above, pale below, narrowly elliptic, glabrous or finely scabrous, acute; inflorescence of axillary clusters, umbels, raceme-like, or solitary flowers; flowers white; capsule cup shaped, shortly protruding but not exceeding calyx lobes; seeds numerous, brown, faintly reticulate.

In watered lawn of Kimberley Regional Offices, Broome. Also occurs in NT and Qld.

Previously known as *Hedyotis corymbosa* L.

Flowering May.

Oldenlandia galioides (F. Muell.) F. Muell.

Slender diffuse, much-branched, scabrous or glabrous annual herb; leaves more or less sessile, narrow elliptic or linear, midvein prominent

below; inflorescence of axillary clusters of 1-3 flowers; pedicels filiform; flowers white; capsule broadly ovoid to globular, separating at the top; seeds numerous, brown, 3-sided, angular, faintly reticulate.

In grassland at Cape Bertholet, One Arm Point, Curlew Bay, Beagle Bay and Broome. Also occurs in NT and Qld.

Previously known as *Hedyotis galioides* (F. Muell.) F. Muell.

Flowering April-November.

Oldenlandia galioides

Oldenlandia mitrasacmoides (F. Muell.) F. Muell. subsp. *mitrasacmoides*

Erect slender diffuse herb; branches ribbed, sparsely hairy to glabrous; leaves few, narrow-linear, midvein prominent below, sparsely hairy to glabrous, acuminate; flowers white; capsule more or less globular or obloid; seeds numerous, brown, elliptic or oblong, concave, peltately attached by a prominent ridge on concave face, smooth.

On pindan flats between Broome and Crab Creek. Also occurs in NT.

Previously known as *Hedyotis mitrasacmoides* (F. Muell.) F. Muell.

Flowering March.

Oldenlandia sp. B Kimb. Flora

Erect, slender herb to 0.5 m; branches ribbed, glabrous; leaves linear, midvein prominent below, glabrous, acuminate; inflorescence of irregular cymes or racemes; pedicels solitary or paired, glabrous; flowers pink; capsule more or less globular, seeds numerous, brown, elliptic to oblong, concave, peltately attached by prominent ridge on concave face, faintly reticulate, often undulate.

Oldenlandia sp. B

Occasional on edge of saltmarsh at Barred Creek and Broome, and on rocky cliff tops at One Arm Point.

These specimens may represent a distinct taxon or a variant of *O. mitrasacmoides*. These collections have conical stigmas which are included, unlike *O. mitrasacmoides* where the stigma is generally shortly bifid and is exerted from the corolla tube.

This taxon is only represented by four collections from the Kimberley: One Arm Point and Barred Creek on the Dampier Peninsula; Mt Anderson and Camballin, SE of Derby.

Flowering February-April.

Pavetta kimberleyana S.T. Reynolds.

Semi- to deciduous erect shrub to 3 m; bark grey, shallowly fissured; young parts especially young leaves densely hairy with long white hairs; branchlets sparsely hairy at tips; leaves oval-oblong or almost lanceolate, apex obtuse or sometimes rounded, rarely subacute, apiculate, base subacute or obtuse and abruptly attenuate and decurrent into the long petiole, upper surface usually with a slight sheen, sparsely hairy, soon glabrous or hairy only on midrib; flowers white in very open and laxly corymbose showy clusters, trichotomously branched, strongly scented; corolla lobes 4, reflexed, twisted to the right in bud; fruit a puberulous or glabrous berry, in clusters, green going black, sparsely hairy; seeds subglobose.

Pavetta kimberleyana

Near mouth of creek at Cape Bertholet and in vine thicket behind coastal dunes at Broome. Widely scattered in pindan throughout the Peninsula. A Kimberley endemic.

Bardi name = *midingaran* or *marloomoolnorr*. When fruit is ripe and black in November-December, it is eaten raw.

Green caterpillars of the hawkmoth *Cephanodes (Hylas) cunninghamii* feed on the leaves of *Pavetta kimberleyana* at Broome during March (Shirani Wijesuriya, Entomologist, W.A. Dept. Agric.-pers. comm. from specimen collected by T. Willing).

The leaf shape and texture is rather variable, even when seeds are grown from the same plant.

Spermacoce auriculata

An ornamental with horticultural potential, but currently little grown.

Previously referred to as *P. brownii* Bremek. which is now regarded as restricted to NT and Qld.

Flowering and fruiting September-May.

Spermacoce auriculata F. Muell.

Semi-prostrate to erect perennial herb or subshrub to 0.6 m, scabrous with short hispid hairs to glabrous; stems square, sparsely to densely hispidulous to glabrous; leaves sessile, narrowly elliptic to very narrowly elliptic or linear, scabrous with short rigid hispidulous hairs particularly on the midrib and margin, margin sometimes pale and thickened, apex subacute to pungent; inflorescence of usually terminal, globular clusters; flowers blue to purple or white, longer than the sepals; stamens shortly- to well-exserted; capsule obovoid.

Common in pindan throughout the Peninsula and also on coastal dunes. Also occurs in NT and Qld.

An extremely variable species. One collection (P.R. Foulkes 160) has a more hispid indumentum and pungent leaves which are often undulate and have thickened usually pale margins and may represent a distinct species.

Previously known as *Borreria australiana* Specht and including *S. brevifolia* (F. Muell. ex Benth.) Specht.

Flowering February-December.

Spermacoce brachystema R. Br. ex Benth.

Erect herb or subshrub to 40 cm, glabrous, scabrous or sparsely scabridulous; leaves sessile, very narrowly ovate, narrowly oblong or narrowly elliptic to linear, scabrous with short thick broad-based hairs to glabrous, sometimes tapered towards base, margin not pale and thickened, acute; inflorescence of axillary and terminal dense, more or less globular clusters; flowers white, sessile or almost so; stamens included; capsule obovoid to oblong-obovoid, glabrous.

Synaptantha scleranthoides

In seasonally wet areas near Beagle Bay and Coconut Well. Also occurs in NT and Qld.

Previously known as *Borreria brachstema* (R. Br. ex Benth.) Valeton.

Flowering March.

Synaptantha scleranthoides (F. Muell.) Pedley ex Halford

A divaricately branched or diffuse glabrous annual; branches ribbed and scabrous; leaves linear, mucronate-acute; stipules short, usually with two bristle-like lobes on each side; flowers white, very small, on very short pedicels, solitary or 2 together in each axil; fruit a globular capsule; seeds many, brown, 3-sided with 2 sides indented, rarely slightly concave, minutely pitted.

On bank of Bobbys Creek and in pindan over sandstone at One Arm Point. Also occurs in NT. This species is usually confined to seasonally wet areas.

Previously known as *Hedyotis scleranthoides* F. Muell. then *Oldenlandia scleranthoides* (F. Muell.) F. Muell.

Flowering and fruiting March-July, October.

Timonius timon

Timonius timon (Spreng.) Merr.

Tree to 10 m, either glabrous except the inflorescence, or the young shoots silky-hairy, and the older leaves sprinkled with long soft hairs; bark platy almost corky; leaves from ovate-elliptical to oblong-lanceolate, narrowed into petiole; flowers unisexual; male inflorescence 3-many-flowered; female inflorescence of few-flowered axillary clusters, 1-3 together;

male flowers white with 4-6 lobes, female flowers white with 7-9 lobes; fruit a green drupe, broadly ellipsoid to globular, ridged and bullate, minutely and sparsely sericeous, crowned by persistent calyx; seeds numerous.

In freshwater swamp, Carnot Bay, Beagle Bay, and in freshwater seepage area behind Willie Creek. Also occurs in NT, Qld and Indonesia.

Nyul Nyul = *garj, gaaj*. The timber was used by the missionaries at Beagle Bay for manufacturing the rails for ladders.

Previously known as *T. rumphii* DC. and *T. sericeus* (Desf.) Schumann.

Flowering June-September.

Glycosmis trifoliata

RUTACEAE

Glycosmis sapindoides Lindley ex Oliver var. *australiensis* Stone

Citrus-like shrub to 3 m, stems light brown with prominent lenticels; leaves dark green above, dull below, drooping and yellowing, aromatic when crushed, mostly (1)3-5-foliate, sparsely puberulent with pale rusty hairs; leaflets elliptic to slightly ovate or obovate-elliptic or elliptic-oblong, apex acute to obtuse; inflorescences axillary, puberulous with ferruginous hairs; flowers pale yellow to white, sweetly scented, on short pedicels; ovary 3-celled, densely covered in reddish curled hairs; fruit a pink berry; seeds 1-3, ovate in outline.

Behind coastal dunes in understorey of vine thickets and in coastal vine thicket at James Price Point. This variety is endemic to the Kimberley.

A species with ornamental potential.

Flowering October-December; fruiting January.

Glycosmis trifoliata

Glycosmis trifoliata (Blume) Sprengel

Citrus-like shrub to 4 m, stems smooth, light brown, leaves dark green above, dull below, drooping and yellowing, aromatic when crushed, usually (1)3-foliate; leaflets elliptic, at base obtuse to acute, at apex acute and slightly acuminate; inflorescence raceme-like, puberulous with ferruginous hairs; flowers pale yellow to white, sweetly scented, on short pedicels; ovary (2)3(4)-celled, glabrous; fruit a small green, globular berry turning pink to orange when ripe; seeds 1 or 2.

In vine thickets behind coastal dunes at One Arm Point and Quondong Point. Also occurs in NT, Qld, Indonesia, the Philippines, the Moluccas and New Guinea.

Bardi name = *moolinyj* (same as for *Paramignya*).

Flowering February-June; fruiting May-June.

Paramignya trimera

Paramignya trimera (Oliver) Burkill

Citrus-like shrub to 2 m or liane; stems armed with recurved axillary spines; leaves alternate, simple, glossy green on upper surface, dull underneath, aromatic when crushed, simple, petiolate, elliptic to obovate, apex obtuse or retuse; flowers pale cream, sweetly scented, in axillary panicles; fruit an orange-red berry.

Localised in the north of the Peninsula to rock crevices of Melligo Sandstone near Cape Leveque and Carnot Peak. Also in vine thickets and in sand behind coastal dunes at One Arm Point. Also occurs in NT, Indonesia and the southern Philippines.

Bardi name = *moolinyj* (same as for *Glycosmis)*.

Flowering April-October; fruiting December-February.

Paramignya trimera

Exocarpos latifolius

Exocarpos latifolius

Santalum lanceolatum

Santalum lanceolatum

SANTALACEAE

Exocarpos latifolius R. Br. **Mistletoe Tree**

Hemiparasitic shrub or small spreading tree to 5 m; bark greyish brown, shallowly tessellated; leaves dark green, glaucous, broadly ovate, elliptic or obovate, very obtuse, varying remarkably in size, coriaceous, with 5-11 main veins; flowers very small, yellow-cream, in axillary spikes or clusters; fruiting receptacle glaucous, swollen below drupe, obconic to obovoid; drupe ellipsoid, scurfy, yellowish-green, becoming red when ripe.

In thicket behind coastal dunes at Martins Well, and in coastal pindan near Broome, Whimbrel and One Arm Points. Also occurs in NT, Qld and NSW extending north to the Philippines.

Bardi name = *jarnba*. Bark medicinal: burning bark used to smoke and heal cuts and sores and repel mosquitoes; wood used to make boomerangs.

The tree is hemiparasitic, with haustorial roots tapping the roots of other trees. The fruits that form, have a swollen fruit stalk, which resembles the cultivated cashew fruit. The swollen stalk, which ripens to a bright yellow-orange to orange-red, is edible but does not have much of a taste. However, they are favoured by birds.

Flowering March-November; fruiting April-October.

Santalum lanceolatum R. Br. **Tropical Sandalwood**

Hemiparasitic shrub or small tree to 5 m; bark smooth, white, becoming brown and shallowly fissured; leaves bluish green, slightly glaucous, opposite or whorled, petiolate, blade coriaceous or somewhat succulent, midrib rather conspicuous; flowers cream, buds yellowish green; fruit green becoming bluish black when ripe, with a prominent circular scar at the apex.

Widespread on Peninsula. In sand on dunes at Broome, James Price Point, Quondong, One Arm Point and extending inland at Cape Bertholet. Occurs in all mainland states.

Bardi name = *bilooloorr*; Nyul Nyul = *birrmankal*; Yawuru = *gumamu*. Edible fruit eaten raw when bluish-black, very sweet; leaves and bark medicinal: a poultice of warmed leaves is applied for rheumatism, cuts and sores are washed with an infusion from the bark; smoke from burning bark repels mosquitoes.

During the 1930's several Beagle Bay families cut sandalwood on the Peninsula and it was shipped out of Broome. It appears to have been exported for the manufacture of low-grade incense. *S. lanceolatum* is a far inferior source of sandalwood oil than either *S. spicatum* of the W.A. Goldfields or *S. album* of South Asia, which are among the most valuable timbers in the world in terms of value for weight.

Flowering and fruiting January-November.

SAPINDACEAE

Atalaya hemiglauca (F. Muell.) F. Muell. ex Benth. **Western Whitewood**

Shrub or small tree to 8 m; bark greyish brown, deeply tessellated to toothed on older trees; leaves paripinnate; leaflets 2-10, unequal, shortly petiolulate, discolorous, dark green above, pale green below, linear or narrowly elliptic-oblong, sometimes curved, thickly coriaceous, base attenuate or acute and sometimes oblique, apex acute or obtuse; inflorescence a terminal panicle; flowers creamy white, fragrant; fruits divaricately lobed, splitting into indehiscent winged samara, wing erect, crenulate and sometimes undulate. The fruitlets dry out, becoming a pale rusty pink-brown colour and are very noticeable.

Common on sandstone on scree slopes at Dampier Hill, and forming dense thickets in coastal pindan around Broome. Also occurs in NT, SA, Qld and NSW.

Bardi name = *oordool*.

The leaves are often eaten by stock and are considered good fodder. However the seeds are toxic, especially to horses. Even small amounts of seed consumed with the foliage has caused stock losses.

Plants can be seen on the highway leading into Broome, especially between the Rodeo Ground and Nillirr Irbanjin. They can also be seen at the base of sand dunes in the grounds of the Roebuck Bay Golf Club.

Flowering June-October.

Atalaya hemiglauca

Atalaya variifolia F. Muell. ex Benth.

Slender erect tree to 4 m; bark grey, rugose; young branches, peduncles, pedicels and fruits tomentose; leaves parapinnate or imparipinnate, rarely simple; petiole and rhachis continuously or discontinuously winged, the wings 5-39 mm wide; leaflets 3-7, unequal, more or less sessile, narrowly elliptic to oblong, thickly coriaceous, glabrous or puberulous, base attenuate, apex obtuse; inflorescence a terminal panicle; buds yellow, hairy; flowers creamy white; fruit a soft tomentose samara with erect wings.

In coastal pindan at James Price, Swan and OneArm Points and Barred Creek. Not common on the Peninsula and does not occur south of Willie Creek. Also occurs in NT and Qld. A fire sensitive species.

Flowering October-November; fruiting November-December.

Atalaya hemiglauca

Cardiospermum halicacabum* L. var. *halicacabum* **Balloon Vine

A hardy, fast growing, slender trailing vine with hairy, wiry, much-branched glabrous stems bearing tendrils; leaf axils and peduncles puberulous; leaves biternate; leaflets lobed, elongate-ovate, acuminate or acute, irregularly dentate or pinnatifid; inflorescence umbel-like with 3 or 4 raceme-like branches; flowers small, white; fruit a conspicuous stipitate capsule opening loculicidally, inflated, valves membranous, veined, sub-globose or pyriform, hairy; seeds black, globular, smooth; aril white, heart-shaped.

Occasional in grassy woodland in yellow clay at Langey Crossing on the Fitzroy River. Naturalised throughout the Kimberley along stream banks and floodplains. Also occurs in NT, Qld and NSW.

Although the plant is regarded as a pantropical weed, a specimen was collected by Allan Hughan (cited in F. Mueller, *Fragmenta* 9(76)82-July 1875)) at "King's Sound" in 1869, well before effective European settlement in the West Kimberley.

The generic name *Cardiospermum* is derived from the heart-shaped scar on the seeds, whereas the specific name *halicacabum* is derived from the Greek *(halikakabon)* refering to a plant with inflated fruits.

Flowering and fruiting March.

Atalaya variifolia

Cupaniopsis anacardioides (A. Rich.) Radlk. **Tuckeroo**

Tree to 4 m; bark silvery grey, slightly fissured; branchlets and petiole rhachises shortly appressed-pubescent to glabrous, lenticels prominent; leaves parapinnate; leaflets opposite or alternate, obovate or elliptic, obtuse to retuse, entire, obtuse to acute at base, coriaceous; flowers greenish yellow, fruit a yellow capsule, shortly stipitate, sub-globose, puberulous and becoming wrinkled, cuspidate, valves thick and coriaceous, apiculate; seeds shiny and black, enveloped in bright red aril.

Localised in coastal vine thickets near Gnamagun Well and in fissures of outcropping ferruginised sandstone at King Peaks. Not known to occur south of Cape Baskerville. Also occurs in NT, Qld and NSW.

Atalaya variifolia

Above and right: *Cupaniopsis anacardioides*

Distichostemon hispidulus

Dodonaea lanceolata

Dodonaea platyptera

Bardi name = *milimili*.

A tree with horticultural potential in the Kimberley. Often grown as a park and street tree in Qld and NSW.

Flowering June-September; fruiting August-December.

Distichostemon hispidulus (Endl.) Baill. var. *phyllopterus* (F. Muell.) S.T. Reynolds

Much-branched shrub to 0.75 m; bark brown, peeling in small linear flakes; leaves obovate or elliptic-oblong, softly or coarsely pubescent each side; inflorescence a raceme or panicle of 3-18 flowers, or female flowers solitary; styles red; fruit a broadly winged, obovoid, capsule, pale maroon when mature, 3(4)-celled, wings divaricate or erect, broadest in upper third or quarter; seeds usually black, subglobular.

Often forming a dominant understorey in sand at Broome, Cape Bertholet and One Arm Point. Widespread on the Peninsula. Also occurs in NT and Qld.

Bardi name = *moondoorrj*. Bardi people used to rub their bare feet with the leaves before reefing, to protect against Stone Fish.

Flowering March-October; fruiting March- November.

Dodonaea lanceolata F. Muell. var. *lanceolata* **Hop Bush**

Shrub to 1.5 m; leaves simple, petiolate, elliptic, tapering to apex and base, glabrous, midrib and lateral venation prominent, attenuate at base, apex acuminate, acute or rarely obtuse or retuse; flowers in terminal panicles, bisexual or sometimes unisexual, style twisted; capsule 3-winged, purple-brown at maturity, broadly oblong or broadly obovate in lateral view, glabrous, dehiscent; seeds lenticular, shiny, translucent membrane lifting at the margin.

Localised in sand beside creek at Cape Bertholet. Also occurs in NT and Qld.

Bardi name = *guradid*. Hardwood used to make digging and walking sticks.

Flowering and fruiting April-September.

Dodonaea platyptera F. Muell. **Broad-winged Hop Bush**

Shrub to 4 m; bark grey-brown with a distinctive herring-bone pattern; juvenile leaves, pedicels and sepals viscid; leaves often clustered at ends of branchlets, simple, glabrous or sparsely hairy, elliptic, acute, rarely retuse or obtuse, entire, attenuate at base; flowers unisexual, in axillary few-flowered cymes or terminal panicles; capsule green, turning straw coloured, 3-4-winged, glabrous, dehiscent, wings ascending, coriaceous; seeds more or less globular with small ridge above hilum, shiny, translucent membrane completely attached.

Growing behind coastal dunes at Martins Well, Cape Leveque and One Arm Point, often forming a transitional fringe between mangroves and vine thickets. There is a collection from Cygnet Bay by A. Cunningham. On the Peninsula does not occur south of Carnot Bay. Also occurs in NT and Qld.

Bardi name = *alarrgarr*.

Flowering February-May; fruiting February-September.

Mimusops elengi

SAPOTACEAE

Mimusops elengi L. **Mamajen**

Evergreen spreading tree to 12 m; bark grey, shallowly fissured; the branchlets, young foliage and inflorescence clothed with a loose rusty pubescence, which more or less disappears from the mature leaves; leaves bright shiny green above, dull green below, on long petioles, ovate or elliptic, obtuse or acuminate, finely veined; flowers white, axillary, of small clusters, rarely paired or solitary flowers, ferruginous-hairy; fruits yellow, globular, becoming brick red at maturity, slightly hairy in the upper half; seeds 1 or 2.

Mimusops elengi

In closed forest vine thicket behind coastal dunes, Martins Well, Cape Leveque, Karrakatta Bay and One Arm Point. Does not occur south of Barred Creek. Also occurs in NT and Qld. A widespread tropical species occurring from Africa, through southern Asia, New Caledonia and the Pacific Islands.

Bardi name = *joongoon*; Nyul Nyul = *mamajen*. The fruit of this tree is a much prized resource. 100 g of fruit contains: 46.63 g moisture; 2.35 g protein; 1.99 g ash; no fat; 49.03 g carbohydrate; 161.78 mg calcium; 402.25 mg potassium; 229.21 mg sodium; and 1.44 mg ascorbic acid (Judy Gedeon - pers. comm. cited in: Smith, M. (1983) Joules from Pools. *Archaeology at ANZAAS*. W.A. Museum:Perth). Edible fruit eaten when ripe or warmed in hot ashes. Eating large quantities of raw fruit is said to cause constipation.

A slow-growing but superb tree for ornamental planting.

Previously known as *M. parvifolia* R. Br.

Flowering February-May, November; fruiting April,-July.

Pouteria sericea

Pouteria sericea (Aiton) Baehni **Mangarr**

Much-branched shrub or small tree to 5 m, with an indumentum of sericeous and often ferruginous hairs; bark dark brown to black, rough, corky; leaves alternate, dark green above and glabrescent apart from the midrib, sparsely to densely sericeous below, obovate-elliptic; inflorescence of axillary few-flowered clusters, minutely hairy; flowers small, creamish green; fruit a sub-sessile berry, purple when ripe, succulent, ovoid-ellipsoid, glabrous; seed 1, ellipsoid, beige-coloured, with prominent longitudinal scar and a delicate surface pattern.

Pouteria sericea

Common shrub along creek banks at Cape Bertholet and behind coastal dunes and in pindan at One Arm Point. Around Broome groves of trees often follow the ridges of old dune systems. Also occurs in NT and Qld. The best stands in Broome are found in the Gubinge Road vine thicket. A good example can be seen outside the Broome Bowling Club in Herbert Street.

Bardi name = *mangarr*; Nyul Nyul = *mangarr*; Yawuru = *minyyuru*. Edible fruit, eaten raw when ripe and black, reject seeds. The fruits are slightly larger than an olive and are dark purple to a blackish blue when ripe. These fruits then drop to the ground and the edible flesh layer begins to shrivel up. This is the best time to eat the fruits as the dried flesh is sweetest with a taste reminiscent of prunes.

Bacopa floribunda

Buchnera ramosissima

Buchnera urticifolia

Glossostigma drummondii

Native beehives in trunks. An excellent shade tree.

The genus *Pouteria* has many fruiting trees, usually from rainforest areas and some five of these, from Central American countries are under trial in Australia for their tropical fruits. Slow growing from seed.

In the north of the Peninsula, the reddish lichen *Pyrenula nitida* is often conspicuous on its bark.

Previously known as *Lucuma sericea* Benth. and *Sersalisia sericea* R. Br.

Flowering November-April; fruiting May-June.

SCROPHULARIACEAE

Bacopa floribunda (R. Br.) Wettst.

Glabrous, erect, annual herb to 18 cm, stems brick red; leaves light green, lanceolate or linear-lanceolate, opposite, toothed; flowers white, single in leaf axils, so numerous that the plant often appears like a leafy raceme or panicle; calyx divided to the base into 5 distinct sepals, the outer one much broader than the others; corolla more or less 2-lipped, scarcely exceeding the calyx; capsule ovoid-globular, shorter than the calyx, opening in 4 valves; seeds small, numerous, usually striate.

In damp soil on edge of Bobbys Creek. Also occurs in NT and south east Asia.

Previously known as *Herpestis floribunda* R. Br.

Flowering and fruiting April-July.

Buchnera ramosissima R. Br.

Woody erect perennial or subshrub to 0.6 m, with several major stems and widely spreading branches; leaves sometimes sub-petiolate, entire; basal leaves narrowly elliptic to narrowly obovate-elliptic; upper leaves narrowly oblong to linear, shorter; inflorescence a crowded head of 10-20(30)-flowered; flowers white; capsule broadly ellipsoid; seeds reticulate, the transverse ridges broad.

