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VEGETATION MAPS OF FOUR LARGE ISLANDS NEAR ALBANY, WESTERN AUSTRALIA

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ABSTRACT

Vegetation maps and commentary are provided for the four largest islands (Bald, Eclipse, Breaksea, Michaelmas) near Albany, Western Australia. The units mapped were recognized by a mixture of structural and floristic criteria. The number of units mapped ranged from four (Eclipse I.) to nine (Breaksea I.). Vegetation structure and floristics of each island are discussed briefly in the context of exposure to salt-bearing winds, geology, and nesting seabirds.

It is argued that description of the vegetation of large islands of the South-western and southern coastlines of Australia has important scientific value. These islands provide a baseline which could aid understanding of the long term effects of Aboriginal firing on the vegetation of the mainland coast.

INTRODUCTION

Bald, Eclipse, Breaksea and Michaelmas Islands, although only four of the 300 islands near the southern coastline of Western Australia, are amongst the largest. They differ markedly in vegetation because of differences in area, maximum elevation, distance from the mainland and degree of exposure and orientation to the swell (coming from the southwest).

The purpose of this paper is to provide vegetation maps with detailed commentaries for the four islands. Short descriptions of the vegetation present on smaller islands near Albany are supplied, and brief comparisons are made between the vegetation present on islands and on peninsulas and headlands on the adjacent mainland. This is a companion paper to Abbott (in press b), which deals with plant species richness of islands and coastal mainland sites near Albany, analysed mathematically.

Vegetation maps for the four large islands were constructed from extensive reconnaissance on the ground and interpretation of large-scale

aerial photographs (1:4400 to 1:15840). As in Abbott and Watson (1978) and Abbott and Black (1978) the communities mapped represent a combination of structural and floristic units.

MAPS AND COMMENTARY

1. Eclipse Island

35°11'S, 117°53'E. Area 104 ha; maximum elevation 109 m (north of centre); isolation, 6.1 km from mainland at Cave Point; orientation of long axis, east/west; degree of exposure to swell, high; visited 4-15 April 1975; rock type, granite-gneiss; number of plant species recorded, 51; usage by seabirds, four hole-nesting and one surface-nesting species breed on the island (Fullagar 1978). Recorded human disturbance: Sealers frequented the island when the settlement at King George Sound was founded in 1826 (Lockyer 1827). A lighthouse was established and manned by three families from 1926 but was automated in 1975. A fire in 1968 burnt a small portion of the NW part of the island. Rabbits are present.

The most extensive plant communities are designated *Carpobrotus* and *Zantedeschia* in Fig. 1. The *Carpobrotus* one, however, actually conceals a more diverse community. Although *Carpobrotus virescens* is nearly everywhere the dominant element, in some places other species become locally codominant and change the structure from herbland to open-heath. On the eastern hill (elevation 44 m), *Andersonia sprengelioides*, *Verticordia plumosa*, *Boronia alata* and *Dodonaea ceratocarpa* are codominant. Soils here are so poorly developed that the eastern hill is the only place on the island

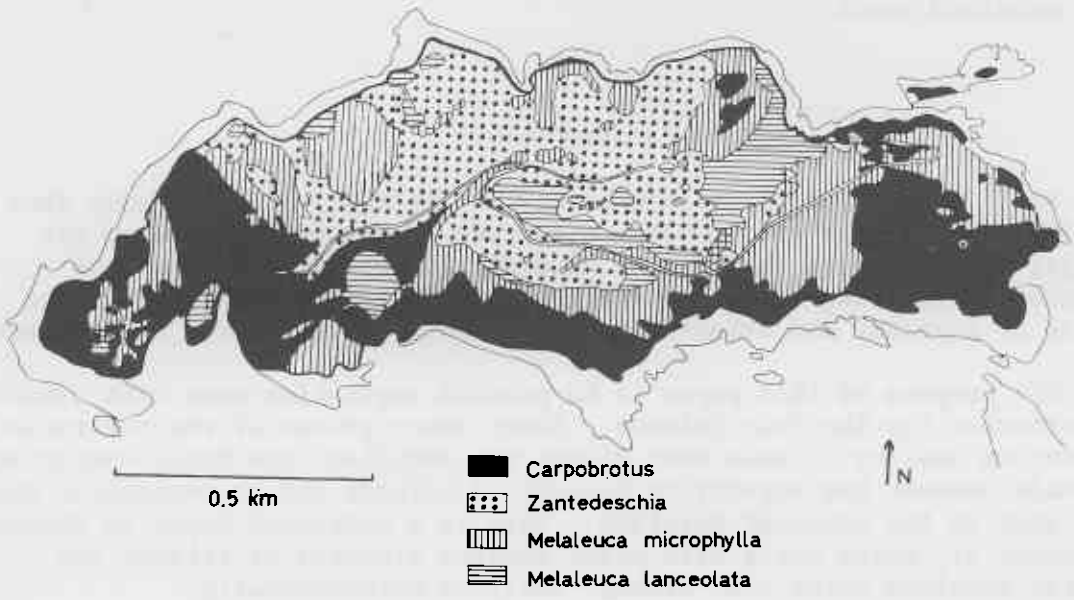

Fig. 1. Vegetation map of Eclipse Island.

lacking nesting seabirds. Nearer the coast *Calocephalus brownii, Senecio lautus, Poa poiformis, Lepidosperma gladiatum, Scirpus nodosus* and *Sporobolus virginicus* are prominent members of the *Carpobrotus* unit as mapped. With increasing distance from the sea *Boronia alata, Leucopogon revolutus, Stylidium adnatum, Verticordia plumosa, Thryptomene saxicola, Chorilaena quercifolia, Andersonia sprengelioides* and *Hibbertia cuneiformis* become more conspicuous and generally increase from 1 m to 2 m in height.

On the other hand the *Zantedeschia* community is virtually monospecific, and is best developed on the more sheltered (northern) slopes of the island. It consists of the Arum Lily *Zantedeschia aethiopica*, evidently an escape from a lighthouse keeper's garden since 1926. As it dies off in summer, much bare soil is then exposed and probably washed from the island. *Zantedeschia* grows to 1 m and clearly excludes many native species, probably those constituting the open-heath of the *Carpobrotus* community.

