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THE VEGETATION OF HELLFIRE BLUFF – CAPE BERNIER TASMANIA

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Introduction:

Hellfire Bluff and Cape Bernier form a spectacular series of coastal cliffs and screes rising to 315 m on the south-eastern coast of Tasmania (fig. 1), and dominate the coastal landscape between Cape Frederick Henry 14 km to the south and Lords Bluff 23 km to the north.

Much of the land in the vicinity of Cape Bernier is either privately owned or is leased, and has been subject to grazing by sheep, but the vegetation of the cliffs, screes and foreshores is distinctive and remains relatively untouched. Whilst there are many descriptions available of the vegetation and ecology of plant communities which occur on periglacial screes and blockfields of inland areas of Tasmania and Victoria (Ashton and Moore, 1978; Davies, 1978; Jackson, 1973; Martin, 1940; Ratkowsky and Ratkowsky, 1977; Wells et al. 1977), there have been few studies reported for equivalent coastal situations, especially on dolerite substrates.

Kirkpatrick (1975, 1977) has described the heathland vegetation above the coastal dolerite cliffs of Bruny Island and the Tasman Peninsula, and Brown and Bayly-Stark (1979) have described the plant communities which occur on the dolerite screes and cliffs of Maria Island. The present report provides a preliminary description of the range of plant communities in the vicinity of Hellfire Bluff and Cape Bernier.

Site Description:

Climate:

The climate of the study area has been classified as moist, sub-humid and

warm by Gentilli (1972). Climatic data are unavailable for Cape Bernier, but the climate is probably similar to that at Orford 18 km to the north.

Orford receives an average annual rainfall of 731 mm, distributed fairly evenly throughout the year, with maxima in May (70 mm) and December (73 mm), and minima in September (50 mm), and January (46 mm). Temperatures are generally mild ranging from average monthly maximum temperatures of 22.2^oC and 13.3^oC in February and July respectively. Mean monthly minima for the same months are 11.5^oC and 3.1^oC respectively. Frosts can be expected between June and October at lower altitudes, but at altitudes exceeding 300 m frosts may occur in any month (Langford 1965).

Geology:

The bedrock is formed of Jurassic dolerite outcrops of which are extensive in the region. The sea cliffs are dolerite with Triassic sandstones exposed on the lower parts of sections of the cliff. The geology of the area is shown on the 1" to 1 mile Buckland sheet (Blake, 1958). The valley of Cockle Bay Creek contains an alluvium layer of undetermined thickness, probably accumulated during the Holocene.

Geomorphology:

A sharp ridge runs parallel to the coast and reaches a maximum altitude of 315 m, but averages between 200 and 250 m. The ridge carries a thin mantle of scree deposits on its inland slope. Colhoun (1975) has said of deposits of this type that ... "although not diagnostic of severe periglacial conditions they do point to the occurrence of cold conditions on low ground with much more widespread snowfall, deep seasonal freezing and mass movements during the later part of the last Glacial than was previously realised".

To the west, the ridge drops away fairly rapidly to a flat, alluvium-floored valley. Although occupying a large valley the small Cockle Bay Creek is an example of an underfit stream. Colhoun (1975) says that "One of the most impressive geomorphological characteristics of the subhumid broken hill and valley country of Eastern Tasmania is that the present streams are grossly underfit when compared with the size of the valleys and basins in which they occur. The steep valley slopes are bare and rocky but the broad valley floors are thickly mantled with alluvium."

The most spectacular feature of the area is the high, near vertical, cliffs of Hellfire Bluff, plunging into the sea on the eastern side of the ridge. These are caused by weathering along the vertical joints of the dolerite. Columnar jointing of very good form was observed along the scarp. Broken off sections of columns have accumulated in an extensive scree pediment fringing the base of these slopes. In places along the top of the cliffs are some trenches and holes caused by massive separation along joint faces. These appear to be presently stable.

Fig. 2. is a diagrammatic cross section of the cliffs, ridge and valley showing some of the features mentioned above.

The Vegetation:

The vegetation between Cockle Bay Creek and the ridgeline of Hellfire Bluff is typical in many respects of the dry sclerophyll forests and woodlands on dolerite elsewhere in Tasmania (e.g. Curtis 1969, Hogg and Kirkpatrick 1974, Brown and