In pindan north of Broome and Fraser River. Also occurs in NT.

Flowering January-June.

Buchnera urticifolia R. Br.

Slender, erect herb to 40 cm, branches hardly developed, terminated by inflorescence; leaves basal in a rosette and cauline, obovate or broadly oblong, usually sessile, obtuse, entire or slightly sinuate-toothed; flowers white, tinged maroon, in slender interrupted terminal spikes; capsule ovoid-ellipsoid.

In pindan and in grey sandy saltflat with *Sporobolus* at Waterbank Station, Beagle Bay and One Arm Point. Also occurs in NT.

Flowering March-August.

Glossostigma drummondii Benth. *(sens. lat.)*

Decumbent, diminutive glabrous annual herb forming dense mats; leaves with the midvein apparent on the underside, linear-spathulate or oblong, entire, but narrowed into slender petiole; flowers pale mauve, on erect pedicels; capsule shorter than the enlarged calyx, thin-walled, loculicidal; seeds many, dark brown, reticulate.

Forming dense swards in white sand at edge of freshwater lake in the Beagle Bay area and on the aprons of Lake Campion and Taylors Lagoon. Occurs in all mainland states but is restricted in the Kimberley to the Dampier Peninsula and one other collection from Liveringa Station.

The flowers are sweet scented and attract foraging meat ants (*Iridomyrmex sanguinea*) in June and later, swarms of ladybirds.

Flowering June-August.

Lindernia chrysoplectra W.R. Barker

A slender-branching, erect, or diffuse delicate annual, usually glabrous and not exceeding 15 cm, with slender succulent stems and ascending branches; stem-leaves in the lower part of the plant soon shedding, upper leaves sessile, narrowly linear to narrowly ovate to subulate; inflorescence a terminal raceme; flowers small, deep purple, on slender pedicels; corolla tube longer than calyx; capsule broadly ovoid to globular, thin-walled, densely covered by blister-like sessile glands.

In washed sand in dry bed of Bobbys Creek, north east of Beagle Bay, Priors Bore and Wonganut Spring. A Kimberley endemic.

Flowering and fruiting March-August.

Lindernia chrysoplectra

Lindernia clausa (F. Muell.) F. Muell.

Small, delicate herb to 20 cm, with a single unbranched scapiform stem; branches 4-ribbed; leaves few, near the base of the stem, ovate-obovate; flowers bright royal blue when fresh, becoming darkish purple blue, in axillary or short terminal open raceme; capsule narrowly ovoid to narrowly ovoid-ellipsoid, thin-walled; seeds broadly oblong.

Rare to occasional in grassland, usually inundated, wet and boggy; in fine greyish white sand, Beagle Bay. Growing with *Mitrasacme hispida* and *M. lutea* at Bobbys Creek. A widespread species in the Kimberley. Also occurs in the NT.

"When flower is crushed, particularly when bright blue, there is a very strong smell of aniseed which Aboriginal children of Beagle Bay recognise as of lollies. The taste is not strong, but the smell is, and lingers" (J.B. Martin - pers. comm.).

Flowering February-April.

Lindernia clausa

Lindernia tectanthera W.R. Barker

Fleshy-stemmed glabrous annual herb to 20 cm, with many slender scapiform branches arising from a basal cluster or rosette of leaves, branches 4-ribbed; lower stem tinged maroon, upper stem green; leaves few, near the base of the stem, ovate-obovate or oblong, entire, narrowed into a short petiole, the upper leaves linear; flowers deep purple, in a short loose terminal raceme, on slender pedicels; capsule ovoid-ellipsoid or broadly so.

In seepage area near Priors Bore. A Kimberley endemic.

Flowering July.

Mimulus uvedaliae var *uvedaliae*

Mimulus uvedaliae Benth. var *uvedaliae*

Straggling annual, glabrous herb to 15 cm, with internodes 15-50 mm long; radical leaves rosulate, ovate, but soon disappearing; stem leaves small and distant, linear-lanceolate, acute or scarcely obtuse, entire, stem-clasping; pedicels in the upper axils slender; flowers purplish blue; capsule compressed ellipsoid, truncate, opening into 4 valves; seeds light yellow to dark brown, ellipsoid to broadly and/or obliquely so, longitudinally ribbed with finer transverse walls.

In seasonally wet areas at One Arm Point and scattered throughout Peninsula. Also occurs in NT.

This variety has a similar distribution to *M. uvedaliae* var. *lutea*, but is seen much less frequently.

Flowering and fruiting April-September.

Mimulus uvedaliae var. *lutea*

Mimulus uvedaliae Benth. var. *lutea* Benth.

Identical to the above except the flowers are yellow-orange with deep orange spots in throat.

In seasonally wet areas under *Melaleuca* on fringe of swamp at Hunter Creek, Priors Bore, Boolaman Well, Coulomb Point and Bobbys Creek.

Flowering March-September.

Peplidium muelleri

Stemodia florulenta

Peplidium muelleri Benth.

Prostrate mat-forming perennial herb, rooting at nodes, with branches radiating from a woody root-stock, sparsely hairy, sometimes glabrescent; leaves petiolate, blade obovate-elliptic to circular, three veined at base, rounded to obtuse, rarely bluntly acute; flowers axillary or in racemes of axillary clusters, pale yellowish-green with a purplish spot on the lower lobe; capsule included in the large persistent calyx, ovoid, thick-walled, dehiscing around the base; seeds finely reticulate.

On the Peninsula only known from seasonally wet sandy aprons at Yulleroo Well and Taylors Lagoon, 65 km NE of Broome. Previously known in the Kimberley from between Derby and Fitzroy Crossing. Also occurs in NT.

Germinates in shallow water of drying claypan as a spindly-stemmed aquatic with a few floating leaves. Once stranded, it changes form to a tight-growing prostrate mat.

Flowering and fruiting March-June.

Stemodia florulenta W.R. Barker

Much-branched perennial subshrub to 0.75 m, branches more or less erect, glabrous; leaves opposite or 3 or 4 in whorls, slightly fleshy, linear-lanceolate, acute; flowers purple, faintly scented, with deep mauve striations, many in showy racemes; capsule mid-brown, ovoid, acuminate; seeds yellowish brown, ellipsoid-ovoid to ellipsoid-oblong, reticulate with translucent walls.

In damp depressions under *Lophostemon grandiflorus* and in understorey of regenerating *Melaleuca acacioides* thicket at Coconut Well, and Cape Bertholet. Also occurs in NT, SA, Qld, NSW and Vic.

Previously known as *Morgania floribunda* R. Br.

Flowering August-April.

Stemodia kingii F. Muell.

Scentless perennial subshrub to 0.5 m; leaves triangular, sessile, stem-clasping, completely glabrous; flowers in sparse to moderate dense spikes or panicles of spikes; corolla blue with deeper blue lines and with the tube and base of the lower lip white to blue-white; capsule just shorter than the persistent calyx, ovoid to narrowly ovoid; seeds oblong-ellipsoid to obovoid, papillose.

Known in the Kimberley from a single specimen collected by F.J. Wise in January 1933 from Broome. This species is normally restricted to red clay creek beds in the Pilbara and the locality recorded on the herbarium sheet may be incorrect.

Previously known as *Limnophila kingii* (F. Muell.) C. Gardner.

Flowering January.

Stemodia lathraia

Stemodia lathraia W.R. Barker

Much-branched subshrub from basal rootstock, weakly ascending to 30 cm, densely hispid; leaves opposite, pale green, glabrous or eglandular hairy on the lower parts or throughout, linear-lanceolate; flowers purple with yellow throat, faintly aromatic, in large racemes or panicles, arranged singly in the axils of the bracts; capsule ellipsoid-ovoid or narrowly ellipsoid-ovoid, shorter than the persistent calyx, acuminate; seeds dark brown, oblong-ellipsoid, minutely papillose.

In seasonally inundated claypan under *Eucalyptus polycarpa*, east of Balk Bore and in sandy soil at Coulomb Point and Taylors Lagoon. Also recorded for NT and Qld.

Previously known as *Morgania parviflora* Benth.

Flowering June-August.

Stemodia lythrifolia F. Muell. ex Benth. **Bush Tobacco**

Robust perennial to 0.5 m with sage-like fragrance, branches ascending to erect, very softly villous all over, almost woolly, and sometimes slightly viscid; leaves opposite, ovate-lanceolate, oblong or lanceolate, serrate, almost entire; flowers small, purple-lilac, sometimes with light striations extending onto lobes, 12-40 in several dense or rarely loose spikes, terminal on or in distal axils of branches, 4-angled in fruit, arranged singly in the axils of the bracts; capsule enclosed by persistent sepals; sepals many, dark brown, ellipsoid-oblong or rarely ovoid-oblong, reticulate.

On creek banks under *Melaleuca acacioides* at Coulomb Point Reserve, Catamaran Bay and Balk Creek. Also occurs in NT and Qld.

Bardi name = *ngalil*. Dry leaves are crushed and chewed like tobacco, mixed with ash of various trees.

Flowering March-October.

Stemodia lythrifolia

Striga curviflora (R. Br.) Benth.

Hemi-parasitic, densely hispid herb to 0.5 m, with a single stem, simple or branched in the upper nodes, the branches steeply ascending; leaves opposite, sessile, lanceolate, cauline, becoming linear up stem, entire, bluntly acute; inflorescence an elongated to dense spike; flowers pinkish mauve; capsule much shorter than the persistent enlarged calyx, ellipsoid or broadly so; seeds oblong-ellipsoid to obovoid, often narrowly or obliquely so, twisted, finely longitudinally ribbed, with oblique fine cross-ribs.

In pindan at Broome area and in grassland at Coconut Well, Wonganut and One Arm Point. Also occurs in NT.

S. curviflora now includes specimens previously known as *S. multiflora* Benth. as the range of variation in relative size of the lower corolla is extremely variable across northern Australia.

Flowering April-June.

Striga curviflora

Striga squamigera W.R. Barker

Hemi-parasitic ?annual herb 10-30 cm tall, with several stems, arising from the base; leaves opposite, sessile, scale-like over much of the stem, broadly triangular, obtuse, narrow ovate-linear, bluntly acute; inflorescence spikes 7-18 cm or more long, simple, consisting of c. 20-50 flowers; calyx tubular; corolla pink to mauve; capsule included in the persistent calyx; seeds ellipsoid-oblong to obovoid, sometimes broadly so, twisted, finely longitudinally ribbed.

On travertine outcrops at Barred Creek. Known only from a few scattered localities in the Kimberley and NT. The type specimen was collected by J.R. Clarkson at Barred Creek in June 1986.

S. squamigera is apparently allied to *S. orobanchoides* of Africa and India.

Flowering and fruiting April-June.

SOLANACEAE

Datura metel* L. **Warty Thornapple

Erect, bushy, annual to 0.8 m high, glabrous; leaves ovate to broadly ovate, acute to acuminate, sinuate, toothed or lobed; calyx tube conspicuously veined; corolla funnel shaped, cream, up to 15 cm long, lobes rounded, terminating in an acuminate point, usually more than 10 mm long; capsule reflexed, straw coloured, ovoid to globular, spiny with short, blunt tubercles 2-5 mm long; seeds yellow to light brown, furrowed but the surface smooth.

Naturalised in greyish black sand under *Melaleuca dealbata* and *Eucalyptus bella* behind coastal dunes at Old Quondong Station north of Barred

Datura metel

Nicotiana heterantha

Physalis minima

Solanum beaugleholei

Solanum cunninghamii

Creek. Not recorded elsewhere in the Kimberley. Also occurs in NT, SA, Qld and NSW.

A widespread weed of work-places and settled areas and believed to be native of Asia. Not recorded in the Flora of the Kimberley.

Flowering and fruiting October, but possibly all year.

Nicotiana heterantha Symon & Kenneally **Broome Tobacco**

Sprawling, leafy subshrub, often forming dense colonies to 40 cm; stems decumbent with tufts of leaves at the lower nodes; leaves thin, mostly stem-clasping, petiole narrowly winged, elliptic to obovate, apex obtuse, base attenuate, margin entire, broadly ovate lamina up to 15 cm, basal leaves petiolate; inflorescence a simple or sparsely branched raceme up to 30 cm; flowers either chasmogamous (the corolla fully developing and opening before pollination) or cleistogamous (the corolla not fully developing with pollination and fertilisation occuring before the flower has opened), white, the tube with very pale maroon striations, the outside of the perianth lobes suffused maroon; seeds numerous, brown, strongly honeycombed.

Endemic to the Kimberley and only known from seasonally wet greyish black clay, adjacent to, and in *Melaleuca acacioides* thickets south of Coconut Well.

Listed by the Department of Conservation and Land Management (CALM) as a Priority One - Poorly Known Taxa. This species is under threat from grazing and trampling by cattle.

Recorded in the Flora of the Kimberley under *N. benthamiana* Domin.

Flowering May-August.

Physalis minima* L. **Wild Gooseberry

Bushy subshrub to 0.5 m, glabrescent or minutely hairy; leaves petiolate, narrowly ovate to ovate, or narrowly elliptic to elliptic, entire or shallowly toothed or lobed, acute; flowers cream to pale yellow, fruit a globular berry enclosed by an inflated angular, papery calyx; seeds disc shaped to reniform in outline.

In grassland around Pender Bay and in *Melaleuca acacioides* thicket, regenerating after fire, near Coconut Well. Widespread throughout Australia, tropical America, Asia and Africa. Considered to have been naturalised prior to European settlement.

The ripe berries are reported to be edible but the plant has been suspected of poisoning stock in Queensland. Sometimes a weed in cultivated land.

Flowering March; fruiting April.

Solanum beaugleholei Symon

Strong, erect woolly subshrub to 1 m; stems greyish green with long golden prickles; leaves large, thick and velvety, ovate or elliptic, concolorous, entire or slightly undulate; inflorescence of 1 bisexual flower below a pedunculate cyme of male flowers; flowers purple, in dense heads on long pedicels; berry pale yellow, drying yellow-brown, globular, not enclosed by enlarged calyx; seeds black.

Only known from a single specimen collected from roadside 17 km north of Broome on Beagle Bay-Cape Leveque road. A species endemic to the Kimberley. Believed to be introduced to the Peninsula in roadfill.

Flowering June-August.

Solanum cunninghamii Benth.

Much branched subshrub to 0.6 m, prickles on stems few to scattered, 2-5 mm long, straight; leaves slender, narrowly elliptic, with rusty densely stellate tomentum, apex acute or acuminate; male and female flowers on separate plants; male inflorescences with up to 50 flowers; female inflores-

cences of solitary axillary flowers; flowers purplish blue, rotate; fruit a globular or depressed-globular berry enclosed by an enlarged spiny calyx; seeds dark brown.

Common in grader spoil on edge of road at Martins Well, One Arm Point and throughout the Peninsula, and growing in sand at mouth of creek, Cape Bertholet. A species endemic to the Kimberley.

Bardi name = *langgoorr*; Nyul Nyul = *nankoorr*; Yawuru = *bunug*. Berries are considered poisonous.

The type locality for this species is Cygnet Bay, collected by Allan Cunningham in February 1822.

Flowering and fruiting all year.

Solanum dioicum W. Fitzg.

Erect or spreading shrub to 1 m, greyish rusty green or silvery green, densely, stellate-hairy, prickles common on stems, 5-10 mm, straight or slightly retrorse; leaves usually ovate but sometimes narrowly ovate or elliptic, usually concolorous, entire, acute to acuminate; male and bisexual flowers on the same plant; male inflorescence with up to 20 flowers; bisexual flowers solitary, male and female flowers blue; berry yellowish green, drying brownish, globular, surrounded almost completely by the enlarged spiny calyx; seeds black or dark brown.

East of Broome near Willare Bridge. Also occurs in NT.

A very variable species.

Flowering and fruiting May-July.

Solanum diversiflorum F. Muell.

Shrub to 0.8 m, green or greyish green, stellate-hairy, prickles scattered to abundant on most parts; leaves spiny, more or less ovate, elliptic or oblong in outline but deeply lobed, concolorous, the lobes oblong to obovate, obtuse, these in turn sometimes lobed; inflorescence of 1 bisexual flower below about 20 male flowers; flowers blue; berry greenish yellow, depressed, globular, not enclosed by enlarged calyx; seeds dark brown to black.

On the Peninsula, restricted to a marsh in pindan on Roebuck Plains. Also occurs in NT.

Flowering April.

Solanum diversiflorum

Solanum esuriale Lindl. **Potato Weed**

Erect subshrub from perennial rootstock to 30 cm, usually grey-green pubescent with dense stellate hairs, prickles usually absent; leaves narrowly oblong to oblong, concolorous, entire or undulate, obtuse or acute, the lower leaves larger and shallowly 5-9-lobed; inflorescence of 2-6-flowered cymes; fruit pale yellow to pale-yellow brown, globular or ovoid berry, not enclosed by enlarged calyx, apex sometimes acute; seeds pale yellow-brown.

In seasonally flooded claypan on track to Crab Creek. A widespread species occurring in all mainland states.

Reportedly toxic to stock.

Fruiting May.

Solanum nigrum* L. **Black berry Nightshade

Much-branched herb or short-lived subshrub to 0.5 m, dark green or purplish green in colour, sparsely hairy, prickles absent; leaves petiolate, ovate, almost glabrous to sparsely hairy, especially near the margins, entire, undulate or shallowly lobed; flowers white on a very short raceme of 4-8 bisexual flowers; fruiting pedicel deflexed; fruit a berry, turning purple, not enclosed by calyx; seeds fawn.

Growing adjacent to a *Lophostemon-Melaleuca* swamp and in dis-

Sonneratia alba

Stackhousia intermedia

Brachychiton diversifolius

Brachychiton diversifolius

turbed areas of the Coulomb Point Nature Reserve. A cosmopolitan species, probably native to central and southern Europe, occurring in all mainland states.

Reportedly toxic to stock.

Flowering and fruiting April-July.

SONNERATIACEAE

Sonneratia alba Sm. **Jolorr**

Mangrove to 12 m; bark scaly at base, smooth silvery on upper limbs; branchlets disarticulating at the nodes; leaves elliptic to obovate, tapered to a short petiole, apex more or less obtuse; flowers large, showy, white, solitary, calyx green, maroon inside, stamens numerous; fruit an obpyriform berry, with the persistent floral tube and reflexed stamens covering the lower half.

Common on seaward edge of mangal particularly towards northern end of Peninsula. Also occurs in NT and Qld. Ranges from eastern Africa through Asia to the Philippines and Pacific Islands.

Bardi name = *jolorr*. Wood used for shields, nectar sucked from flowers.

This species is readily recognised by its stout, cone-shaped pneumatophores, opposite leaves and large, solitary flowers with numerous stamens.

Flowering and fruiting February-August.

STACKHOUSIACEAE

Stackhousia intermedia Bailey

Glabrous or rarely sparsely-puberulent, stout, erect, annual to 1 m; stems tinged maroon; leaves linear-oblanceolate to narrow-linear, persistent; flowers yellowish, 1-5 or more in clusters; fruit a schizocarp, separating into up to 5 indehiscent single-seeded mericarps or cocci, cocci glabrous, ellipsoid to obovoid, tuberculate.

In pindan and seasonally inundated areas at Beagle Bay, Pender Bay and 40 km north east of Broome. Widespread across subtropical and tropical Australia extending northwards through New Guinea, south-east Asia and the Caroline Islands.

A variable species.

Flowering and fruiting April-August.

STERCULIACEAE

Brachychiton diversifolius R. Br. subsp. *diversifolius* **Northern Kurrajong**

Semi-deciduous tree to 4 m; bark grey, vertically fissured and tessellated; petioles yellowish, up to 10 cm long; leaves shiny green above, paler below, midvein yellow, prominent, base very shortly attenuate to cordate, margin entire to sinuate or undulate, apex acuminate to caudate; inflorescence an axillary panicle with up to 60 flowers; calyx petal-like, joined and more or less deeply lobed, green to yellow, with purplish maroon striations, particularly noticeable on the reflexed lobes, very densely stellate-hairy outside, glabrous inside; follicle ellipsoid or ovoid, glabrous outside; seeds yellow or cream, 10-22 per follicle.

Common in pindan around Broome and throughout the Peninsula. Also occurs in NT and Qld.

Bardi name = *gorrgorr*; Nyul Nyul = *kawoorrkawoorr*; Yawuru = *darlab*. Edible seed winnowed to remove irritant hairs and cooked in ashes;

root of young trees eaten as yam (= *nalk* in Bardi) particularly during the Wet; edible white gum cooked in hot ashes until brown then pounded to powder, soaked in water used as drink; soft inner parts of bark used to make short-lived but strong string; bark used as handle and tie for axes.

In Broome a good example can be seen outside the Commonwealth Bank, on Barker Street.

Previously known as *Sterculia caudata* Heward ex Benth. and *Sterculia decipiens* W. Fitzg.

Flowering May-November.

Helicteres rhynchocarpa W. Fitzg.

Much-branched straggly shrub to 2 m; stems densely and shortly stellate-hairy, glabrescent; leaves discolorous, silvery dark green above, greyish green below, narrowly ovate to ovate, with short velvety stellate hairs, denser on lower surface, veins on lower surface prominent, the margins often curled, apex acute to acuminate; inflorescence of axillary cymes with short peduncles and pedicels; flowers mauve or lavendar, small, subtended by two bracteoles; fruits stipitate, ovate-oblong, densely stellate, each carpel with a slightly divergent beak, dehiscing along inner edge; seeds dark brown, trigonous, tuberculate.

On the Peninsula restricted to woodland or open areas adjacent to vine thicket at Cape Leveque. A Kimberley endemic.

Flowering February-April; fruiting April-May.

Helicteres rhynchocarpa

Keraudrenia velutina Steetz

An erect, subshrub to 0.8 m; the young shoots white or rusty with a close tomentum, becoming reddish brown and glabrous; leaves discolorous, dark olive green on upper surface, lower surface lighter green to cream or rust-flecked; petiolate, oblong, very obtuse, entire; inflorescence a loose sub-terminal cyme; calyx pale pink to pale mauve, occasionally tinged greenish maroon, lobes 4 or 5, broad, acute; fruit a schizocarp with fused carpels; seed 1 per carpel, reniform, smooth.

Locally common in pindan in isolated patches adjacent to Caravan Park on Port Drive, Broome. Recorded south from Broome along the coastal strip extending inland around the Edgar Ranges. Also occurs in NT.

A potential ornamental species.

Flowering March-August; fruiting August.

Keraudrenia velutina

Keraudrenia sp. A. Kimb. Flora

Shrub to 0.8 m high; branches red-brown; leaves petiolate, 28 x 13 mm, blade discolorous, dull green above, pale rusty grey-green below, ovate to elliptic, with very short velvety stellate hairs above and longer dense pale hairs interspersed with rusty stellate hairs below, base obtuse, margins entire or slightly undulate, apex obtuse to retuse; inflorescence a dense subterminal cyme; calyx pale mauve; lobes 4 or 5, broadly acute; carpels 4 or 5, joined but distinct, sparsely stellate-hairy except for a dorsal ridge with stiff processes covered with stellate hairs; seeds 1 per carpel, reniform, smooth.

Locally common in pindan near the Broome Powerhouse. Also known from Ruby Plains and Gordon Downs Stations in the east Kimberley.

Flowering and fruiting April-July.

Keraudrenia sp. B.

Keraudrenia sp. B.

A small, open, straggly, much-branched subshrub to 0.7 m, the young stems and leaves clothed in a dense stellate tomentum; leaves grey-green, petiolate, oblong; cymes rather loose, few-flowered; flowers bluish mauve, *Solanum*-like, the calyx lobes reflexed.

Only known in the Kimberley from pindan between Port Drive and

Melhania oblongifolia

Melochia corchorifolia

Rulingia loxophylla

Kavite Road, towards Gantheaume Point.

This species does not appear to set fruit and is therefore difficult to identify. Referred to in the Kimberley Flora under *K. velutina* Steetz.

Flowering April-December.

Melhania oblongifolia F. Muell.

Slender shrub to 0.5 m, densely and shortly stellate-hairy; leaves petiolate, discolorous, dark green above and paler green below, oblong or ovate-lanceolate, obtuse, scarcely toothed, very densely stellate-hairy on lower surface, much sparser or glabrous above, veins prominent on undersurface, base rounded to shallowly cordate and sometimes oblique, margins serrate, apex acute to obtuse; peduncles bearing 1-2 flowers in axillary cymes; flowers yellow; capsule globular, densely hairy, shorter than calyx; seeds brown, with black or dark brown irregular tubercles, roughly trigonous.

In sandplain along creek at Cape Bertholet, One Arm Point, Cygnet Bay (collected by A. Cunningham in February 1822) and Broome. Also in NT, SA, Qld and NSW.