The remaining two communities mapped are the tallest on the island, and consist of nearly pure stands of one or other of two *Melaleuca* species. Maximum heights reached are 6 m (*M. microphylla*) and 12 m (*M. lanceolata*). The tallest *M. lanceolata* trees are restricted to the most sheltered valley on the island, running NE from the summit into the sea. There is a sparse ground cover of *Z. aethiopica*, otherwise most is bare earth. Where openings occur, occasional bushes of *Leucopogon revolutus, Pimelea clavata, Hibbertia cuneiformis, Chorilaena quercifolia* and *Thryptomene saxicola* (this last only around exposed sheets of rock) occur. In contrast to Breaksea and Michaelmas Islands, *Agonis flexuosa* and *Rhagodia radiata* are so scarce on the island as to make no contribution to the physiognomy of the vegetation. The NE peninsula is a herbland dominated by *Carpobrotus virescens* and *Disphyma clavellatum* with scattered low bushes (0.5 m high) of *Leucopogon revolutus*.

2. Breaksea Island

35°04'S, 118°03'E. Area 102 ha; maximum elevation 102 m (east of of centre); isolation, 5.1 km from mainland at Bald Head; orientation of long axis, east/west; degree of exposure to swell, high; visited 23 August-1 September 1975; rock type, granite-gneiss with extensive aeolianite veneer; number of plant species recorded, 61; usage by seabirds, three hole-nesting and one surface-nesting species breed on the island (Abbott 1978). Recorded human disturbance: Sealers worked the island in the 1820s and a lighthouse was manned by three families from 1858 to 1926.

The vegetation units on this island have been mapped (Fig. 2) more intensively than on Eclipse Island. Over twice as many units are recognized. The dominant unit is *Rhagodia radiata*, of height 1.0-1.5 m, forming a closed-heath over much of the lee slopes of the island but only on aeolianite. Associated perennial species are *Hibbertia cuneiformis, Thryptomene saxicola, Poa poiformis, Lepidosperma gladiatum, Pimelea clavata* and *Leucopogon revoluta*. Many annuals are also present and include *Parietaria debilis, Senecio lautus, Anagallis arvensis* and *Urtica urens*. The exposed side of the island is mainly bare rock, both gneissic and aeolianite. During gales all of the southern side becomes drenched with salt spray. Consequently, its vegetated parts consist of open-herbland of *Calandrinia calyptrata* and associated species *Sarcocornia blackiana, Maireana oppositifolia, Samolus repens* and *Sporobolus virginicus*, and tussock grassland (1 m high) of *Poa poiformis* with *Calocephalus brownii, S. repens, M. oppositifolia, S. virginicus* and *Apium prostratum*.

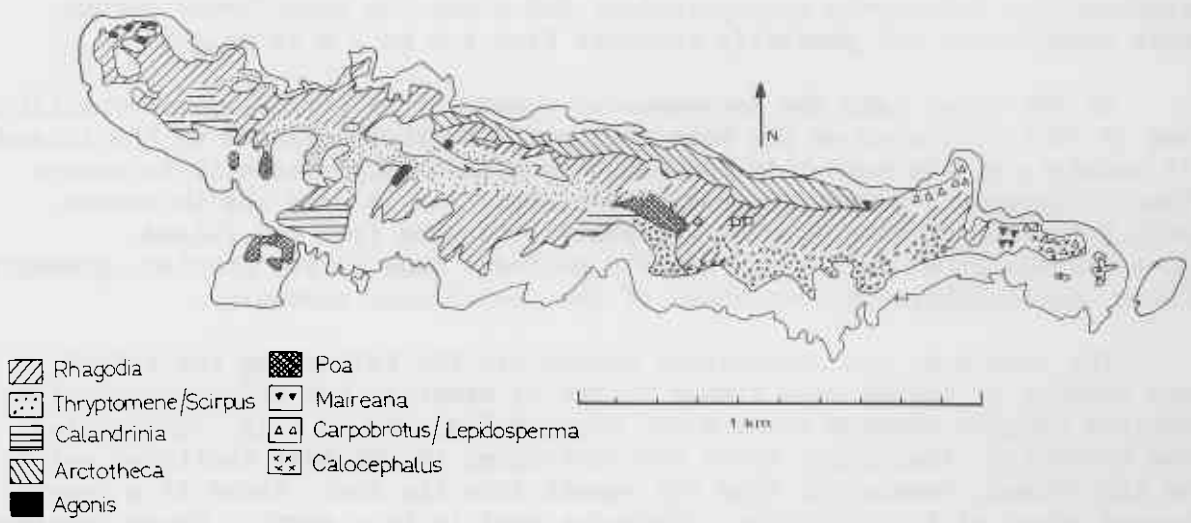

Fig. 2. Vegetation map of Breaksea Island.

On the backbone of the island, largely gneissic, and elsewhere on the island wherever gneisses are exposed is present an open-heath comprising *Thryptomene saxicola*, *Cheilanthes tenuifolia*, *Leucopogon revolutus* and *Scirpus nodosus*. *T. saxicola* and *L. revolutus* do not occur east of the houses. *Agonis flexuosa* is represented by a tiny grove of bushes and trees (1-5 m) at two places on the island. A large area dominated by Capeweed *Arctotheca calendula* is present north of the lighthouse buildings; this is of vigorous growth with plants having large leaves and reaching 0.5 m in height. Although *Zantedeschia aethiopica* is present, only a few plants were found about the lighthouse buildings. I do not know why this species has not spread as widely as it has on Eclipse Island, but the garden escape *Cotyledon orbiculata* has a wide range about the buildings. All vegetation units on Breaksea Island are burrowed by nesting seabirds (Abbott 1978).

3. Michaelmas Island

35°03'S, 118°02'E. Area 90 ha; maximum elevation 152 m (at east end); isolation, 2.2 km from mainland at Herald Point and 1.4 km north of Breaksea Island; orientation of long axis, east/west; degree of exposure to swell, low (sheltered by Breaksea Island and Flinders Peninsula); visited 4 September-14 September 1975; rock type, granite-gneiss with aeolianite capping on northern slopes only; number of plant species recorded, 78; usage by seabirds, two hole-nesting species breed (Abbott 1978). Recorded human disturbance: A severe fire was lit on the island in 1826 by sealers (Lockyer 1827).

