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THE DISCOVERY OF TASMANIA AND MAN'S EFFECT ON THE ENVIRONMENT

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Until recently the Tasmanian Aborigines were described as a race separated not only geographically but also physically and genetically from their Australian neighbours. As the scope of archeological discovery and investigation widens, the former ambiguities over racial origin and environmental balance lessen. This paper summarizes the evidence that suggests the Tasmanian natives originated from the Australian mainland and reviews the literature that suggest that rather than be in balance with his environment, Tasmanian prehistoric man was totally at its mercy.

Initially two questions must be answered, (a) from where did the Tasmanian natives come and (b) by whom was this island discovered. Let us consider the most obvious population source - the Australian mainland. From many archaeological discoveries we have good reason to believe that it is from the Australian mainland that the Tasmanian natives originated. Throughout Australia the Aborigines displayed a stone technology that had strong morphological similarities. This may be termed the Australian core tool and scraper tradition (Jones, 1971). Basically this tradition was characterised by the style of retouch and types of tools. Most of the tools were hand-held scrapers. This kind of tool dates from the earliest records of man until approximately 5,000 years B.P. (Before Present) and was characterised by a large variety of scrapers made from a core material (Fig.1) and a variety of flake scrapers with steep edges (Fig.2) and many small scrapers with delicately shaped edges (Figs.3 and 4).

As one may expect there are broad regional differences within this tradition, characterised by the frequency of certain tools used. For example, Tasmania was characterised by a higher proportion of notched, concave and nosed scrapers (Figs. 3 and 4), the coastal region of N.S.W. displays a low but persistent occurence of small, carefully made denticulate pieces and in South Eastern Australia the scrapers are smoothly re-

touched with long convex edges (Jones, 1971). Stone tool similarities would seem to link Tasmanian culture to the mainland culture.

Recent studies also tend to reduce the numbers of physical traits thought to distinguish the Tasmanians from the Southern Australian natives. For example, there is general agreement as to the similarity between Tasmanian and Australian skulls. The differences include (Jones, 1971) a longer, wider, yet less deep skull interior, a lower face with lower eye sockets and broader nasal openings. The roof of the mouth was also shorter due to a smaller area of bone at the rear of the mouth. There seems therefore, to be some deviation in facial form, yet the Australians and Tasmanians were most probably derived from a common racial stem.

Excavations by Dr. Rhys Jones at West Point, near Marrawah, revealed skeletal material which was very similar to individuals from coastal New South Wales. We can conclude that Tasmanians are probably local variants of the southern Australian population and differences that do exist are probably due to environmental pressures and genetic factors resulting from population restraints. The anatomical picture therefore fits the archaeological picture very well.

In addition to the archaeological and anthropological similarities there are definite similarities between the Tasmanian and Southeast Australian cultures. These include similarities in economic systems, organization of society, the technology of spears, waddies, baskets, huts, stone tools and in the use of ochre for burial, ceremonial practices and art.

However, after 10,000 B.P. Tasmania became an island, eventually separated from Australia by 320 km. of water. Influences that diffused through the Australian culture after this time did not affect the Tasmanian culture. This explains the absence of the dingo, boomerang, spear thrower, hafted tools, a variety of small stone types (backed microliths), adze flakes and points, compound disposal of the dead and some religious customs. (Jones, 1971).

If it is acceptable that the Tasmanians find ancestry with the Australian natives, we must now consider how they discovered Tasmania. This is quite simple. Until 10,000 years ago the Pleistocene sea level was some 60m. below its present level. Man had entered Tasmania some 23,000 years ago (Bowlder and Hope, 1976) and reached southern Tasmania by 12,000 B.P. (Goede and Murray, 1976) , as Tasmania was connected to Australia by a low land bridge (Fig.5) some 65-70 km. wide, running up the eastern side of Tasmania.

Environment

Evidence from pollen analysis at Pulbeena Swamp, N.W. Tasmania, indicates that the vegetation of North West Tasmania between 10-25,000 years B.P. consisted of grasslands in which shallow, poorly drained swamps ocurred (Colhoun, 1976). These grasslands extended across the North Coast of Tasmania (including the Bass Strait landbridge) and through the midlands to the lower reaches of the Derwent Valley. The mountains and plateaux of the centre and south west displayed alpine grasslands.

The climate into which the Aborigine first ventured was colder and drier with temperatures being 8°C lower than at present. Cold, frosty winters were succeeded by spring floods, accentuated by snow melts and followed by relatively warm and dry summers. From 11,500-9,500 B.P. marked increases in precipitation produced rapid increase and altitudinal zonation of forests - which remain the dominant vegetation today.

Throughout Australia during the Pleistocene there seem to be several environmental themes. There is evidence for an Australian dry period before 10,000 B.P. (Kershaw, 1976; Hope, 1976). This was subject to fluctuation and local variations, particularly on the coasts, with the central Australian region being affected little by Pleistocene climatic changes (Jones, 1968). After 10,000 B.P. there seems to be an increase in temperature and precipitation. Again the major impact of this change was felt in coastal areas, presenting an environment of invading forest.

