



**DEPARTMENT OF FISHERIES AND FAUNA
WESTERN AUSTRALIA**

REPORT No. 11

**THE FAUNA, FLORA AND PLANNED USAGE
OF THE
DAMPIER ARCHIPELAGO**

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I INTRODUCTION

The Dampier Archipelago is a group of islands off the north west coast of Australia ($20^{\circ}20'$ - $20^{\circ}45'S$, $116^{\circ}25'$ - $117^{\circ}E$), first discovered by William Dampier in 1699 and subsequently named after him by the Baudin expedition of 1801. This name has since been applied by some authors to include all islands from Roebourne to North West Cape, including both Barrow Island and the Monte Bello Islands, but it is more correctly applied to those islands within a 30 mile radius of the town of Dampier.

The Dampier Archipelago is comprised of about ten large islands and a number of smaller ones (see map). The major islands are

Dolphin Island,	7915 acres
Enderby Island,	7418 acres
West Lewis Island,	5003 acres
Legendre Island,	3325 acres
Rosemary Island,	2798 acres
East Lewis Island,	2605 acres
Angel Island,	2283 acres
Gidley Island	2060 acres

Smaller islands some distance offshore include Malus, Eaglehawk, Goodwyn, Keast, Haug and Delambre Islands and unnamed islands to the north of Gidley Island.

Nearer to the coast are found Intercourse, East and West Middle Intercourse, East Intercourse, Mistaken and Tidepole Islands. West Intercourse Island is a large near shore island but actually appears to be an extension of the mainland to which it is joined by mudflats at low tide.

It is known that Dampier himself named one of the islands he visited "Rosemary Island" because he saw on it a plant (Olearia axillaris) which reminded him of the English Rosemary. It is now agreed, however, that the island which bears this name on current maps is not the one originally named by Dampier (see King, 1817; Tuckfield, 1955; and George 1971).

In recent times, three parties have visited the Archipelago and examined the flora and fauna. The first, from the Western Australian Museum and comprising Dr. B.R.

Wilson and Mr. D.G. Bathgate, visited the islands in 1961. The second, a joint party from the W.A. Museum and the W.A. Herbarium, comprising Drs. W.D.L. Ride and G.M. Storr, Mr. R.D. Royce and two assistants visited in 1962. The most recent survey, which forms the basis of this report, was arranged by the Department of Fisheries and Fauna. The two survey teams were based on the fisheries patrol vessel "Dampier" crewed by Mr. E.J. Little (skipper) and Mr. J.D. Harman. The first team comprised Messrs. R.I.T. Prince, T. Evans (Department of Fisheries and Fauna) and W.K. Youngson (W.A. Museum). It was relieved by the second team of Dr. A.A. Burbidge, Mr. R.F. Dear (Department of Fisheries and Fauna) and Mr. R. Johnstone (W.A. Museum). The survey was carried out from June 15th to June 30th, 1970. Surveys of the Muiron Islands (unpublished) and the Monte Bello Islands (Burbidge, 1971) were also carried out by these teams.

Available time precluded a proper survey of any island, but more time was spent examining those islands which appeared likely to be disturbed in the near future for tourist and industrial developments, i.e. Legendre, Dolphin and Rosemary Islands. For comparative purposes, visits were also made to Angel, Gidley, West Lewis and Enderby Islands, but no landings were made on East Lewis, Malus or any of the smaller islands.

II CLIMATE

The Dampier Archipelago is in an area of low, unreliable rainfall. Although rain may fall at any time, the heaviest falls generally come from tropical cyclones during the period January to April. Potential evaporation is between 90 and 100 inches per annum, but relative humidity is fairly high in comparison to inland areas, and heavy dews may be recorded during both summer and winter.

The closest station with long term meteorological records is Roebourne, and a summary of these records dating from 1887 is given in Table 1. Roebourne itself is situated approximately 30 miles east south east of Dampier and about 6 miles from the sea. Temperatures on the islands may be slightly milder.

III GEOLOGY AND TOPOGRAPHY

The geology of the area has been mapped at 1:250,000 scale by Kriewaldt, Horwitz, Ryan and Bock, and published by the Geological Survey of Western Australia (Geological

Series Sheet SF 50-2 and part Sheet SF 50-1, with explanatory notes compiled by Kriewaldt, 1964).

The islands can be divided roughly into three categories. The first consists largely of Proterozoic intrusives and includes Dolphin, Angel, Gidley and smaller islands near the town of Dampier. The main rock type is a granophyre, which also occurs on small parts of East Lewis and Enderby Islands. The eastern half of Dolphin Island consists of gabbro, and both this and the granophyre are intruded by dolerite dykes. Small areas of Archaean granite gneiss and pegmatites also occur on some islands. Small areas of beach sand of recent origin occur on the edges of some islands.

Topographically these islands (Plate 1) are steep and rugged consisting largely of enormous rock piles with valleys between. Dolphin is the highest island in the Archipelago rising to 450 feet above sea level. The valleys contain fresh water for some time after rain, allowing frogs and other aquatic life to breed.

The second category is made up largely of a Proterozoic basalt, the Mount Joep Basalt. This group includes East and West Lewis, Enderby, Malus and Rosemary Islands. Dolerite sills also occur and are especially extensive on Rosemary Island. On Rosemary the basalt is replaced by tuffaceous rocks. These islands also have areas of fringing recent beach deposits, which are fairly extensive on Enderby and Rosemary Islands.