Seven units were recognized (Fig. 3). A mixture of closed-herbland and open-heath, called '*Carpobrotus* complex' in Fig. 3, occurs on the northern slopes; it is extraordinarily rich in codominant species, including *Carpobrotus virescens*, *Threlkeldia diffusa*, *Tetragonia amplexicoma*, *Olearia*

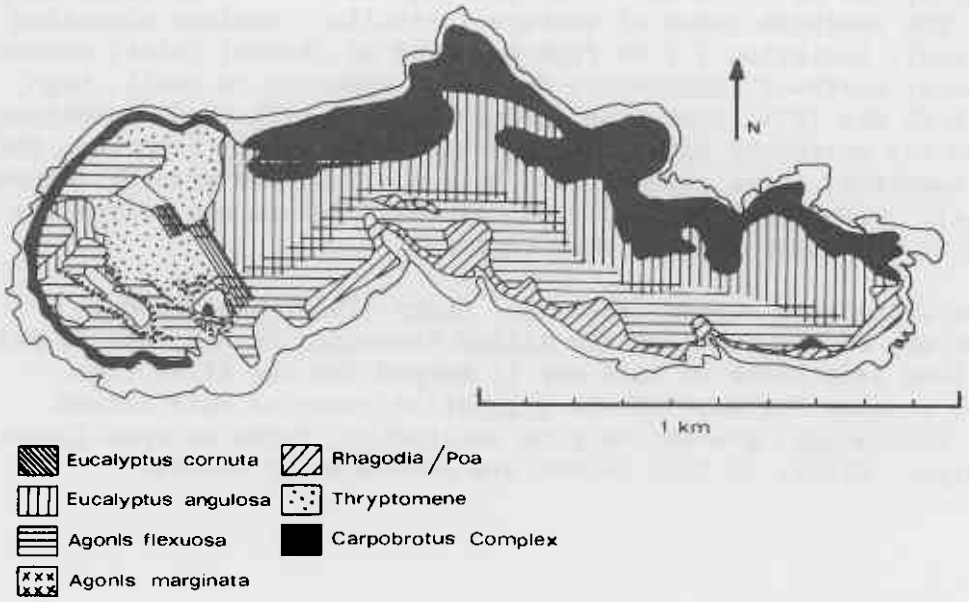

Fig. 3. Vegetation map of Michaelmas Island.

axillaris, *Rhagodia radiata*, *Calandrinia calyptrata*, *Westringia dampieri*, *Maireana oppositifolia* and *Samolus repens*. Where aeolianite cliffs are present the vegetation is sparser (open-heath), with *O. axillaris*, *Acacia littorea*, *A. cyclops* and *W. dampieri* more predominant. On the backbone of the island there is closed-forest of *Eucalyptus angulosa*, with trees to 12 m high. Within this forest little understorey is present and there is deep leaf litter and very few herbs. The chief species comprising the understorey are *Hibbertia cuneiformis* (to 1.1 m), *Leucopogon parviflorus* (to 3 m), *Boronia alata* (over 3 m), *Agonis flexuosa* (over 3 m), *Albizia lophantha* (over 6 m), *Pimelia clavata* and *Chorilaena quercifolia* (over 3 m), *Clematis pubescens* and *Stylidium adnatum*. Between the western dome and the remainder of the island there is a small valley, 30-60 m wide, dominated by *Eucalyptus cornuta* (height to 12 m). *Thryptomene saxicola* and *Agonis marginata* occur around the extensive exposures of gneisses on the western dome. On the thin soil over this rock are to be found moss mats with *Cheilanthes tenuifolia*, *Thryptomene saxicola*, *Andersonia sprengelioides*, *Hakea suaveolens* and *H. oleifolia*.

Agonis flexuosa forms extensive open-heath on the south side of the island and the western sides of the dome. Much of this *Agonis* appears senescent. *Rhagodia radiata* closed-heath and *Poa poiformis* closed-tussock grassland patchily occur on the lower slopes of the south side of the island. Many small annuals, including *Senecio lautus*, *Apium prostratum*, *Crassula macrantha* and *Parietaria debilis*, as well as the perennial sedges *Lepidosperma gladiatum* and *Scirpus nodosus* are found here. This was the only vegetation unit on the island in which burrow-nesting seabirds were found (Abbott 1978b). Areas of slumping on the southern slopes have been colonized by *Calandrinia calyptrata*, *Parietaria debilis*, *Carex preissii*, etc. to form an open-herbland.

4. Bald Island

34°55'S, 118°26'E. Area 717 ha (making the island the third largest island of the southern coast of Western Australia); maximum elevation 311 m (near SE end); isolation 1.2 km from mainland at Channel Point; orientation of long axis, northwest/southwest; degree of exposure to swell, high; visited 14-25 May 1976; rock type, granite-gneiss with eroded aeolianite capping on the northwest corner; number of plant species recorded, 104; usage by seabirds, three species (all hole-nesting) are present (Abbott in press a). Recorded human disturbance: Bald Island was leased for agistment in the early part of this century.

Seven units were mapped (Fig. 4). Storr (1965) published a vegetation map of the parts of the island traversed by him; the SE part of the island left blank on this map is mapped for the first time. Four units account for most of the vegetative cover of Bald Island. *Melaleuca lanceolata*, present only on aeolianite, forms an open-forest to 12 m high. Breaks in this forest are dominated by several