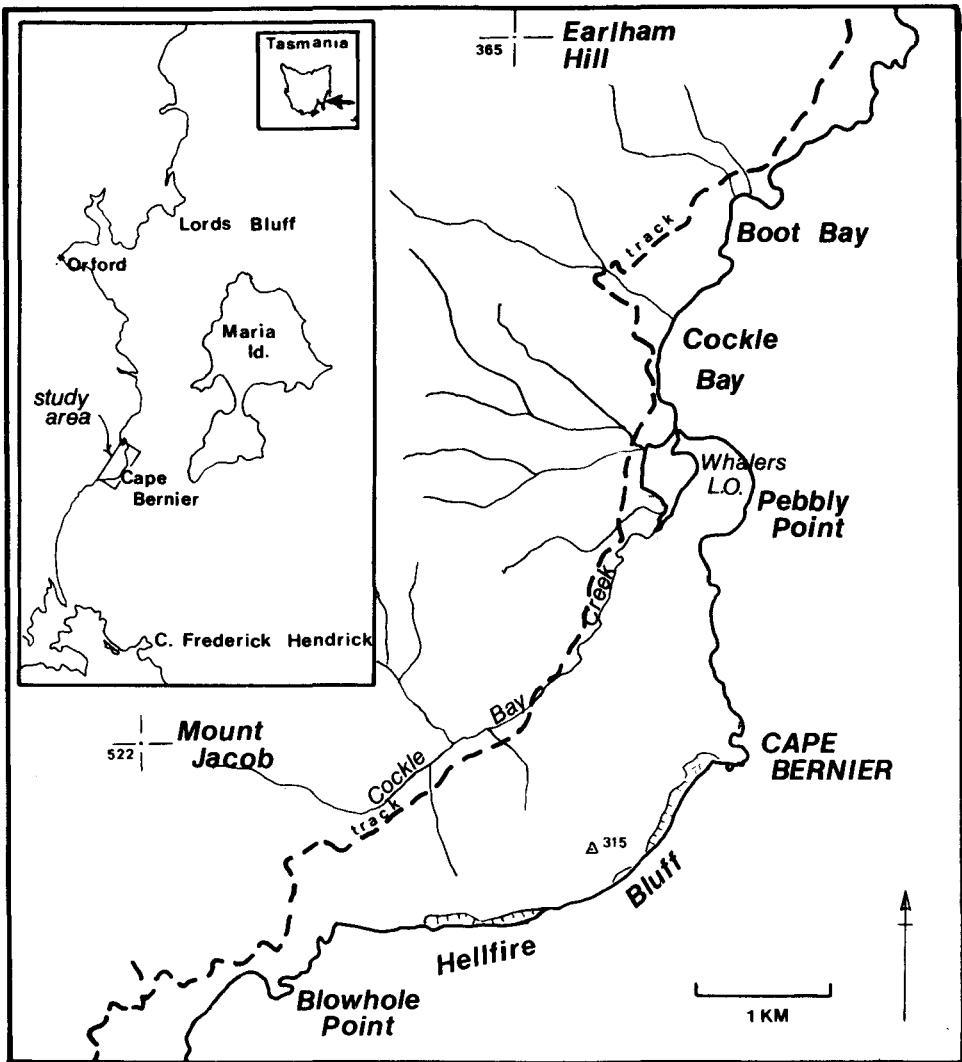


Fig. 1 Locality of the Study Area

Bayly-Stark 1979). The sparse understorey is mostly grassy and shrubby on dry and rocky ground. Frequent fires maintain this sparse understorey; however fire refuges are found in specialised habitats such as the cliffs, large landslip crevices, and the talus slopes at the base of the sea cliffs.

The vegetation has developed in response to fire frequency, local drainage, exposure to onshore desiccating winds, aspect, and sheep grazing pressure. Inland of Hellfire Bluff the dry rocky slopes are covered with Eucalypt Open-forest. The Open-forest has a greater crown cover where it occupies slopes with least insolation (south-east and south facing slopes). The understorey throughout the Open-forest varies but

is mostly very dry, open, and comprised of low sedges, tussocky grasses and herbs. The dominant eucalypts change throughout the formation, these being shown in fig. 3.

To seaward of the ridge above Hellfire Bluff, are fire protected communities on the cliffs and on the basal talus slopes. Some shaded, protected and specialised habitats occur in damp clefts in the dolerite along the ridge top, these habitats being colonised mainly by ferns.

The structural formations (Specht, 1970) were sampled in the field to find out the vegetation composition. The structural units were subsequently delineated on black and white aerial photographs and mapped. Each community is described in more detail below.

The area has been divided into 13 communities which comprise *Eucalyptus globulus* Open-forest, *E. ovata* - *E. amygdalina* - *E. viminalis* Open-forest, *E. ovata* Open forest, *Ixodia angusta* Low shrubland, *Callitris rhomboidea* - *Notelaea ligustrina* Low closed-forest, bare rock and talus (very sparse herbfield), *Casuarina stricta* Low open-woodland, *E. globulus* Open-forest above Blowhole Point, *E. ovata* Open-woodland, *E. pulchella* - *E. viminalis* Open-forest on generally north facing slopes, *E. pulchella* - *E. viminalis* Open-forest on generally south facing slopes, *E. cordata* Low open-forest on the exposed ridgetops and strand (halophytic herbfield) communities.

E. globulus Open-forest over understorey of *Casuarina stricta*, *Callitris rhomboidea* and *Banksia marginata*.

This community occurs in a fairly fire protected situation on the southeast and east facing slopes of Pebbly Point on steep talus slopes.