Topographically these islands (Plate 2) are not as steep as those in the first category, but are more undulating although rock piles still occur. Cliffs are present adjacent to the sea in some places.

The third group which is largely made up of Pleistocene Coastal Limestone includes Legendre, Hauy, Delambre and some smaller islands. Some derived dunes occur on Legendre and there are fringing beach sands. These islands are low and fairly flat.

IV FLORA

A complete list of the flora collected on the islands can be found in Table 2.

The floral associations of the Archipelago can be broken down into a number of types depending on the soils and situation.

1. Rock Piles and Outcrops. (Plate 3)

a. Dolphin, Angel and Gidley Islands.

These are characterised by small trees such as the kurrajong (Brachychiton australe), native figs (Ficus platypoda and F. orbicularis) and pittosporum (Pittosporum phylliraeoides). Grasses are common, especially "spinifex" (Triodia pungens) and kangaroo grass (Themeda australis). Herbs such as Trachymene spp. and climbers such as Mukia maderaspatana and Passiflora foetida occur in some areas.

b. Lewis Islands, Enderby and Rosemary Islands.

Rocky areas on these islands are less diverse, the trees being largely absent. Passiflora foetida was not recorded from these islands.

c. Legendre Island.

Limestone outcrops have a similar flora, Ficus and Pittosporum being present along with grasses and climbers.

2. Slopes (Plate 4)

This is the commonest type of situation in the Archipelago. It is basically a hummock grassland with Triodia pungens the dominant species. Other softer grasses also occur, for example, Eriachne obtusa and Themeda. Occasional shrubs, especially Acacia pyrifolia and Hakea lorea are scattered here and there. On Dolphin Island the weeping box (Eucalyptus patellaris) and the variable-barked bloodwood (E. dichromophloia) occur near the bottom of some slopes.

3. Drainage Lines. (Plates 5 and 6)

Small drainage lines contain a greater number and variety of shrubs and herbs, e.g. Sarcostemma australe, Tephrosia rosea, Trichodesma zeylanicum, Sesbania cannabina and Ptilotus spp. (Mulla-mullas). Where well defined creek beds occur these may be lined with trees, on Dolphin the coolabah (Eucalyptus microtheca), and on West Lewis, the coolabah and Terminalia canescens.

4. Run-on areas or flats. (Plate 7)

These areas are water-logged after rain and contain a wide variety of grasses and herbs with a few shrubs. Dominants are Sorghum plumosum, Setaria dielsii, Chrysopogon pallidus, Eulalia fulva, Tribulus occidentalis and Mukia maderaspatana.

5. Beaches and sand dunes.

a. Beach and fore dunes (Plate 8)

Spinifex longifolius is the dominant plant and the creeper Ipomoea pes-caprae and the Sturt Pea (Clianthus formosus) are also common.

b. Inland dunes. (Plate 9)

In some areas, particularly on Rosemary Island, the sandy areas are covered with an Acacia scrub (largely A. bivenosa and A. coriacea). In more open situation, Spinifex longifolius and Sporobolus virginicus (salt water couch) are found.

6. Rocky shores.

Mangroves, particularly the white mangrove (Avicennia marina), occur where rocky country meets the sea, (Plate 10) especially in sheltered locations. Where the bottom is muddy, such as in tidal creeks or bays the black mangrove (Bruguiera conjugata), the red mangrove (Ceriops tagal) and Rhizophora mucronata occur (Plate 11).

Only one introduced plant appears to have established in the Archipelago, this being the prickly pear (Opuntia sp.) which is growing on the beach sands on Enderby Island.

V FAUNA

A. Mammals.

1. Dolphin Island Euro, Macropus robustus rubens.

The euro occurs on Dolphin Island, this being the only other island on which it is known to occur in Western Australia besides Barrow Island. The Barrow Island euro is morphologically distinct from the mainland animals, but the status of this population is not clear. Further work is required to resolve this point.

2. Rothschild's Rock Wallaby, Petrogale rothschildi

(Plate 12). This species occurs on Rosemary, Enderby, and Dolphin Island, although the rock wallaby on Dolphin has not been positively identified and is possibly Petrogale penicillata (Ride, pers. comm.). This is the most striking mammal on the islands and it can easily be observed during daylight. It ranges all over the islands to feed, unlike mainland populations of rock wallabies which appear to move only a short distance from the rock pile which forms the day

time refuge. Petrogale rothschildi has a restricted distribution on the mainland occurring sparsely in the Hamersley Range and near Roebourne.

3. Little Northern Native Cat, Dasyurus hallucatus.

Two male animals were captured on Dolphin Island. They were taken in Elliott box traps (dimensions 14" x 4" x 3") using universal bait, and were the only specimens recorded. They were of relatively small size (live weights 400 and 350 grams), but were apparently mature adults. One animal was maintained in captivity for nearly 12 months and did not show any appreciable increase in size prior to death. This species also occurs in the Kimberleys and as far south as the Roebourne area on the adjacent mainland. Little is known of the variability in this species in W.A.