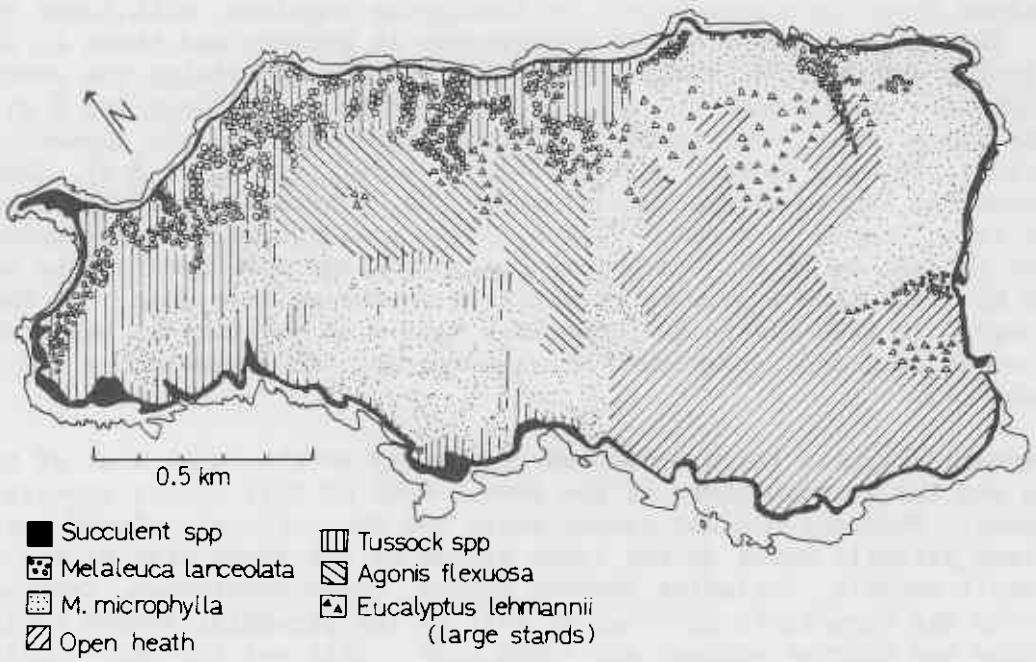

Fig. 4. Vegetation map of Bald Island

species of bushes, namely *Phebalium rude*, *Myoporum tetrandrum*, *Templetonia retusa* and *Thomasia solanacea*, several species of shrubs, namely *Rhagodia radiata*, *Spyridium globulosum* and *Pimelea clavata*, and various species of ground covers including *Poa poiformis*, *Parietaria debilis*, *Stylidium adnatum* and *Senecio lautus*.

Agonis flexuosa occurs virtually as a pure stand on the sheltered upper slopes of the island. This low closed-forest has a deep leaf litter; *Poa poiformis* is the main, albeit sparse, ground cover. Where there are breaks resulting from exposures of bare gneisses a lithic vegetational complex is present. The main species are *Thryptomene saxicola*, *Danthonia caespitosa*, *Scirpus nodosus*, *Lepidosperma angustatum*, *Hibbertia cuneiformis* and *Phyllanthus calycinus*. The exposed slopes of the island are occupied by a closed-scrub (3-5 m high) dominated by *Melaleuca microphylla* and a most unusual open-heath/open-scrub. Species associated with *M. microphylla* include *Thryptomene saxicola* (to 1 m), *Lepidosperma drummondii*, *L. angustatum*, and *Darwinia vestita* (to 1.1 m) with *Andersonia sprengelioides*, *Dodonaea ceratocarpa*, *Athrixia nivea*, *Platysace compressa*, *Danthonia caespitosa*, *Eutaxia obovata*, *Chorilaena quercifolia* and *Agonis marginata* typically around granite boulders. The open-heath/open-scrub (1-5 m high) is floristically similar, though still very depauperate, to heath on mainland sites studied. It is also the only vegetation unit on the island lacking nesting seabirds. It is difficult to single out any one species as dominant because the heath is a mosaic of patches each dominated by one of about 15 species. These include *Andersonia sprengelioides*, *Acacia leioderma*, *Agonis linearifolia*, *A. marginata*, *Banksia praemorsa* (to 2 m), *Boronia albiflora*, *Danthonia caespitosa*, *Eucalyptus lehmannii*, *Gastrolobium bilobum*, *Hakea elliptica*, *H. suaveolens*, *Lepidosperma angustatum*, *Leucopogon revolutus*, *Melaleuca diosmifolia* and *M. microphylla*.

Smaller vegetation units on Bald Island are the zone of succulent species, closed tussock-grassland and *Eucalyptus lehmannii* closed-forest. The zone of succulent, halophytic species occurs on the perimeter of the island and on the northern peninsula. Dominant species on gneisses are *Disphyma clavellatum*, *Carpobrotus virescens*, *Sarcocornia blackiana*, *Maireana oppositifolia*, *Apium prostratum*, *Sporobolus virginicus* and *Calocephalus brownii* whereas on aeolianite *D. clavellatum* and *Atriplex paludosa* are dominant. Closed tussock-grassland is chiefly made up of three species: The grass *Poa poiformis* and the sedges *Scirpus nodosus* and *Lepidosperma gladiatum*, although bushes of *Pimelea clavata*, *Hibbertia cuneiformis*, *Phyllanthus calycinus*, *Rhagodia radiata*, *Solanum symonii* and *Spyridium globulosum* are widely scattered throughout. This unit occurs as breaks throughout the *Melaleuca microphylla* unit as well as along the backbone and in the NW corner of the island. The remaining unit, *Eucalyptus lehmanii* closed-forest, is not as extensive as indicated by Storr (1965). Instead, it forms patchy stands mainly in the eastern portion of the island. Another important difference between Storr's map and mine is that the *Melaleuca microphylla* and the open heath units recognized here were not distinguished by Storr.

VEGETATION OF SMALLER ISLANDS, AND PENINSULAS AND HEADLANDS OF MAINLAND

The vegetation of the other islands and of the mainland sites was not mapped because of their structural uniformity, and in the case of the mainland sites because of their extraordinary floristic richness, making it

impossible for me to detect dominant species. Instead very brief descriptions will be given.

Only 11 of the remaining islands landed on were vegetated. Details of their area and elevation are included in Abbott (in press b). Flat Rock had only about 1 m^2 of *Lepidium foliosum* present. Coffin Island is a moderately-sized (28 ha) island, fully exposed to the SW swell, and consequently with uniform vegetative cover. It is dominated by *Rhagodia radiata* (1-2 m), with *Carpobrotus virescens* and *Sporobolus virginicus* common near the edges. A few bushes of *Anthocercis viscosa* (2 m) and *Stypandra grandiflora* (0.5 m) occur on sheltered parts but they make little contribution to the physiognomy of the vegetation.