Apart from much bare dolerite rock, the scrub component consists mainly of *Banksia marginata* and *Olearia viscosa* with occasional specimens of *Casuarina stricta* and *Callitris rhomboidea*. Growing among the boulders are plants such as *Cardamine* sp., *Asplenium flabellifolium*, *Lomatia tinctoria*, *Euphrasia collina*, *Bulbine bulbosa*, *Cerastium fontanum*, *Aira caryophyllea*, *Poranthera microphylla*, *Microsorium diversifolium* and *Luzula* sp.

E. amygdalina - *E. viminalis* - *E. ovata* Open-forest

This alliance occupies the flat and gently sloping area of the valley to the east of Cockle Bay Creek. *E. ovata* is locally dominant on the poorly drained areas but *E. amygdalina* is far more abundant overall, with individuals of *E. viminalis* scattered here and there.

The substrate comprises a thicker soil mantle due to the wash of soil from the steep adjacent slopes. The understorey is very sparse and this appears to be primarily due to the high frequency of fires with grazing by sheep a contributing factor. *Casuarina littoralis* is scattered through the community but is rarely found on the higher slopes to the east. *Banksia marginata* also occurs more commonly in this alliance.

The groundcover comprises mainly sedges and herbs. The rare endemic plant *Wurmbea uniflora* is abundant. *Diplarrena moraea* is abundant and occurs with *Haloragis tetragyna*, *Bossiaea prostrata*, *Pimelea humilis*, *Helichrysum scorpioides*, and *Lomandra longifolia*.

E. ovata Open-forest with dense scrubby understorey

This community occupies the area immediately contiguous with the creek for about 2.5 km. The dominant eucalypt is *E. ovata*. The understorey is very scrubby and includes *Leptospermum scoparium*, *Acacia verticillata*, *Pultenaea juniperina* and *Melaleuca gibbosa*. A tongue of unburnt scrub intrudes along a shallow elongate damp depression. Here were collected *Epacris impressa* and the endemic *Epacris tasmanica*.

Ixodia angusta Low Open-shrubland

(*Ixodia angusta* - *E. ovata* Low shrubland on former pasture).

This community is seral and is restricted to a largely flat area near Whalers Lookout where it occupies an area on private land which was once cleared for pasture. Old stockyards still exist here. Numerous introduced species occur in the groundcover including many introduced pasture species.

If undisturbed this sere will proceed to a *E. ovata* Open-forest with a scrubby understorey component of *Bursaria spinosa* and *Acacia verticillata*.

At present, numerous shrubs of *Ixodia angusta* cover the area with interspersed low coppiced *E. ovata* regeneration. There is almost complete groundcover and this includes *Mazus pumilio*, *Hypericum* sp., *Juncus pauciflorus*, *Eryngium vesiculosum*, *Plantago lanceolata*, *Carex inversa*, *Gnaphalium luteoalbum*, *Rumex acetosella*, *Oxalis* sp., *Cotula* sp., *Acaena novaezelandiae*, *A. ovina*, *Viola hederacea*, *Wahlenbergia* sp., *Hypochaeris radicata*, *Haloragis tetragyna* and *Dichondra repens*. Seedlings of *Bursaria spinosa* and *Acacia verticillata* occur.

The area is still used as a rough run for sheep.

Callitris rhomboidea - *Notelaca ligustrina* Low closed-forest

This community has developed on the dolerite talus slopes on Hellfire Bluff. No evidence of firing was found, in marked contrast to the ubiquitous evidence of past fires elsewhere in the area. The area is buffered from fire by the low fuel availability on the surrounding bare areas of talus, a situation found also by Ashton & Moore (1978) on Victorian block fields.

The floors of these forests are composed of the talus largely covered by moss and a diversity of ferns including *Pteris tremula*, *Microsorium diversifolium*, *Hymenophyllum rarum*, *H. cupressiforme*, *Polystichum proliferum*, *Lycopodium* sp., *Asplenium flabellifolium*, *Ctenopteris heterophylla*, *Rumohra adiantiformis* and *Grammitis billardieri*. Apart from *Callitris rhomboidea* which is predominant, there are also large specimens of *Pittosporum bicolor*, *Olearia argophylla*, *Notelaea ligustrina*, *Leucopogon parviflorus*, *Beyeria viscosa* and *Bedfordia salicina* in the upper layer of vegetation.

The absence of fire has enabled the growth of a fire-susceptible climax community apparently of a great age in spite of an environment depauperate in soil.

Isolated specimens of *E. globulus* are found along the base of the cliffs and are occasional emergents from the *Callitris* - *Notelaea* Low closed-forest. (These occasional emergents were ignored in ascribing a structural term to the *Callitris* - *Notelaea* formation.)