The predatory relationship between the Tasmanian Aborigines and the giant marsupial is very uncertain. Goede and Murray (1976) suggest that "the mega-fauna contained in Tasmanian Pleistocene localities appears to be very similar to the mainland, particularly Southern Australia." They suggest that the mega-faunal elements in the late Pleistocene of Tasmania had been isolated from their mainland counterparts for only a short period before their extinction. However, there is still some uncertainty as to actual date of extinction. As the Tasmanian evidence is inconclusive this portion of the paper only considers the evidence from the mainland.

Australian Pleistocene fossils contain the extinct marsupials *Thylacoleo, Nototherium, Diprotodon, Phascolonus, Procoptodon* and the flightless birds *Dromornis* and *Genyornis*. Extinction of these species was very rapid and archaeological sites of less than 20,000 B.P. on the mainland do not show mega-faunal remains. The most recent dates for mega-fauna are from Keilor (Vic.) 30,000 B.P. and Lake Menindee (N.S.W.) 25,000 B.P. (Jones, 1968).

Extinction has previously been blamed on post glacial aridity. This may not be acceptable in the light of recent research as,

(a) this fauna had survived previous climatic 'drys'
(b) evidence tends to suggest these marsupials were tolerant if not well adapted to drier environments. For example the fossilized stomach contents of a *Diprotodon* contained vegetable material similar to today's salt bush communities.
(c) the extinction on the mainland became most pronounced around 20,000 B.P. - well before any post-glacial aridity.
(d) it is likely there was no post-glacial aridity.

Considering these findings, it would appear that man was the only factor facing the marsupials to which they were not adapted. An analogy is found in America where "Pleistocene fauna had survived all climatic changes until the arrival of man - they disappeared not because they lost their food supply, but because they became one." (Jones, 1968). Similar evidence is

found in Malagasy and New Zealand where much of the endemic fauna became extinct only in the last 1,000 years, the time man colonized these islands. If man did not play a major role in the extinction of Australian mega-fauna he must have accelerated it. By analogy with other continents, and lack of alternatives, one must conclude that the arrival of man was the decisive factor in the extinction of Australian marsupials.

Fire

Fire was the Aborigines most powerful tool. The vegetation of Australia is certainly fire adapted and had most likely been a major ecological factor for millions of years. The advent of man must have increased the frequency of this factor.

In mainland Australia and Tasmania fire was used continuously, the dry climate and inflammable vegetation being conductive to widespread environmental damage. The first accounts of fires in Tasmania give some indication of the use of fire by the Aborigines. Tasman (1964) while sailing up the D'Entrecasteaux Channel in 1642 stated "now and then we saw clouds of dense smoke rising up from the land." Peron (1809) noted that "in every direction immense columns of flame and smoke arose. All the appointed sides of the mountain were burning.....for the extent of several leagues." The following day in the Derwent estuary "wherever we turned our eyes we beheld the forest on fire." Robinson (1966) records many observations of the Tasmanians' use of fire, or of burnt areas.

The Aborigines carried fire in the form of fire sticks and lit the bush as a matter of course as they moved through. For example, Labillardiere (Feb. 14, 1792) describes a group of people "one of whom carried a lighted piece of decayed wood in his hand, he.....amused himself now and again by setting it to a tuft where there were some dry herbs." Peron (1809) described an Aborigine with "a lighted fire brand in his hand, setting fire here and there to the bushes which covered the land."

Fire was used universally to alter, if only temporarily, the vegetation over vast areas. If areas are not reburned regeneration occurs quickly. Today on the south coast of Tasmania there is inaccessible scrub which Robinson refers to as easy walking. On the west coast near West Point, which is still burned regularly, our bush still looks the same as Robinson described.

The *Poa* grasslands of Surrey and Hampshire Hills - described by the explorer Helleyer as open grass country - have been rapidly returning to forest in the past 100 years. On the mainland savannah woodland becomes forest within 50 years if fire is prevented (Jones, 1968).

In high rainfall areas of Tasmania there are complex ecological ratios of soil fertility, aspect and fire frequence, the latter being most important. For example we have a wet sclerophyll (mosaic of *Eucalyptus* forest) with a medium fire frequency and wet scrub and sedgeland with high fire frequency.

Constant fires impoverish the land due to leaching of soils and if this occurs the process may not be reversible. Jackson

(1965) argues that rain-forest does not occupy anything like its full range because of firing by the Aborigines. The rain-forest is inhospitable to man - dank and dark with a few edible animals (Guiler, 1965). On the other hand sclerophyll mosaic forest holds plenty of food, is easily burned and therfore makes easy passage for the fire starter. Aborigines lived in areas that are now rain-forest.