The rest of the islands are small (10 ha or less) and sheltered. Vegetative cover on the smallest, Seal Island, an unnamed islet adjacent to Mistaken Island, Green Island and Gull Rock, is scanty and of a very different floristic composition from the other islands or the mainland. *Lavatera arborea, L. plebeia, Carpobrotus virescens, Ehrharta longiflora, Avena barbata* and *Phytolacca octandra* are variously codominant, and other weeds are also present.

Mistaken Island is covered with *Agonis flexuosa* trees (5 m) on its sheltered (northern) side but elsewhere *Anthocercis viscosa* (to 4 m), *Lhotskya ericoides* (to 2 m), *Ehrharta longiflora* (to 1.5 m), *Leucopogon revoluts, Pimelea clavata, Acacia cyclops* and *Cheilanthes tenuifolia* are codominant. A few large Yate (*Eucalyptus cornuta*) trees (6 m) are present on the summit.

The predominant vegetation unit recognized on the exposed mainland sites is open-heath. *Scaevola nitida, Pimelea ferruginea* and *Acacia littorea* are very common where aeolianite occurs. On soils derived from gneissic/granitic rocks *Darwinia diosmoides* and *Melaleuca microphylla* are widespread. Small areas of bushes (up to 3 m high) are present on most sites, but forest occurs only on Flinders Peninsula where a small patch of *Agonis flexuosa* is present.

Nearly all of the sheltered mainland sites studied are devoid of aeolianite. *Darwinia diosmoides, Agonis marginata, Eucalyptus calophylla, Agonis flexuosa* and *Andersonia sprengelioides* are conspicuous and widespread. The commonest vegetation unit is closed-heath. Closed-scrub is present on the two largest sites (Point Possession and Vancouver Peninsula), but only the Vancouver Peninsula possesses *Eucalyptus*-dominated open-forest (as Jarrah/Marri).

THE SCIENTIFIC VALUE OF VEGETATION MAPS OF ISLANDS OF SOUTH-WESTERN AND SOUTHERN AUSTRALIA

Vegetation maps of islands like those presented in this paper have two uses. The first is obvious; maps of the current vegetation will provide a baseline. As the population of Western Australia expands over the next 100 years (and beyond) it is to be expected that pressure will be put on the authorities to make the islands available for recreation. Ideally we should have had vegetation maps produced soon after settlement, but as none were produced we have to accept that maps produced now will be the yardstick with which future changes will be compared.

The second use of island vegetation maps concerns the impact of Aboriginal man on the Western Australian landscape. It is widely known that many of the islands of South-western Australia, South Australia and Bass Strait have acted as 'museums' for mammal species that are now extinct or endangered on the Australian mainland (Ride 1970). It is, however, less appreciated that these islands are important because they were inaccessible to Aborigines. Aborigines from about Onslow to Adelaide either lacked watercraft (Davidson 1935) or did not visit islands (Abbott 1980) Elsewhere islands were frequently visited. The islands of South-western Australia and southern Australia therefore suffered no fires, other than those started by lightning, for 5,000 - 10,000 years depending on when they were isolated by the rise in sea level. In contrast the mainland was repeatedly burnt by Aborigines (Hallam 1975).

The accurate description of the vegetation of islands along the coastline of South-western Australia and southern Australia needs to be completed because the islands and mainland form a natural 'experiment' - the islands are the 'controls' for the long-term firing 'treatment' of the mainland coast.

It needs to be stated that there are probably no islands of South-western Australia or southern Australia that have not been disturbed in some way by European man. In most cases we have no idea how severe the impact of the earliest Europeans (sealers, whalers, castaways) was. The very largest islands have been used for agriculture and grazing by sheep, goats or rabbits (Saint Peter, Flinders, Waldegrave, Thistle, Wedge, several of the Sir Joseph Banks Islands, Boston, and Kangaroo Islands in South Australia; King and Flinders Islands in Bass Strait). Smaller ones have been used for agistment (Woody, Gull, Charley, Sandy Hook, and Bald Islands in Western Australia). Those islands with long-established lighthouses on them (South Island of the South Neptune Group in South Australia, Breaksea I., Eclipse I., and Goose, Deal, and Swan Islands in Bass Strait) have suffered some alterations to vegetation through clearing, limited grazing, and the introduction of alien plants. However, the larger islands adjacent to the southern coast of Western Australia have certainly suffered less disturbance than those of South Australia and Bass Strait.

ACKNOWLEDGEMENTS

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REFERENCES

Abbott, I. (1978). Seabird Islands, numbers 55 and 56. Breaksea and Michaelmas Islands, King George Sound, Western Australia. *Corella* 2: 24-27.

Abbott, I. (1980). Aboriginal man as an exterminator of wallaby and kangaroo populations on islands round Australia. *Oecologia* 44: 347-354.

Abbott, I. (in press a). Seabird Islands series. Bald Island. *Corella*.

Abbott, I. (in press b). The transition from mainland to island, illustrated by the flora and landbird fauna of headlands, peninsulas and islands

near Albany, Western Australia. *Journal of the Royal Society of Western Australian.*

Abbott, I. and Black, R. (1978). An ecological reconnaissance of four islands in the Archipelago of the Recherche, Western Australia. *Journal of the Royal Society of Western Australia* 60: 115-128.

Abbott, I. and Watson, J.R. (1978). The soils, flora, vegetation and vertebrate fauna of Chatham Island, Western Australia. *Journal of the Royal Society of Western Australia* 60: 65-70.

Davidson, D.S. (1935). The chronology of Australian watercraft. *Journal of the Polynesian Society* 44: 1-16, 69-84, 137-152, 193-207.

Fullagar, P.J. (1978). Seabird Islands, number 54. Eclipse Island, Western Australia. *Corella* 2: 21-23.

Hallam, S.J. (1975). *Fire and Hearth: A study of Aboriginal usage and European usurpation in South-western Australia.* Australian Institute of Aboriginal Studies, Canberra.

Lockyer, E. (1827). Despatches to Colonial Secretary Macleay. *Historical Records of Australia,* Series 3, Volume 6: 453-548.

Ride, W.D.L. (1970). *A guide to the native mammals of Australia.* Oxford University Press, Melbourne.

Storr, G.M. (1965). Notes on Bald Island and the adjacent mainland. *Western Australian Naturalist* 9: 187-196.