4. Tunney's Rat, Rattus tunneyi (Plate 13).

This rat is known from Legendre and West Lewis Islands. It favours sandy, flat habitats near creeks or beaches, which are vegetated with grasses other than Triodia. It has an extensive mainland distribution.

5. Common Rock Rat, Zyzomys argurus.

This animal is known from Dolphin and Rosemary Islands. Skeletal remains were collected on Legendre Island and it probably occurs there too. The Common Rock Rat occurs from Northern Queensland through the Northern Territory and the Kimberley to the Pilbara. It also occurs on Barrow Island. As the name signifies it is generally associated with rock piles.

6. Sandy Inland Mouse, Pseudomys hermannsburgensis.

This mouse is known only from Rosemary Island where it was live trapped in Elliott traps. It has a wide distribution in the dry inland parts of Australia, but this is the only known island population.

7. Bats.

Unidentified bats were seen and heard flying over most islands at dusk and after dark.

8. Fox, Vulpes vulpes.

Droppings and tracks identified as belonging to the introduced fox were seen on Dolphin, Angel, Gidley and Legendre Islands. The droppings contained reptile, fish and bird remains apart from insects and other invertebrates.

9. Marine Mammals.

The Dugong (Dugong dugon) still occurs in fair numbers in the waters of the Archipelago. The Dolphin (Tursiops truncatus) is also common, and other small toothed whales probably occur.

B. Birds.

A summary of the birds recorded is as follows. Names used are from "An Index of Australian Bird Names" (1969).

LAND BIRDS

	Dolphin	Angel	Gidley	Legendre	W. Lewis	Enderby	Rosemary
Plumed Tree Duck		X				X	X
Black-shouldered Kite				X X		X	X
Whistling Eagle				X X		X	X
Collared Sparrowhawk	X						
White-breasted Sea Eagle	X	X		X X		X	X
Red-backed Sea Eagle							X
Spotted Harrier				X X			
Osprey	X	X		X X		X	X
Nankeen Kestrel	X	X		X X		X	X
Brown Hawk	X				X	X	
Quail (? Brown)		X		X			X
Bar-shouldered Dove	X	X			X	X	X
Peaceful Dove					X	X	
Diamond Dove	X				X	X	X
Little Corella	X			X X			X
Galah		X					
Pallid Cuckoo	X				X		
Boobook Owl	X						
Barn Owl		X					
Spotted Nightjar						X	
Sacred Kingfisher	X	X		X X		X	
Mangrove Kingfisher						X	
Welcome Swallow				X X		X	X
Australian Pipit	X	X		X X		X	X
Black-faced Cuckoo-Shrike	S	X		X X			X
Spinifex-Bird	X						
Brown Songlark					X		
Large-billed Warbler	X			X X		X	
Chestnut-rumped Thornbill						X	
Mangrove Robin				X X		X	

	Dolphin	Angel	Gidley	Legendre	W. Lewis	Endersy	Rosemary
Grey Fantail				X	X	X	X
Willie Wagtail	X	X	X	X	X	X	X
Mangrove Golden Whistler					X	X	
White-breasted Whistler				X	X	X	
Western Shrike-Thrush						X	
Striated Pardalote	X						
Yellow Silvereye	X			X	X	X	X
Brown Honeyeater	X	X			X	X	X
Singing Honeyeater	X	X	X	X	X	X	X
Yellow-throated Miner	X						
Painted Finch	X	X			X		X
Zebra Finch	X				X		
Magpie Lark	X						
Masked Wood-Swallow	X						
White-breasted Wood-Swallow				X	X		
Little Wood-Swallow			X				
Pied Butcher-Bird	X	X			X	X	X
Australian Crow	X			X	X	X	X

SEA BIRDS AND WADERS

The following birds have been recorded from one or more islands or at sea near the islands.

Wedge-tailed Shearwater	Turnstone
Wilson Storm-Petrel	Whimbrel
Australian Pelican	Eastern Curlew
Pied Cormorant	Grey-tailed Tattler
Lesser Frigate-Bird	Southern Stone-Curlew
White-faced Heron	Beach Stone-Curlew
Mangrove Heron	Silver Gull
White Egret	Caspian Tern
Reef Heron	Roseate Tern
Pied Oystercatcher	Fairy Tern
Sooty Oystercatcher	Crested Tern
Red-capped Dotterel	Lesser Crested Tern

The avifauna of the Archipelago is diverse. Notable records include the Plumed Tree-Duck, which was observed feeding on reefs, and the Western Shrike-Thrush which is at the northern end of its range.

A probable nesting colony of sea birds was sighted on Mawby Island, a small islet to the east of Malus Island. It is not known which species use this area, since the weather precluded landing.

While travelling between the Dampier Archipelago and the Monte Bello Islands on June 10, 1970 and again on July 3, 1970, a number of Fork-tailed Swifts were seen hawking over the surface of the sea. On the latter occasion, a flock of about 50 birds was seen, as well as many isolated individuals. The Swifts were flying just above the waves in a manner similar to sea birds such as Shearwaters.