There is some doubt as to whether *M. oblongifolia* F. Muell. is an endemic Australian species or whether it is the same as *M. incana* Heynes, a widespread Asian species.

Flowering January-August.

Melochia corchorifolia L.

Annual or short-lived perennial herb to 1 m; stems glabrous or with lines of dense stellate hairs, the lower stem hollow; leaves petiolate, from broadly ovate to lanceolate and often shallowly 3-lobed, glabrous or with a few simple or stellate hairs mainly on the veins or margin, serrate or crenate, glabrous, apex acute; inflorescence of axillary or terminal compact clusters, often with only 1 or 2 flowers in axillary clusters; flowers small, pink or purplish; capsule septicidally dehiscent, brown, small, depressed-globular, with sparse simple hairs.

Growing around billabong at Coulomb Point Nature Reserve, Beagle and Curlew Bays. Also in NT, Qld and extending from India to Malaysia.

Flowering March-September.

**Melochia pyramidata* L.

A woody herb to 0.8 m; branches slender, divaricate, slightly pubescent; leaves petiolate, lanceolate, or the lower ones ovate, the larger ones serrate, usually glabrous; flowers small, purplish mauve, 2 to 4 together in a little, almost sessile, axillary umbel; fruit a pyramidal capsule, the very prominent angles produced into short horizontal points, pale green when young, becoming yellowish when mature and persistent after dehiscence, broadly triangular in outline, glabrous.

In grey sandy clay at Langey Crossing on the Fitzroy River. Also in NT and Qld. A pantropical weed native to tropical America and introduced to tropical Africa, Asia and Australia.

Flowering and fruiting March.

Rulingia loxophylla F. Muell.

Much-branched shrub to 0.7 m, stems glabrous or clothed in a dense, soft tomentum; leaves obliquely ovate or cordate, obtuse, crenate, soft and thick, the tomentum rather harsh on the upper side, very dense and whitish underneath with prominent venation; flowers small, yellow, in sessile cymes; capsule 3-4 mm across, densely hairy, with 5 longitudinal ridges, each consisting of a fringe of narrow, densely hairy processes up to 2.5 mm.

Localised in coastal pindan near Gantheaume Point. Also occurs in NT, SA and Qld.

Flowering April-December.

Waltheria indica L.

Erect perennial or subshrub to 1.5 m, densely stellate-hairy; leaves distinctly petiolate, upper surface green, lower surface dull greyish green, with stellate hairs denser on lower surface than upper surface, veins prominent on lower surface, from ovate to oblong, obtuse, toothed; flowers small, yellow, becoming orange with age, in dense heads, almost sessile in the axils of the leaves; fruit a capsule.

Widespread throughout the Peninsula. In sandy soil at Packer Island and growing in alluvial sand at Coulomb Point Nature Reserve and in pindan at Broome. A pantropical species also occurring in NT and Qld.

Flowering all year.

Waltheria indica

STYLIDIACEAE

Stylidium costulatum Lowrie & Kenneally

Slender reddish plant with a dark reddish stem to 30 cm; leaves green, linear, clustered in a terminal rosette; scapes usually several; inflorescence a glandular hairy corymbose panicle; calyx lobes short, two united, the other 3 free; flowers yellow and orange; back of petals orange; petals about as long as the tube, two of them slightly bigger; capsule obovoid, prominently ribbed.

In seepage areas in Coulomb Point Nature Reserve, Wonganut Spring and Beagle Bay extending north to Beverley Springs Pastoral Station.

Previously misidentified as *S. floodii* F. Muell., but distinguished by the two fused sepals and ribs on the capsule. The type locality is Wonganut Spring.

Flowering May-June.

Stylidium costulatum

Stylidium desertorum Carlquist

Robust herb to 25 cm; stems short, sometimes branched, pale green below, pinkish above with the lowermost leaves scattered along the stem and soon withering, upper leaves in a terminal tuft (which may appear basal when the stem is short); leaves linear, glabrous, margins minutely white scabridulous, apex a long white curved hair-like mucro; inflorescence of 1-several panicles, with slender glandular hairs; peduncle stout; flowers dark pink, pale underneath, sparsely glandular hairy, petal lobes paired vertically, unequal, entire, obtuse; throat appendages denticulate; capsule obovoid to ellipsoid but slightly compressed.

In moist sandy soil on edge of Taylors Lagoon, 76 km ENE of Broome. Also occurs in NT.

The most northerly record of a predominantly desert species. Previously only recorded for the Kimberley from the Edgar Ranges SE of Broome.

Flowering and fruiting August-September.

Stylidium desertorum

Stylidium leptorrhizum F. Muell.

Erect herb to 30 cm, stem red below leaves and light green above; leaves often withering early, the upper leaves in a terminal tuft; leaves petiolate, broadly elliptic, sparsely glandular hairy, apex obtuse, minutely mucronate; inflorescence a raceme of several glandular hairy scapes; flowers light to dark pink, the lobes almost equal in size; capsule obovoid to ellipsoid.

In seepage areas at Taylors Lagoon, Coulomb Point Nature Reserve, Bunda Bunda Well, Curlew Bay, Hunter and Balk Creeks. Also occurs in NT and Qld.

Flowering May-August.

Stylidium leptorrhizum

Stylidium schizanthum

Thecanthes punicea

Corchorus aestuans

Corchorus pumilio

Stylidium schizanthum F. Muell.

Basally rosetted herb to 20 cm; leaves glabrous, orbicular, scape sparingly glandular-hairy; flowers white, the petals very unequal, the smaller pair erect, bifid, the larger pair united for more than halfway, each deeply bifid; capsule linear.

In creek bed in Coulomb Point Nature Reserve. Also occurs in NT, Qld and NSW extending into New Guinea and Malaysia. A variable species.

Flowering October.

THYMELAEACEAE

Thecanthes punicea (R. Br.) Wikstrom

An erect, glabrous, slightly-branched annual to 20 cm; leaves lime green, mostly opposite, lanceolate, very acute or mucronate; flower-heads on rather long erect terminal peduncles thickened at the end; involucral bracts green, very rarely slightly reddish inside; flowers dark scarlet, showy, much exserted; fruit with deep red spots when immature.

Rare in open *Eucalyptus tectifica* woodland in loose pink sand at Vincent Well near Beagle Bay and in grassy claypan in pindan country in the Coulomb Point Nature Reserve. Also occurs in NT.

Formerly known as *Pimelea punicea* R. Br.

Flowering and fruiting February-April.

TILIACEAE

Corchorus aestuans L.

Spreading to prostrate, decumbent or erect annual herb to 0.5 m; stems reddish, densely hairy; leaves dark green, ovate to circular, with scattered hairs especially along the veins, margins dentate, obtuse to acute; inflorescence an umbel or reduced umbel of 1-3 flowers; flowers yellow, very small; fruit a large winged capsule, more or less narrowly ellipsoid, straight, glabrescent.

On damp flat at Broome, Coulomb Point Nature Reserve, Goolbiarla Creek (south of Lombadina) and One Arm Point. Also occurs in NT and Qld. Widespread in tropical regions of Africa and Asia.

Previously known as *C. acutangulus* Lam.

Flowering February-April; fruiting April.

Corchorus pumilio R. Br. ex Benth.

Low erect shrub to 0.7 m; branches densely but rather loosely stellate-tomentose; leaves densely hairy, shortly petiolate, from oval-oblong to oblong-lanceolate, obtuse, rather thick, crenate, plicate and rugose; flowers yellow, in nearly sessile clusters; capsule tomentose or villous, cylindric but with slight contractions, few-seeded, with a short to fairly prominent terminal beak.

Common in pindan understorey throughout the Peninsula. Recorded from Coulomb Point Nature Reserve, Gantheaume Point, Coconut Well, One Arm Point and from Cygnet Bay by Allan Cunningham. Also occurs in NT and Qld.

Previously confused with *C. sidoides* F. Muell.

Flowering and fruiting January-November.

Corchorus sp.

Shrub to 1 m, very densely stellate-hairy on young stems and leaves; leaves densely hairy, ovate to almost circular, obtuse or acute with the ter-

minal tooth often shortly acuminate; flowers yellow in 3-6-flowered umbels; capsule more or less ovoid to 16 mm long, densely covered by a soft tangled indumentum of large stellate hairs.

In pindan around Broome.

An undescribed W.A. endemic species extending south to Pardoo and Shellborough. Included in the Kimberley Flora as *C. walcottii* F. Muell.

Flowering April-October; fruiting June-August.

Grewia breviflora Benth. **Currant** or **Coffee Fruit**

Deciduous shrub or tree to 8 m, with minute stellate hairs, very densely hairy on young stems, becoming more sparsely hairy with age; bark greyish brown; leaves ovate, sparsely to rather densely hairy, serrulate, acute, the new foliage lime-green, with 3 prominent veins on the undersurface; flowers bright yellow or creamish in 2-6 flowered umbels; fruit a drupe, green becoming purplish black, globular, densely hairy at first, becoming almost glabrous.

In vine thickets beind coastal dunes at Hunter Creek, James Price Point, One Arm Point, Repulse Point and Broome. The type locality for this species is Cygnet Bay. Also occurs in NT.

Bardi name = *goolmi*; Nyul Nyul = *goolm*. Edible fruit, eaten raw when ripe and purplish black, has a taste like currants; wood used to make spears and ceremonial boomerangs.

Good stands of this tree can be seen at Broome in the Gubinge Road vine thicket.

Flowering and fruiting November-April.

Grewia breviflora

Grewia breviflora

Grewia retusifolia Kurz.

Much-branched, semi-deciduous shrub to 1 m, the branches tomentose or softly hirsute; leaves very densely stellate-hairy, discolorous, petiolate, obovate-oblong to oblong-elliptical, serrate, wrinkled, velvety white-tomentose underneath; flowers small, white, staminal cluster yellow, in dense axillary clusters; fruit a reddish brown drupe, depressed-globular, of 2 closely appressed, more or less reniform parts, with long hairs at first, becoming more or less glabrous.

Common in sandplain behind Pender Bay and in fragmented vine thickets behind Cable Beach. Also occurs in NT and Qld.

Nyul Nyul = *wombanyilinyli*. Fruit eaten raw.

The name *G. polygama* Roxb. has been applied to this species in the Kimberley.

Flowering January-April; fruiting April-June.

Grewia retusifolia

Triumfetta albida Halford ms.

Shrub to 0.5 m high, with a very dense indumentum of short stellate hairs on young stems; leaves ovate to elliptic or broadly so, unlobed, obtuse or acute; umbels or clusters 1 or 2 per node, usually 3-5 flowered; fruit broadly obloid-ovoid with a slight but usually distinct constriction just above the middle, densely bristly, closely stellate-tomentose, bristles moderately stout, densely stellate hairy in basal third, glabrous above except at apex, the apical hair hooked.

On sandstone plateau on the summit of Dampier Hill.

Possibly a Kimberley endemic. Cited in the "Flora of the Kimberley Region" as *Triumfetta* sp. L.

Flowering and fruiting June.

Grewia retusifolia

Triumfetta breviaculea Halford ms.

Shrub to 1 m, the whole plant densely hairy; leaves broadly ovate-cordate, obtuse, crenate, very soft and thick; flowers bright orange; fruit a

Triumfetta breviaculea

Triumfetta carteri

Triumfetta triandra

broadly obloid-ovoid capsule, closely stellate-tomentose, densely bristly, bristles stout, hairy on basal leaf, glabrous above except at apex, the apical hair hooked.

On sandplain beside creeks at Coulomb Point Nature Reserve and on the edge of a gravel pit at One Arm Point.

Possibly extends to NT.

Previously misidentified as *T. appendiculata* F. Muell., a species occurring in the Pilbara Region. Cited in the "Flora of the Kimberley Region" as *Triumfetta* sp. M.

Flowering February-May; fruiting May-June.

Triumfetta carteri Halford ms.

Spreading shrub to 0.5 m high, densely or moderately densely stellate-hairy on young stems; leaves narrowly ovate to ovate, densely or moderately densely stellate-hairy on lower surface, sparsely stellate-hairy on upper surface, unlobed to very deeply 3-lobed, acute; umbels or clusters 1 or 2 per node, usually 3-flowered; fruit very broadly ovoid or globular, rather densely bristly, stellate-tomentose, bristles slender, largely glabrous but with a few stellate hairs on base, the apical hair hooked.

On the Peninsula restricted to sandstone at One Arm Point.

Possibly a Kimberley endemic. The name commemorates Brian Carter of One Arm Point. Cited as *Triumfetta* sp. I Kimb. Flora

Flowering and fruiting May-September.

Triumfetta pentandra A. Rich.

Much-branched shrub to 0.5 m, with a short indumentum of fine hairs; leaves unlobed to broadly 3-lobed, broadly ovate to almost depressed-ovate in outline, rather sparsely hairy on the lower surface, with scattered hairs on upper surface especially on veins, acute; flowers yellow, small, in clusters or umbels of 1-4 flowers; fruit broadly ovoid, rather densely bristly, densely stellate-hairy between the bristles, bristles coarse, with a dense indumentum of long simple hairs on adaxial surface except near apex, glabrous abaxially.

In sandy soil at Wonganut Creek, south of Cape Bertholet. A widespread species extending from Africa and possibly naturalised in Australia.

Cited as *Triumfetta* sp. C in the Kimberley Flora.

Flowering and fruiting April-May.

Triumfetta simulans Halford ms.

Shrub to 1 m, with a dense indumentum of large stellate hairs on young stems; leaves densely stellate-hairy, blade ovate-cordate or broadly so; umbels or clusters 1-3 per node; flowers yellow; fruit broadly obloid-ovoid, densely bristly, densely and closely stellate-hairy, bristles stout, densely hairy in basal two-thirds, glabrous above except at apex, the apical hair hooked.

In white sand of riparian woodland dominated by *Melaleuca viridiflora* and *Eucalyptus polycarpa* at Wonganut Spring and south of Cape Bertholet. Possibly a Kimberley endemic. Cited in the "Flora of the Kimberley Region" as *Triumfetta* sp. S.

Flowering and fruiting April-June.

Triumfetta triandra Sprague & Hutchinson

Erect woody-stemmed shrub to 2 m, the whole plant clothed in a dense stellate tomentum; stems reddish brown; leaves dark green, from crenate-oblong to lanceolate; flowers small, yellow, axillary; fruit a small capsule, covered with short soft plumose-villous setae.

On rocky hill under eucalypts at Hunter Creek and Cygnet Bay.
Flowering February-May.

Triumfetta sp.

Stellate, pubescent subshrub; leaves petiolate, discolorous, stellate-hairy on lower surface, rather sparsely stellate-hairy on upper surface, blades narrowly ovate to broadly ovate, apex acute to acuminate, margin serrate; inflorescence pedunculate; flowers small, yellow in umbels or clusters 1-4 per node, usually compound, 5-many flowered; fruits ovoid, moderately densely stellate-hairy between the bristles, bristles slender, glabrous, apically hooked.

In sandy soil under *Melaleuca dealbata* at James Price Point and Wonganut Creek.

A species previously identified in the Flora of the Kimberley as *Triumfetta rhomboidea* Jacq., but now considered to be an undescribed Kimberley endemic (B. Rye, W.A. Herbarium - pers. comm.).

Flowering and fruiting April.

ULMACEAE

Celtis philippensis Blanco var. *philippensis*

Semi-deciduous compact shrub or tree to 7 m, often with buttress roots; bark smooth, pale grey and patchy; leaves elliptic to broadly elliptic, dark green above, pale green below with 3 prominent veins, leathery, brittle, margin entire but often spiny-toothed in juvenile leaves, apex abruptly acuminate; flowers greenish white, fragrant; fruit a small succulent globular to ellipsoid drupe with persistent style branches, green turning scarlet.

Common in vine thickets behind coastal dunes at Martins Well, Rumbul Bay, Hunter Creek and One Arm Point. Grows in rock outcrops at Carnot Peak. Also occurs in NT and Qld. A widespread tropical species extending from Africa to south east Asia. On the Peninsula does not occur south of Quondong Point.

Bardi name = *goolnji*; Nyul Nyul = *goonj*. Edible fruit, eaten raw when scarlet.

Sometimes misspelt as *C. philippinensis*.

Flowering December-April; fruiting January-May.

Celtis philippensis

Celtis philippensis

VERBENACEAE

Clerodendrum floribundum R. Br. var. *floribundum*

Tree or shrub to 4 m; bark dark brown, corky, fissured; young branches pale grey; leaves large, discolorous, medium green, petiolate, oblanceolate; inflorescence either a loose leafy corymb of cymes or axillary cymes, with 5-13 flowers per cyme; calyx glabrous, lobes narrowly to broadly ovate; flowers white; fruits green turning deep purple black or bluish black; drupe shiny black, succulent.

In red soil behind coastal dunes at Broome and Packer Island.

An extremely variable species. This variety can be readily distinguished by the presence of hairs on the petioles, peduncles and pedicels and often on the calyx and corolla lobes.

All species of native *Clerodendrum* are frequently completely defoliated by black-and-white striped caterpillars around February.

Recent taxonomic studies suggest that *Clerodendrum* may be better placed in the Lamiaceae (=Labiatae). However, the family is retained here in Verbenaceae, its traditional placement.

Flowering and fruiting January-September.

Clerodendrum floribundum var. *floribundum*

Clerodendrum tomentosum

Clerodendrum tomentosum

Phyla nodiflora

Premna acuminata

Clerodendrum floribundum R. Br. var. *coriaceum* (R. Br.) Mold.

This variety is distinguished from other taxa of this species in its leaf blades being cordate, ovate-cordate or almost truncate at the base, coriaceous, glabrous, generally larger than any other variety; inflorescence lax and glabrous.

In pindan around Broome townsite.

Flowering and fruiting May.

Clerodendrum floribundum R. Br. var. *ovatum* (R. Br.) Domin

This variety is distinct from other taxa of *C. floribundum* in its leaf blades being ovate, rounded or broadly cuneate at the base and chartaceous.

"Roebuck Bay" collected by J.W.O Tepper in April 1890 and 62 km north of Broome on the Cape Leveque Road.

Flowering April.

Clerodendrum tomentosum (Vent.) R.Br. var. *mollissima* Benth.

Small tree or shrub to 3 m, branching from ground-level; stems corky bark, linearly fissured, young branches with prominent linear lenticels; leaves ovate, dark green above, greyish green below with prominent venation. silky hairy; flowers white, tubular, calyces persistent, enlarging after flowering, prominent, often tinged reddish on the inner reflexed lobes; fruits green turning bluish black.

In pindan at Poinciana Well, Crab Creek, Cable Beach and Lake Eda.

The lectotype for this variety is based on a Dr James Martin undated (but probably May 1864) herbarium specimen (no. 44) from Roebuck Bay (MEL-Herbarium sheet no. 98342).

Flowering and fruiting May, June.

Phyla nodiflora (L.) Greene **Carpet Weed** or **Wild Lippia**

Semi-erect or creeping perennial, rooting at the nodes of horizontal stems, with shortly-ascending flowering stems up to 30 cm; with an appressed indumentum on the stems, leaves and bracts; leaves from obovate to linear-cuneate, moderately densely hairy but appearing glabrous, coarsely toothed at the apex; peduncles axillary but only one to each pair of leaves and much longer than they; spikes dense, almost globular, becoming cylindric and up to 1.5 cm; flowers white turning purplish mauve; fruit a dry schizocarp of 2 nutlets, almost as broad as long.

In freshwater seepage areas at Karrakatta Bay, Camp Inlet, Roebuck Plains and in couch grassland at Wibijakun claypan. Also occurs in NT and considered to be native to tropical America. Regarded as native to the Kimberley but naturalised in the southern part of the State.

An introduced tight-growing prostrate form is popularly cultivated in Broome as a lawn substitute.

Flowering March-June.

Premna acuminata R. Br. **Firestick Tree**

Spreading tree to 5 m; bark white, corky, longitudinally fissured; young stems hairy becoming glabrous; leaves green above, greyish green below, broadly cordate-ovate, acuminate, entire or coarsely and irregularly toothed, hairy on both sides; flowers orange, in a lax panicle of cymes; fruit a depressed, globular, succulent drupe, black when ripe.

In pindan and vine thicket around Broome, Whimbrel Point and Gallen Well. Also occurs in NT and Qld.

Bardi name = *ngalinginkil*. Yawuru name = *ngarnamin'gil*. Wood used for spears and fire sticks.

There is a specimen in the Melbourne Herbarium collected by Allan Hughan at Beagle Bay in 1869.

Flowering December-March.

Left and above: *Vitex glabrata*

Vitex glabrata R. Br. **Bush Currant**

Tree to 4 m, with a moderately dense indumentum of antrorse hairs on very young stems and leaves and on flower buds; leaflets 3 or rarely 5, from broadly ovate and obtuse to elliptic-oblong and acuminate, the terminal leaflet somewhat discolorous, medium green, broadly elliptic-obovate to almost circular or rarely narrowly elliptic to ovate; flowers small, mauve in loose, dichotomously branched, axillary cymes; fruit dark purple or black, becoming more or less globular.

On sandplain adjacent to mud flats at Curlew Bay, in vine thicket at Gallen Well, Skeleton Point and Hunter Creek. Not common on the Peninsula, only known from these three localities. Also occurs in NT and Qld.

Bardi name = *ingiirri*. Edible fruit, marble size, purple-black when ready to eat.

Flowering December-July; fruiting March-July.

Vitex trifolia

**Vitex trifolia* L. var. *subtrisecta* (Kuntze) Moldenke

Dwarf, erect or sub-prostrate shrub 0.5-3 m; leaves both 1-foliate and 3-foliate interspersed on branchlets; petioles up to 25 mm; leaflets sessile, elliptic to oblanceolate, obtuse or shortly acuminate at apex; terminal leaflet much larger than laterals, cuneate at base; laterals elliptic-obtuse, oblique at base. Inflorescence of densely tomentose thyrse; flowers purplish mauve or pale blue. Fruit sub-globose, glabrous, glandular all over.

Cultivated in gardens at Broome and One Arm Point. Also naturalised in NT, Qld and NSW. A widely cultivated species extending from Africa, east to the western Pacific Islands.

A garden escape now naturalised in Kimberley.

Flowering and fruiting November.

VIOLACEAE

Hybanthus aurantiacus

Hybanthus aurantiacus (F. Muell. ex Benth.) F. Muell. **Orange Fairy's Aprons** or **Orange Spadeflower**

Erect compact subshrub to 0.6 m, with woody base; leaves sessile or shortly petiolate, alternate or clustered, linear to narrowly ovate, sparsely hairy to glabrous, serrate to dentate or occasionally entire; flowers solitary, petals imbricate, yellow to orange, anterior petal spathulate, 7-13 mm; capsule 4-6 mm; seeds 1-12, ovoid to ellipsoid, pitted or ribbed.

In pindan near Broome and One Arm Point. Also occurs in NT, SA and Qld.

The type locality for this species is Cygnet Bay, collected by Allan Cunningham in February 1822.

Flowering December-May; fruiting May.

Hybanthus enneaspermus

Tribulopis angustifolia

Tribulus occidentalis

Tribulus terrestris

Hybanthus enneaspermus (L.) F. Muell. subsp. *enneaspermus* **Blue Fairy's Aprons** or **Blue Spadeflower**

Erect subshrub to 0.5 m, branchlets hairy; leaves sessile or shortly petiolate, alternate or clustered, linear to very narrowly elliptic, sparsely hairy to glabrous, revolute, entire to serrulate; flowers solitary, bluish to mauve, petals imbricate, anterior petal spathulate, 6-15 mm long; capsule green; seeds ribbed.

In sand beside creek and in pindan with *Acacia eriopoda* at Martins Well, Fraser River, Coulomb and One Arm Points. Also occurs in NT, Qld, NSW extending into Africa, India, Sri Lanka and Malaysia.

Flowering January-May.

ZYGOPHYLLACEAE

Tribulopis angustifolia R. Br.

Prostrate or more or less erect annual herb, sometimes with a perennial rootstock; stems densely hairy, often tinged pale maroon up to 40 cm; leaves petiolate, pale green, glabrous or with scattered or dense hairs on both surfaces; leaflets in 3-6 pairs, linear or narrowly ovate with an acute apex; flowers pale yellow; fruit narrowly pyramidal, lacking large prickles but with 2 small basal spines and usually with a very small spine on each side at about the middle.

In alluvial sand at Point Coulomb and common in pindan around Broome, Bobbys Creek and One Arm Point. Also occurs in NT and Qld.