APPENDIX

Distribution of plant species on the islands near Albany

Note (1): Several records for Bald Island result from collections made by N.G. Marchant or G.M. Storr. Such species that were not found by me are indicated below by either (Marchant) or (Storr).

(2): * denotes alien plant species.

Acacia alata R.Br., Mimosaceae: Bald
A. cyclops A. Cunn. ex G. Don, Mimosaceae: Mistaken, Michaelmas
A. leioderma B.R. Maslin, Mimosaceae: Bald
A. littorea B.R. Maslin, Mimosaceae: Michaelmas
Actinobole uliginosum (A. Gray) Eichler, Mimosaceae: Gull Rk, Bald
Agonis flexuosa (Spreng.) Schau., Myrtaceae: Eclipse, Seal, Mistaken, Michaelmas, Breaksea, Bald
A. linearifolia (DC.) Schau., Myrtaceae: Bald
A. marginata (Labill.) Schau., Myrtaceae: Michaelmas, Bald
Agrostis avenacea Gmel., Poaceae: Seal, Breaksea, Bald
**Aira cupaniana* Guss., Poaceae: Coffin, Bald
Albizia lophantha (Willd.) Benth., Mimosaceae: Michaelmas
**Anagallis arvensis* L., Primulaceae: Eclipse, islet next to Mistaken, Mistaken, Green, Michaelmas, Breaksea, Bald
Anarthria prolifera R.Br., Restionaceae: Bald
Andersonia sprengelioides R.Br., Epacridaceae: Eclipse, Michaelmas, Bald
Anthocercis viscosa R.Br., Solanaceae: Mistaken, Gull Rk, Coffin
Apium prostratum Labill., Apiaceae: Eclipse, islet next to Mistaken, Mistaken, Michaelmas, Breaksea, Coffin, Bald
**Arctotheca calendula* (L.) M. Levyns, Asteraceae: Green, Gull Rk, Breaksea
**A. populifolia* (Berg.) T. Norl., Asteraceae: Gull Rk
Asplenium adiantoides (L.) Lam., Aspleniaceae: Michaelmas, Bald
Athrixia nivea (Steetz) T. Norl., Asteraceae: Bald
Atriplex paludosa R.Br., Chenopodiaceae: Green, Bald

A. patula L., Chenopodiaceae: Mistaken, Coffin
**Avena barbata* Brot., Poaceae: Seal, Gull Rk, Michaelmas
Banksia praemorsa Andrews, Proteaceae: Bald
Boronia alata Sm., Rutaceae: Eclipse, islet next to Mistaken, Mistaken, Michaelmas, Breaksea, Bald
B. albiflora (R.Br.) Benth., Rutaceae: Bald
**Briza maxima* L., Poaceae: Mistaken, Coffin
**B. minor* L., Poaceae: Mistaken
Bromus arenarius Labill., Poaceae: islet next to Mistaken, Michaelmas
**B. diandrus* Roth., Poaceae: Seal, Coffin
Bulbinopsis semibarbata (R.Br.) Borzi, Liliaceae: islet next to Mistaken, Mistaken
Cakile maritima Scop., Brassicaceae: Green
Caladenia ? flava R.Br., Orchidaceae: Bald
C. latifolia R.Br., Orchidaceae: Mistaken, Michaelmas, Breaksea
Calandrinia calyptrata Hook.f., Portulacaceae: Seal, Mistaken, Gull Rk, Michaelmas, Breaksea, Coffin
Callitris preissii Miq., Cupressaceae: Bald
Calocephalus brownii (Cass.) F. Muell., Asteraceae: Eclipse, Michaelmas, Breaksea, Bald
Carduus tenuiflorus Curt., Asteraceae: Eclipse, Michaelmas, Breaksea, Bald
Carex preissii Nees, Cyperaceae: Eclipse, islet next to Mistaken, Mistaken, Michaelmas, Breaksea, Bald
Carpobrotus virescens (Haw.) Schwantes, Aizoaceae: Eclipse, Seal, islet next to Mistaken, Mistaken, Gull Rk, Michaelmas, Breaksea, Coffin, Bald
Casuarina huegeliana Miq., Casuarinaceae: Eclipse
Centaurium minus Gars., Gentianaceae: Eclipse, Mistaken, Bald (Storr)
Centrolepis polygyna (R.Br.) Hieron, Centrolepidaceae: Mistaken, Bald
C. strigosa (R.Br.) Roem. & Schultz, Centrolepidaceae: Eclipse, islet next to Mistaken, Mistaken, Coffin, Bald
**Cerastium glomeratum* Thuill., Caryophyllaceae: islet next to Mistaken, Mistaken, Michaelmas, Breaksea
Cheilanthes tenuifolia (Burm.f.) Sw., Adiantaceae: Eclipse, Mistaken, Michaelmas, Breaksea, Bald
Chemaescilla corymbosa (R.Br.) F. Muell., Liliaceae: Michaelmas, Bald
**Chenopodium murale* L., Chenopodiaceae: Green, Gull Rock
Chorilaena quercifolia Endl., Rutaceae: Eclipse, Michaelmas, Bald
**Cirsium vulgare* (Savi) Ten., Asteraceae: Eclipse
Clematis pubescens Hueg., Ranunculaceae: Michaelmas, Breaksea, Bald
Cotula australis (Less.) Hook., Asteraceae: Seal, islet net to Mistaken, Mistaken, Green
C. coronopifolia L., Asteraceae: Mistaken, Gull Rk
**Cotyledon orbiculata* L., Crassulaceae: Breaksea
Crassula macrantha (Hook.f.) Diels, Crassulaceae: Seal, islet next to Mistaken, Mistaken, Michaelmas, Breaksea, Coffin
Dampiera cuneata R.Br., Goodeniaceae: Bald
Danthonia caespitosa Gaud., Poaceae: Michaelmas, Bald
Darwinia vestita (Endl.) Benth., Myrtaceae: Bald
Daucus glochidiatus (Labill.) Fisch. et al., Apiaceae: Michaelmas, Bald
Dianella revoluta R.Br., Liliaceae: Eclipse, Mistaken, Michaelmas, Breaksea, Coffin, Bald
Dichondra repens R. & G. Forst., Convolvulaceae: ? Seal, Mistaken, ? Gull Rk, Michaelmas, Breaksea, Bald
Disphyma clavellatum (Haw.) Chinnock, Aizoaceae: Eclipse, Michaelmas, Breaksea, Bald
Dodonaea ceratocarpa Endl., Sapindaceae: Eclipse, Bald
Drosera pallida Lindl., Droseraceae: Mistaken, Michaelmas
**Ehrharta longiflora* Sm., Poaceae: Eclipse, Seal, islet next to Mistaken, Mistaken, Green, Gull Rk, Michaelmas, Breaksea, Coffin