Along the west coast there is extensive sedgeland - where the climax vegetation should be rain-forest. The maintenance of the sedgeland depended on constant firing. Although there is a great difference in the environments of east and west Tasmania, Hiatt (1967) has found surprising similarity in the ethnographically recorded diets from both areas. This could not be the case if sedgeland did not exist and it may be that through fire the Aborigines maintained an environment suitable to their economy in areas normally closed to them. Faunal evidence at West Point, near Marrawah, suggests sedgeland for the last 2,000 years (Jones, 1968).

The eastern part of Tasmania displays large open areas of *Poa* grass. Jackson (1965) says there seems "no doubt that this condition was produced by a long firing by the Tasmanians." This was most probably a conscious policy, carried out by the Aborigines to attract and hunt game. Robinson (April 3, 1829) describes an open country interspersed with wooded copses that were intended for hunting kangaroos, having "been done by the natives, when burning the undergrowth they have beaten out the fire in order to form these clumps."

There is no questioning the fact that the Tasmanian natives used fire liberally to maintain their environment. However, the actual significance and environmental impact of fire may be over-estimated.

Colhoun (1976) describes an environment in Tasmania which from approximately 25,000 years B.P. was grassland. Approximately 10,000 B.P. Eucalypt forests began to dominate. Man occupied Tasmania from at least 23,000 B.P. and lived in an environment with much more open forests than seen by European man. These conditions persisted until 10,000 B.P., when, due to increased moisture Eucalypt forest expanded rapidly. These vegetation patterns seem to be totally independent of man, a low precipitation producing grassland and a higher precipitation forest. The effect of man-made fire may not have created the grasslands or open forests prevailing today; rather man could only contest forest encroachment on his favoured, open environment. Consequently man may have been faced with an increasingly inhospitable environment in which fire was his only way of maintaining the environment to which he was best adapted. Fire therefore, may not have been a significant tool in the formation of our present environment.

Conclusion

Results from Lynch's Crater on the coast of North East Australia (Kershaw, 1976) tends to support the hypothesis that climate is a significant factor in the formation of our present environment. He puts forward a 'climatic anthropogenic' hypothesis for the rain-forest - sclerophyll transitions that

occured between 38-28,000 B.P. The vegetation he claims "would have been under stress through lower rainfall and would have been more susceptible to human interference through fire and therefore more easily destroyed." This may account for the period 38-20,000 B.P. but Kershaw gives no explanation for the rapid increase in rain-forest after 10,000 B.P., except evidence of increased rainfall. This creates an inconsistency in the theme that the Aborigines could control and modify their environment through the use of fire. This vegetation curve is very similar to that described by Colhoun (1976) and suggests to us that the Aborigines, at least in their Northern Australian and Tasmanian environments, played little part in the overall pattern of vegetation. This may indicate the Aborigines were totally at the mercy of the environment which was becoming increasingly hostile towards them.

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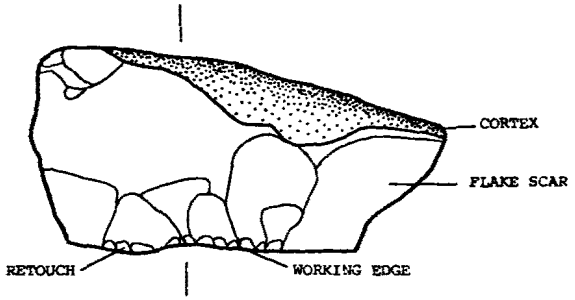
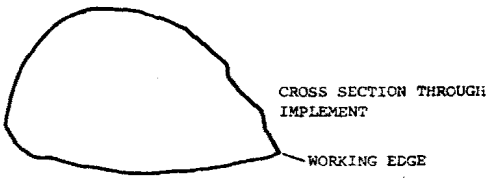
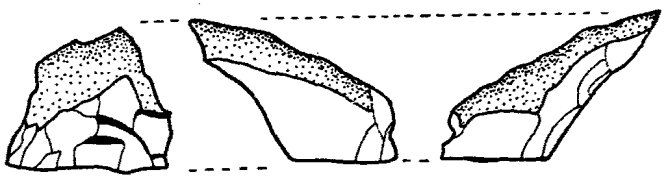




1. PEBBLE CORE SCRAPER



2. STEEP EDGED FLAKE SCRAPER

3. CONCAVE FLAKE SCRAPER

4. NOSED FLAKE SCRAPER

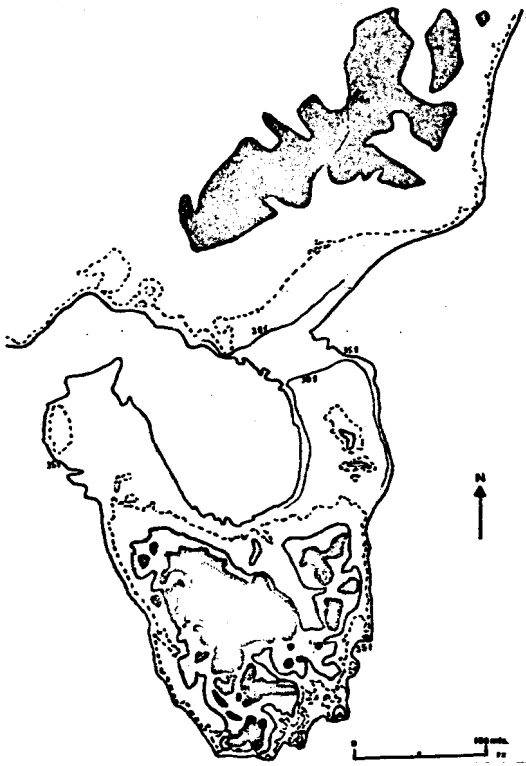


Fig. 5 PLEISTOCENE LAND BRIDGE ACROSS BASS STRAIT.
(after Jones, 1968).