Often abundant after good rains. A very variable species in general hairiness and flower size (petal length), but distinguished from other *Tribulopis* species by 3 or more pairs of linear or narrowly ovate leaflets. Some specimens from 6 km NW of One Arm Point townsite consistently have only 2 pairs of leaflets and fruits with 2 small rounded basal projections and no spines above the middle.

The Flora of the Kimberley treats *Tribulopis affinis* (W. Fitzg.) H. Eichler and *T. curvicarpus* (W. Fitzg.) G.J. Keighery as extreme variants of *T. angustifolia*.

Flowering and fruiting February-August.

Tribulus occidentalis R. Br. **Bindi-eye** or **Perennial Caltrop**

Prostrate spreading plant clothed in silky hairs; stems occasionally pinkish; leaves abruptly pinnate; leaflets greyish green, usually in 7 or 8 pairs, obliquely oblong; flowers bright yellow; fruits globular, 20-28 mm across including the spines, abaxial surface of mericarps densely villous and covered with hairy spines 3-6 mm long.

Common in pindan around Broome townsite. Also occurs in NT, SA, Qld and NSW.

Can be distinguished from *T. terrestris* by the larger leaves, flowers and fruits.

Specimens from the vicinity of Broome form an outlying and comparatively uniform population with the characteristics of *Tribulus occidentalis*. However, it is possible that further study will reduce *T. occidentalis* to a variety of *T. hystrix* R. Br.

Flowering and fruiting March-August.

Tribulus terrestris* L. **Bindi-eye or **Caltrop**

Prostrate annual herb; leaflets dark green, usually in 4-7 pairs; flowers yellow; fruits more or less globular, 7-10 mm across excluding the spines, glabrescent or shortly scabrous-hairy and then sometimes minutely velutinous, abaxial surface of mericarps with a crest of spines or tubercles each rarely more than 1 mm long and 2 pairs of larger spines, 1 pair in the

upper half, rigid, thick, divergent, 4-6 mm, the other pair towards the base, usually reflexed and 1-2 mm, or sometimes absent.

Common in pindan around Broome townsite and One Arm Point. Also occurs in all mainland states. A native of the Mediterranean Region, now a widespread weed in warm temperate areas.

A very variable species. Some forms have fruits with basal spines parallel to and as long as the upper spines.

Reported to be toxic to sheep.

Flowering and fruiting February-October.

MONOCOTYLEDONAE - THE MONOCOTYLEDONS

The smaller of the two divisions of the Angiosperms (or flowering plants) in which the embryo has only one cotyledon that forms the first seed leaf. This group includes non-woody herbs such as the grasses and sedges.

Crinum angustifolium

Corynotheca micrantha var. *gracilis*

Thysanotus chinensis

ALISMATACEAE

Caldesia oligococca (F. Muell.) Buchenau var *oligococca*

Emergent aquatic to 0.85 m; submerged leaves sometimes present, narrow linear; floating leaves ovate to broadly ovate to sub-orbicular, with a deeply cordate base; flowering stems 1-3 per plant; flowers small, white with 3 petals; fruits with conspicuous warts or spiny longitudinal ribs on abaxial surface; seeds reddish brown.

In spring and seasonal claypans at Beagle Bay. Also occurs in NT and Qld, extending from central and western Africa through southern Asia to New Guinea.

Flowering and fruiting May-June.

AMARYLLIDACEAE

Crinum angustifolium R. Br. **Bush Lily**

Bulbous herb; leaves radical, long, strap-like; scape to 0.6 m, flowers fragrant, white, numerous in an umbel, staminal filaments crimson; seeds buoyant.

In sand adjacent to wet boggy area, Wonganut Spring, Moorak Bore and Cape Bertholet. On the Peninsula not recorded south of Kundandu Creek. A widespread species in the Kimberley. Also occurs in NT and Qld.

After flowering the entire plant dies back to the underground bulb.

Flowering January-March.

ANTHERICACEAE

Corynotheca micrantha (Lindl.) Macbride var. *gracilis* R. Henderson **Zig-zag lily**

Erect, divaricately branched, tangled, glabrous subshrub to 1 m; leaves narrowly linear, soon shedding; flowers pale mauve with white margins; capsule pendulous, usually or always 1-seeded, often attenuate at base, longitudinally dehiscent along 1 side; seed dull with numerous wavy ridges covering surface.

In pindan and in alluvium beside creek, Cape Bertholet and Broome. A Kimberley endemic.

The type locality for this variety is Riddell Beach, Broome, collected by K.F. Kenneally in June 1984.

Flowering March-July, October.

Thysanotus chinensis Benth. **Fringed Lily**

Delicate herb to 18 cm, roots fibrous, tubers absent; stems light green, 8 or more from base; leaves annual, narrowly linear, usually shorter than stems, flat or channelled on lower surface, glabrous, often absent; flowering stems spreading-decumbent or rarely erect, terete, glabrous, with a single terminal many-flowered umbel; flowers mauve, 3 inner petals fringed; stamens 6, anthers straight; capsule 4 mm long.

Rare in grassland of sandy bank at Balk Creek. Also occurs in NT and Qld extending north to China.

Flowering April-October.

ARACEAE

Colocasia esculenta* (L.) Schott **Taro or **Elephant Ears**

Large herb with thick rootstock; stems thick, usually prostrate or semi-prostrate at or near ground level, bearing groups of leaves which form dense clumps; leaves radical, ovate; more or less peltate or cordate; scapes radical, flowers enclosed in a spathe, the females at the base separated from the males by short, ovoid neutral organs; berries small, enclosed in the persistent base of the spathe.

In spring country with *Typha domingensis* adjacent to Beagle Bay settlement. Also occurs in NT, Qld, NSW, Asia and the Pacific Islands.

The plant is believed native in some parts of the Kimberley and is widespread through tropical Australia and Asia.

Taro is a very important food plant in the Pacific region where the swollen root is cooked and eaten. If eaten raw the plants can be poisonous to humans. The plant is often grown as an ornamental. Taro was introduced to the Beagle Bay area about 1900 by Trappist monks for the edible root.

Flowering March.

Colocasia esculenta

ARECACEAE

Phoenix dactylifera* L. **Date Palm

Strong palm to 10 m or more, producing offshoots; columnar stem covered with old leaf bases; leaves pinnate glaucous, very long, stiff; flowers dioecious, yellowish; fruits cylindric, borne profusely on the long hanging strands of the spadix, with edible flesh.

Known only on the Peninsula from near old Quondong Homestead (abandoned). A native of western Asia and North Africa and long domesticated.

Phoenix dactylifera

ASPARAGACEAE

Protasparagus racemosus (Willd.) Oberm. **Asparagus Fern**

Scrambling perennial subshrub with recurved spines; leaves yellowish green, terete; flowers greenish white, anthers reddish brown; fruits purplish red, globose, shiny.

On bushes near creek and in vine thickets behind coastal dunes at Gallen and Martins Wells, Carnot Bay, One Arm Point, Cape Bertholet and south of James Price Point. Not recorded south of Moorak Bore. A widespread species in north Australia extending from Africa through India and south-east Asia to Australia.

Flowering June; fruiting May, August.

Protasparagus racemosus

COLCHICACEAE

Iphigenia indica Kunth

Perennial herb arising from small tunicated bulb; stems simple, up to 35 cm; leaves long, linear to linear-lanceolate, sheathing at base; flowers brown, at the end of the stems subtended by leafy bracts; fruit an ovoid capsule.

Protasparagus racemosus

Cartonema parviflorum

Commelina ensifolia

Cyanotis axillaris

Murdannia graminea

Occasional in *Melaleuca acacioides* woodland in grey sandy clay at Point Coulomb Nature Reserve. A widespread species occurring across northern Australia and extending into south-east Asia.

The plant contains the toxic alkaloid colchicine.

Flowering and fruiting March.

COMMELINACEAE

Cartonema parviflorum Hassk.

Tuberous perennial herb to 40 cm; leaves filiform, acute; inflorescence an elongated spike, flowers yellowish cream; capsule 4-6 mm long, glandular-hairy on the beak.

Common in grasslands beside creeks or seasonally inundated lowlands dominated by *Melaleuca* at Beagle Bay, Barred Creek, Lombadina and seen at Wonganut. Also occurs in NT and Qld.

Bardi name = *rambag*. Edible corm eaten raw or baked in hot sand or ashes.

Flowering March-April.

Commelina ciliata T.D. Stanley

Straggling, semi-prostrate, glabrous herb to 30 cm, creeping and rooting at the base; leaves ovate-lanceolate to narrow-lanceolate, acuminate; flowers in a complicate oblique leafy bract or spathe; spathes on short peduncles opposed to the upper leaves, broad, shortly acuminate, deeply cordate at the base with rounded auricles not connate; flowers bright blue; fruiting pedicels recurved so as to ripen capsules within the spathe.

Common in herb patch amongst grasses on floodplain at Willare Bridge on Fitzroy River. Also occurs in NT, Qld and NSW.

The names *C. cyanea* R. Br. and *C. lanceolata* R. Br. have often been misapplied to this species.

Flowering February.

Commelina ensifolia R. Br.

Semi-prostrate creeper to 30 cm, glabrous or with a slight pubescence on the leaf sheaths and a few cilia on the base of the leaves; leaves lanceolate, acuminate; flowers deep royal to navy blue in a complicate oblique leafy bract or spathe, usually 2 or more on a peduncle included in the spathe; fruiting pedicel recurved so that capsule ripens within the spathe.

Fairly common in vine thickets at One Arm, Bell and Emeriau Points, Beagle Bay and, Willare Bridge. Also occurs in NT, SA and Qld and extending into parts of Asia.

Flowering and fruiting February-June.

Cyanotis axillaris D. Don

Glabrous creeping herb; leaves light green, linear-lanceolate; flowers 2 or 3 together within the short loose leaf-sheaths; outer perianth segments shortly united at base; inner perianth deep blue to purple; stamens bright yellow, filaments bearded; fruit a 3-valved capsule; seeds rounded, smooth.

In damp grassland and on edge of inundated claypan at Lombadina, Beagle and Curlew Bays. Also occurs in NT and Qld and extending from India east to Indonesia.

Flowering March-June.

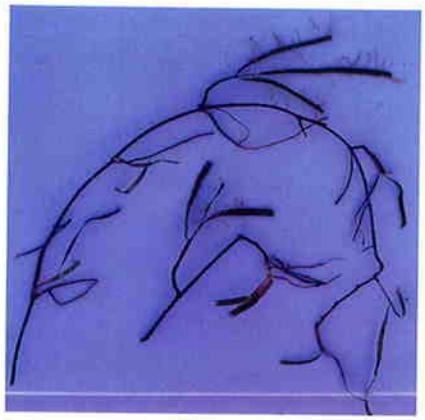
Murdannia graminea (R. Br.) G. Brueckner

Erect or sprawling, glabrous herb to 0.7 m, with clusters of fleshy cylindrical tubers; leaves radical, tufted, grass-like with short broad sheaths; stems erect, with a few long leaves dilated into short sheaths; panicle very

irregularly and loosely branched; flowers with inner tepals lilac, outer tepals white, occasionally tinged maroon; capsule oblong or ovoid, rather longer than the perianth; seeds pitted-rugose.

Growing by swamp and in sand beside creek at Cape Bertholet, Crab Creek, Lake Campion (fringing areas only), Pender Bay, One Arm Point, and common in pindan around Broome.

Flowering January-May.



Cymodocea angustata

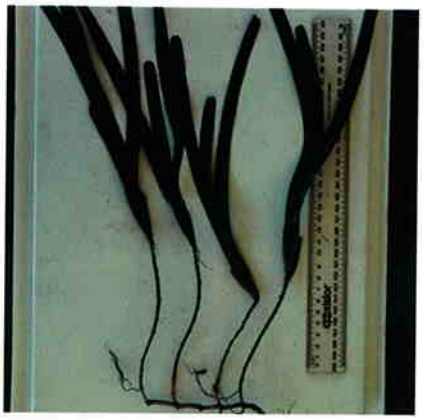
CYMODOCEACEAE

Cymodocea angustata Ostenf.

Perennial submerged rhizomatous marine herb; nodes with 1(2) unbranched or sparsely branched roots; leaf-bearing internodes 1.5-8 cm long; leaves 2 or 3 per stem; sheath pale purplish or very pale brown, leaving an open circular scar when shed; blade 6-12 cm long and 3-4 mm wide, 9-13-veined, rather sparsely serrate around apex, obtuse to slightly attenuate, teeth sometimes 2-branched; fruiting carpel with a stalk, almost circular in outline, at least 6 mm long, beak curved.

Occurs in a variety of substrates in inter-tidal pools or raised reef platforms and in depths of up to 5 m below the low tide level at One Arm Point.

Flowers and fruits recorded October-November.



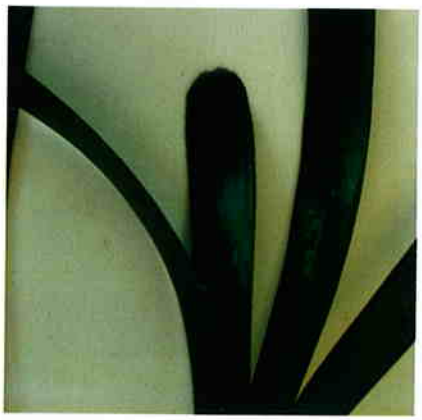
Cymodocea serrulata

Cymodocea serrulata (R. Br.) Asch. & Magnus

Perennial submerged rhizomatous marine herb, with 2 or 3 sparsely branched roots at each node; leaf bearing internodes usually 15-35 mm; leaves 2-5 per stem; sheath bright purple to medium brown, leaving an open circular scar when shed; blade 3-20 cm and 4-9 mm wide, 13-17-veined, densely serrulate around apex, very obtuse to truncate; fruiting carpels sessile, elliptic in outline, 2 mm thick, with 3 parallel blunt ridges on abaxial surface, beak erect.

Occurs in a variety of substrates in inter-tidal pools around the Peninsula.

Flowering and fruiting period unknown.



Cymodocea serrulata

Halodule pinifolia (Miki) Hartog

Submerged perennial rhizomatous seagrass; rhizome with 2 or 3 roots per node; internodes 10-30 mm long; leaves 6-24 cm; sheath 1-4 cm; blade 0.6-1.2 mm wide, 3-veined but only the midvein conspicuous, somewhat serrulate at apex, obtuse, teeth numerous, irregular; inflorescence terminal, 1-flowered or apparently 1-flowered, subtended by the terminal leaf; male inflorescence stalked; female inflorescence subsessile or sessile; fruiting carpels 2-2.5 mm, with a lateral beak c. 1 mm.

Occurs in mud either in the inter-tidal zone or in shallow parts of the sub-tidal zone at Roebuck Bay and One Arm Point. Also occurs in NT and Qld, extending north to Taiwan and east to New Caledonia and Fiji.

Flowering and fruiting ? October.

Halodule uninervis

Halodule uninervis (Forsskal) Asch.

Submerged marine rhizomatous seagrass; leaf blade long and strap-like to 15 cm, flat and narrowed at base, three-nerved, midrib conspicuous.

In association with *Thalassia hemprichii*, in extensive beds with *Halophila ovalis*, along seaward edge of mangrove (*Avicennia marina*), and scattered in pools of standing water on upper land terrace southward of mangrove stands.

Halodule uninervis is typically the main component in the more exposed micro habitats at low tide. Substrate hard rocky, fine greyish mud or shelly, at One Arm Point, and sheltered mouth areas of Barred Creek and Crab Creek.

Flowering and fruiting period unknown.

Syringodium isoetifolium (Asch.) Dandy

Perennial submerged marine herb; rhizome monopodial, slender, with 1-3 roots and a short erect stem arising at each node; internodes usually 20-45 mm; leaves 2-4 per stem; sheath often tinged with red, 10-25 mm; blade 3-15 cm long and 0.5-1 mm wide. narrowed at base to become distinctly narrower than the sheath; fruiting carpels obliquely ellipsoid, usually 3.5-4 mm long.

Occurs in rock pools or at depths of up to 10 m off One Arm Point. Also occurs in NT and Qld. Extends from the Red Sea and Madagascar (Malagasy) east to Fiji.

Previously known as *Cymodocea isoetifolia* Asch.

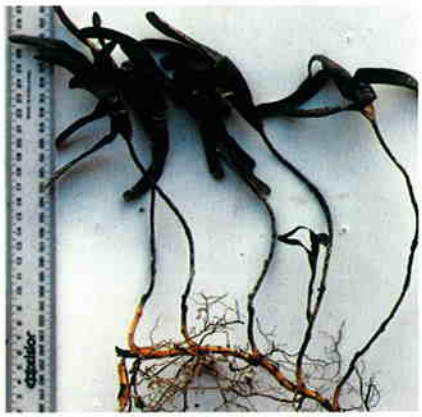
Flowering and fruiting period unknown.

Thalassodendron ciliatum (Forsskal) Hartog

Perennial submerged marine herb, roots 1-5 at each root-bearing internode, brown, usually many-branched, coiled; leaves 4-13 cm; sheath cream to pinkish and green, 1-4 cm, blade 6-13 mm wide, 17-27-veined, denticulate at apex, truncate or very obtuse to emarginate, teeth 0.5 mm long, sometimes with 2 or 3 branches; false fruit consisting of the succulent innermost bract and 2 enclosed carpels, 1 of which is usually aborted, free floating when ripe.

Occurs on coral debris or grows directly on rock, often in fast currents off One Arm Point. Also occurs in Qld.

Flowering and fruiting period unknown.



Thalassodendron ciliatum

Bulbostylis barbata

Crosslandia setifolia

CYPERACEAE

Bulbostylis barbata (Rottb.) C.B. Clarke.

Small annual sedge to 40 cm; stems terete, glabrous; leaves often recurved, longitudinally ridged; inflorescence a head of 3-35 spikelets; spikelets ovoid to cylindric; nut whitish to pale brown, triquetrous to trigonous, minutely reticulate but rather smooth.

In white sandy areas between vine thicket patches at Moorak Bore, Broome, Langey Crossing and One Arm Point. Also occurs in NT, SA, Qld and NSW. Widely distributed in warmer parts of the world.

Previously known as *Fimbristylis barbata* (Rottb.) Benth.

Flowering April.

Crosslandia setifolia W. Fitzg.

Caespitose, densely tufted sedge to 30 cm; stems almost terete, not noded, somewhat scabrous immediately below male inflorescence.

In sandy soil near beach at One Arm Point. Also occurs in NT.

Flowering March.

Cyperus bifax C.B. Clarke **Downs Nutgrass**

Perennial sedge to 1 m, forming dense rhizomatous sedgeland; rhizome has a strong aromatic odour and slender creeping stolons each bearing an ovoid tuber; stems triquetrous; leaves usually exceeded by inflorescence; inflorescence compound or partially compound, each ray bearing a pair of spikelets.

Common in wet seepage area and beside *Lophostemon/Melaleuca* swamp, Cape Bertholet, Point Coulomb and Langey Crossing on west bank of Fitzroy River. Occurs in all mainland states. Occurs in tropical South America and extends from Africa through southern Asia to New Guinea and New Britain.

Flowering April.

Cyperus brevifolius* (Rottb.) Hassk. **Mullumbimby Couch

Lax sedge to 10 cm, with a creeping rhizome; stems triquetrous; leaves all reduced to a brown sheath; inflorescence of a condensed head-like spike of spikelets; nut yellowish brown, bilaterally compressed, elliptic or obovate.

In black peaty swamp at Bunda Bunda Spring, south of Beagle Bay. Also occurs in NT, Qld, NSW and Vic. Widespread in tropical and warm temperate areas of the world.

Flowering and fruiting (?) all year.

Cyperus brevifolius

Cyperus bulbosus M. Vahl **Bush Onion**

Perennial sedge to 40 cm, with stolons, each forming an ovoid black tuber resembling a bulb; stems triquetrous; leaves flat, grass-like, often reaching inflorescence; inflorescence simple or partially compound; each ray bearing a spike of spikelets; flowers light green to brownish in a spike; nut black, trigonous, obovate in outline.

In closed grassland, on coastal sand dunes and often on the fringes of salt marshes at Whimbrel Point, Gnamagun, Quondong, Beagle Bay and Broome. Also occurs in NT, SA, Qld and NSW extending from tropical Africa through southern Asia to Indonesia.

Bardi name = *niyalboon*; Nyul Nyul = *niarlboon*; Yawuru = *jarrinyarri*. Bulbs eaten raw, roasted in warm ashes or made into damper. The Bardi believe that if you pull the plants up when it is raining it causes lightning.

According to Paddy Roe (pers. comm.) this species formed the diet of the Boodie (*Bettongia lesueur*) known to the Aboriginals as *yalva*, *yalwa* or *noodook* in Broome district. This animal is now thought to be extinct on the Peninsula. Also a favoured food of the Brolga.

Flowering and fruiting January-July.

Cyperus bulbosus

Cyperus carinatus R. Br.

Caespitose sedge, with a short rhizome; stems trigonous; leaves sometimes reaching inflorescence; involucral bracts very unequal, at least one greatly exceeding inflorescence.

In river washed sand, Coulomb Point and Martins Well. Also occurs in NT and Qld.

Flowering April.

Cyperus bulbosus

**Cyperus compressus* L.

Caespitose sedge, stem triquetrous; leaves dark shiny green, often reaching inflorescence.

Naturalised as a weed in lawns and drainage lines of Government Offices, Broome. Also occurs in NT, Qld and NSW. A widespread tropical species.

Flowering and fruiting April-May.

Cyperus conicus (R. Br.) Boeckler

Caespitose sedge with a short rhizome; stem trigonous; leaves greyish green, shorter than the inflorescence; scape up to 0.5 m; inflorescence brown.

In river washed sand at One Arm Point, Coulomb Point, and in pindan at Broome and Nilli Bubbaca Well. Also occurs in NT, Qld and NSW.

Flowering February-May.

Cyperus haspan L. subsp. *juncoides* (Lam.) Kuek.

Perennial sedge to 20 cm; rhizome usually creeping with long internodes between the erect stems, rarely short; leaves usually reduced to the sheath and reddish brown, sometimes with a definite blade.

In peat bank at edge of spring, Beagle Bay. Also occurs in NT. Widespread in tropical regions of the world.

Flowering June.

Cyperus nervulosus (Kuek.) S.T. Blake

Annual sedge to 10 cm; stems trigonous; leaves exceeded by inflorescence.

Occasional in black soil at Hunter Creek. Also occurs in NT, Qld and New Guinea.

Flowering May.

Cyperus pulchellus R. Br.

Perennial sedge to 30 cm; rhizome short; stem trigonous; leaves usually greatly exceeding the stem; flowers white with green centre.

On edge of billabong at Cape Bertholet. Also occurs in NT and Qld extending from tropical Africa through southern Asia to the Philippines.

Flowering April.

Cyperus sp. E Kimb. Flora

Perennial sedge to 30 cm; rhizome short; stem trigonous; leaves often reaching inflorescence; involucral bracts at least 2, greatly exceeding inflorescence.

In sandy clay near Broome. Also occurs in NT and Qld.

Flowers and fruits December-April.

Eleocharis dulcis

Eleocharis dulcis (Burm.f.) Trin. ex Henschen **Chinese Water Chestnut**

Emergent perennial sedge to 1.5 m, tufted, with stolons, sometimes with tubers; stems erect, terete, conspicuously transverse septate, otherwise smooth; leaves brownish or purplish; spikelets cylindrical; nut white at first, usually becoming dull black but reportedly shiny black.

In spring near Beagle Bay and forming sedge beds at Nimalaica Claypan. Also occurs in NT and Qld, extending from Africa through southern Asia to Japan and the western Pacific.

Bardi name = *bilgin*. Edible root or tuber eaten raw.

Favoured food of the purple swamphen.

Flowering June.

Eleocharis geniculata (L.) Schultes

Caespitose annual sedge to 30 cm; stems erect, prominently longitudinally ridged, otherwise smooth; leaves purplish at base; spikelets ovoid to almost globular.

Common in wet river washed sand at Coulomb Point and Lolly Well, near Beagle Bay. Also occurs in NT, SA, Qld and NSW.

Flowering April, June.

Fimbristylis caespitosa R. Br.

Perennial sedge to 0.5 m; stems somewhat compressed, striate, glabrous; stem-sheathing leaves 1 or 2 per stem.

Very common in sand on edge of swamp at Point Coulomb and Lake Campion. Also occurs in NT and Qld.

Flowering April, December.

Fimbristylis cymosa R. Br.

Sedge to 40 cm with a short rhizome; stems compressed, smooth, glabrous; leaves numerous, densely clustered at base of each stem.

On open marsh, in grey sandy clay of marsh-pindan mix at Broome and in coastal dune field forming broad mats at Chile Head. Also occurs in NT and Qld. Widespread in tropical regions of the world.