Enchylaena tomentosa R.Br., Chenopodiaceae: Bald (Storr)
**Erodium cicutarium* (L.) L'Herit., ex Ait., Geraniaceae: Eclipse, Seal
Eucalyptus angulosa Schau., Myrtaceae: Michaelmas
E. cornuta Labill., Myrtaceae: Mistaken, Michaelmas
E. lehmanii (Schau.) Benth., Myrtaceae: Bald
**Euphorbia paralias* L., Euphorbiaceae: islet next to Mistaken, Mistaken, Breaksea, Bald
**E. peplus* L., Euphorbiaceae: Bald
Eutaxia obovata (Labill.) C.A. Gardn., Fabaceae: Michaelmas, Bald
Exocarpos sparteus R.Br., Santalaceae: Mistaken
**Fumaria muralis* Sond. ex Koch., Papaveraceae: Breaksea
Gahnia trifida Labill., Cyperaceae: Bald
Galium sp., Rubiaceae: Michaelmas, Bald
Gastrolobium bilobum R.Br., Fabaceae: Mistaken, Bald
**Geranium molle* L., Geraniaceae: islet next to Mistaken, Mistaken, Gull Rk, Michaelmas, Bald
**Gladiolus vittatus* Homen, Iridaceae: Mistaken
Gnaphalium candidissimum Lam., Asteraceae: islet next to Mistaken, Mistaken
G. gymnocephalum DC., Asteraceae: Coffin
G. indutum Hook.f., Asteraceae: Breaksea
G. luteoalbum L., Asteraceae: Michaelmas
G. ? sphaericum Willd., Asteraceae: islet next to Mistaken
Hakea elliptica (Sm.) R.Br., Proteaceae: Bald
H. oleifolia (Sm.) R.Br., Proteaceae: Michaelmas
H. suaveolens R.Br., Proteaceae: Michaelmas, Bald
Haloragodendron racemosum (Labill.) Orchard, Haloragaceae: Bald
Hardenbergia comptoniana Benth., Fabaceae: Michaelmas
Hibbertia cuneiformis (Labill.) Gilg., Dilleniaceae: Eclipse, Seal, islet next to Mistaken, Mistaken, Green, Michaelmas, Breaksea, Coffin, Bald
**Hordeum leporinum* Link, Poaceae: Eclipse, Seal, Gull Rk
Hydrocotyle diantha DC., Apiaceae: islet next to Mistaken, Mistaken, Michaelmas, Breaksea, Bald
Hymenolobus procumbens (L.) Nutt., Brassicaceae: Michaelmas, Bald
**Hypochoeris glabra* L., Asteraceae: islet next to Mistaken, Mistaken, Michaelmas, Breaksea, Coffin, Bald
**Inula graveolens* (L.) Desf., Asteraceae: Eclipse
Juncus bufonius L., Juncaceae: Green
J. kraussii Hochst., Juncaceae: Green
J. pallidus, Juncaceae: Eclipse, Bald (Storr)
Lasiopetalum indutum Steud., Sterculiaceae: Bald (Marchant)
**Lavatera arborea* L., Malvaceae: Seal, Green, Gull Rk
L. plebeia Sims, Malvaceae: Seal, Green, Gull Rk, ? Coffin (sp. uncertain)
Lepidium foliosum Desv., Brassicaceae: Seal, Flat Rk, Gull Rk, Coffin
L. hyssopifolia Desv., Brassicaceae: Bald
Lepidosperma angustatum R.Br., Cyperaceae: Bald
L. drummondii Benth., Cyperaceae: Bald
L. gladiatum Labill., Cyperaceae: Eclipse, islet next to Mistaken, Mistaken Michaelmas, Breaksea, Bald
Leucopogon parviflorus (Andr.) Lindl., Epacridaceae: Michaelmas
L. revolutus R.Br., Epacridaceae: Eclipse, Mistaken, Michaelmas, Breaksea, Coffin, Bald
Lhotzkya ericoides Schau., Myrtaceae: Mistaken
Lobelia alata Labill., Lobeliaceae: Eclipse, Seal, islet next to Mistaken, Gull Rk, Michaelmas, Coffin, Bald
**Lolium rigidum* Gaud. var. *rottbollioides* Boiss., Poaceae: Green
**Lotus subbiflorus* Lag., Poaceae: Fabaceae: Mistaken, Gull Rk
Lyperanthus nigricans R.Br., Orchidaceae: Mistaken, Bald
Maireana oppositifolia (F. Muell.) P.G. Wilson, Chenopodiaceae: Eclipse, Michaelmas, Breaksea, Bald