Bare Rock and Talus (very sparse herbfield)

This "community" is widespread on the talus slopes of Hellfire Bluff. There has been little litter accumulation and no chance for soil to develop, hence only a few small herbs and ferns are found in crevices here and there. These include *Asplenium flabellifolium*, *Crassula sieberana*, *Cynoglossum suaveolens* and *Microsorium diversifolium* and an orchid sp.

Casuarina stricta Low open-woodland

This community occurs discontinuously along the precipitous slopes of Hellfire Bluff itself and on the cliffs to the north of Cape Bernier in an environment highly exposed to salty, dessicating winds. Run-off is fairly rapid on these slopes due to the small amount of soil available for water retention. Thus these areas have been colonised largely by drought resistant species. The community is dominated by *Casuarina stricta* with *Dodonaea viscosa* in patchy association, over a (mainly) grassy understorey. Scattered here and there are clumps of *Dianella revoluta* and *D. tasmanica*. Also occurring are *Bedfordia salicina*, *Helichrysum reticulatum*, *Exocarpos strictus*, *Plantago hispida*, *Beyeria viscosa*, *Bulbine bulbosa*, *Lepidosperma inops* and *Stylidium graminifolium*. At the southern end of Hellfire Bluff cliffs were also found: *Plantago varia*, *Correa reflexa*, *Lobelia alata* and *Olearia axillaris*, together with occasional emergent *Eucalyptus globulus*.

Eucalyptus globulus Open-forest

This alliance occurs on the seaward side of Hellfire Bluff ridge, just north of Blowhole Point. *E. globulus* is dominant over a dense scrubby understorey especially thick in the gully, and which includes *Acacia verticillata*, *Banksia marginata*, *Pomaderris apetala*, *Leucopogon parviflorus*, *Pittosporum bicolor*, *Coprosma quadrifida*, *Bedfordia salicina*, *Casuarina stricta* and *Zieria arborescens*. The slopes here are south-east facing and receive less insolation than most of the investigated area. Thus there is greater moisture availability and reduced fire frequency leading to more prolific growth. It is likely that most fires would start in the valley of Cackle Bay Creek, burn straight to the top of the ridge and stop dead, fire not having a propensity to burn downslope.

Eucalyptus ovata Open-woodland

This community is confined to the vicinity of Cackle Bay Creek, especially the southern end, on soils which are deep and loamy, in contrast to the rest of the study area. The area has been severely burnt in the recent past.

A creek bed carrying a small intermittent stream occurs with some deep pools containing a *Myriophyllum* sp. Elsewhere, the plain is punctuated by specimens of *E. ovata*. Saplings have been killed by fire, but the plants are sprouting from lignotubers. Other sub-dominants comprise *Leptospermum scoparium*, *Melaleuca gibbosa* and *Leptospermum lanigerum*. Most branches of these are actually dead but the plants are re-sprouting from rootstocks. The herbs and forbs found on the ground include *Haloragis tetragyna*, *H. teucroides*, *Hydrocotyle* sp., *Ranunculus* sp., *Bossiaea prostrata*, *Mazus pumilio*, *Hypoxis hygrometrica*, *Helichrysum pumilum*, *Xanthosia tridentata*, *Geranium* sp., *Cassytha pubescens*, *Epacris tasmanica* and *Wurmbea uniflora*.

E. pulchella - *E. viminalis* Open-forest on generally north-facing slopes

This alliance occupies a great part of the area and is dominated by *E. pulchella* with scattered specimens of *E. viminalis*.

The forest has apparently suffered a high fire frequency. Undergrowth and eucalypt seedlings are very sparse, most of the ground cover being composed of sedges and herbs and some shrubs and tussocky grasses. These plants include *Ixodia angusta*, *Astroloma humifusum*, *Oxalis corniculata*, *Geranium solanderi*, *Gahnia graminifolia*, *Carex graminifolia*, *Lepidosperma laterale*, *Plantago varia*, *Gnaphalium collinum*, *Poa labillardieri*, *Lomatia tinctoria*, *Bossiaea* spp., *Viola* spp., *Hypochaeris radicata*, *Taraxacum officinale*. Sub-dominants include *Casuarina stricta*, *Bursaria spinosa* and *Banksia marginata*.

Sheep still run freely over most of this community and together with high fire frequency contribute to a very open understorey. Because of the scant groundcover in many places there has been considerable soil erosion and much bare scree is evident on the upper slopes.

Open-forest dominated by *E. pulchella* - *E. viminalis* on generally south-facing slopes

This community does not apparently differ in floristic composition from the previously described community yet would be receiving marginally less insolation. On aerial photos the darker tone coinciding with this community appears to be due to the greater crown cover of the dominant eucalypts.

The understorey plants noted include *Lomandra longifolia*, *Lepidosperma lineare*, low grasses and forbs such as *Gnaphalium collinum*, *Viola* spp., *Cheilanthes tenuifolia*, *Goodenia lanata*, *Hypericum gramineum*, seedlings of *Ixodia angusta*, *Bursaria spinosa*, and *Clematis gentianoides*.