C. Reptiles

Reptiles recorded are as follows:

	Dolphin	Angel	Gidley	Legendre	W. Lewis	Enderby	Rosemary
<u>GEKKONIDAE (Geckoes)</u>							
<i>Gehyra variegata</i>	X				X		X
<i>Gehyra punctata</i>	X	X			X	X	X
<i>Gehyra australis</i>				X			
<i>Heteronotia bynoei</i>	X		X	X		X	X
<i>Oedura marmorata</i>	X						
<i>Diplodactylus conspicillatus</i>				X			
<i>Diplodactylus stenodactylus</i>				X			
<i>Diplodactylus elderi</i>	X						
<i>Crenadactylus ocellatus</i>	X						
<u>PYGOPODIAE (Legless Lizards)</u>							
<i>Lialis burtoni</i>					X		
<i>Delma fraseri</i>							X
<u>AGAMIDAE (Dragon Lizards)</u>							
<i>Amphibolurus caudicinctus</i>	X	X		X	X	X	X
<i>Amphibolurus isolepis</i>				X			
<i>Physignathus gilberti</i>	X			X			
<u>SCINCIDAE (Skinks)</u>							
<i>Ctenotus lesueurii</i>	X	X		X	X	X	X
<i>Sphenomorphus isolepis</i>	X	X		X	X		X
<i>Cryptoblepharus plagiocephalus</i>							
<i>metallicus</i>	X	X					X

	Dolphin	Angel	Gidley	Legendre	W. Lewis	Enderby	Rosemary
<i>Morethia taeniopleura</i>	X		X	X			
<i>Egernia</i> sp.							X
<i>Lerista muelleri</i>				X			
<i>Lerista bipes</i>			X				
<i>Menetia greyi</i>	X						
<i>Omolepida branchiale</i>	X						
<u>VARANDIDAE</u> (Goannas)							
<i>Varanus acanthurus</i>				X	X		
<u>TYPHLOPIDAE</u> (Blind snakes)							
<i>Rhamphotyphlops diversus</i>				X			
<u>BOIDAE</u> (Pythons)							
<i>Liasis childreni</i>							X
<i>Liasis</i> sp.					X		
<u>ELAPIDAE</u> (Snakes)							
<i>Demansia psammophis reticulata</i>	X						
<u>HYDROPHIIDAE</u> (Sea snakes)							
<i>Aipysurus laevis</i>							SEAS OFFSHORE
<u>CHELONIIDAE</u> (Marine Turtles)							
<i>Chelonia mydas</i> (Green Turtle)							SEAS OFFSHORE
<i>Eretmochelys imbricata</i> (Hawksbill)							SEAS OFFSHORE

In addition to the reptiles recorded above, the Mulga Snake (*Pseudechis australis*) has been reported from Rosemary Island, although it has not been collected.

The islands display a wide range of reptiles most of which are widespread on the mainland. The *Egernia* sp. from Rosemary Island and the *Liasis* sp. from West Lewis are possibly undescribed species. Additional collecting at different times of the year would doubtless add to the list.

D. Amphibia

Two species of frogs are known from the Archipelago.

1. Cyclorana cultripes. Tadpoles and juveniles of this species were collected on Angel and Dolphin Islands. The water-holding frog is widespread on the mainland (Main, 1965).

2. Hyla rubella. The desert tree frog, which is also widespread on the mainland (Main, op.cit.) was collected on Dolphin Island.

VI IMPORTANCE OF THE AREA

The islands of the Dampier Archipelago are of scientific and biological importance because:

1. With the exception of Legendre, the larger islands of the Dampier Archipelago are composed primarily of Proterozoic rocks (see Geology) and appear to be biologically representative of much of the hill country of the Pilbara and north west. All other islands off the west and north west coasts (excluding the Kimberley) are composed of Quaternary and, in the case of Barrow Island, Tertiary limestones, thus representing mainly coastal situations. A number of these other islands are already important conservation reserves, but the Dampier Archipelago, being completely different in terms of climate, flora and fauna, as well as geology and soils, complements these islands and does not repeat them.

2. Islands are important natural laboratories from which information can be acquired on a number of problems. Some examples are:

a) ecological information derived from islands can provide useful guidelines for the selection and management of nature reserves elsewhere in Australia (Main and Yadav, 1971).

b) animals and plants on islands can be compared with the same or similar species on the mainland in order to work out rates of evolution and strategies of adaptation.

c) islands often provide relatively simple ecological communities which are easier to study than an extensive mainland area.

d) the Dampiers have not been affected by development, and can, therefore, provide a comparison with the mainland from which measurements can be made of the effects of development. One example of this is that the Archipelago has not been affected by the pastoral industry. In fact it provides a range of different grazing combinations. Dolphin Island is grazed by both euros and, to a lesser extent, rock wallabies, whereas Enderby and Rosemary Islands have rock wallabies but at different densities. West Lewis (and probably East Lewis) has small rodents while Angel, Gidley and other smaller islands appear to have no vertebrate grazing animals at all. Legendre Island also has rodents but it provides a different habitat. Contrasting grazing combinations including red kangaroos, euros and domestic stock such as sheep, cattle and goats may be found on the mainland.

3. The Archipelago supports species which are rare or absent on the mainland or which are not protected by reservation elsewhere. Notable among these is the Dolphin Island Euro, Rothschild's Rock Wallaby and the Little Northern Native Cat. Other animals not recorded from reserves are Tunney's Rat and the Sandy Inland Mouse.