**Malva parviflora* L., Malvaceae: Gull Rk
**Medicago polymorpha* L., Fabaceae: Mistaken, Green, Breaksea
Melaleuca diosmifolia Andrews, Myrtaceae: Bald
M. lanceolata Otto, Myrtaceae: Eclipse, Bald
M. microphylla Sm., Myrtaceae: Eclipse, Bald
Millotia tenuifolia Cass., Asteraceae: Michaelmas
Myoporum oppositifolium R.Br., Myoporaceae: Michaelmas, Breaksea
M. tetrandrum (Labill.) Domin., Myoporaceae: Bald
Olearia axillaris (DC.) Benth., Asteraceae: islet next to Mistaken, Michaelmas, Breaksea, Bald
Oxalis corniculata L., Oxalidaceae: Eclipse, Mistaken, Michaelmas, Breaksea, Bald
**O. pescaprae* L., Oxalidaceae: islet next to Mistaken
Oxylobium ellipticum (Labill.) R.Br., Fabaceae: Mistaken, Coffin
**Parentucellia viscosa* (L.) Caruel., Scrophulariaceae: Mistaken
Parietaria debilis Forst.f., Urticaceae: Michaelmas, Breaksea, Coffin, Bald
Pelargonium australe Willd., Geraniaceae: Michaelmas, Breaksea, Coffin, Bald
Phebalium rude Bartl., Rutaceae: Bald
Phyllanthus calycinus Labill., Euphorbiaceae: Bald
**Phytolacca octandra* L., Phytolaccaceae: Green
Pimelea clavata Labill., Thymeliaceae: Eclipse, Mistaken, Breaksea, Bald
Platysace compressa (Labill.) Norman, Apiaceae: Bald
**Poa annua* L., Poaceae: Seal, Mistaken, Green, Gull Rk, Breaksea
P. poiformis (Labill.) Druce, Poaceae: Eclipse, Seal, islet next to Mistaken, Mistaken, Michaelmas, Breaksea, Coffin, Bald
**Polycarpon tetraphyllum* (L.) L., Caryophyllaceae: Seal, islet next to Mistaken, Mistaken, Green, Gull Rk
Polypogon maritimus Willd., Poaceae: Eclipse
Pterostylis nana R.Br., Orchidaceae: Michaelmas
Quinetia urvillei Cass., Asteraceae: Mistaken, Michaelmas
**Raphanus raphanistrum* L., Brassicaceae: Green
Rhagodia crassifolia R.Br., Chenopodiaceae: Eclipse
R. radiata Nees, Chenopodiaceae: Eclipse, islet next to Mistaken, Mistaken, Michaelmas, Breaksea, Coffin, Bald
**Romulea rosea* (L.) Eckl., Iridaceae: Mistaken
Rumex brownii Campd., Polygonaceae: islet next to Mistaken, Mistaken, Green, Breaksea
Sagina apetala L., Caryophyllaceae: Eclipse, Michaelmas, Breaksea, Coffin
Samolus repens (Forst.) Pers., Primulaceae: Eclipse, Mistaken, Michaelmas, Breaksea, Bald
Sarcocornia blackiana (Ulbr.) A.J. Scott, Chenopodiaceae: Green, Michaelmas, Breaksea, Bald
Scirpus cernuus Vahl., Cyperaceae: Mistaken, Michaelmas, Breaksea
S. nodosus Rottb., Cyperaceae: Eclipse, islet next to Mistaken, Mistaken, Gull Rk, Michaelmas, Breaksea, Coffin, Bald
Senecio lautus Forst.f. ex Willd., Asteraceae: Eclipse, Seal, islet next to Mistaken, Michaelmas, Breaksea, Coffin, Bald
S. ramosissimus DC., Asteraceae: Bald
Sida hookerana Miq., Malvaceae: Bald (Marchant)
**Sisymbrium orientale* L., Brassicaceae: Green
**Solanum nigrum* L., Solanaceae: Eclipse, Green, Gull Rk, Michaelmas
S. symonii Eichler, Solanaceae: Mistaken, Green, Gull Rk, Michaelmas, Breaksea, Bald
Sollya heterophylla Lindl., Pittosporaceae: Michaelmas, Bald (Storr)
**Sonchus oleraceus* L., Asteraceae: Eclipse, Seal, islet next to Mistaken, Mistaken, Green, Gull Rk, Michaelmas, Breaksea, Coffin, Bald
Spergularia rubra (L.) J. & C. Presl., Caryophyllaceae: Bald
Sporobolus virginicus (L.) Kunth., Poaceae: Eclipse, Mistaken, Green, Michaelmas, Breaksea, Coffin, Bald

Spyridium globulosum (Labill.) Benth., Rhamnaceae: Michaelmas
S. spadiceum (Fenzl) Benth., Rhamnaceae: Bald
Stackhousia pubescens A. Rich., Stackhousiaceae: Bald
**Stellaria media* (L.) Vill., Caryophyllaceae: Eclipse, Mistaken, Green, Gull Rk, Breaksea
Stipa flavescens Labill., Poaceae: Seal, Bald
Stylidium adnatum R.Br., Stylidiaceae: Eclipse, Mistaken, Michaelmas, Breaksea, Bald
S. fasciculatum R.Br., Stylidiaceae: Mistaken
S. glaucum Labill., Stylidiaceae: Bald
Stypandra grandiflora Lindl., Liliaceae: Coffin
Sueda australis (R.Br.) Moq., Chenopodiaceae: Green
Templetonia retusa (Vent.) R.Br., Fabaceae: Bald
Tetragonia amplexicoma (Miq.) Hook., Aizoaceae: Eclipse, Breaksea, Bald
T. tetragonoides (Pall.) Kuntze, Aizoaceae: islet next to Mistaken, Mistaken, Green
Thomasia discolor Steud., Sterculiaceae: Bald
T. solanacea J. Gay, Sterculiaceae: Bald
Threlkeldia diffusa R.Br., Chenopodiaceae: Eclipse, Michaelmas, Breaksea, Bald
Thryptomene saxicola (A. Cunn.) Schau., Myrtaceae: Eclipse, Michaelmas, Breaksea, Bald
Thysanotus patersonii R.Br., Liliaceae: Bald
**Trachyandra divaricata* (Jacq.) Kunth., Liliaceae: Michaelmas
Trachymene pilosa Sm., Apiaceae: Michaelmas
Triglochin centrocarpa Hook., Juncaginaceae: Michaelmas, Breaksea
**Triticum vulgare* L., Poaceae: Eclipse
**Tropaeolum majus* L., Tropaeolaceae: Green
Trymalium spathulatum (Labill.) Ostf., Rhamnaceae: Bald
**Urtica urens* L., Urticaceae: Eclipse, Green, Michaelmas, Breaksea, Bald
Verticordia plumosa (Desf.) Druce, Myrtaceae: Eclipse
Vittadinia sp., Asteraceae: Bald
**Vulpia myuros* (L.) Gmel., Poaceae: Michaelmas, Breaksea
Waitzia citrina (Benth.) Steetz, Asteraceae: Bald (Marchant)
Westringia dampieri R.Br., Lamianceae: Michaelmas, Bald
Zantedeschia aethiopica (L.) Spreng., Araceae: Eclipse, Green, Breaksea
Sp. indet., Amaryllidaceae: Breaksea