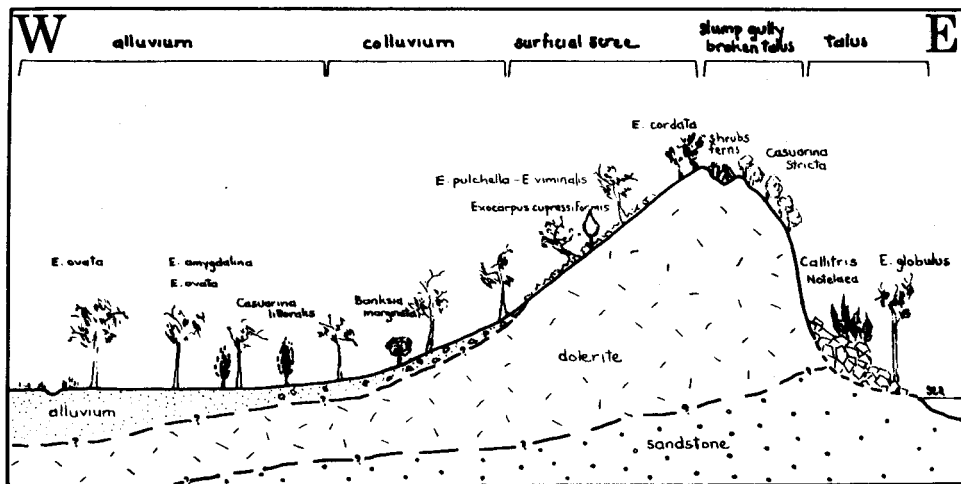


Fig. 2 Diagrammatic cross section of the ridge from Hellfire Bluff to Cackle Bay Creek showing the geomorphology and geology.

E. cordata Low open-forest

A patch of *E. cordata* low open-forest occurs around the trig. point on the highest part of the ridge of Hellfire Bluff. In fact some of the trees have been felled to enable an unobstructed view of the trig. station. Many of the eucalypts reach 0.3 - 0.5 m diameter at breast height.

The understorey is shrubby and dissimilar in floristic composition to the *E. pulchella* - *E. viminalis* Open-forests on the lower western slopes. Some components of this shrubby understorey which is typical of the ridge tops in general include *Cyathodes glauca*, *C. divaricata*, *Lomatia tinctoria*, *Helichrysum antennarium*, *Acacia melanoxylon*, *Indigofera australis*, *Olearia viscosa*, *O. phlogopappa*, *O. lirata*, *Pultenaea daphnoides* and *Banksia marginata*.

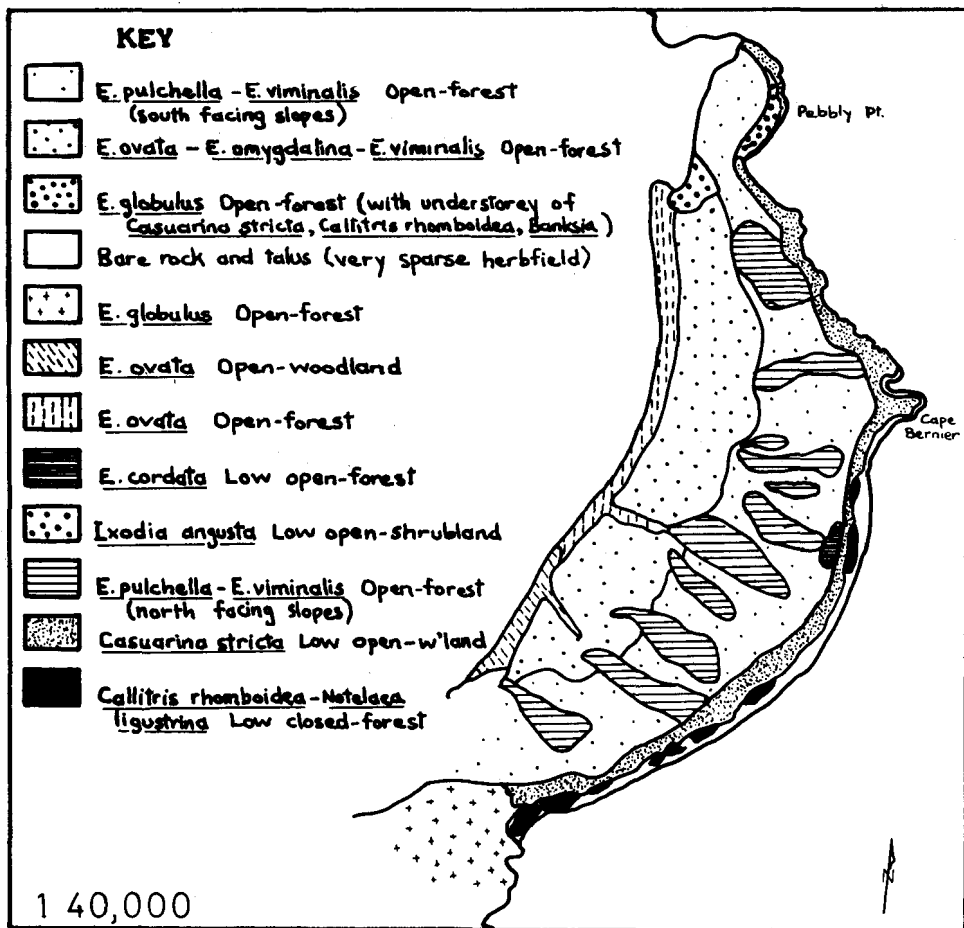


Fig. 3 Map showing the Plant Communities of the Study Area.