SOME PLANT RECORDS FOR THE CAPE BARREN ISLAND WILDERNESS AREA.

J. S. Whinray

The Furneaux Group is in south-eastern Bass Strait and Cape Barren, which is about 44,000 hectares in area, is its second largest island. Some clearing has taken place at its western end and at Puncheon Head, the north-eastern point. Although part of the island was referred to by the Australian Conservation Foundation (1975) as a potential minor Wilderness Area, no specific section of the island was mentioned.

The present article gives some details of the plants of the part of the island which I call the Wilderness Area. They are drawn from notes taken during my many visits from 1969 to 1976. Specimens of unusual species lodged at Australian herbaria are indicalted in the text by the first letters of the cities in which the herbaria are situated.

The Wilderness Area

The Wilderness Area, which is about 34,000 hectares in area, is the portion of the island east from the foothills of Mount Munro, excepting Puncheon Head (see map). Its highest land is Double Peak (512 metres) by the western edge and Mount Kerford (500 metres) in the south-east. The Battery Bay Hills and the few other hills are much lower. There are many swamps on the extensive flats and gently sloping plains. One of the lagoons is dammed behind high coastal sand dunes. Another is separated from the sea by a bare, low, narrow beach. All of the streams are intermittent and at least three have saltings in their estuaries.

Some Effects of Firing

In 1831 an area near the Battery Bay Hills was described as "an extensive country consisting of grass trees and interspersed with some copse." (Plomley, 1966). That description still fits parts of the Wilderness Area. The most obvious thing about the Area is the immaturity of much of its vegetation, about three fourths of it having been fired between 1969 and early 1976. Some parts have been fired twice during that period. Little of the fired parts had mature vegetation at the time of firing because of previous fires. Austral Grasstrees *Xanthorrhoea australis* are now dominant in parts of the Area because the constant firing has suppressed scrub growth. I think that the early description given above is of vegetation affected similarly by firing.

Some of the present day firing is done by fishermen but most is done by the resident Aborigines. The latter told me that firing, by keeping the vegetation short, favours the Brush Kangaroo *Wallabia rufogrisea* which prefers open areas, and allows it to increase its numbers relative to the Wallaby *Thylogale billardieri* which prefers thick scrub (John Mansell and Devony N. Brown, pers. comm.). From about 1900 to about 1948, dogs were used to hunt Brush Kangaroos in the Wilderness Area and the animals were snared as well (E.L. Maynard, W.A. Riddle, John Mansell and Claude B. Mansell, pers. comm.). Hunting, therefore, depended on firing. I think that the frequent firing could have been started in the early nineteenth century by Aboriginal women who hunted Brush

Kangaroo on a large scale on the island before 1831. I think they would have used dogs as they were using them for hunting on nearby Flinders Island in 1830 (Plomley, 1966). Fire was used by Aborigines to effect vegetation change and increase macropod numbers on the Tasmanian mainland (Jones, 1968). I surmise that it might also have favoured some macropods more than others. Even though hunting and snaring have ceased in all but the far west of the island, almost the whole island is still being fired regularly and I believe the use of fire has become a custom with the Aborigines. This firing is probably one of the few Aboriginal practices still being followed in Tasmania.

Lowland Vegetation

Much of the vegetation of the lower country of the Wilderness Area can be divided roughly into that of the dry banks and slopes and that of the damper flats and bottoms.

The main dominants of the dry areas are Silver Peppermint *Eucalyptus tenuiramis* and Austral Grasstree *Xanthorrhoea australis* Large parts of the lowland Silver Peppermint stands have been changed to a mallee gum habit by the firing and these trees send up many small trunks from large rootstocks. I have not seen any young Peppermints in the lowland dry areas. Some Peppermints have been killed by the firing and I think that originally this species would have been much more common. Patches of Austral Grasstrees have died in many places during the last ten years. Seedling Grasstrees were noticed only in the existing stands.

Where only Peppermints are present they remain the dominant species after firing by either shooting from their trunks or regrowing quickly from their rootstocks. Where there are Grasstrees with Peppermints, the dominant species after firing depends on the pre-fire height of the Grasstrees and on whether or not the Peppermints are mallee-like. The taller shrubs are the dominant species in areas which lack Peppermint and Grasstrees.