4. The islands contain large numbers of Aboriginal rock etchings (Plate 14). These appear to be especially common on Angel and Dolphin Islands, but numbers also occur on West Lewis, Enderby, Rosemary, East Intercourse and possibly on other islands. These etchings have not been properly catalogued or studied and could easily be destroyed by vandalism. Some rock etchings on East Intercourse Island have already been destroyed.

5. The marine fauna of the waters of the Archipelago is exceptionally rich and diverse. Coral reefs are extensive, especially around Delambre Island, and the fauna of intertidal and underwater flats is interesting. Both mud and sand flat situations are found in the Archipelago.

The Archipelago has long been recognised as an area of great scientific and public importance and in 1962 the West Australian Sub-Committee of the Australian Academy of Science Committee on National Parks recommended that:

"1. the islands of the Dampier Archipelagoshould be gazetted Class A Reserves and together comprise a National Park vested in a Statutory Body having control of other National Parks;

2. a biological survey should be made of the Archipelago and, following such survey, recommendations should be made as to which islands should be set aside for public recreation;

3. the remaining islands in the National Park be set aside for preservation of fauna and flora" (Anon, 1965; p. 193).

In 1963, the Chief Warden of Fauna requested on behalf of the Fauna Protection Advisory Committee (now the Western Australian Wild Life Authority), that the larger islands of the Archipelago be reserved for the conservation of flora and fauna and vested in the Committee. No action was taken on these recommendations and the islands remain vacant crown land under the control of the Minister for Lands.

VII FUTURE USAGE

The Archipelago is in an area which is undergoing rapid development based on the exploitation of iron ore and other minerals. The town of Dampier is already a major port for the export of iron ore and the capacity of the port is being increased at present by developing East Intercourse Island as a new shipping terminal. Mistaken Island may also be joined to the mainland as a port for the Dampier solar salt industry. Legendre Island has been suggested as a port site capable of handling very large bulk carriers since deep water is found close to its shore. If this latter proposal is carried out it would necessitate the construction of a link between Legendre Island and the mainland. This would probably pass through Dolphin Island and possibly Gidley and other smaller islands as well.

Another new town and iron ore port is now being developed at Cape Lambert, some 25 miles to the east of Dampier.

In 1966, Hamersley Iron Pty. Ltd., the company operating the port of Dampier, applied for and were granted, mineral leases for limestone and limesands on some of the islands. They were subsequently granted a temporary reserve covering the whole Archipelago, but this was cancelled in 1970. Most of the Archipelago is now within temporary reserve 5461 H, a ministerial reserve for regional development. Areas under mineral lease to Hamersley Iron include the whole of Delambre, Hauy, Legendre and some smaller islands (predominantly composed of limestone) and extensive parts of Rosemary, Enderby and Malus, plus a small part of East Lewis. These latter areas include all the beaches and coastal dunes which in this instance are composed of shell and coralline sands.

A fishing industry based on prawns is developing in the area. This is concentrated on Nickol Bay, but areas adjoining the Archipelago are sometimes trawled. Sport fishing is also popular.

Some tourist usage already occurs and further is proposed. The North West Game Fishing Club (Inc.) has a lease of about 18 acres on Rosemary Island for the purpose of a game fishing resort. A building has been erected on the leased area, and elsewhere on the island an airfield has been constructed and a well sunk for water. A four wheel drive vehicle is kept on the island and a number of tracks have been cut. Hamersley Iron Pty. Ltd. has recently requested another lease on Rosemary Island in order to erect recreational facilities for its staff. Other tourist developments have been suggested in the past and will no doubt be proposed in the future, since the increasing urban development in the area will generate a need for further recreational facilities.

Thus there are a number of conflicting usages proposed for the Archipelago, some of which are mutually exclusive. It is obvious that, if rational decisions are to be made, these issues can not be examined in isolation. Planning for this area should take cognisance of all possible uses and lay down guidelines for future development.

VIII CONSERVATION ASPECTS OF PLANNING

The most important islands from a nature conservation point of view are Dolphin, Rosemary and Enderby, particularly the first two. Dolphin is considered to be the most important as it is the largest island, has the most diverse flora (over 100 species) and harbours euros, rock wallabies, native cats and rodents, as well as a diverse avian and reptilian fauna. Rosemary Island does not have the same variety of flora and fauna as Dolphin, but is complementary to it, containing many different species. Rock wallabies are much more common and are possibly of a different species. The reptilian fauna is especially diverse for such a small island and includes species not found elsewhere. Also, the only known insular population of Pseudomys hermannsburgensis is found on Rosemary.

For these reasons we consider that Dolphin and Rosemary Islands should be wildlife sanctuaries with a minimum of disturbance by the public. Future intensive development of Rosemary Island for recreational or tourist usage is undesirable in view of the importance of the wildlife and