Halophytic Closed-herbland

Patches of this community occur as dense mats of *Tetragonia implexicoma*, *Disphyma australe*, and *Carpobrotus rossii* in places along the rocks at the base of Hellfire Bluff. These were not inspected at close quarters.

Conclusion

Altogether 203 plant species from 61 families were found in the area and a more intense scrutiny of areas such as the actual cliff faces and the halophytic herbfields would certainly reveal more. A good diversity of species was found and included the rare endemic *Eucalyptus cordata*, also the rare, delicately beautiful, and endemic *Wurmbea uniflora* occurring lower on the slopes.

An interesting diversity of plant habitats occurs in the area from dry slopes to steep damp gullies in places behind the shore to the south, from talus slopes carrying in fire protected miniature forests to *Casuarina* woodland on cliff slopes.

Botany aside, the area is one of spectacular natural scenery, especially along the ridge above Hellfire Bluff. From here, inspiring views can be obtained of a coastline which is still largely in its natural state.

Acknowledgements

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REFERENCES

- ASHTON, D.H. and MOORE, G.M. (1978):
Vegetation of Pleistocene block streams and block fields in Victoria: a successional interpretation.
Aust. J. Ecol. **3**, 43 - 56.
- BLAKE, F. (1958):
Geological Atlas 1 mile series, Buckland sheet, Dept. of Mines.
- BROWN, M.J. and BAYLY-STARK, H.J. (1979):
Vegetation of Maria Island
N.P.W.S. Tas. Tech. Rep. 79/1
- COLHOUN, E. (1975):
A Quaternary climate curve for Tasmania. Conference paper at
Australasian Conference on Climate and Climatic Change.
Monash University, 7 - 12 Dec., 40 pp.
- CURTIS, W.M. (1963):
The Student's flora of Tasmania, Part II. Govt. Printer, Tas.
- _____, (1967):
The Student's Flora of Tasmania, Part III, Govt. Printer, Tas.
- _____, (1969):
The Vegetation of Tasmania In: "The Tasmanian Yearbook",
R. Lakin Ed. Govt. Printer, Tasmania.

_____, and MORRIS, D. I. (1975):

The Student's Flora of Tasmania, Part I, (2nd Ed.), Govt. Printer, Tas.

DAVIES J.B. (1978):

Alpine and Sub-alpine Plant Communities of the Mt. Field National Park and Mt. Rufus. B. Sc. (Hons) Thesis. Botany Department, Uni. of Tas.

GENTILLI, J. (1972):

Australian Climatic Patterns. Nelson, Melbourne.

HOGG, A. and KIRKPATRICK, J.B. (1974):

The phytosociology and synecology of some southern Tasmanian eucalypt forests and woodlands.
J. of Biogeog. **1**, 227.

JACKSON, W.D. (1973):

Vegetation of the Central Plateau in "The Lake Country of Tasmania"
Proc. Roy. Soc. Tas. Symp.

JONES, D.L. and CLEMESHA, S.C. (1976):

Australian Ferns and Fern Allies, Reed Sydney.

KIRKPATRICK, J.B. (1975):

The Cape Raoul Heaths, Tasmania
Vict. Nat. **92** 180 - 187

KIRKPATRICK, J.B. (1977):

The Disappearing Heath
Tas. Cons. Trust Inc. 95 pp.

LANGFORD, J. (1965):

Weather and Climate In "Atlas of Tasmania", J.L. Davies, ed.
Lands and Surveys Department, Hobart.

MARTIN, D. (1960):

The vegetation of Mt. Wellington, Tasmania
Pap. Proc. Roy. Soc. Tas. **39** 97 - 124

RATKOWSKY, D.A. and RATKOWSKY, A.V. (1977):

Plant communities of the Mt. Wellington Range, Tasmania,
Aust. J. Ecol. **2**, 435 - 445.

SPECHT, R.L. (1970):

Vegetation. In "The Australian Environment", Leeper G.W. ed.
4th Ed. C.S.I.R.O.

WELLS, K.F., GOWLAND, P.N. and SPATE, A.P. (1977):

Natural Resources of the Buckland Training Area, Tasmania
Divn Land Use Res. Tech. Man. 77/14 C.S.I.R.O.