As an example of a dry area, I will describe a dry slope about 1km. north of Rices River Point, Kents Bay. There the vegetation was about ten years old (fired c. 1966) and the dominant species was Silver Peppermint to 3.6m. high. The understory had Austral Grasstree and the tall shrubs Silver Banksia *Banksia marginata*, Dagger Hakea *Hakea teretifolia*, Tasmanian Teatree *Leptospermum glaucescens*, Dwarf Sheoak *Casuarina pusilla* and Spreading Wattle *Acacia genistifolia*. The many lower shrubs included Wiry Bauera *Bauera rubioides*, Guinea-flower *Hibbertia procumbens*, Swamp Beardheath *Leucopogon esquamatus*, Oval-leaf Pseudanthus *Pseudanthus ovalifolius* and Hairy boronia *Boronia pilosa* var. *laricifolia*. The few herbs included Bogrush *Schoenus turbinatus*, Climbing Sundew *Drosera planchonii*, Common Rapier-sedge *Lepidosperma filiforme* and Slender Bogrush *Schoenus tenuissimus*.

Silver Peppermints were not noticed in the bottoms or on damp flats but Austral Grasstrees extended into some of the drier ones. Rushes and sedges are dominant in parts where there are neither shrubs nor Grasstrees. After firing, the vegetation of all the bottoms and flats is dominated by rushes and sedges, except where Grasstrees are present. Where only shrubs occur, they become dominant again when they outgrow the rushes and sedges.

Next I will describe an area in which shrubs, as they grow taller, will be only occasional emergents above the sedge layer. This is the very damp, peaty bottom, with some surface water, on the eastern side of Kents Bay about 2km. east-south-east of the mouth of Rices River. A dense growth of Large-flowered Rapier-sedge *Lepidosperma forsythii* and occasional clumps of Button Bogrush *Gymnoschoenus sphaerocephalus* formed the dominant layer in this area which was fired sixteen months previously (December, 1974). There were only seven species growing under the dominant layer. These were Bogrush *Schoenus carsei* (This species is a new record for Tasmania. I found it first, in north-western Cape Barren Island, in 1970 (MEL, HO).), Pink Swampheath *Sprengelia incarnata*, Slender Twinerush *Leptocarpus tenax*, Soft Twigrush *Baumea rubiginosa*, Forked Sundew *Drosera binata*, Pointed Ricegrass *Tetrarrhena acuminata* and Scented Paperbark *Melaleuca squarrosa*.

A drier, nearby flat had rushes and shrubs as the dominant species. They included Manuka *Leptospermum scoparium*, Pithy Swordsedge *Lepidosperma longitudinale*, Flat Cordrush *Restio complanatus*, Yellow Hakea *Hakea nodosa* and Slender Twinerush *Leptocarpus tenax*. The lower species included Swamp Selaginella *Selaginella uliginosa*, Slender Honey-myrtle *Melaleuca gibbosa* and Common Rapier-sedge *Lepidosperma filiforme*. This vegetation was about four years old, as the area had been fired in about 1972. The shrubs will soon be the dominant species. An adjacent section, not fired for about eight years, had shrubs to about 2.5m. high and only a very occasional rush in the dominant layer.

Unusual Plants

The Wilderness Area has twelve Australian mainland plant species that do not reach mainland Tasmania. For two of the species, Large-flowered Rapier-sedge *Lepidosperma forsythii* (CAN) and Common Fringelily *Thysanotus tuberosus* (MEL), the only Tasmanian recordings are in the Wilderness Area. Six species occur on nearby Flinders Island and have their southernmost Tasmanian occurrence in the Area. These are Furze Hakea *Hakea ulicina*, Oval-leaf Pseudanthus *Pseudanthus ovalifolius* (MEL), Swamp Beardheath *Leucopogon esquamatus*, Pink Bladderwort *Polypompholyx tenella* (MEL), and Pomaderris *Pomaderris affinis* (MEL, AD, CAN). The remaining five species, which also occur just to the south on Clarkes Island, are Banded Greenhood *Pterostylis vittata* (CAN), Fringed Everlasting *Helichrysum baxteri* (CAN), Prickly Couch *Zoisia macrantha*, Horny Conebush *Isopogon ceratophyllus* and Bogrush *Schoenus carsei*. Pomaderris *Pomaderris sieberana* (MEL, AD, CAN) had also been found in the area but I do not know if it reaches the Tasmanian mainland.

The rare Bog Clubmoss *Lycopodium serpentinum* (MEL, AD, CAN), occurs in at least three localities and in one of them is very extensive. Already the Wilderness Area is probably both the Tasmanian and Australian stronghold of the species and I am sure that more occurrences will be found there. This species also occurs in one Cape Barren Island locality outside the Area (MEL, HO). Button Bogrush *Gymnoschoenus sphaerocephalus* occurs in much of the southern half of the Area and is a dominant species in many parts after fires. It is a distinctive feature as the only other Bass Strait record seems to be one small occurence on Flinders Island (Dimmock, 1957). Alpine Heath *Epacris*

paludosa grows in the Area at Victualling Office Bay (only a metre above sea level), at Rooks River and on the higher parts of Mount Kerford. Its only occurrences on mainland Tasmania are on Mount Cameron (Betty Gee, pers. comm.) and on Cape Tourville. Bushy Needlewood *Hakea sericea* is present in the Area and has been found south of this only on Rocky Cape. The Bogrush *Schoenus turbinatus* (MEL, AD, CAN), which is uncommon on the Tasmanian mainland, is widespread on dry banks and slopes in the Area. It is not recorded for any other Bass Strait island.