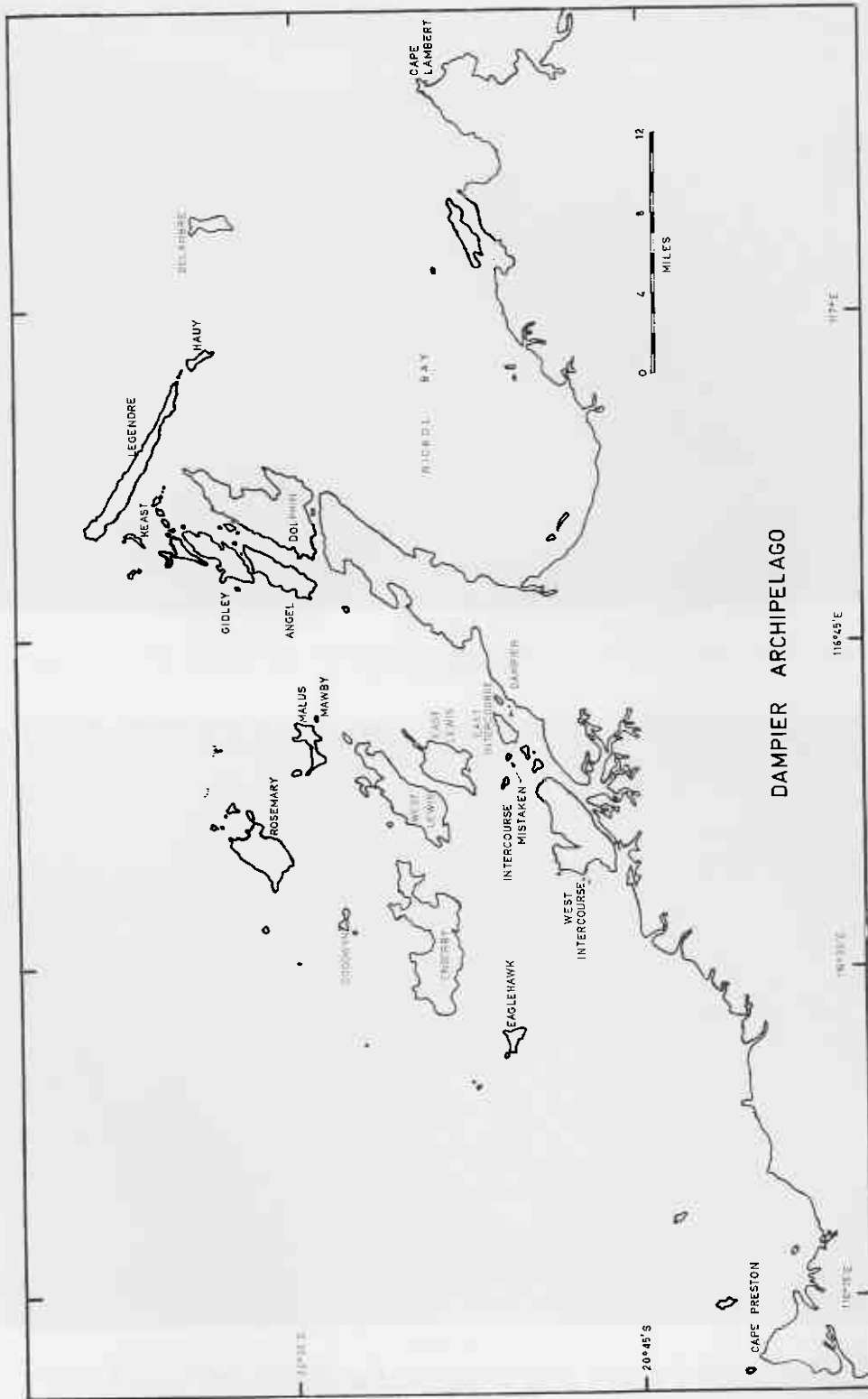




PLATE 1
Angel Island.



PLATE 2
Enderby Island looking toward the mainland



PLATE 3

Angel Island with Flying Foam Passage and Dolphin Island in the background. Note standing fresh water in valley.



PLATE 4

Enderby Island. *Acacia pyrifolia* in the right foreground and occasional shrubs of *Hakea lorea* in the background. The grasses are *Triodia pungens* in the foreground and *Eriachne* and *Themeda* in the background



PLATE 5

West Lewis Island. *Sarcostemma australe* in the foreground.



PLATE 6

Creek on West Lewis Island lined with coolabahs (*Eucalyptus microtheca*).



PLATE 7

Rosemary Island. Run-on area with *Sorghum plumosum* and other plants.



PLATE 8

Fore-dunes, Enderby Island. Note the introduced prickly pear (*Opuntia* sp.) and *Spinifex longifolius*.



PLATE 9

Inland sandy area on Rosemary Island, covered with an *Acacia* shrub.



PLATE 10

Enderby Island showing the fringe of white mangroves (*Avicennia marina*) on the rocky shores.



PLATE 11
Mangrove-lined tidal creek on Enderby Island.



PLATE 12
Rothschild's Rock Wallaby (*Petrogale rothschildi*) on Enderby Island

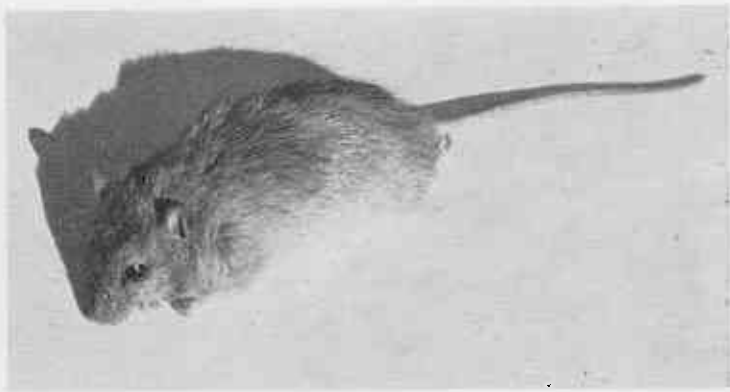


PLATE 13

Tunney's Rat (*Rattus tunneyi*) from West Lewis Island

W. S. Hoar



PLATE 14

Aboriginal rock etchings on Angel Island.

its relatively small size(2978 acres). At present, Rosemary is the only island on which fresh water is known to be available, but the supply there (from a well) appears to be limited. A proper search for water elsewhere in the Archipelago has not, to our knowledge, been made.