Flowering March-April.

Fimbristylis depauperata R. Br.

Clumped annual herb to 40 cm; stem somewhat compressed, striate, usually glabrous except just below inflorescence; outer leaves usually shorter than stem-sheathing leaves; stem-sheathing leaves 1-3 per stem; spikelets yellowish; nut distinctly stipitate, white to shiny brown, smooth.

In sandy soil on edge of swamp adjacent to the airstrip at One Arm Point.

Previously known as *F. dichotoma* M. Vahl subsp. *depauperata* (R. Br.) Kern.

Flowering and fruiting January-March.

Fimbristylis depauperata

Fimbristylis ferruginea M. Vahl.

Caespitose perennial sedge with a shortly creeping rhizome; stems erect, to 0.5 m, strongly compressed.

Forming dense swards in freshwater seepage area on coast at Cape Borda and Beagle Bay. Also occurs in NT, Qld and NSW. Widespread in tropical regions of the world.

Bardi name = *unurr*.

Flowering June-August, November.

Fimbristylis littoralis Gaud.

Annual sedge to 1 m; stems acutely ridged, glabrous or somewhat scabrous; stem-sheathing leaves up to 3 per stem.

Common in wet river washed sand at Coulomb Point, Beagle Bay and Nilli Bubbaca Well. Also occurs in NT, Qld and is widespread in the tropics.

Flowering April, May.

Fimbristylis microcarya F. Muell.

Annual sedge to 40 cm; stems sulcate or ridged, scabrous or glabrous; leaves stem-sheathing, 1 or 2 per stem.

Common in river washed sand at Coulomb Point. Also occurs in NT and Qld.

Flowering April.

Fimbristylis miliacea M. Vahl

Annual sedge to 0.6 m; stems acutely angled but often appearing strongly compressed; stem-sheathing leaves, 1 or 2 per stem.

In peat bank at edge of spring at Beagle Bay. Also occurs in NT, Qld and extends from India and Sri Lanka to southern China and New Guinea.

Flowering June.

Fimbristylis nuda Boeckler

Caespitose sedge to 15 cm; stems spreading, striate, glabrous; outer leaves often with a long blade.

Common in river washed sand at Coulomb Point. Also occurs in NT and Qld.

Flowering April.

Fimbristylis pauciflora R. Br.

Perennial or sometimes annual sedge to 25 cm; stems striate or slightly sulcate, glabrous; outer leaves with a slightly scabrous blade; inflorescence of 1 spikelet, erect.

Forming tufted lawn in fine white sand at Wonganut Spring and near Beagle Bay. Also occurs in NT and Qld.

Flowering June.

Fimbristylis punctata R. Br.

Annual sedge to 0.5 m; stems erect, sulcate, scabrous or glabrous; outer leaves up to 20 cm long but sometimes reduced; inflorescence of 1 spikelet, erect; spikelet pale brown.

In grey sandy clay beside Deep Creek. Also occurs in NT and Qld.

Flowering March.

Fimbristylis rara R. Br.

Annual sedge to 0.5 m; stems compressed, striate, glabrous; outer leaves shorter than stem-sheathing leaves.

Growing in river washed sand at Coulomb Point. Also occurs in NT and Qld.

Flowering April.

Fimbristylis sericea R. Br.

Perennial sedge to 0.5 m, with a long stout creeping rhizome; stems erect, striate or smooth, glabrous to densely minutely hairy; leaves pale green to silvery.

Commonly found creeping over leeward side of coastal sand dunes at Cape Bertholet and Gregory Well. Also occurs in NT, Qld and extending from Africa east to the Philippines.

Bardi name = *ngalany-djudun*. Crushed and placed on top of water containers as a 'hat' to prevent spillage.

Flowering March, April.

Fimbristylis squarrulosa F. Muell.

Perennial sedge to 0.5 m; stems somewhat sulcate, slightly scabrous; outer leaves often becoming reduced to a lacerate sheath; stem-sheathing leaves 2 per stem.

Common in river washed sand at Coulomb Point and in *Eucalyptus dampieri* woodland at Lombadina. Also occurs in NT and Qld.

Fruiting April.

Fimbristylis tetragona

Fimbristylis tetragona R. Br.

Perennial sedge to 1 m with a rhizome; stems erect, glaucous, 4-ridged, glabrous; outer leaves sometimes with a long blade, stem-sheathing leaves 2 or 3 per stem, dark brown to ferruginous at least on orifice.

In closed grassland in wet seepage area at Martins Well. Also occurs in NT, Qld and extending from India and Sri Lanka to southern China and New Guinea. Recorded for Beagle Bay by Alexander Forrest.

Flowering April-June.

Fuirena ciliaris

Fimbristylis aff. sp. D Kimb. Flora

Annual sedge to 0.5 m, spikelets 4-6 mm wide, style flat, 3-branched; nut prominently rugose-tuberculate.

Possibly endemic to the Kimberley Region and may prove to be a new species.

Flowering June.

Fuirena ciliaris (L.) Roxb.

Sedge to 30 cm; stems obtusely angled to almost terete; leaves hairy throughout or at least ciliate; inflorescence usually with 1 or 2 axillary clusters of spikelets with a short hairy peduncle.

Growing at Bobbys Creek, east-north-east of Beagle Bay. Also occurs in NT, Qld, NSW and extending from tropical Africa to Japan and Australia.

Flowering and fruiting March-August.

Fuirena umbellata Rottb.

Rhizomatous sedge to 0.5 m; stems acutely 4-angled or 5-angled; leaves bright green, ciliate at least on base of blade or glabrous; inflorescence usually with several axillary clusters of spikelets as well as the terminal cluster.

Forming large clumps in black peat of permanent freshwater swamp at Carnot Bay. Also occurs in NT. Widely distributed in tropical and subtropical parts of the world.

Flowering and fruiting June.

Rhynchospora affinis W. Fitzg.

Annual sedge to 40 cm; stems not noded; leaves basal; inflorescence a head of spikelets.

In closed grassland at Martins Well and Beagle Bay. Also occurs in NT.

Flowering and fruiting April.

Schoenoplectus lateriflorus (J. Gmelin) Lye

Caespitose annual sedge to 0.5 m; stems terete to almost trigonous; inflorescence tinged black.

Growing in wet areas with *Eleocharis dulcis* at Bunguaduk Lagoon, east of Beagle Bay. Also occurs in NT, Qld and extends from India to southern China and the Philippines.

Flowering August.

Schoenoplectus litoralis (Schrader) Palla

Perennial sedge to 1.5 m, tufted with a long stout rhizome; stems trigonous near inflorescence, more or less terete below; inflorescence brown, an erect compound arrangement of many spikelets.

Often forming dense swards on edge of swamp at Carnot Bay and Lolly Well near Beagle Bay. Occurs in all mainland states except Vic. Extends from the Mediterranean Region and Africa through southern Asia to the Philippines and New Guinea.

Flowering June.

Schoenoplectus mucronatus (L.) Palla ex Kerner

Perennial sedge to 1 m; rhizome very short; stems triquetrous; inflorescence simple, a head of spikelets or sometimes with a few slender rays each bearing 1 or more sessile spikelets.

In mud of permanent pool at Bernards Well near Beagle Bay. Also occurs in NT, Qld, NSW and extending from the Mediterranean Region and Africa to the western Pacific Islands.

Flowering August.

Schoenus falcatus R. Br.

Dense clumped rhizomatous perennial sedge to 1 m; base of culms reddish brown; stems noded, concave-convex to more or less flat, but becoming slender near inflorescence, often ridged, scabridulous; cauline leaves bright green, with a definite blade.

In wet areas under *Melaleuca cajuputi* at Nimalaica Claypan. Also occurs in NT and extends from Thailand and the Taiwan area to the Solomon Islands.

Flowering August.

Above and right: *Dioscorea bulbifera*

Eriocaulon cinereum

Flagellaria indica

Flagellaria indica

DIOSCOREACEAE

Dioscorea bulbifera L. var. *bulbifera* **White Yam**

Slender, vigorous climbing vine with a tuberous rhizome; leaves alternate, glabrous, broadly ovate, deeply cordate often with cylindric to globular bulbils in the axils; male and female flowers on separate plants, flowers small, greenish white; male spikes 2-6 per axil; female spikes 1-5 per axil; fruit an oblong, winged capsule.

In vine thickets climbing on *Mimusops elengi* at Gallen Well, and more common at the northern end of Peninsula. One isolated population occurs on the easternmost boundary of the Point Coulomb Nature Reserve. Also occurs in NT and Qld and extends from Asia east to the Western Pacific Islands.

Bardi name = *gulngariny* or *mardelang*. Edible root and bulbils, roasted in hot ashes.

Flowering December-February; fruiting February-March.

ERIOCAULACEAE

Eriocaulon cinereum R. Br.

Diminutive herb with filiform scape to 20 cm; leaves radical linear-filiform; flower-heads white, hemispherical; fruit a loculicidal capsule; seeds smooth.

Forming dense swards in damp soil of claypan at Beagle Bay, Taylors Lagoon and in Deep Creek on Great Northern Highway. Also occurs in NT and Qld and extends to Africa, India, Sri Lanka, China and Japan.

Flowering March-September.

FLAGELLARIACEAE

Flagellaria indica L. **Supplejack** or **Lawyer Vine**

Vigorous, bamboo-like glabrous creeper up to 5 m; branches encased at base in closed leaf-sheaths; leaves long-lanceolate or linear-lanceolate, the long points twisted into tendrils; flowers cream, very numerous, sessile in clusters or short spikes on the ultimate small branches of a dense terminal panicle; fruit an indehiscent drupe, red, globular, finely rugose, with persistent stigmatic lobes.

In canopy of coastal vine thickets at Gnamagun Well and on sandstone at Karrakatta Bay and One Arm Point. Restricted to N. Peninsula. Also occurs in NT, Qld, NSW and extends from tropical Africa through Asia to the Pacific Islands. Recorded by W.V. Fitzgerald at Point Cunningham, Cygnet Bay and Swan Point in 1906.

Bardi name = *balbal*. Used for spears and as ceremonial headband and for many purposes in lieu of bamboo.

Flowering and fruiting June-January.

Haemodorum gracile

HAEMODORACEAE

Haemodorum gracile T. Macfarlane **Bloodroot**

Erect glabrous herb to 0.6 m; base of stem or rhizome thickened and enclosed in the persistent base of the leaves so as to resemble narrow bulbs, often red; leaves sheathing, the lower ones very long, the upper few and short; flowers and fruits deep maroon.

In damp white sand under *Verticordia verticillata* at Wonganut Spring, Hunter Creek and Beagle Bay. A widespread Kimberley endemic.

Flowering and fruiting November.

HYDATELLACEAE

Trithuria lanterna D. Cooke

Small, tufted, annual glabrous herb to 10 mm high and 30 mm in diameter; leaves linear, filiform, radical; inflorescence sessile, closely surrounded by leaves; fruit indehiscent, largely clear translucent but with brown ribs, ovoid; seeds pale with a dark tip, largely translucent, smooth.

In seepage area beside Wonganut Creek, and widespread across tropical Australia. Also occurs in NT and Qld.

Flowering June.

HYDROCHARITACEAE

Blyxa aubertii Rich. var. *aubertii*

Submerged, stoloniferous plants having rooted tufts of radical leaves; leaves sheathing at base, linear-tapered, 10-25 cm long x 5-15 mm wide, longitudinally nerved; flowers sessile in spathe, petals white; fruit narrow-linear, 3-10 cm, enclosed in spathe; seeds 10-many, 1-2 mm, ellipsoid to ovoid with rows of short, obtuse tubercles.

In creek near Wonganut Spring and in spring-fed pools near Beagle Bay. Also recorded in NT and Qld and widespread through tropical Asia.

Flowering and fruiting June.

Halophila ovalis - *see page 212*

Enhalus acoroides (L.f.) Royle

Submerged seagrass with a thickened, fibrous sheathed rhizome; leaves dark shiny green, 15 cm long and strap-like, the margins inrolled, nearly 2 cm wide with a rounded or obtuse, often lopsided apex, multi-nerved.

Isolated clumps in shelly substrate at One Arm Point and Lombadina Creek. Widespread in tropical areas extending from the Red Sea and eastern African coast to the tropical part of the western Pacific Ocean.

Flowering and fruiting throughout year.

Halophila minor (Zoll.) Hartog

Submerged rhizomatous seagrass; leaves elliptic or ovate, with less than 8 pairs of cross-veins at 70-85 degrees to midvein.

Along seaward edge of mangroves (*Avicennia marina*). Isolated patches in or beside pools of standing water. Substrate fine greyish mud at Roebuck Bay. Occurs in NT and Qld and extends from the central eastern coast of Africa to New Caledonia.

Flowering October.

Halophila spinulosa - *see page 212*

Thalassia hemprichii

Vallisneria spiralis

Triglochin dubium

Triglochin dubium

Halophila ovalis (R. Br.) J.D. Hook. **Sea Wrack**

Submerged rhizomatous seagrass; leaves elliptic or ovate with 12-25 pairs of cross-veins at 45-60 degrees to midvein, with margin entire, glabrous.

In association with *Thalassia hemprichii*, with *Halophila ovata* along seaward edge of mangroves (*Avicennia marina*), and with *Halodule uninervis* in extensive beds. Typically in pools of standing water at low tide. Shelly substrate with fine greyish brown mud, at One Arm Point and Roebuck Bay. A widespread species extending from the Red Sea and eastern coast of Africa eastwards to Japan and Hawaii.

Flowering January-February.

Halophila spinulosa (R. Br.) Asch.

Submerged rhizomatous seagrass; leaves distichous, usually 4-15 pairs, sessile, narrowly obovate, serrulate, teeth acuminate at first, often losing the point with age.

Recorded from shallow water off Tooker Point in Beagle Bay. Occurs in NT and Qld and extends north to Philippines.

Flowering and fruiting not recorded in Kimberley, mainly October-December elsewhere.

Thalassia hemprichii (Ehrenb.) Asch.

Submerged rhizomatous seagrass; leaves flattened, strap-like to 3.5-20 cm long by 1 cm wide, multi-nerved, leaf tip obtuse.

Forming scattered patches on shelly substrate at One Arm Point. Also found in Qld and extending through tropical areas from the Red Sea and eastern African coast to the western Pacific Islands.

Flowering August.

Vallisneria spiralis L. **Eelweed** or **Ribbon Weed**

Submerged, stoloniferous perennial aquatic; leaves radical, arranged in rooted tufts, strap-shaped; plants dioecious, the male and female flowers on different individuals; female flowers on end of long slender peduncle; male flowers on long peduncle; fruiting peduncles spirally coiled.

In 1 m of water in permanent waterhole near Beagle Bay and in shallow pools at Taylors Lagoon. Occurs throughout Australia and extends from Europe and Africa through southern Asia to Japan and New Britain.

Flowering and fruiting June-August.

JUNCAGINACEAE

Triglochin dubium R. Br. **Water Ribbon**

Robust perennial, rhizome thick, bearing roots which end in tubers; leaves radical, strap-like, somewhat fleshy; flowers small, creamish white with yellowish tinge, on elongated spike-like racemes; fruits elongated, smooth, incurved, tapered cylinders.

In permanent freshwater springs near Beagle Bay. Widespread in the Kimberley extending into NT.

Bardi name = *gajanangoorr*. Edible tubers eaten raw or after warming in hot ashes.

Flowering and fruiting January-June.

LEMNACEAE

Lemna aequinoctialis Welw. **Duckweed**

Small free-floating aquatic without distinct stems or real leaves, but consisting of small leaf-like fronds cohering two or three together by their edges, with several fine, simple roots suspended from the undersurface; flowers minute.

Very common, forming dense masses on surface of *Lophostemon/ Melaleuca* freshwater swamps behind coastal dunes at Beagle Bay, Coulomb Point, Willie Creek, and Nimalaica Springs and Claypan. Widespread in the warmer parts of the world.

Lemna aequinoctialis

Spirodela punctata (G. Meyer) C. Thompson **Large-leaved Duckweed**

Free-floating aquatic with 2-7 roots, all roots perforating the scale-like leaflet; leaflets tinged maroon underneath with 3-7 nerves.

Common on the surface of permanent freshwater springs in the Beagle Bay area. A world-wide species that most frequently propagates vegetatively.

Spirodela punctata

NAJADACEAE

Najas graminea Del. var. *graminea*

Slender, submerged, attached annual aquatic; leaves sessile, appearing opposite, narrow-linear, finely toothed on the margins; flowers small, inconspicuous; fruit a nut, with a very thin pericarp surrounding the seed.

In billabong at Beagle Bay and in Taylors Lagoon. Also recorded from NT and extending from Europe and Africa through southern Asia to Japan and New Caledonia.

Flowering and fruiting March-June.

Najas graminea

ORCHIDACEAE

Cymbidium canaliculatum R. Br. **Tree Orchid**

Robust epiphytic orchid; leaf-stems or pseudo-bulbs up to 10 cm; leaves elongated, narrow, keeled, channelled above, leathery; flowers brown and cream, borne on racemes up to 30 cm; fruit a green obovoid pod.

Found scattered throughout the Peninsula, at Roebuck Bay, Lombadina, One Arm Point, Pender and Karrakatta Bays. Also occurs in NT, Qld and NSW.

In stem hollows of *Eucalyptus bella* also occasionally on *E. dampieri,*

Left and above: *Cymbidium canaliculatum*

Melaleuca, Lophostemon and *Owenia*. Root systems often extend long distances down limbs hollowed out (or 'piped-out') by termites (*Mastotermes*).

Bardi name = *banggaljoon* or *pungulyon*. Edible corms at base of leaves.

A rare yellow flowering form is known from parts of the Peninsula. In the last decade, numerous roadside examples have been illegally removed from areas north of Broome.

Flowering October-November; fruiting May-September.

PANDANACEAE

Pandanus aquaticus F. Muell. **River Screwpine**

Erect tree to 5 m, sometimes with aerial or prop roots, often forming dense clumps; stems thin; leaves very narrowly triangular, up to 1.4 m, midrib with appressed spines which are dark brown in upper half but absent towards the apex, margins entire at base then armed with spines similar to those on the midrib; male and female flowers on separate plants; fruit of usually solitary drupes, crowded into a globular head; drupe club-shaped, irregularly 5 or 6-angled in upper third.

On the Peninsula restricted to the banks of the Fitzroy River invariably adjacent to permanent pools. Also occurs in NT and Qld.

Good stands can be seen at Langey Crossing, on the Fitzroy River.

Flowering July; fruiting December-May.

Pandanus aquaticus

Pandanus aquaticus

Pandanus darwinensis H. St. John **Darwin Screwpine**

Screwpine to 3 m; leaves slightly glaucous, midrib unarmed or with ascending brown-tipped spines, margins entire at base and with spines similar to those of the midrib; fruits large, globular, elliptic or cylindric heads (cephalia), consisting of drupes joined into segments (phalanges); carpels 11-20 in each phalange, with sharp lateral ridges interlocking between phalanges and between carpels, apices convex to semi-globular.

On edge of creek at Cape Bertholet. Widespread throughout Kimberley and extending into NT.

Fruiting April.

Pandanus spiralis R. Br. **Iidool** or **Common Screwpine**

Screwpine to 5 m; some plants with thin stems; leaves very narrowly triangular, up to 2 m, sometimes glaucous, the midrib with appressed or ascending and reddish-brown tipped scales, or unarmed for part or all of its length, margins with spines similar to those of the midrib; male flowers white; ripe fruits reddish orange with approx. 24 globular segments with 6-24 carpels.

In vine thickets at Cape Leveque, Beagle Bay and Wonganut Spring. Not recorded south of Roebuck Plains. A widespread species in northern Australia.

Bardi name = *iidool* (tree); *gaamba* (fruit); Nyul Nyul = *manbang*; Yawuru = *wagire*. Edible seed, when ripe, soft and red, the fruit is cooked in hot ashes then ground until the seed is visible; the seed is then shaken or prised out with a stick and eaten raw or lightly baked. Leaves were used by Bardi people for weaving footwear.

A very variable species with five varieties described from the Kimberley.

Flowering November; fruiting June.

Pandanus spiralis

PHILYDRACEAE

Philydrum lanuginosum Gaertner **Frogsmouth** or **Woolly Waterlily**

Tall perennial herb to 1 m; stem erect, simple or scarcely branched, with white wool especially on inflorescence, wearing away with age, leaves flag-like; inflorescence forming a long terminal interrupted spike; flowers yellow, hairy, closely sessile, solitary or rarely two together within each bract; capsule opening in 3 valves; seeds dark reddish.

In peat swamp at Beagle Bay and in springs at Nimalaica Claypan. A widespread Kimberley species. Also occurs in NT, Qld, NSW and Vic.

Flowering June.

Philydrum lanuginosum

POACEAE

Aristida holathera Domin var. *holathera* **Erect Kerosene Grass**

Annual or short-lived perennial grass to 40 cm; leaf blades involute; seeds with a pungent point with a spirally twisted column and a prominent terminal trifid awn.

In pindan around Broome, also in river washed sand beside creek at Coulomb Point and frequent in open woodland with *Eucalyptus* sp. on sandplain, Gallen Well, Cape Leveque and Beagle Bay. Also occurs in NT.

The grass seeds cause festering sores if embedded in skin.

Has previously been incorrectly identified as *A. browniana* Henrard.

Flowering August; fruiting April.

Aristida hygrometrica R. Br. **Corkscrew Grass**

Annual loosely tufted grass to 0.8 m; leaves rigid, leaf sheaths conspicuously ribbed; inflorescence pale green.

In pindan dominated by *Acacia eriopoda*. One of the most common grasses of wet areas of the Peninsula. Also occurs in NT and Qld.

Bardi name = *garawal*.

Flowering March; fruiting April.

Aristida hygrometrica

Aristida inaequiglumis Domin **Feathertop Threeawn Grass**

Caespitose perennial grass to 0.8 m, with harsh grey foliage; leaf blades often twisted.

In alluvium at Deep Creek. Also recorded from NT, SA and Qld.

Flowering and fruiting April-May.

Bothriochloa bladhii (Retz.) S.T. Blake **Forest Bluegrass**

Densely caespitose grass to 1 m; leaves up to 30 cm; inflorescence a panicle of racemes.

In moist soil at Nilli Bubbaca Well and near Logue River. Common across northern Australia extending through New Guinea and south-east Asia to India. A good fodder grass.

Flowering and fruiting April.

Bothriochloa pertusa* (L.) A. Camus **Indian Bluegrass

Caespitose grass, stolons red, culms to 30 cm, ascending from prostrate base; inflorescence terminal, subdigitate; racemes 3-8, 25-50 mm long.

In disturbed pindan at Broome. Also occurs in NT and Qld. Native of tropical Asia.

Regarded as a good fodder grass. Some cultivars ex Qld have been used for lawns in recent years and are cutworm resistant. Has citrus-like smell when mown or crushed.

Flowering and fruiting May.

Cenchrus biflorus

Cenchrus ciliaris

Cenchrus setiger

Chloris barbata

Brachyachne convergens (F. Muell.) Stapf. **Kimberley Couch**

Annual or short-lived perennial grass to 0.5 m, usually stoloniferous

In pink sand behind coastal dunes near Gubinge Road, Broome. Also occurs in NT, Qld and NSW.

Flowering and fruiting March

Cenchrus biflorus* Roxb. **Gallon's Curse

Slender lax annual grass to 30 cm; seed burr-like, composed of 1 or more whorls of bristles.

Common in patches in sand at Broome, Cape Bertholet, Pender Bay and One Arm Point, and scattered in low inter-dunal vine thicket at Pender Bay. Also occurs in NT and Qld. Native to India.

A weed whose spiny burrs are troublesome. Pioneer invader of disturbed ground, first collected at Broome in 1933.

Flowering and fruiting March-May.

Cenchrus ciliaris* L. **Black Buffel Grass

Caespitose grass to 1 m; leaves pale green; inflorescence purplish black.

Common, forming dense stands around Broome and One Arm Point. Found in all mainland states. Native of Africa and India.

Said to have been introduced with camel fodder from India. Often cultivated as a valuable pasture species. Claimed to be a common cause of hayfever in Broome townsite. Both this species and *C. setiger* are capable of outcompeting native grasses, causing considerable ecological change, e.g. along roadside to Quondong Point where large monospecific stands can be seen.

Flowering March-August

Cenchrus echinatus* L. **Burr Grass or **Mossman River Grass**

Decumbent grass; leaves bright green; seeds yellowish green.

In lawn on pindan at Cable Beach, Broome. Also occurs in NT, Qld and NSW. Native to Jamaica and Central America.

Regarded as a serious weed because of its spiny burrs.

Fruiting March-May.