A few other unusual species are Prawn Greenhood *Pterostylis pedoglossa* (MEL - the only Bass Strait record), Lizard Orchid *Burnettia cuneata* (MEL - known elsewhere in Bass Strait only on King Island), Bushpea *Pultenaea stricta* (MEL, AD, CAN - the only Bass Strait records) and Pigmy Clubmoss *Phylloglossum drummondii* (CAN - elsewhere in Bass Strait only on King and Flinders Islands).

The six endemics recorded so far for the Area are Silver Peppermint *Eucalyptus tenuiramis*, Guitar Plant *Lomatia tinctoria*, Tasmanian Teatree *Leptospermum glaucescens*, *Hakea epiglottis*, *Pimelea nivea* and *Hibbertia hirsuta*.

Recommendation

My plant list for Cape Barren Island now totals just over 540 species. About 300 species occur in the Wilderness Area and I am sure that more will be found there. Most of the Area is marginal agricultural land that has never been considered seriously for farming and there are few tracks in it. It is the largest piece of uncleared land left on the Bass Strait islands and would make a distinctive Wilderness Reserve. To judge by the Australian Conservation Foundation (1975), Tasmania has only four potential minor Wilderness Areas. The Cape Barren Area would be and important addition to Tasmania's natural reserves.

Acknowledgements

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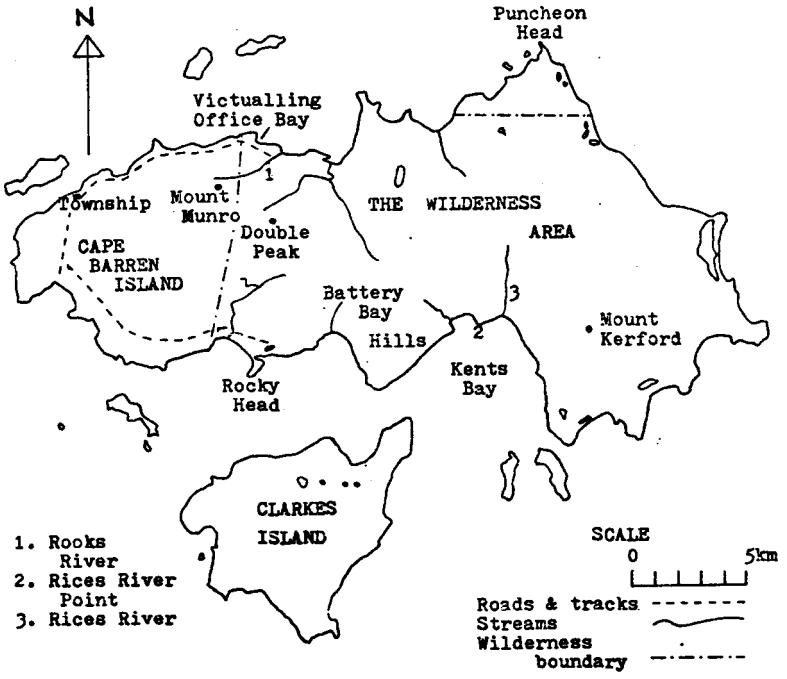
CAPE BARREN ISLAND



TOWARDS A FLORA OF MAATSUYKER IS.

PART I - Introduction and Vascular Plants

A. M. Moscal and G. C. Bratt

Introduction

During visits by A. M. Moscal to Maatsuyker Is. in 1971 and 1976 the opportunity was taken to examine extensively and collect samples of the flora. The collections have since been examined by the authors and others and the preliminary results are recorded herein.

Maatsuyker Is. is situated at approximately 43°39'S, 146°17'E, and is the most southerly substantial extension of the Tasmanian regime (excluding Macquarie Is.). It is about 2.5 x 1.2 km. and reaches a height of 260 m. Rainfall data for the island are as follows - 249 days of rain/year; mean annual rainfall 1200 mm; wettest month July (125 mm) and driest month Feb. (85 mm). Average annual temperatures vary between 8.4°C and 13.9°C with extreme mean values of 17.2°C in January to 6.3°C in August (Bureau of Meteorology, pers. comm.). High winds and salt spray are factors affecting the vegetation and mist often shrouds the higher elevations.

Geologically it appears to be composed almost entirely of metamorphosed quartz schists, faulted and folded. Sands and quartzite and remnants of conglomerate occur.