Enderby Island is considered important, but it could probably absorb some disturbance without undue effect, especially because of its relatively large size (7418 acres, almost three times that of Rosemary), while most of its flora and fauna occurs elsewhere in the Archipelago. The rock wallabies (which would be an added tourist attraction) also occur on Rosemary Island. Additional attractions for public and tourist usage are the sheltered bays for small craft and the availability of sufficient flat ground to enable the construction of an airstrip for light aircraft if necessary. A proper search might disclose underground water supplies, otherwise water will have to be provided from catchments, by transportation, or by desalination.

We consider that Enderby Island is the most suitable for any long term development of permanent facilities for recreation and tourism, including those of the North West Game Fishing Club (Inc.).

Legendre Island also harbours a diverse fauna and flora, but most of it is present on other islands in the Archipelago or on geologically similar islands such as Barrow Island. With proper planning, the use of part of Legendre as a port site would not greatly affect the total fauna and flora of the region, so long as steps were taken to protect the other islands in the Archipelago and a substantial part of Legendre be left untouched. The design of the structures linking Legendre and the mainland should provide for a minimum of disturbance of intermediate islands (i.e. Dolphin, and possibly others) during the course of development. The design should also ensure that the bridges are an effective barrier to the passage of animals so as to prevent the introduction of further predators or pests and mainland individuals of the native fauna. No further usage of Dolphin Island should be permitted. Before any route is planned, a professional survey of the aboriginal etchings on Dolphin Island should be undertaken to ensure minimum destruction of important sites.

Other islands apart from Dolphin and Rosemary also need to be protected in order to maintain the full diversity of the Archipelago.

IX RECOMMENDATIONS

1. That no further decisions on the final usage of any of the islands of the Dampier Archipelago be made until a comprehensive review has been made of all possible uses to which the area might be put.

2. That a plan be prepared for the Archipelago showing which islands should be used for:

- a) industrial and port development
- b) mining for limestone and limesands
- c) tourism and recreation
- d) the conservation of indigenous fauna and flora, and
- e) the preservation of aboriginal sites.

3. That the plan should set aside a number of the islands as a Class A Reserve for the conservation of indigenous fauna and flora to be vested in the Western Australian Wild Life Authority.

4. That the plan should not allow the development, mining or disturbance of either Dolphin or Rosemary Islands.

5. That, if Legendre Island is to be used as a port site then:

- a) a substantial part of Legendre be left undisturbed,
- b) the structure linking Legendre with the mainland be designed so that minimum interference occurs to intermediate islands, especially Dolphin Island, and
- c) the structure should provide effective barriers preventing the movement of animals across it.

6. That a comprehensive study be made of the Aboriginal rock etchings on the islands before any development is allowed to take place, and in any case, no development should be permitted on Angel Island. Reserves for the preservation of Aboriginal sites should be made, possibly jointly with the areas for the conservation of fauna and flora.

7. That consideration be given to declaring some of the waters of the Archipelago a marine reserve.

X ACKNOWLEDGEMENTS

Dr. G.M. Storr of the W.A. Museum identified the reptiles and provided information on birds and reptiles observed by him in 1962. Dr. W.D.L. Ride and Mr. J.L. Bannister

of the W.A. Museum and Mr. A. Baynes of the Department of Zoology, University of W.A., identified the mammals and Dr. Ride made available his field notes taken during the 1962 visit. The plants were identified by Mr. A.S. George and other officers of the W.A. Herbarium. The West Australian Department of Lands and Surveys provided figures showing the area of the islands.

Hamersley Iron Pty. Ltd. provided assistance to the party in Dampier.

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TABLE I

METEOROLOGICAL DATA FROM ROEBOURNE

TEMPERATURE (°F)	JAN.	FEB.	MAR.	APR.	MAY.	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.	YEAR
Mean Max.	100.8	100.9	98.5	93.9	86.2	79.4	79.0	82.9	89.6	94.4	100.5	101.7	92.3
Mean Min.	79.2	79.3	77.4	70.6	64.0	58.2	55.4	57.5	57.5	66.6	73.2	76.7	68.3
Highest Max.	118.0	116.0	113.4	109.8	100.0	93.8	91.0	97.0	97.0	106.8	114.5	116.0	118.0
Lowest Min.	66.5	55.0	63.0	57.8	46.7	40.0	41.0	44.0	44.0	48.1	49.0	53.0	40.0
No. of days 90° and over	29.8	26.3	27.9	24.1	7.2	0.2	0.2	3.3	15.2	23.3	28.1	30.5	216.1
No. of days 100°F and over	17.7	15.0	15.9	4.7	0.0	0.0	0.0	0.0	0.0	0.8	16.2	19.4	95.6
RAINFALL													
Average	247	240	283	124	116	102	56	21	6	3	7	38	1243
Average (last 30 years)	166	185	338	97	109	86	22	20	8	6	6	55	1098
Highest	1448	1278	1607	2173	887	734	530	385	158	120	120	507	4173
Lowest	0	0	0	0	0	0	0	0	0	0	0	0	13
Highest (1 day)	911	666	1032	1144	660	325	530	172	90	115	66	383	1144
Average No. of Wet days	3	4	4	2	2	2	1	1	0	0	0	2	21
HUMIDITY (per-cent)													
Mean Rel. Hum- idity	54	53	55	46	48	51	47	48	41	43	42	47	48
3 p.m. Rel. Humidity	41	42	43	36	38	40	36	36	29	33	33	37	37