WILLIS, J.H. (1970):

A Handbook to Plants in Victoria, Volume 1
2nd Ed. M.U.P., Melb.

APPENDIX

CHECKLIST OF SPECIES

Except where authorities are given, the nomenclature for species in the checklist follows Curtis (1963, 1967) and Curtis and Morris (1975) for dicotyledons and gymnosperms, Willis (1970) and Townrow (1973) for monocotyledons, and Jones and Clemesha (1976) for pteridophytes.

Endemic species are prefixed by *e*, and introduced species by *i* in the checklist.

PTERIDOPHYTA : FILICINAE

ADIANTACEAE

- Cheilanthes tenuifolia*
- Pellaea falcata*
- Pteris tremula*

ASPIDIACEAE

- Polystichum proliferum*
- Rumohra adiantiformis*

ASPLENIACEAE

- Asplenium flabellifolium*
- Asplenium flaccidum*

BLECHNACEAE

- Blechnum wattsii*
- Blechnum nudum*
- Doodia media*

DENNSTAEDTIACEAE

- Pteridium esculentum*

GRAMMITIDACEAE

- Ctenopteris heterophylla*
- Grammitis billardieri*

HYMENOPHYLLACEAE

- Hymenophyllum cupressiforme*
- Hymenophyllum rarum*

POLYPODIACEAE

- Microsorium diversifolium*

PTERIDOPHYTA : LYCOPODIINAE

LYCOPODIACEAE

- Lycopodium myrtifolium*

GYMNOSPERMAE

CUPRESSACEAE

- Callitris rhomboidea*

ANGIOSPERMAE : DICOTYLEDONES

BORAGINACEAE

- Cynoglossum suaveolens*

CAMPANULACEAE

- Wahlenbergia sp.*

CARYOPHYLLACEAE

- i Cerastium fontanum*

CASUARINACEAE

- Casuarina littoralis*
- Casuarina stricta*

CHENOPODIACEAE

- Rhagodia baccata*

COMPOSITAE

- e Bedfordia salicina*
- Brachycome scapiformis*
- Cotula sp.*
- i Cirsium arvense*
- i Gnaphalium candidissimum*
- Gnaphalium collinum*
- Gnaphalium luteo-album*
- e Helichrysum antennarium*
- Helichrysum apiculatum*
- Helichrysum bicolor*
- e Helichrysum pumilum*
- e Helichrysum reticulatum*
- Helichrysum scorpioides*
- i Hypochaeris glabra*
- i Hypochaeris radicata*
- e Ixodia angusta*
- Leptorhynchos squamatus*
- Olearia argophylla*

ANGIOSPERMAE : DICOTYLEDONES

COMPOSITAE

- Olearia axillaris*
Olearia lirata
Olearia phlogopappa
Olearia ramulosa
Olearia sp. aff. ramulosa
Olearia viscosa
Senecio sp. aff. lautus
Senecio linearifolius
Senecio minimum
 ? *Senecio pectinatus*
Senecio quadridentatus
Senecio sp.
Solenogyne bellioides
 i *Sonchus asper*
 i *Sonchus oleraceus*
 i *Taraxacum officinale*

CONVOLVULACEAE

- Dichondra repens*
Convolvulus erubescens

CRASSULACEAE

- Crassula sieberana*

CRUCIFERAE

- Cardamine sp.* (possibly undescribed)

EPACRIDACEAE

- Acrotriche serrulata*
Astroloma humifusum
Brachyloma stricta
 e *Cyathodes divaricata*
 e *Cyathodes glauca*
Cyathodes juniperina
Epacris impressa
Epacris lanuginosa
 e *Epacris tasmanica* W.M. Curtis
Leucopogon australis
Leucopogon parviflorus
Lissanthe strigosa
Sprengelia incarnata

EUPHORBIACEAE

- Beyeria viscosa*
Phyllanthus gunnii
Poranthera microphylla

FICOIDEAE

- Carpobrotus rossii*
Disphyma australe
Tetragonia implexicoma

GENTIANACEAE

- Sebaea ovata*

GERANIACEAE

- Geranium potentilloides*
Geranium solanderi
Geranium sp.
Pelargonium australe

GOODENIACEAE

- Goodenia lanata*
Goodenia ovata

HALORAGACEAE

- Haloragis tetragyna*
Haloragis teucrioides
Myriophyllum sp.

HYPERICACEAE

- Hypericum gramineum*
Hypericum japonicum

LABIATAE

- i *Marrubium vulgare*
Scutellaria humilis
Teucrium corymbosum

LAURACEAE

- Cassytha pubescens*

LEGUMINOSAE : MIMOSOIDEAE

- Acacia genistifolia*
Acacia melanoxydon
Acacia mucronata
Acacia myrtifolia
Acacia verticillata var. *verticillata*

LEGUMINOSAE : PAPILIONATAE

- Bossiaea cordigera*
Bossiaea prostrata
Indigofera australis
Pultenaea daphnoides
Pultenaea juniperina
 i *Vicia sp.*

LOBELIACEAE

Lobelia alata

MALVACEAE

e Asterotrichion discolor

MYRTACEAE

*e Eucalyptus amygdalina**e Eucalyptus cordata**Eucalyptus globulus**Eucalyptus ovata**e Eucalyptus pulchella**Eucalyptus viminalis**Leptospermum lanigerum**Leptospermum scoparium**Melaleuca gibbosa**Melaleuca squarrosa*

OLEACEAE

Notelaea ligustrina

ONAGRACEAE

Epilobium sp.