Cenchrus setiger* M. Vahl **Birdwood Grass

Caespitose grass; inflorescence tinged maroon.

In pindan at Broome and One Arm Point, also common at Ledge Point, Beagle Bay. Native of Africa and India.

An important pasture species cultivated widely in the Kimberley.

Often incorrectly referred to as *C. setigerus*.

Fruiting March-August.

Chloris barbata* Sw. **Windmill Grass, Rhodes Grass or **Purpletop Chloris**

Annual or short-lived weakly tussocky perennial grass to 1 m; spikes 8-14, digitate, purple.

In pindan at Broome and One Arm Point. Also occurs in NT and Qld.

A serious weed of reticulated lawns, present at Broome since c. 1983. The seed heads form so fast, it necessitates frequent mowing.

Flowering and fruiting April.

Chloris lobata Lazarides

Annual grass to 30 cm, culms sometimes prostrate, branched; spikes rigid, erect or divergent.

Occasional in heavy black soil in seasonally wet claypan with scattered *Melaleuca acacioides*, at Beagle Bay. Also occurs in NT and Qld.

Flowering and fruiting March-April.

Chloris pumilio R. Br.

Glabrous annual or perennial to 40 cm, slender and erect grass, branched towards base; spikes 4-7, usually digitate.

On Roebuck Plains. Also occurs in NT, Qld and Indonesia.

Flowering and fruiting February-July.

Chrysopogon pallidus (R. Br.) Trin. ex Steudel **Razor Grass, Blade Grass, Ribbon Grass** or **Golden Beard Grass**

Caespitose perennial grass to 2 m, branched from upper nodes; inflorescence branched, in whorls of up to 30.

Common in deep sand and on coastal dunes at Broome, Roebuck Plains, Cape Bertholet, Cape Leveque and One Arm Point. Also occurs in NT and Qld.

Bardi name = *irrooloo* (= plant), *oonbi* (= seed).

Grass seeds can penetrate skin. In the late dry season Agile Wallabies dig up and eat the fibrous root mass, discarding the fibres. Pulling up clumps of the grass with bare hands can result in deep cuts, hence the name razor grass.

Flowering and fruiting March-May.

Chrysopogon pallidus

Cymbopogon ambiguus (Steud.) A. Camus **Scent Grass**

Caespitose perennial, aromatic grass to 1 m; inflorescence a large compound panicle.

Common in wet sand beside creek and at mouth of creek where it enters the ocean at Cape Bertholet and Coulomb Point and in low deciduous inter-dunal vine thicket at Pender Bay.

Also occurs in all mainland states except Vic. and extends to Timor.

Fruiting March-April.

Cymbopogon procerus (R. Br.) Domin **Silky Oilgrass** or **Citronella Grass**

Caespitose perennial, aromatic, erect grass to 2 m; inflorescence a large compound panicle.

Common understorey grass on edge of vine thicket behind coastal dunes at Coulomb Point, Goolbiarla Creek, Whimbrel Point and in sandstone crevices at Dampier Hill. Also occurs in NT and Qld.

Flowering and fruiting April-June.

Cymbopogon procerus

Cynodon dactylon (L.) Pers. **Couch**

Perennial stoloniferous, matted grass to 15 cm, with short erect flowering culms; spikes digitate.

Forming swards on peaty soil beside spring at Beagle Bay, associated with *Melaleuca viridiflora*, and forming a grassland on Wibijakun Claypan between Barred and Willie Creeks. Common near spring areas throughout Peninsula. A cosmopolitan species occurring in all states of Australia and favoured for lawns.

As early as 1900, Daisy Bates noted that the Beagle Bay Missionaries had planted large paddocks of couch grass, as grazing for Timor ponies, the Mission having sustained heavy losses from *Crotalaria* poisoning.

Flowering June.

Dactyloctenium aegyptium* (L.) Willd. **Coast Button Grass

Slender to robust spreading annual to 1 m; inflorescence of (1)3-9 digitate spikes terminal on culms and branches, ascending or radiating horizontally; spikes usually more than 12 mm.

A recent arrival in Broome, common in reticulated lawns. Also occurs in NT, SA and Qld. A cosmopolitan weed throughout the world.

Flowering and fruiting March-September or all year in reticulated areas.

Dactyloctenium radulans

Digitaria bicornis

Dactyloctenium radulans (R. Br.) P. Beauv. **Button Grass**

Caespitose annual grass to 30 cm; inflorescence a compact more or less globular cluster of (3)4-7(10) digitate spikes terminal on culms and branches; spikes usually less than 12 mm.

Common in patches in river washed sand at Coulomb Point, Roebuck Plains, Broome and One Arm Point. Also occurs in all mainland states.

Fruiting February-April.

Dicanthium fecundum S.T. Blake **Curly Bluegrass**

Caespitose perennial grass to 1 m, branching from nodes which are usually bearded; inflorescence of solitary or sub-digitate terminal racemes.

In alluvial sand at Langey Crossing on Fitzroy River. Also occurs in NT, Qld and extends to New Guinea.

Flowering and fruiting March.

Digitaria bicornis (Lam.) Roemer & Schultes **Hairy Finger Grass**

Caespitose annual grass to 0.8 m; inflorescence of 1-several primary branches.

In sand beside mouth of creek where it enters ocean at Coulomb Point and common surrounding swamp near Cape Bertholet, also around Broome, especially in watered lawns, and One Arm Point. Also occurs in NT, Qld and extends from India to Australia.

Fruiting March-May.

Diplachne parviflora (R. Br.) Benth. **Small-flowered Beetle Grass**

Caespitose perennial grass to 1 m; culms usually shallowly grooved on one side, usually 4-6-noded; inflorescence a terminal contracted panicle.

In white sand near beach at Coulomb Point. Also occurs in NT, Qld, NSW and New Guinea.

Fruiting September.

Echinochloa colona* (L.) Link **Barnyard Grass

Slightly ascending annual grass to 0.8 m; inflorescence a panicle.

In mud surrounding billabong at Cape Bertholet, and common at edge of swamp near Coulomb Point, Beagle Bay and Deep Creek also at Langey Crossing on the Fitzroy River. A native of Africa and Asia now naturalised in all mainland states.

Fruiting April-August.

Ectrosia danesii Domin

Erect annual caespitose grass to 30 cm; culms erect or ascending, 1-3-noded, filiform, glabrous; inflorescence a loose panicle, tinged maroon.

Common in river washed sand, Coulomb Point, Waterbank Station and Nilli Bubbaca Well. Also occurs in NT and Qld.

Flowering April-May.

Ectrosia scabrida C.E. Hubb. **Hare's Foot Grass**

Caespitose annual or short-lived perennial grass to 40 cm; inflorescence a densely spiciform panicle, tinged maroon.

In dried bed of pool at Beagle Bay and Deep Creek. Also occurs in NT and Qld.

Flowering August.

Ectrosia schultzii Benth.

Densely caespitose perennial grass; stems, leaves and spikelets tinged maroon; inflorescence a panicle.

Common in river washed sand at Point Coulomb and in alluvial soil under *Eucalyptus polycarpa* at Rumble Bay. Also occurs in NT and Qld.

Flowering April-June.

Eleusine indica* (L.) Gaertner **Crowsfoot Grass

Coarse caespitose annual to 0.6 m, branching at base; spikes 2-6 digitate, sessile.

In sand at Broome and Beagle Bay. Also occurs in NT, SA, Qld and NSW and in many parts of the world as a cosmopolitan weed. An aggressive and invasive weed of lawns, first noted in Broome c. 1989.

Flowering and fruiting April.

Elionurus citreus (R. Br.) Munro ex Benth. **Lemon-scented Grass**

Erect, caespitose, perennial, aromatic grass to 1 m; culms tinged maroon; inflorescence a loose panicle of terminal and axillary racemes.

With *Eucalyptus tectifica* and *Pterocaulon* at Baldwin Creek and in sand beside creek at Wonganut Spring. Also occurs in NT, Qld, NSW and extends to New Guinea and Solomon Islands.

Flowering June.

Elytrophorus spicatus (Willd.) A. Camus

Glabrous caespitose annual to 25 cm; culms erect; flowers sessile, in clusters forming an interrupted spike, sometimes almost continuous in the upper part.

Occasional in grey sand at edge of waterholes at Bobby Creek and Beagle Bay. Also recorded for NT, SA, Qld and NSW.

Flowering May-July.

Enneapogon pallidus (R. Br.) P. Beauv. **Conetop Nineawn**

Caespitose perennial grass to 0.8 m; inflorescence a panicle.

Common in pindan dominated by *Acacia eriopoda* and outside coastal vine thicket at Broome, Hunter Creek and One Arm Point. Also occurs in NT, Qld and New Guinea.

Flowering March.

Enneapogon polyphyllus (Domin) N.T. Burbidge **Leafy Nineawn**

Caespitose annual or perennial grass to 40 cm; inflorescence a linear panicle.

In open patches of sandplain, Cape Bertholet. Also occurs in all mainland states except Vic.

Flowering January-July.

Enteropogon dolichostachyus (Lagasca) Keng ex Lazarides

Perennial grass in small bunches to 0.6 m; stems thin; leaves rolled; inflorescence a divided spike.

On edge of vine thicket under *Lysiphyllum cunninghamii* at Cape Leveque. Also occurs in Qld, extending to the Philippines, Timor and New Guinea.

Flowering and fruiting May, September.

Eragrostis cumingii Steud. **Cuming's Lovegrass**

Caespitose annual grass to 20 cm; inflorescence an open, contracted or spike-like panicle.

Outside vine thicket at Broome, Pender Bay and Langey Crossing on Fitzroy River and One Arm Point. Also occurs in NT, Qld and south-east Asia.

Flowering and fruiting March-April.

Ectrosia schultzii

Enneapogon pallidus

Enteropogon dolichostachyus

Eragrostis cumingii

Eragrostis eriopoda Benth. **Woollybutt Grass**

Caespitose grass up to 0.6 m often forming tussocks, with a thickened or bulbous, hirsute or woolly base; inflorescence straw-coloured.

Common on damp flat, in red clay and loamy sand at Cape Bertholet, Broome and recorded for Cygnet Bay by Allan Cunningham in February 1822. Also occurs in all mainland states except Victoria and extends into New Guinea.

Flowering and fruiting March-May.

Eragrostis falcata (Gaudich.) Gaudich. ex Steudel **Sickle Lovegrass**

Perennial, tussock-forming grass to 30 cm, with somewhat thickened hairy base; culms sometimes stoloniferous; inflorescence a panicle; spikelets purplish.

In sandy clay behind tidal flats at Curlew Bay and Barred Creek. Also occurs in NT, SA and Qld.

Flowering and fruiting April.

Eragrostis minor Host. **Smaller Lovegrass**

Delicate annual to 40 cm, sometimes odorous; inflorescence straw-coloured.

Common in open areas of coastal vine thicket at Broome. Also occurs in all mainland states except Victoria.

Flowering March.

Eragrostis setifolia

Eragrostis setifolia Nees **Neverfail Grass**

Densely caespitose perennial to 40 cm; stock thick almost bulbous, or short rhizome covered with villous sheathing scales.

In sand at Langey Crossing on Fitzroy River, One Arm Point and recorded for Cygnet Bay by Allan Cunningham in February 1822. Also occurs in all mainland states.

Flowering and fruiting March, July.

Eragrostis speciosa (Roemer & Schultes) Steudel **Handsome Lovegrass**

Caespitose perennial grass to 1 m; inflorescence straw-coloured.

Common on damp flat and in sand beside mouth of creek where it enters the ocean near Cape Bertholet and in sand at Cape Leveque and in sandy clay at Lake Campion. Also occurs in all mainland states except Victoria.

Flowering April, August.

Eragrostis sp. nov.

Caespitose grass to 40 cm; inflorescence straw-coloured.

In sandy soil adjacent to permanent water at Beagle Bay.

Flowering August.

Eriachne avenacea R. Br.

Slender annual or short-lived perennial grass to 0.5 m, densely hispid with tubercle-based hairs; inflorescence a panicle.

Frequent groundstorey species in open woodland on sandplain with *Eucalyptus dampieri* and *Acacia tumida* near Lombadina. Also occurs in NT and Qld.

Bardi name = *guldja*.

Flowering August.

Eriachne ciliata R. Br. **Slender Wanderrie Grass**

Slender annual grass to 30 cm, usually spiny hispid; inflorescence a panicle.

Common in sand beside creek at Coulomb Point, Beagle Bay, and One Arm Point. Also occurs in NT and Qld.

An important nesting material for Long-tailed Finches (D. Dureau - pers. comm.).

Flowering and fruiting March-April.

Eriachne glauca R. Br. var. *glauca* **Pan Wanderrie Grass**

Tufted perennial to 1 m, mainly glabrous and smooth on culms and leaves, often pruinose or purple-coloured.

Forming closed grassland in wet seepage area at Lombadina, Beagle Bay and Langey Crossing on Fitzroy River. Also occurs in NT and Qld.

Flowering and fruiting March-May.

Eriachne glauca

Eriachne melicacea F. Muell.

Annual or short-lived perennial to 40 cm; inflorescence a panicle, prominently exserted on elongated peduncles.

Common in sand beside creek at Point Coulomb Nature Reserve, Lombadina and Broome. Also occurs in NT and Qld.

Fruiting March-May.

Eriachne obtusa R. Br. **Northern Wanderrie Grass**

Tufted perennial grass to 0.5 m, with a thickened hairy butt; culms wiry; inflorescence a panicle.

Very common on red sand dunes adjacent to Gantheaume Point. Collected by Allan Cunningham from Cygnet Bay in February 1822. Also occurs in NT and Qld.

Flowering March; fruiting May.

Eriachne sulcata Hartley

Tufted perennial grass to 0.5 m, sometimes glaucous; culms rooting at lower nodes; inflorescence a panicle.

Growing in sand at mouth of creek at Coulomb Point and Wonganut Spring. Also occurs in NT.

Fruiting April-June.

Eriochloa procera (Retz.) C.E. Hubb. **Spring Grass** or **Cup Grass**

Erect caespitose perennial to 0.5 m, culms erect, spikelet woolly.

In grey sandy clay at Langey Crossing on the Fitzroy River. Also occurs in NT, SA and NSW.

Flowering and fruiting March.

Heteropogon contortus (L.) P. Beauv. ex Roemer & Schultes **Bunch Speargrass** or **Black Speargrass**

Densely tufted perennial grass to 1 m, branched from upper nodes; inflorescence terminal.

In sandplain near creek at Coulomb Point, Broome and One Arm Point. A pantropical species also recorded for NT, Qld and NSW.

The seeds are densely clustered and will penetrate the skin. This grass is often a good indicator of disturbance.

Fruiting April, May.

Heteropogon contortus

Ischaemum australe R. Br. var. *australe*

Caespitose perennial, rhizomatous grass to 1.5 m; inflorescence a terminal raceme.

Common in clumps in wet river washed sand at Coulomb Point. Also occurs in NT, Qld and NSW.

Fruiting April.

Ischaemum australe R. Br. var. *arundinaceum* (F. Muell ex Benth.) B. Simon

Densely tufted, robust perennial to 2 m; leaves and culms bright green; inflorescence a terminal raceme.

On clay flats near creek subject to inundation at Beagle Bay and Cape Leveque.

Flowering and fruiting April, November.

Iseilema vaginiflorum Domin. **Red Flinders Grass**

Caespitose annual to 0.7 m; inflorescence terminal or axillary.

In alluvial sand at Langey Crossing on Fitzroy River. Also occurs in all mainland states except Victoria.

Flowering and fruiting March.

Mnesithea rottboellioides (R. Br.) R. de Koning & M.S.M. Sosef

Rhizomatous perennial grass to 3 m; nodes glabrous; inflorescence terminal or axillary.

Forming dense stands in swamp under *Melaleuca viridiflora* at Beagle Bay. Also occurs in NT, Qld and extending from Indonesia and the Philippines to New Guinea.

Previously known as *Coelorhachis rottboellioides* R. Br.

Flowering June.

Panicum decompositum R. Br. **Australian Millet**

Caespitose perennial grass forming large, spreading clumps to 1 m; inflorescence yellowish green; seeds purplish maroon.

In understorey of regenerating *Melaleuca acacioides* thicket at Coconut Well and in coastal pindan dominated by *Acacia eriopoda*. Collected by A. Cunningham at Cygnet Bay in February 1822. Occurs in all mainland states.

Flowering March; fruiting August.

Panicum decompositum

Paspalidium rarum (R. Br.) Hughes

Sprawling annual tufted grass to 40 cm; branches dense, each reduced to 1-3 spikelets.

Common in sand at Broome, Coulomb Point and One Arm Point. Also occurs in NT, Qld and NSW.

Fruiting March-April.

Perotis rara R. Br. **Comet Grass**

Annual or short-lived perennial grass to 40 cm, slender, tufted; inflorescence spiciform; spikelets numerous, pale pink.

Common in loose white, poor sand in disturbed sites at Beagle Bay and widely distributed on the Peninsula in light red sandy soil. Also occurs in all mainland states except Vic. and New Guinea.

Bardi name = *garawal*. The awned seeds are considered to be highly irritating and cause festering sores if they become embedded in skin.

Flowering and fruiting March-April.

Perotis rara

Phragmites karka (Retz.) Trin. ex Steudel **Tropical Reed**

Robust rhizomatous perennial bamboo-like reed to 3 m, formimg dense compact tussocks or thickets; culms erect, rigid, stout, unbranched, glabrous; inflorescence a plumose, much-branched panicle.

On edge of pool of permanent spring, adjacent to abandoned police outpost at Beagle Bay. Also occurs in NT, SA and Qld.

Flowering April-June; fruiting August.

Plectrachne bynoei C.E. Hubb.

Hummock-forming resinous, perennial grass to 1.5 m; inflorescence paniculate, often large and open.

Common amongst sandstone outcrops at Deep Water Point and One Arm Point. Also occurs in NT.

Bardi name = *mayala*. Used for roofing on shelters.

Named after ship's surgeon Benjamin Bynoe who visited the Dampier Peninsula aboard HMS *Beagle* in 1838.

Fruiting June-August.

Plectrachne bynoei

Plectrachne caroliniana S.W.L. Jacobs

Hummock-forming resinous perennial grass to 1.5 m; inflorescence straw coloured.

Forms dense stands under *Eucalyptus polycarpa* and *Acacia tumida* in orange sandy loam on Cape Leveque to One Arm Point track. Endemic to the Kimberley.

Flowering April.

Plectrachne mollis Lazarides

Hummock-forming perennial grass with only slight traces of resin and branching culms to 1 m; spikelets tinged maroon.

In *Eucalyptus polycarpa* woodland with *Acacia tumida* understorey on Cape Leveque to One Arm Point track. A Kimberley endemic previously only known from sandstone and lateritic areas on the Mitchell Plateau.

Flowering April.

Plectrachne mollis

Plectrachne schinzii Henrard **Feathertop Spinifex**

Hummock-forming resinous perennial grass with culms to 1.5 m, frequently much-branched at base; inflorescence an open panicle, spikelets straw coloured.

Common in coastal pindan dominated by *Acacia eriopoda* at Cable Beach, Broome and Beagle Bay. Also occurs in NT, SA and Qld.

Flowering March-June.

Plectrachne schinzii

Pseudoraphis spinescens (R. Br.) Vickery **Spiny Mudgrass**

Aquatic perennial grass to 40 cm, decumbent, rooting at the lower nodes, the upper parts erect or floating in water; inflorescence a panicle consisting of racemes along a main axis.

Growing in and around shallow water of billabong, near Cape Bertholet. Occurs in all mainland states.

A dominant floating species at Lake Campion, when flooded. Used by grebes and (rarely) black swans for nesting material.

Flowering April.

Schizachyrium fragile (R. Br.) A. Camus **Firegrass**

Compactly tufted annual grass to 0.5 m, stems decumbent or trailing and branching from nodes; inflorescence a raceme.

In red sand at Gantheaume Point and in alluvial sand beside creek at Point Coulomb. Also occurs in NT, Qld and NSW.

Extends from south China to New Caledonia, the Marianas, Caroline and Aru Islands.

Flowering and fruiting March.

Setaria apiculata (Scribner & Merr.) Schumann **Pigeon Grass**

Annual tufted, erect or basally decumbent grass to 0.5 m; inflorescence narrow, cylindric and dense.

Setaria apiculata

Occasional in pink sand of *Eucalyptus-Acacia* woodland at Beagle Bay, and in low open vine thicket at Pender Bay and One Arm Point. Also occurs in NT and Qld extending to New Guinea.

Closely related to *S. surgens* Stapf.

Flowering and fruiting March-April.

Setaria verticillata* (L.) P. Beauv. **Whorled Pigeon Grass

Annual tufted, erect or basally decumbent grass to 1 m, glabrous, usually stout with branched culms; panicle spike-like, interrupted, green or pallid.

Usually grows near wet places. Occurs in all mainland states.

S. carnei Hitchc. described from Broome is a synonym of this species.

Flowering sporadic throughout year.

Sorghum ecarinatum

Sorghum ecarinatum Lazarides

Erect annual cane-grass to 2 m; culms tinged maroon, nodes hairy or glabrous; inflorescence dark red to maroon.

In sand at One Arm Point. A disjunct population occurs in NT.

Bardi name = *oonbi*.

Flowering April-June.

Sorghum interjectum Lazarides

Robust, tussock forming caespitose perennial cane-grass to 2 m; inflorescence brownish yellow to greenish gold.

In sand over limestone on beach at One Arm Point and Cable Beach. Also occurs in NT with a disjunct locality in Qld.

This species can be readily identified by its robust, tussock-forming habit, glabrous ovary, lack of pruinosity and conspicuous indumentum on culms, nodes and leaf sheaths.

Flowering April-June.

Spinifex longifolius - male

Spinifex longifolius - female

Sorghum plumosum (R. Br.) P. Beauv. var. *plumosum* **Plume Sorghum**

Erect perennial cane-grass to 1 m; culm nodes glabrous or hairy, sometimes with the upper ones bearded with long white hairs; inflorescence golden.

In sand pockets over travertine at Barred Creek, Broome and Roebuck Plains. Also occurs in NT and Qld.

The seeds are an important food source for Gouldian Finches.

Fruiting June.

Sorghum stipoideum (Ewart & J. White) C.A. Gardner & C.E. Hubb. **Native Annual Sorghum**

Caespitose annual cane-grass to 3 m; culm nodes glabrous or hairy to bearded; inflorescence straw coloured.

Near swamp at Cape Bertholet; in swales of dunes at Beagle Bay and Swan Island; and in sandy soil at Gantheaume Point, Willie Creek and Roebuck Plains. Also occurs in NT.

Heavily grazed by cattle on limestone country close to coast.

Flowering March; fruiting April-June.

Spinifex longifolius R. Br. **Beach Spinifex**

Perennial grasses forming large tufts to 1 m, or masses with strong rhizomes and stolons; male inflorescences in more or less fan-shaped clusters; female or bisexual inflorescences in clusters, fan-shaped at first, becoming globular.

Common on coastal dunes all over the Peninsula. Also occurs in NT, Qld and extends to Indonesia.

Bardi name = *oorral*. Yawuru name = *rrarrga-rrarrga*. Used in shelter roofs.

The inflorescence clusters or heads are adapted for wind dispersal and can be seen blowing along the beaches.

Flowering December, April-July.

Sporobolus pulchellus R. Br.

Tufted annual grass to 30 cm; leaves chiefly at the base, flat or keeled, broad or narrow, rather rigid; panicle loosely pyramidal; spikelets black, shiny.

Occasional in heavy black soil of wet claypan under scattered *Melaleuca acacioides*, at Beagle Bay, and in shaded areas surrounding coastal vine thicket at Saddle Hill, Broome.

Not recorded in the Flora of the Kimberley.

Flowering March.

Sporobolus virginicus (L.) Kunth **Saltwater Couch**

Rhizomatous perennial grass to 30 cm; inflorescence a spiciform panicle.

Common on salt marsh and on flats by creeks, often amongst *Melaleuca acacioides* at Broome, Barred Creek, Coulomb and One Arm Points. Also occurs in all Australian states

Yawuru name = *balyjarr*.

Studies on the chromosome numbers of four morphotypes of *S. virginicus* from the coastal northwest of W.A. found that the Broome populations were tetraploid (2n=40) with fine leaves and stems (A.R. Smith-White & P. Adam (1990) *Kingia* 1(4):321-325. A valuable fodder grass.

Flowering and fruiting March-July.

Sporobolus virginicus

Thaumastochloa pubescens (Domin) C.E. Hubb.

Loosely tufted or decumbent annual grass to 30 cm; inflorescence axillary, racemose, contracted, with spikelets embedded in the rhachis.