TABLE 2

THE FLORA OF THE DAMPIER ARCHIPELAGO

	Dolphin	Angel	Gidley	Legendre	W. Lewis	Enderby	Rosemary
<u>Filicales</u>							
<u>POLYPODIACEAE</u>							
<i>Cheilanthes tenuifolia</i> (Burm.) Schwartz	X						
<u>Angiospermae-Monocotyledonae</u>							
<u>GRAMINEAE</u>							
<i>Aristida contorta</i> F. Muell.		X		X	X		
<i>Chloris ruderalis</i> Domin.		X	X	X	X		X
<i>Chrysopogon pallidus</i> (R.Br.) Trin. ex Steud.		X	X	X			
<i>Cymbopogon ambiguus</i> A. Camus	X	X	X	X			
<i>Dactyloctenium radulans</i> (R.Br.) Beauv.		X	X	X			
<i>Dichanthium affine</i> (R.Br.) A. Camus	X	X	X	X			
<i>Digitaria ctenantha</i> (F. Muell.) Hughes	X	X	X	X	X		
<i>Enneapogon pallidus</i> (R.Br.) Beauv.	X	X	X	X	X		
<i>Enneapogon polyphyllus</i> (Domin.) N.T. Burbidge	X	X	X	X			
<i>Eragrostis eriopoda</i> Benth.		X	X	X			
<i>Eragrostis setifolia</i> Nees.		X	X	X			
<i>Eriachne mucronata</i> R. Br.		X	X	X			
<i>Eriachne obtusa</i> R.Br.		X	X	X			
<i>Eulalia fulva</i> (R.Br.) O. Kuntze	X	X	X	X	X	X	X
<i>Panicum cymbiforme</i> Hughes	X	X	X	X	X		X
<i>Panicum decompositum</i> R.Br.							
<i>Paspalidium clementii</i> (Domin.) C.E. Hubb.		X	X	X			
<i>Paspalidium tabulatum</i> (Hack.) C.E. Hubb.		X	X	X			
<i>Setaria carnei</i> Hitchcock	X	X	X	X			
<i>Setaria dielsii</i> Herm.		X	X	X			
<i>Sorghum plumosum</i> (R.Br.) Beauv.	X	X	X	X			

THE FLORA OF THE DAMPIER ARCHIPELAGO (Cont.)

Spinifex longifolius R.Br.
 Sporobolus virginicus (L.) Kunth.
 Triodia pungens R.Br.
 Themeda australis (R.Br.) Staps.

CYPERACEAE

Cyperus bulbosus Vahl.
 Cyperus cunninghami (C.B. Clark) C.A. Gardn.
 Cyperus vaginatus R.Br.
 Fimbristylis shultzei Boeckl.

COMMELINACEAE

Commelina ensifolia R.Br.

Angiospermae - Dicotyledonae

MORACEAE

Ficus orbicularis A. Cunn. ex Miq.
 Ficus platypoda A. Cunn.

PROTEACEAE

Hakea lorea R.Br.

CHENOPODIACEAE

Arthrocnemum cf. halocnemoides Nees.
 Arthrocnemum sp.
 Atriplex isatidea Moq.
 Atriplex semilunaris Allen
 Enchylaena tomentosa R.Br.
 Rhagodia preissii Moq.

	Dolphin	Angel	Gidley	Legendre	W. Lewis	Enderby	Rosemary
Spinifex longifolius R.Br.	X	X	X	X	X	X	X
Sporobolus virginicus (L.) Kunth.	X	X	X	X	X	X	X
Triodia pungens R.Br.	X	X	X	X	X	X	X
Themeda australis (R.Br.) Staps.	X	X	X	X	X	X	X
Cyperus bulbosus Vahl.	X		X				
Cyperus cunninghami (C.B. Clark) C.A. Gardn.	X	X	X		X		
Cyperus vaginatus R.Br.	X	X					
Fimbristylis shultzei Boeckl.	X			X			
Commelina ensifolia R.Br.	X				X	X	
Ficus orbicularis A. Cunn. ex Miq.	X	X	X		X		
Ficus platypoda A. Cunn.	X	X	X	X			
Hakea lorea R.Br.	X				X	X	
Arthrocnemum cf. halocnemoides Nees.	X				X	X	
Atriplex isatidea Moq.	X	X	X		X		
Atriplex semilunaris Allen	X	X	X	X	X		
Enchylaena tomentosa R.Br.	X	X	X	X	X		
Rhagodia preissii Moq.	X	X	X	X			X