The northern end of the Island has predominantly shallow skeletal soil alternating on inclines with sandy loam. The remaining two-thirds of the Island has sandy soils intermixed or overlaid by humus.

Mutton birds are probably the largest group of inhabitants numerically (1/2 million birds) (Fleming, 1976) and their burrowing results in some erosion and land slips.

The Island has suffered at the hands of man from early times. For example, Flinders in 1798 (Lord, 1921) noted that the vegetation on the island had been burned, presumably by visiting natives. Some fires occurred before 1910 in connection with clearing operations, but apparently no man-made or wild fires have affected the vegetation since.

Some clearing has been done to give access to the lighthouse, residences, and for grazing purposes. These clearings are the major areas affected by introduced species, the blackberry being particularly widespread possibly as a result of suckering and blackbird activity. Perhaps both these non-indigenous species (the blackbird and the blackberry) should be eradicated.

Vascular Plants

The vegetation is predominantly *Leptospermum scoparium*, *Melaleuca squarrosa* and *Banksia marginata*. At about 15 m. above sea level, the dominant vegetation is stunted and wind pruned, but at higher elevations or in more sheltered areas it may reach 3.5 m. to 6 m. in height.

The higher plant flora is listed in Table 1 and further detailed information is given below.

a. *Pittosporum bicolor* - Several trees with unusual leaves were noted and these are being further examined.

b. *Blandfordia punicea* - The stronghold for this species is on western slopes. The form observed here is more robust than that observed on the mainland. On the plateau and ridges in areas of native trees, another variant of this plant was common but appeared to be reluctant to flower.

Further examination is required to determine if these represent separate species or environmental variants

c. *Westringia, Coprosma, Pimelea, Helichrysum* and *Olearia* sp. are more abundant on the Island than on the West and the South West coasts of Tasmania and this is possibly due to the infrequency of fires on the Island.

No attempt has been made to study algae, fungi, mosses or hepatics.

Part II will contain information on ferns, clubmosses and lichens.

The assistance of Dr. W.M. Curtis, Mr. D.I. Morris and Mr. M.J. Brown is gratefully acknowledged.

References

Fleming, K. (1976). Maatsuyker south by south-west. *Skyline* 22:32-33 and 42. Launceston Walking Club : Launceston.

Lord, C.E. (1921). The early history of Bruny Island. *Pap. Proc. Roy. Soc. Tasm.*, 1920:114-136.

Table 1

HIGHER PLANTS OF MAATSUYKER IS.

Genus & Species	Family	Status See foot note	Habitat, etc.
Acacia verticillata	Leguminosae	N	Abundant at all levels
Anopterus glandulosus	Escalloniaceae	E	Common but localized
Apium prostratum	Umbelliferae	N	Mutton bird rookeries
Archeria eriocarpa	Epacridaceae	E	On borders of shrub-eries. More common than in Tas.
" *hirtella*	"	"	" " " " " " "
Aristotelia peduncularis	Elaeocarpaceae	E	Individual plants in damp areas from mid top of Main Ridge
Banksia marginata	Proteaceae	N	Dominant plant

Genus & Species	Family	Status See foot note	Habitat, etc.
Billardiera longiflora	Pittosporaceae	N	Tangled network in shady places
Blandfordia punicea	Liliaceae	E	On poor soil and exposed areas. See text.
Bromus diandrus	Gramineae	I	Open habitat
Caladenia sp.	Orchidaceae	-	Rare, not presently fully identified
Carex appressa	Cyperaceae	N	Open habitat
Carpobrotus rossii	Ficoideae	N	Salt spray areas
Cenarrhenes nitida	Proteaceae	E	Rare
Clematis aristata	Ranunculaceae	N	Found with *Epacris impressa* and *Gahnia grandis*
Colobanthus sp.	Carophyllaceae	E?	Open habitats. Appears to be distinct species
Coprosma quadrifida	Rubiaceae	N	Abundant, see text.
Correa lawrenciana	Rutaceae	N	Abundant in open areas along cliff tops
" *backhousiana*	"	E	" " " " " " "
Corybas dilatata	Orchidaceae	N	Well distributed but localised in or near open areas
Cotula coronopifolia	Compositae	N	Open habitat
" *longipes*	"	N	" " "
Crassula peduncularis	Crassulaceae	N	" " "
Cyathodes abietina	Epacridaceae	E	Abundant in open areas along cliff tops
" *juniperina*	"	N	" " " " "
Dianella sp.	Liliaceae	N	Open habitats
" *tasmanica*	"	N	Mutton bird rookeries
Disphyma australe	Ficoideae	N	Salt spray area
Drimys lanceolata	Winteraceae	N	Abundant at all levels
Epacris impressa	Epacriaceae	N	Form as in high rainfall and alpine habitats in Tas.
Epilobium billardierianum	Onagraceae	N	Open habitats
Eriochilus cucullatus	Orchidaceae	N	Open areas
Eucalyptus nitida	Myrtaceae	N	Only 8 specimens - possibly due to absence of fire
Exocarpos strictus	Santalaceae	N	Abundant at all levels
Gahnia grandis	Cyperaceae	N	Found with *Epacris impressa* and *Clematis sp.*