Very common in sand at Coulomb and Gantheaume Points. Also occurs in NT, Qld and New Guinea.

Fruiting March, April.

Triodia microstachya R. Br.

Robust, resinous, hummock-forming perennial grass with culms to 2 m; inflorescence paniculate.

On the edge of vine thicket at Gubinge Road, Broome. Also occurs in NT and Qld.

W.V. Fitzgerald recorded this species from Cygnet Bay in 1906.

Flowering and fruiting March.

Triodia pungens R. Br. var. *pungens* N. Burb. **Gummy Spinifex**

Resinous, perennial grass forming loose to compact hummocks, with culms to 1 m; inflorescence paniculate.

Common in open areas outside patch of vine thicket at Gubinge Road and forming dense hummock grassland in depressions behind coastal dunes at Broome. Also occurs in NT and Qld.

Flowering March; fruiting August.

Triodia stenostachya Domin

Robust, resinous, hummock-forming perennial, with culms to 1.5 m; inflorescence paniculate.

In skeletal sand over sandstone at One Arm Point. Also occurs in NT.

Flowering and fruiting January-March.

Urochloa piligera (F. Muell. ex Benth.) R. Webster **Hairy Armgrass**

Annual tufted or stoloniferous grass to 0.5 m; stems glabrous; inflorescence a raceme.

In alluvial soil at Langey Crossing on Fitzroy River. Also occurs in NT, Qld and NSW.

Flowering and fruiting March.

Urochloa pubigera (Roemer & Schultes) R. Webster

Annual tufted, or more or less stoloniferous, grass to 30 cm, often rooting at nodes; inflorescence of 2-several primary branches on an elongated main axis.

Occasional in pink sand of *Eucalyptus-Acacia* woodland with other grasses at Beagle Bay and Broome. Also occurs in NT and Qld

.Flowering and fruiting March.

Urochloa subquadripara

**Urochloa subquadripara* (Trin.) R. Webster

Tall grass to 1 m; inflorescence a panicle with 3 or 4 distant racemes 3-4 cm long, rhachis flattened and glabrous.

In pindan at One Arm Point. Native to tropical Africa and Asia, often considered native to Australia.

Fruiting April.

Whiteochloa airoides

Whiteochloa airoides (R. Br.) Lazarides **Creeping Panic**

Perennial, or perhaps sometimes annual, caespitose grass to 1 m, single or few-stemmed, often rooting at the nodes or forming large tufts; inflorescence a panicle, with 1-several primary branches per node of the main axis.

On edge of mobile sand-dune outside vine thicket at Broome, Willie Creek, Cape Leveque, and One Arm Point. Also occurs in NT and Qld. A variable species.

Flowering July.

Whiteochloa cymbiformis (Hughes) B. Simon

Caespitose grass to 1.5 m.

Dominant grass with *Plectrachne schinzii* on residual orange-red sand dunes adjacent to Gantheaume Point; Point Coulomb, Roebuck Plains and Langey Crossing. The type locality for this species is Cygnet Bay based on an Allan Cunningham collection made in February 1822. Treated in the Kimberley Flora as a synonym of *W. airoides*.

Flowering March; fruiting April-May.

Whiteochloa airoides

Xerochloa barbata R. Br.

Sub-caespitose perennial to 0.5 m, little-branched at culm nodes; leaf blades flat or inrolled; inflorescences arranged on the upper parts of the culms.

In red sand near Nilli Bubbaca Well, near Logue River and Broome. Also occurs in NT and Qld.

Flowering and fruiting March-June.

Xerochloa imberbis R. Br.

Caespitose, erect or decumbent perennial grass to 0.5 m.

On mud flat behind mangroves, Cape Bertholet and One Arm Point. Recorded by Allan Cunningham at Cygnet Bay in February 1822. Also occurs in NT, Qld, Thailand and Indonesia.

Flowering and fruiting April.

Xerochloa imberbis

Xerochloa laniflora Benth.

Annual or perennial grass to 0.5 m; glabrous except inflorescence.

In alluvial sand at Langey Crossing on Fitzroy River. Also occurs in NT and Qld.

Flowering and fruiting March.

Yakirra australiensis (Domin) Lazarides & R. Webster var. *intermedia* R. Webster **Bunch Panic**

Annual or short-lived perennial grass to 30 cm, tufted, usually densely compact; flowering culms extensively branched; inflorescence of numerous panicles.

Common in pindan behind shops in Chinatown, Broome and Moorak Bore. Also occurs in NT and Qld.

Fruiting March-May.

Xerochloa imberbis

Yakirra muelleri (Hughes) Lazarides & R. Webster

Annual or short-lived perennial grass to 40 cm, tufted; flowering culms extensively branched; inflorescence paniculate, exceeding leaves.

In sandy soil behind shoreline at Carnot Bay. Also occurs in NT and Qld.

Fruiting September.

Yakirra pauciflora (R. Br.) Lazarides & R. Webster

Annual or short-lived perennial grass to 0.7 m, tufted; flowering culms unbranched or branching only at 1 or 2 nodes; panicles few or numerous.

In whitish sand north of Beagle Bay turn-off on Cape Leveque Road, near Lombadina and Coulomb Point. Also occurs in NT and Qld.

Flowering and fruiting April.

PONTEDERIACEAE

Monochoria cyanea (F. Muell.) F. Muell.

Attached glabrous freshwater perennial to 0.4 m, with long-petioled radical leaves and erect or semi-erect stems arising from a creeping rootstock, each stem bearing at its top a single leaf which forms a prolongation of the stem; flower dark blue; fruit a 3-valved, ellipsoid capsule; seeds numerous, oblong to barrel shaped.

In seasonally inundated claypans E of Beagle Bay and at Lake Campion. Widespread in the Kimberley extending into NT, Qld and NSW.

Flowering March; fruiting April.

TACCACEAE

Tacca leontopetaloides (L.) Kuntze

Tuberous, slender, herbaceous perennial; petiole hollow; leaves single, renewed annually, divided into 3 branches, each bifid or trifid, the segments all more or less ovate-lanceolate; scape up to 1 m, slender, ribbed; flowers numerous, yellowish green, umbellate, interspersed with long drooping filaments; fruit an ovoid globular berry crowned by persistent withered perianth; seeds ovoid, many-ribbed.

Tacca leontopetaloides

Typha domingensis

Xyris complanata

Xyris complanata

Rare on edge of grassland and eucalypt woodland in spring country near Beagle Bay. Also occurs in NT and Qld and extends from Africa, Madagascar, India, south east Asia, Indonesia, Malaya, New Guinea to Hawaii in the Pacific.

Fruit can be eaten raw or as a vegetable sliced in stews.

Fruiting April.

TYPHACEAE

Typha domingensis Pers. **Bulrush, Narrowleaf Cumbungi** or **Reedmace**

Aquatic rhizomatous perennial over 2 m; leaves strap-like, sheathing at base, with long linear parallel veins; flowers unisexual, very closely packed on separate heads or spikes along a common rhachis, the upper ones male, the lower ones female. At maturity the female spikes release large, fluffy masses of pale hairs (with fruits attached) which are dispersed by wind.

Occasional in freshwater seepage areas on saltflats with various sedges and a few *Melaleuca acacioides*; and in freshwater seepage areas with Taro (*Colocasia esculenta*) adjacent to Beagle Bay Community Settlement. Widespread in the Kimberley and throughout tropical and warm temperate regions of the world.

Flowering November.

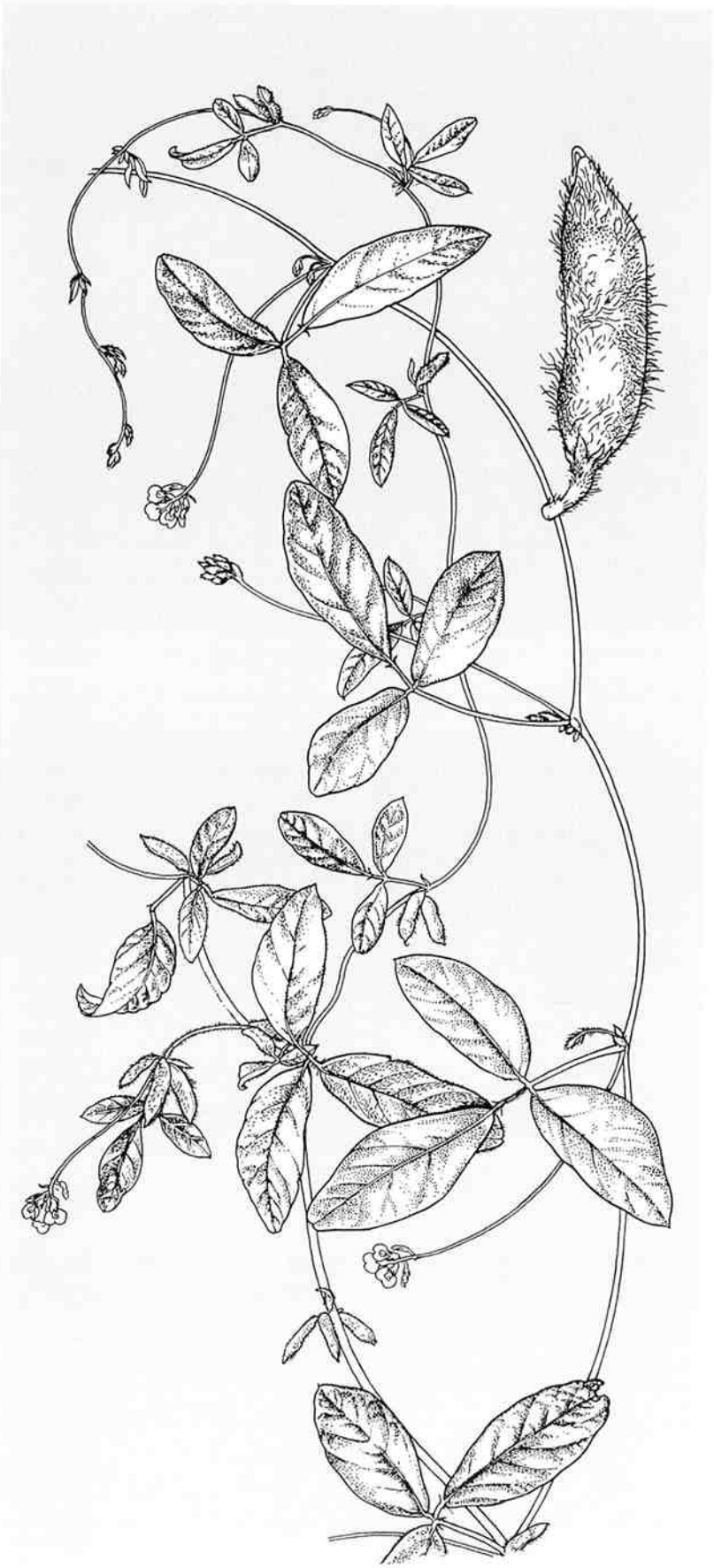
XYRIDACEAE

Xyris complanata R. Br.

Tufted perennial; leaves tufted, generally surrounded by old brown sheaths, grass-like, flat, often very narrow; scape more or less flattened, up to 0.5 m high; flower-head at first short and ovoid, but usually lengthening into a cylindrical spike; flowers yellow, surrounded by light brown scales.

In river washed sand beside creek, at Deep Water Point, Wonganut Spring, Beagle Bay and Coulomb Point. Also occurs in NT, Qld, NSW and south-east Asia.

Flowering April-August.



Woolly glycine (Glycine tomentella)

PART THREE

GLOSSARY
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GLOSSARY

abaxial: away from the axis.
abscission: normal shedding of mature or aged parts.
achene: dry one-seeded indehiscent fruit.
acicular: needle-shaped.
aculeate: covered in prickles.
acuminate: tapering gradually to a point.
acute: sharp; ending in a point.
adaxial: towards the axis.
adpressed: closely flattened.
alternate: borne singly, not opposite, along the axis.
alveolate: having the appearance of honeycomb.
annual: completing the full cycle of germination to fruiting within a single year and then dying.
anther: part of the stamen that bears the pollen.
anthesis: period that a flower is open.
apex: tip; the extreme end.
apiculate: ending abruptly in a short point.
appressed: lying close and flat along the entire length.
aquatic: living in or on water for most of its life.
areole: small space or cavity.
aril: fleshy part around the seed (often brightly coloured).
articulate: jointed; usually fracturing easily into segments.
ascending: arched upwards in the lower part and becoming erect in the upper part.
asymmetric: not even; irregular
attenuate: tapering gradually.
auricle: ear-shaped appendage.
auriculate: leaf base that has lobes on both sides of the petiole.
autotrophic: capable of synthesising its own food.
awn: bristle-like projection in some grasses.
axil: the upper angle where small stem joins larger, or leaf stalk joins the stem. *adj.* **axillary**.
axis: main stem of a plant or inflorescence.
barbate: bearded; having tufts or hairs.
beak: prominent terminal projection. *adj.* **beaked**.
berry: fleshy indehiscent many-seeded fruit containing no hard parts except the seeds.
biennial: completing its full cycle of germination to fruiting in two years and then dying.
bipinnate: 2-pinnate; twice pinnately divided.
bisexual: having both sexes, as in a flower bearing both fertile anthers and a fertile ovary.
blade: lamina; part of the leaf above the sheath or petiole.
bract: leaf-like structure, associated with an inflorescence or flower. *adj.* **bracteate**.
bracteole: small (often scaly) bract-like structure borne on the pedicel.
bulbil: small bulb produced on upper parts such as a leaf axil. *adj.* **bulbiferous**.
caducous: falling early.
caespitose: growing in dense tufts.
calcareous: substance containing calcium carbonate.
callus: hardened tissue that forms over a wound. *adj.* **callose**.
calyx: collective term for all the sepals of a flower.
campanulate: bell-shaped.
capsule: dry fruit normally dehiscing at maturity to release the seeds.
carpel: female reproductive organs of the flower, comprising ovary, ovules, style and stigma.
cauline: borne on the aerial part of a stem.
caruncle: small outgrowth, especially on a seed.
chartaceous: papery.
ciliate: fringed with hairs.
circumscissile: when the upper part separates as a cap.
cleistogamous: describing small inconspicuous self-fertilising flowers.
cocci: the separated parts of a dry many-celled fruit (berry).
coccus: one of the segments of a distinctly lobed fruit that becomes separate at maturity. Sometimes called a mericarp. *pl.* **cocci**.
collateral: side by side.
coma: tuft of hairs. *adj.* **comose**.
ommissure: join or seam; the interface of two fused carpels in an ovary.
complanate: flattened so that several organs lie in one plane.
concentric: having a common centre.
concolorous: of the same colour.
confluent: merging or blending together.
connate: joined together.
cordate: heart-shaped.
coriaceous: leathery.
corolla: collective term for all the petals of a flower or a corolla tube.
corymb: in which the flowers, through unequal pedicels, are in one horizontal plane i.e. rather flattish top. *adj.* **corymbose**.
cotyledon: the primary ('seed') leaf, each seedling having one or two.
crenate: with obtuse or rounded teeth, which either point forwards or are perpendicular to the margin.
crenulate: with a round-toothed or scalloped edge, or margin regularly notched with small rounded teeth.
culm: the stem of grasses and sedges.
cuneate: wedge-shaped.
cupular: cup-like.
cyme: inflorescence in which the central flower opens first. *adj.* **cymose**.
deciduous: falling at the end of the growth period or at maturity.
decumbent: of stems spreading horizontally with the tips growing upwards.
decurrent: having the leaf base prolonged down the stem as a winged expansion or rib.
decussate: having paired leaves or branches with successive pairs at right angles to give four rows.
deflexed: bent downwards.
dehiscent: breaking open at maturity to release the contents.

dentate: with sharp spreading rather coarse teeth standing out from the margin.
denticulate: having very small teeth or serrations.
depressed: flattened from the top.
dichotomous: dividing into two.
diffuse: spread out.
digitate: having parts arranged like the fingers of an open hand.
dioecious: having male and female flowers on different plants; unisexual.
discrete: separate.
discolorous: having two colours, e.g. the lower different in colour from the upper.
divaricate: widely spreading.
drupe: fleshy fruit with a seed e.g. *Pandanus* spp.
ellipsoid: oval in outline in three-dimensios; like an Australian Rules football.
elliptic: oval in outline in two-dimensions; narrow and tapering at each end.
emarginate: having a broad shallow notch at the apex.
emergent: tree reaching a greater height than its associates, or aquatic plant growing or flowering above water.
endocarp: inner layer of the fruit wall.
entire: of the margins of a leaf when it is continuous and not broken.
ephemeral: short-lived.
epicarp: outer layer of the fruit wall, the skin.
epicortal: attached along the bark of a stem or branch e.g. mistletoes (Loranthaceae).
epiphyte: plant growing on, but not parasitic on, another plant, e.g. the tree orchid, *Cymbidium canaliculatum.*
erect: upright.
exarillate: not having an aril.
exocarp: outer layer of the ovary wall, sometimes called the **epicarp**.
exserted: protruding beyond the enclosing organ.
falcate: sickle-shaped e.g. leaf of *Persoonia falcata.*
fascicle: bundle or cluster. *adj.* **fasciculate**.
ferruginous: rust-coloured.
fertile: having sexual parts with ability to reproduce seeds.
filament: the stalk of a stamen that bears the anther.
filiform: thread-like.
flaccid: limp and weak.
-foliolate: used with a number prefix to denote the number of leaflets.
follicle: derived from a single carpel that dehisces along one side only e.g. *Brachychiton* spp.
frond: leaf of a fern or cycad.
fruit: seed-bearing structure formed from the ripened ovary after flowering.
funicle: stalk of an ovule or seed.
fusiform: spindle-shaped.
genus: main subdivision of a family. A taxonomic rank containing related species. The generic name is the first used, followed by the species name.
glabrescent: having few, very fine, hairs when young, which are lost at maturity.
glabrous: without hairs.
gland: secreting structure.
glaucous: having a fine silvery, white or greenish bloom that is easily rubbed off.
globular: nearly spherical. *adj.* **globose**.
glume: bracts at the base of the grass spikelet, small bracts on sedges (Cyperaceae).
habit: the growth form of a plant, comprising its size, shape, texture and stem orientation.
habitat: the immediate environment occupied by a plant; the surrounding vegetation and soil.
halophyte: plant that grows in salty soil.
haustorium: the absorbing organ of some parasitic and hemiparasitic plants. *pl.* **haustoria**.
hemiparasite: plant that is capable of photosynthesis but relies on host plants for water and minerals.
herb: non-woody plant, or woody at the base only, the above-ground stems usually being ephemeral. *adj.* **herbaceous**.
herbaceous: herb-like; often applied to bracts, bracteoles or floral parts that are green and soft in texture.
hermaphrodite: bisexual.
heterostylous: flowers of one species having different style lengths in different plants.
hilum: scar at the point of attachment to the seed.
hirsute: with long but not stiff hairs.
hispid: having short stiff bristly hairs.
hoary: covered with short greyish-white down.
imbricate: overlapping.
indumentum: hairy covering.
inflorescence: flowering shoot bearing more than one flower; the arrangement of flowers on a stem.
interrupted: unevenly distributed with conspicuous gaps.
introduced: not indigenous; not native to the area in which it now occurs.
involute: the margins of a leaf in-rolled on the upper (adaxial) surface.
involucre: ring of bracts.
juvenile: young or immature, used here especially for leaves on a young plant that are different in shape to those on an older plant.
karst: limestone surface featuring fissures and pinnacles.
keel: boat-shaped structure with a prominent longitudinal ridge; or in the pea-family (Papilionaceae), the part of the corolla formed by the fusion of the lower edge of the two abaxial petals. *adj.* **keeled.**
lamina: leaf blade.
lanate: woolly.
latex: the sap of some plants, which may be milky, clear or coloured.
leaflet: each leaf-like part of a compound leaf.
lenticel: lens-shaped pore on the stem of a woody plant, through which gaseous exchange may occur.
lenticular: shaped like a double convex lens.
lepidote: covered in scales.
liane: woody climbing or twining plant.
lignotuber: woody, usually underground, rootstock often giving rise to numerous aerial stems.
linear: long and very narrow.
lobe: usually rounded or pointed projecting part, usually one of two or more, each separated by a fissure or sinus e.g. calyx lobe, corolla lobe and floral lobe.
loculicidal: type of fruit dehiscence where slits occur along the outer wall of the carpels that do not coincide with the partitions between the carpels or cells.
loment: pod that is constricted between the seeds and separates at maturity into single-seeded articles, as in some pea plants e.g. *Uraria* and *Zornia* spp.
Malesia: collective term covering Peninsula and East Malaysia, Brunei, Indonesia (including East Timor), the Philippines, New Guinea and its neighbouring islands and Christmas Island (Indian Ocean). The flora of Malesia, one of the richest floristic regions on earth, is being treated in *Flora Malesiana*: a joint research project of the Rijksherbarium, Leiden, Netherlands and the Herbarium Bogoriense, Bogor, Indonesia.
mangal: mangrove plant community.
mangrove: coastal trees or shrubs subject to periodic tidal inundation, rarely occurring in fresh water, often with modified roots, often viviparous; plant community in tidal stretches of the mouth of some rivers containing mangrove species.

mericarp: one-seeded portion of an initially joined fruit that splits apart at maturity, e.g. *Trachymene* (Apiaceae). Sometimes called a **coccus**.
-merous: used with a number prefix to denote the basic number of the three outer floral whorls, e.g. a 5-merous flower may have 5 sepals, 10 petals and 15 stamens.
midvein: the main vascular supply of a leaf.
minni ritchie: reddish bark peeling in narrow, curled strips. Usually only applied to certain species of wattle e.g. *Acacia monticola*.
monoecious: having both male and female unisexual flowers on the same individual plant.
monotypic: of a genus with only one species or a family with only one genus.
mucilage: soft jelly-like sticky secretion. *adj.* **mucilaginous**.
mucous: slimy and sticky secretion.
mucro: stiff or sharp short projection of the midvein, abruptly terminating an organ.
mucronate: abruptly tipped with a spine.
muricate: with numerous short hard outgrowths.
muriculate: with numerous minute hard outgrowths; a diminutive of **muricate**.
neap tide: tide of minimum range occurring at the time of quarter and three-quarter moon.
nodes: place on a stem where leaves arise.
ob-: prefix meaning inversely opposite to.
obloid: a three-dimensional shape; brick-shaped, with rounded corners and edges.
oblong: rectangular with a length:breadth ratio between 3:2 and 2:1.
obovate: a two-dimensional shape; egg-shaped in outline and attached at the narrow end.
obovoid: egg-shaped in three dimensions, attached at the narrow end.
obtuse: blunt or rounded at the apex.
-oid: suffix denoting a three-dimensional shape.
operculum: lid or cover becoming detached at maturity by abscission, e.g. in *Portulaca* spp. In *Eucalyptus* spp., a cap covering the bud and formed by fusion or cohesion of sepals and/or petals. *adj.* **operculate.**
orbicular: flat with a circular, or almost circular, outline.
orifice: opening or aperture.
ovary: the basal portion of a carpel or group of fused carpels, enclosing the ovule(s).
ovate: a two-dimensional shape; egg-shaped, attached at the broader end, with a length:breadth ratio between 3:2 and 2:1.
ovoid: egg-shaped in three dimensions, attached at the broader end.
ovule: the organ in the ovary that becomes a seed after fertilisation. *adj.* **ovular**.
palmate: of a leaf that is divided into several leaflets which arise from the same point. *adj.* **palmately**.
panicle: compound raceme; an indeterminate inflorescence in which the flowers are borne on branches of the main axis or on further branches of these. *adj.* **paniculate**.
papillae: minute blunt hair or a small rounded process.
paripinnate: pinnate with an even number of leaflets and without a terminal leaflet. A tendril may be terminal on the leaf.
partite: divided almost to the base into segments, the number of segments given as a prefix.
pedicel: stalk of a flower.
peduncle: stalk of an inflorescence (or fruit). *adj.* **pedunculate**.
pellucid: clear, transparent or nearly so.
pendulous: drooping.
perennial: with a life span extending over more than two growing seasons.
perianth: the outer floral whorl or whorls of monocotyledonous flower, sometimes divisible into outer and inner perianth segments. Sometimes used to describe the floral whorl of a dicotyledonous flower when it is uncertain if the whorl is calycine or corolline in origin, or used as a collective term for calyx and corolla.
persistent: remaining attached.
petal: free segment of the corolla. *adj.* **petaline**.
petiole: stalk of a leaf. *adj.* **petiolate**.
phalange: cluster of joined drupes in the Pandanaceae, each phalange free or joined at the base and forming a large globular to cylindrical head (**cephalium**).
phyllode: leaf whose blade is much reduced or absent and whose petiole has assumed the functions of the whole leaf. Common in Australian acacias. *adj.* **phyllodineous**.
pilose: with slightly stiffened distinct hairs ascending from the surface.
pindan: vegetation consisting of a lower storey of grasses, a middle storey of dense acacia thickets and a sparse upper layer of trees up to 15 metres high. Also regarded as a soil type.
pinnate: the same arrangement as a feather; divided into pinnae; once-compound.
pinnule: second or third leaflet of a bipinnate compound leaf.
placenta: region within an ovary to which the ovules are attached. *adj.* **placental**.
pneumatophore: modified root that allows gaseous exchange in mud-dwelling trees and shrubs, e.g. mangroves.
pod: dry, one to many-seeded dehiscent fruit. Commonly applied to the fruits of Caesalpiniaceae, Mimosaceae and Papilionaceae.
procumbent: trailing or spreading along the ground but not rooting at the nodes, referring to stems.
prop root: root arising from the stem some distance above the ground (alternative, see **stilt root**).
prostrate: lying flat on the ground.
pruinose: with a frosty surface; having a thick waxy powdery coating.
pubescent: softly hairy.
puberulous: covered with very short fine straight erect hairs.
punctate: marked with dots, e.g. the clear-coloured oil glands of a leaf of Rutaceae and Myrtaceae.
pungent: ending in a rigid sharp point.
pustular: covered with blister-like prominences.
pyriform: a three-dimensional shape resembling a pear, attached at the broader end.
raceme: indeterminate inflorescence with a simple elongated axis and pedicellate flowers. *adj.* **racemose.**
rachis: main axis of the spike or other inflorescence of grasses; the axis of a pinna in a bipinnate leaf.
radical: arising from the root; borne near the ground, in a rosette or whorl.
ray: the marginal portion of the inflorescence of Asteraceae and Apiaceae when distinct from the disc. Also, the axis or branches of a compound umbel in some Apiaceae, Cyperaceae and Loranthaceae.
recurved: curved outward or downward
reflexed: bent or turned downward.
reniform: kidney-shaped in outline.
reticulate: forming a network or reticulum.
retrorse: bent or directed downwards or backwards.
retuse: with a very blunt and slightly notched apex.
revolute: with the margins in-rolled on the lower (abaxial) surface.
rhizome: creeping stem, usually below ground, consisting of a series of nodes and internodes with adventitious roots. *adj.* **rhizomatous**.
rosette: tuft of leaves or other organs resembling the arrangement of petals in a rose, ranging in form from a hemispherical tuft to a flat whorl. *adj.* **rosetted, rosulate**.