Genus & Species	Family	Status See foot note	Habitat, etc.
Haloragis teucrioides	Haloragaceae	N	Open habitats
Helichrysum paralium	Compositae	N	Abundant, see text
Hordeum leporinum	Gramineae	I	Open habitats
Lepidium foliosum	Cruciferae	N	Mutton bird rookeries
Leptospermum scoparium	Myrtaceae	N	Dominant plant
Leucopogon collinus	Epacridaceae	N	Abundant along cliff tops
" *parviflorus*	"	N	" " " " "
Luzula flaccidum	Juncaceae	-	Open habitats
Melaleuca squarrosa	Myrtaceae	N	Dominant plant
Microtis bifoba	Orchidaceae	N	Open areas, rare
Monotoca glauca	Epacridaceae	N	Common in all habitats
Muehlenbeckia gunnii	Polygonaceae	N	Tangled network in shaded places
Olearia phlogopappa	Compositae	N	Abundant, see text
" *viscosa*	"	N	" " " "
Oxalis corniculata	Oxalidaceae	N	Open habitat
Pelargonium australe	Geraniaceae	N	" "
Phyllloglossum drummondii	Lycopodiinae	N	Open habitat
Pimelea drupacea	Thymelaeaceae	N	Abundant, see text
Pittosporum bicolor	Pittosporaceae	N	Abundant at all levels, see text
Plantago triantha	Plantaginaceae	N	Open habitat
Poa annua	Gramineae	I	" "
" *poiformis*	"	N	" "
Pomaderris apetala	Rhamnaceae	N	Rare
Pterostylis pedunculata	Orchidaceae	N	Open area
Pultenaea dentata	Papilionatae	N	Open habitat
Rhagodia baccata	Chenopodiaceae	N	Mutton bird rookeries
Rubus fruticosus	Rosaceae	I	Introduced, see text
Salicornia blackiana	Chenopodiaceae	N	Salt spray area
Scirpus cf. wakeieldianus	Cyperaceae	N	Open habitat
Senecio lautus	Compositae	N	Mutton bird rookeries
Sprengelia incarnata	Epacridaceae	N	Uncommon, localized
Stylidium graminifolium	Stylidiaceae	N	Abundant at all levels and habitats. Similar to south coast type
Tetragonia implexicoma	Ficoideae	N	Mutton bird rookeries
Thelymitra megcalyptera	Orchidaceae	N	Open area

Genus & Species	Family	Status See foot note	Habitat, etc.
Thelymitra pauciflora	Orchidaceae	N	Open area
Urtica incisa	Urticaceae	N	Mutton bird rookeries
Westringia brevifolia	Labiatae	E	Abundant in open areas along sliff tops, see text
" *rigida*	"	N	" " " " "
Viola hederacea	Violaceae	N	

Footnote

Abbreviations used are :

I = Introduced
E = Tasmanian endemic
N = Tasmanian native

TRAGEDY IN A COFFEE-JAR!

Elizabeth Turner
Tasmanian Museum

The ways of spiders are a constant source of surprise to me but never have I been angered by the actions of an individual until a recent event which took place in a coffee-jar.

A pregnant White-tailed House spider, *Lampona cylindrata*, was donated to the Tasmanian Museum by a Geeveston resident. I housed the mother-to-be in a jar, with a twig or two and a wet cotton-ball from which to drink. Despite the loss of a leg during her initial capture, she seemed healthy and ate several small moths and a beetle when these were offered to her.

A month after her arrival she was seen to have spun a thin, white sheet of silk over the bottom of the jar. Salmon-pink eggs, wrapped in a membrane, were being squeezed out through the reproductive aperture on the ventral surface of her abdomen. Laying lasted about 20 minutes until an egg-mass, the size and shape of a "Smartie" chocoalte-bit, had been produced and placed on the silken sheet. Without pause she commenced to anchor and cover the membrane-enclosed eggs with fine, silk threads until a pinkish-white egg-sac was formed. Only then, after three hours of work, did she stop to rest.

I had never before seen a *Lampona* lay her eggs and was delighted to have witnessed this instinctive maternal act. Imagine my horror, one hour later, whenI looked again and discovered that her "rest" also included lunch! She had eaten all her eggs! I have watched many other species form egg-sacs, with no harm befalling the latter at any stage, so I was particularly dismayed to see such callous behaviour. I can only conclude that either the moths were not enough and she was still hungry, or

that the abnormal surroundings prompted her action, as this type of cannibalism is not normal amongst spiders. Some species will eat the young spiders after they emerge from the egg-sac while the young, in turn, often eat each other. Adults, too, sometimes attack other adults, of their own or different species, but egg-eating is rare and must happen only for an ulterior reason. Most female spiders are very defensive about their egg-sacs and usually never leave them except in times of stress.

As a result of this little tragedy, I will try to successfully feed and house my next pregnant spider!