rugose: deeply wrinkled.
rugulose: finely wrinkled; a diminutive of rugose.
samara: indehiscent winged dry fruit.
samphire: apparently leafless, succulent and jointed member of the family Chenopodiaceae.
saprophyte: plant that derives all its nourishment from dead organic matter.
scabrous: rough to the touch.
scandent: climbing.
scape: stem-like flowering stalk of a plant with radical leaves.
schizocarp: dry fruit that splits longitudinally into indehiscent or tardily dehiscent parts (mericarps or cocci).
scurf: small bran-like scales on the epidermis. *adj.* **scurfy**.
secund: all turned to, or arranged along one side.
segment: a part of.
senescent: degenerating, growing old.
sepal: free segment of the calyx.
septum: partition or thin wall. *pl.* **septa**. *adj.* **septate**.
sericeous: silky; covered with close-pressed fine straight silky hairs.
serrate: toothed so as to resemble a saw; with regular, asymmetric teeth pointing forward.
serrulate: serrate with minute teeth.
sessile: without a stalk.
setose: having many bristles.
setulose: with minute bristles; a diminutive of setose.
sheathing: clasping or enveloping the stem.
shrub: woody plant usually less than four metres high and many-branched, without a distinct main stem except at ground level.
sigmoid: S-shaped.
solitary: borne singly.
sorus: discrete aggregate of sporangia in ferns. *pl.* **sori**.
spadix: spike-like inflorescence with an unbranched, usually thickened, axis and small embedded flowers, the whole structure often surrounded by a spathe. *pl.* **spadices**.
spathe: large bract ensheathing an inflorescence or its peduncle. *adj.* **spathaceous**.
spathulate: spoon-shaped; broad at the tip and narrowed towards the base.
spike: unbranched inflorescence of sessile flowers or spikelets.
spikelet: grass flowerhead, generally composed of two glumes and one or more florets.
spine: stiff sharp pointed structure.
spinescent: having spines
spring tide: tide of maximum range, which runs at the times of new and full moons.
spur: extension, usually hollow, of some part, usually a flower.
squamulose: covered with small scales.
stamen: male organ of a flower, consisting of a filament and a pollen-bearing anther. *adj.* **staminal, staminate**.
standard: the, usually, adaxial petal in pea flowers (Papilionaceae). See also **keel**, **wing**.
stellate: star-shaped, usually referring to hairs or scales with radiating branches.
stem: the main axis or a branch of the main axial system of a plant.
sterile: not capable of reproducing fertile seed; or a herbarium specimen lacking flowers and fruits.
stigma: the part of the style that receives the pollen.
stilt root: supporting root arising from the stem some distance above the ground, as in some mangroves, e.g. *Rhizophora stylosa*.
stipitate: having a stalk or stipe, usually of an ovary or fruit.
stipule: leaf-like or scale-like appendage at the base of a leaf.
stolon: above-ground propagating stem of a rosetted or tufted plant, giving rise to another plant at its tip; or in *Drosera*, vertical underground stem connecting the tuber with the above-ground parts and bearing adventitious roots. *adj.* **stoloniferous**.
striae: parallel longitudinal lines or ridges. *adj.* **striate**.
strigose: rough and almost prickly, on account of the strong sharp rather flattened hairs that lie along the surface in the same direction.
style: the part that supports the stigma.
sub-: prefix meaning nearly or almost, as in subcapitate or subequal.
succulent: fleshy, juicy, soft and usually thickened.
sulcate: grooved; furrowed.
suture: line, mark or groove marking a natural division or union of parts of an organ.
swale: depression or low point, especially in dune systems.
symmetrical: regular; same on each side.
syncarp: an ovary of two or more united carpels with a single style. *adj.* **syncarpous**.
tendril: modified part of a stem or leaf used for climbing.
terete: round in cross-section.
terminal: at the extreme end.
tessellated: marked in squares like a pavement.
testa: covering of a seed.
thallus: undifferentiated vegetative body of many algae, liverworts and Lemnaceae.
thyrse: panicle in which the ultimate axes are cymose. *adj.* **thyrsoid**.
tomentose: covered with a fine mesh of woolly hairs.
trap: bladder with a trapdoor entrance, capable of ingesting minute insects and crustaceans, as in bladderworts (*Utricularia* spp.).
triad: three-flowered umbels found in some mistletoes (Loranthaceae).
trifoliate: with leaves arranged in groups of three.
trifoliolate: leaf having three leaflets.
trigonous: triangular in cross-section.
triquetrous: having three concave sides meeting in three angles, as in some stems and seeds.
tristylous: of one species having three types of flower (the styles short, medium or long) on different plants. cf. **heterostylous**.
truncate: with a blunt end, as if cut off.
tuber: underground stem, enlarged as a storage organ.
tubercle: wart-like protuberance. *adj.* **tuberculate**.
tuft: bunch growing from same root or from nearly same point e.g. grasses.
tunic: the skin or coating of a bulb. *adj.* **tunicated**.
type-specimen: the specimen on which the description associated with the original publication of a species name was based.
umbel: inflorescence in which the flowers all spring from the same point. *adj.* **umbellate**.
undulate: with wavy edges.
unisexual: with one sex only.
urceolate: urn-shaped. A short tube, swollen below, narrowed near the mouth and with a slightly spreading flange.
valve: one of the portions into which a fruit splits.
vascular: pertaining to, or having vessels that convey fluids.
vascular plant: plant having a vascular system.
variety: variety or modification of a species.
vein: strand of tissue that forms the framework of a leaf.
venation: the arrangement of veins in a leaf.
verrucose: warty.
verticillate: whorled; arranged in one or more whorls.
villous: covered with long soft hairs.
viscid: sticky.
viviparous: of a seed that germinates while still attached to the parent, e.g. mangroves.
zygomorphic: divided into two similar halves in one plane only; bilaterally symmetrical.

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APPENDIX 1

MARINE AND FRESHWATER ALGAE OF THE DAMPIER PENINSULA

CHLOROPHYTA

ANADYOMENACEAE

Anadyomene brownii (Gray) J. Agardh: Flat green alga on reef flat in shelly substrate of senescent reef with sponges and seagrass in sand. One Arm Point.

CAULERPACEAE

Caulerpa lentillifera J. Agardh: Creeping green alga on reef flat in shelly substrate of senescent reef with sponges and seagrass in sand. One Arm Point.

Caulerpa peltata Lamouroux: Green alga on reef flat in shelly substrate of senescent reef with sponges and seagrass in sand. One Arm Point.

Caulerpa racemosa (Forsskal) J. Agardh: Creeping green alga on reef flat in shelly substrate of senescent reef with sponges and seagrass in sand. One Arm Point.

Caulerpa racemosa (Forsskal) J. Agardh var. *corynephora* (Montagne) Weber van-Bosse: Creeping green alga on reef flat in shelly substrate of senescent reef with sponges and seagrass in sand. One Arm Point.

Caulerpa serrulata (Forsskal) J. Agardh: Creeping green alga on reef flat in shelly substrate of senescent reef with sponges and seagrass in sand. One Arm Point.

Caulerpa sertularioides (J. Gmelin) Howe: Creeping green alga on reef flat in shelly substrate of senescent reef with sponges and seagrass in sand. One Arm Point.

CHARACEAE

Nitella penicillata A. Br.: Submerged aquatic, plants dioecious, branchlets with mucronate tip. Common in freshwater swamps behind coastal sand dunes, Point Coulomb Nature Reserve.

UDOTACEAE

Halimeda cylindracea Decne.: Green calcareous alga growing amongst soft corals on reef flat. James Price Point.

Halimeda lacunalis W.R. Taylor: Green calcareous alga growing amongst soft corals on reef flat. James Price Point.

Halimeda simulans Howe.: Yellowish green calcareous alga on reef flat. James Price Point.

Udotea flabellum (Ellis & Sollander) Howe.: Dark green alga of flat thallus on reef flat. James Price Point.

PHAEOPHYTA

CLADOSTEPHACEAE

Cladostephus sp. (KFK 10679): Brown alga on reef flat. One Arm Point.

SARGASSACEAE

Sargassum sp. (KFK 10677): Brown alga common in deeper pools of one metre. One Arm Point.

DICTYOTACEAE

Turbinaria ornata (Turner) J. Agardh: Brown alga on reef flat. One Arm Point.

APPENDIX 2

FUNGI AND LICHENS (EUMYCOPHYTA) OF THE DAMPIER PENINSULA

FUNGI

ASCOMYCETES

GANODERMATACEAE

Ganoderma lucidum (Fr.) Karsten: Young and stipitate fungus attached to bark of root of living *Acacia* spp.

HYMENOMYCETES

AURICULARIACEAE

Auricularia mesenterica Pers.: Growing on bark of dead *Melaleuca* spp.

HYMENOCHAETACEAE

Phellinus gilvus (Schwein.) Pat.: Fungus growing on stand of living *Rhizophora stylosa*, which is submerged at high tide.

Phellinus setulosus (Lloyd) Imazeki: Common on *Melaleuca* spp. beside and in swamp.

Phellinus sp. (KFK 6000): Growing on *Melaleuca* spp.

POLYPORACEAE

Phaeotrametes decipiens (Berk.) Lloyd

Polyporus arcularius (Batsch) Fr.: Growing on rotting wood of both *Melaleuca* and *Lophostemon* spp. following fire.

Trametes muelleri Berk.: Fungus growing on rotting wood.

STEREACEAE

Stereum sp. (KFK 6193): Fungus growing on rotting wood of *Ficus virens*.

TRICHOLOMATACEAE

Flammulina velutipes (Fr.) Karst.: Growing in sand behind dunes; area recently burnt.

GASTEROMYCETES

SCLERODERMATACEAE

Pisolithus tinctorius (Mich. ex Pers.) Coker & Couch: Puffball; in sand beside creek.

LICHENS

ACAROSPORACEAE

Acarospora citrina (Taylor) Zahlbr. ex Rech.: Common on sandstone, Dampier Hill.

LECIDEACEAE

Catillaria sp. (KFK 7649): On bark of *Lysiphyllum cunninghamii*, Repulse Point.

PERTUSARIACEAE

Pertusaria sp. (KFK 7628E): On bark of *Diospyros ferrea* var. *humilis*, Cape Leveque.

PHYSICACEAE

Buellia sp. (KFK 7675): Common on sandstone, Dampier Hill.

Dirinaria appl1anata (Fee) Awasthi: On bark of *Ventilago viminalis*, Repulse Point.

Dirinaria confluens (Fr.) Awasthi: On bark of *Diospyros ferrea* var. *humilis*, Cape Leveque.

Dirinaria picta (Sw.) Clem. & Schaerer: On bark of *Diospyros ferrea* var. *humilis*, Cape Leveque.

Pyxine cocoes (Sw.) Nyl.: On bark of *Lysiphyllum cunninghamii*, *Diospyros ferrea* var. *humilis* and *Ventilago viminalis*.

PLEOSPORACEAE

Arthopyrenia aff. *lapponina* Anzi: On bark of *Diospyros ferrea* var. *humilis*.

PYRENULACEAE

Porina sp. (KFK 7630, 7638): On bark of *Celtis philippensis* and *Ficus virens* var. *dasycarpa*, Cape Leveque and Packer Island.

Pyrenula nitida (Weig.) Ach.: Red pigmented lichen on bark of *Pouteria sericea*, Point Coulomb Reserve and Cape Leveque.

TELOSCHISTACEAE

Caloplaca cinnabarina (Ach.) Zahlbr.: Common on sandstone, Dampier Hill.

TRYPETHELIACEAE

Trypethelium sp. (KFK 6001A): On bark of *Pouteria sericea*, Cape Bertholet.

USNEACEAE

Ramalina celastri (Sprengel) Krog & Swinscow: Epiphyte on the mangroves *Ceriops tagal* and *Excoecaria agallocha* at landward edge of mangal.

APPENDIX 3

PLANT TYPE-SPECIMENS FROM THE DAMPIER PENINSULA

Abutilon otocarpum F. Muell. var. *broomensis* Hochr. (MALVACEAE) T: (of var.) Broome, Feb. 1905, B.P.G. Hochreutiner 2822, *Ann. Cons. et Jard. bot. Geneve* **15/16**:240 (1912).

Acacia bivenosa DC. var. *borealis* Hochr. (MIMOSACEAE) T: (of var.) Broome, Feb. 1905, B.P.G. Hochreutiner 2828, *Candollea* **2**:376 (1925).

Acacia colei Maslin & Thomson (MIMOSACEAE) T: Broome townsite, WA., 23 Oct. 1991, T. Willing 479, *Aust. Syst. Bot.* **5**:729–43 (1992).

Adansonia stanburyana Hochr. (BOMBACACEAE) T: Broome, Feb. 1905, B.P.G. Hochreutiner 2849, *Ann. Cons. et Jard. bot. Geneve* **11/12**:136–137 (1908). Syn. of *A. gregorii* F. Muell.

Amyema thalassium Barlow (LORANTHACEAE) T: Pender Bay, Oct. 1919, C.E. Lane-Poole, *Proc. Linn. Soc. New South Wales* **87**:57 (1962).

Bauhinia hookeri F. Muell. var. *broomensis* Hochr. (CAESALPINIACEAE) T: (of var.) Broome, Feb. 1905, B.P.G. Hochreutiner 2850, *Candollea* **2**:383 (1925). *B. hookeri* F. Muell. is a syn. of *Lysiphyllum cunninghamii* (Benth.) de Wit.

Bonamia oblongifolia Myint (CONVOLVULACEAE) T: Broome, Feb. 1905, B.P.G. Hochreutiner 2840, *Burma J. Life Sc.* **1**:32 (1968).

Caesalpinia broomensis Hochr. (CAESALPINIACEAE) T: Broome, Feb. 1905, B.P.G. Hochreutiner 2841, *Candollea* **2**:385–87 (1925). Treated by us as a syn. of *C. major* (Medik.) Dandy & Exell.

Calandrinia strophiolata (F. Muell.) Ewart, B. Rees & B. Wood (PORTULACACEAE) T: Beagle Bay, 1879, A. Forrest & J. Carey, *Proc. Roy. Soc. Victoria* **24**:62 (1911).

Clerodendrum tomentosum (Vent.) R.Br. var. *mollissima* Benth. (VERBENACEAE) T: (lecto. of var.) Roebuck Bay, undated, Dr James Martin 44, *J. Adelaide Bot. Gard.* **11**(2):160–161 (1989).

Corynotheca micrantha (Lindl.) Macbride var. *gracilis* R. Henderson (ANTHERICACEAE) T: (of var.) Riddell Beach, Broome, June 1984, K.F. Kenneally 9025, *Fl. Australia* **45**:475 (1987).

Crotalaria cunninghamii R.Br (PAPILIONACEAE) T: Cygnet Bay, Feb. 1822, Allan Cunningham, R.Br. in C. Sturt, *Narr. Exped. Cent. Austral.* **2**, App.:71 (1849).

Cyanostegia cyanocalyx (F. Muell.) C. Gardner (CHLOANTHACEAE) T: Roebuck Bay, James Martin s.n., *Enum. Pl. Austral. Occ.* **112** (1931).

Eucalyptus zygophylla Blakely (MYRTACEAE) T: Broome, April 1905 & July 1906, W.V. Fitzgerald, *Key Eucalypts* **88** (1934).

Gomphrena pusilla Benth. (AMARANTHACEAE) T: Foul Point, Feb. 1822, Allan Cunningham, *Fl. Austral.* **5**:256 (1870). Possibly conspecific with *G. tenella* (Moq.) Benth.

Gomphrena tenella (Moq.) Benth. (AMARANTHACEAE) T: Cygnet Bay, Feb. 1822, Allan Cunningham, *Fl. Austral.* **5**:256 (1870).

Gossypium rotundifolium Fryxell, Craven & J.M. Stewart (MALVACEAE) T: road to Beagle Bay N of Broome, 10–15 km north of junction with Broome-Derby Hwy, 29 May 1985, Fryxell, Craven & Stewart 4556, *Systematic Botany* **17**(1):111–113(1992).

Grewia breviflora Benth. (TILIACEAE) T: Cygnet Bay, Feb. 1822, Allan Cunningham, *Fl. Austral.* **1**:270–271 (1863).

Gyrocarpus americanus Jacq. subsp. *pachyphyllus* Kubitzki (GYROCARPACEAE) T: (of subspecies) Broome, 4 Feb. 1905, B.P.G. Hochreutiner 2831, *Bot. Jahrb. Syst.* **89**(2):185–186 (1969).

Gyrostemon tepperi (F. Muell. ex H. Walter) A.S. George (GYROSTEMONACEAE) T: Roebuck Bay, J.G. Tepper, Sept. 1889, *Fl. Austral.* **8**:392 (1982).

Hakea macrocarpa A. Cunn. ex R.Br. (PROTEACEAE) T: Cygnet Bay, Feb. 1822, Allan Cunningham, *Prod. Suppl.* **30** (1830).

Heliotropium diversifolium F. Muell ex Benth. (BORAGINACEAE) T: Cygnet Bay, Feb. 1822, Allan Cunningham, *Fl. Austral.* **4**:400 (1868).

Hybanthus aurantiacus (F. Muell. ex Benth.) F. Muell. (VIOLACEAE) T: Cygnet Bay, Feb. 1822, Allan Cunningham, *J. Bot.* **15**:27 (1877).

Loranthus cycnei-sinus Blakely (LORANTHACEAE) T: Cygnet Bay, Nov. 1906, W.V. Fitzgerald 1705. *Proc. Linn. Soc. New South Wales* **47**:392 (1922). Syn. of *Amyema mackayense* (Blakely) Danser and according to B. Barlow, *Amyema gravis* from Java is also conspecific.

Nicotiana heterantha Symon & Kenneally (SOLANACEAE) T: North of Broome (precise locality withheld), 8 March 1992, J.B. Martin 225, *Nuytsia* **9**(3):421–425 (1994).

Nymphoides beaglensis H.I. Aston (MENYANTHACEAE) T: Bunguaduk Waterhole near Beagle Bay, August 1985, K.F. Kenneally 9451, *Muelleria* **6**:359–362 (1987).

Polygala tepperi F.Muell. (POLYGALACEAE) T: Roebuck Bay, Jan. 1890, J.W.O. Tepper 28, *Victorian Naturalist* **7**:38 (1890).

Portulaca dubia R. Tate ex K. Poellnitz (PORTULACACEAE) T: Roebuck Bay, Jan. 1890, J.W.O. Tepper s.n., *Feddes Repertorium Specierum Novarum Regni Vegetabilis* **37**:295 (1934).

Ptilotus lanatus A. Cunn. ex Moq. var. *lanatus* (AMARANTHACEAE) T: Point Cunningham & Cygnet Bay, Feb. 1822, Allan Cunningham, in *DC. Prod.* **13**(2):281(1849).

Setaria carnei A.S. Hitchc. (POACEAE) T: Broome, April 1925, without collector (collected by North West Department, H 197), *Proc. Linn. Soc. New South Wales* **52**:185 (1927). Syn. of *S. verticillata* (L.) P. Beauv.

Solanum cunninghamii Benth. (SOLANACEAE) T: Cygnet Bay, Feb. 1822, Allan Cunningham 134, *Fl. Austral.* **4**:465 (1868).

Striga squamigera W.R. Barker (SCROPHULARIACEAE) T: Barred Creek, north of Broome, June 1986, J.R. Clarkson 6556, *J. Adelaide Bot. Gard.* **13**:92–93 (1990).

Stylidium costulatum Kenneally & Lowrie (STYLIDIACEAE) T: Wonganut Spring, 19 km ESE of Coulomb Point Nature Reserve, June 1984, K.F. Kenneally 9054/A, *Nuytsia* **9**(3):343–349 (1994).

Terminalia petiolaris A. Cunn. ex Benth. (COMBRETACEAE) T: Point Cunningham & Cygnet Bay, Feb. 1822, Allan Cunningham 320, *Fl. Austral.* **2**:502–503 (1864).

Velleia panduriformis A. Cunn. ex Benth. (GOODENIACEAE) T: Goodenough Bay & Point Cunningham, Feb. 1822, Allan Cunningham, *Fl. Austral.* **4**:46 (1868).

Whiteochloa cymbiformis (Hughes) B. Symon (POACEAE) T: Cygnet Bay, Feb. 1822, Allan Cunningham, *Austrobaileya* **2**:23 (1984).

ABORIGINAL AND COMMON NAMES

Aboriginal names are in italics

SCIENTIFIC NAMES

The Dampier Peninsula forms a remarkable transition zone between the desert and the tropics in the far north-west of Australia. From the pindan grasslands and sandplains of the interior to the mangroves and tropical vine thickets of the coast, *Broome and Beyond* provides a wealth of information on the distinctive botany and natural history of this fascinating area.

Drawing on their own extensive field studies in the Kimberley region, and with the assistance of the local community, botanists Kevin Kenneally, Daphne Choules Edinger and Tim Willing have assembled a comprehensive guide to the flora of the Dampier Peninsula. *Broome and Beyond* includes many original field observations and plants not previously recorded from the Kimberley.

Kevin Kenneally has researched and published on the flora and vegetation of the Kimberley for more than 20 years. He is co-ordinator of CALM's Science Publications Unit and *Landscope Expeditions* research program, president of the WA Gould League and vice-president of the Kimberley Society. Daphne Choules Edinger has been an honorary botanist at the WA Herbarium for more than 10 years, has contributed to many field trips to the Kimberley and is president of the WA Naturalists' Club and secretary of the Kimberley Society. Tim Willing has worked for the Broome Shire Council as a specialist in tropical horticulture since 1980. He is a founder member of both the Broome Botanical Society, of which he is secretary, and the Kimberley Conservation Group.

The opening chapters of *Broome and Beyond* deal with the environment, traditional Aboriginal plant uses, botanical exploration, plant communities and conservation of the Dampier Peninsula. This is followed by a definitive plant list giving descriptions and traditional uses for the more than 700 species known to occur on the Peninsula. The book is illustrated throughout with superb colour photographs, which will help in identification.

Broome and Beyond will help both residents and visitors to better understand and appreciate the unique landscape of the far north-west of Australia.

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