OXALIDACEAE

*Oxalis sp.**Oxalis corniculata*

PITTOSPORACEAE

*Bursaria spinosa**Pittosporum bicolor*

PLANTAGINACEAE

Plantago hispida R. Br.*i Plantago lanceolata**Plantago varia*

POLYGALACEAE

Comesperma volubile

POLYGONACEAE

i Rumex acetosella

PRIMULACEAE

i Anagallis arvensis

PROTEACEAE

*Banksia marginata**e Lomatia tinctoria*

RANUNCULACEAE

*Clematis aristata**e Clematis gentianoides**Ranunculus sp.*

RHAMNACEAE

Pomaderris apetala

ROSACEAE

*Acaena echinata**Acaena novae-zelandiae**Acaena ovina**Rosa sp.**Rubus parvifolius*

RUBIACEAE

*Coprosma hirtella**Coprosma quadrifida**e Galium albescens**Galium gaudichaudii*

RUTACEAE

*Correa reflexa**Eriostemon verrucosus**Zieria arborescens*

SANTALACEAE

*Exocarpos cupressiformis**Exocarpos strictus*

SAPINDACEAE

Dodonaea viscosa

SCROPHULARIACEAE

*Euphrasia collina**Mazus pumilio**i Verbascum thapsus**Veronica calycina**e Veronica formosa**Veronica gracilis*

STYLIDIACEAE

Stylidium graminifolium

THYMELAEACEAE

*Pimelea humilis**e Pimelea nivea*

UMBELLIFERAE

*Daucus glochidiatus**Eryngium vesiculosum**Hydrocotyle javanica**Hydrocotyle sp.**Xanthosia tridentata*

URTICACEAE

*Australina pusilla**Urtica incisa*

VIOLACEAE

*Viola hederacea**Viola sieberana*

ANGIOSPERMAE : MONOCOTYLEDONES

CYPERACEAE

*Carex appressa**Carex gaudichaudiana* ?*Carex inversa**Gahnia* sp.e *Gahnia graminifolia* Rodw.*Lepidosperma laterale**Lepidosperma lineare*e *Lepidosperma lineare* var. *inops**Schoenus apogon**Scirpus* sp.

GRAMINEAE

i *Aira caryophyllea*i *Cynosurus**Danthonia* sp.*Dichelacne* sp.*Echinopogon ovatus*i *Poa annua**Poa labillardieri**Poa poiformis**Poa* sp.*Stipa teretifolia**Themeda australis*

HYPOXIDACEAE

Hypoxis hygrometrica

IRIDACEAE

Diplarrena moraea

JUNCACEAE

*Juncus pauciflorus**Juncus* spp.*Luzula* sp.

LILIACEAE : ANTHERICEAE

*Bulbine bulbosa**Thysanotus patersoni*

LILIACEAE : DIANELLEAE

*Dianella revoluta**Dianella tasmanica*

LILIACEAE : XEROTEAE

Lomandra longifolia

LILIACEAE

e *Wurmbea uniflora* (R. Br.)

Macfarlane and Brittan

CORRIGENDUM:

In the paper "Some plant records for the Cape Barren Island Wilderness Area" by J.S. Whinray, which appeared in *Tasmanian Naturalist* No. 51, November 1977, the following corrections should be made -

Page 11, para. 3, line 5 - Replace "six" with "five".

Page 12, para. 3, line 1 - Add the word "Tasmanian" after the word "six".

SNARES CRESTED PENGUIN

The report on the skeleton found in June 1979 and published in *Tasmanian Naturalist* No. 60 was written without knowledge of the two prior sightings detailed below:

1. One live, South Bruny Is., 15/12/77; Tas. Bird Report No. 7;
2. One live, Port Arthur, found by National Parks & Wildlife Service Ranger in August 1978: see Tas. Bird Report No. 8.

The skeleton found at Okehampton therefore becomes the fifth Australian record of this species. (Editor)

THE FIRST RECORD OF THE BAT *Eptesicus sagittula* IN TASMANIA

by D.E. Rounsevell

National Parks and Wildlife Service, Hobart

All bats of the genus *Eptesicus* found in Tasmania had been considered as one species, *E. pumilus* until recently (e.g. Green, 1965, 1973). However, McKean *et al.*, (1978), from specimens collected throughout Australia, found that the genus contains at least four species, one of which comprises two subspecies. Carpenter *et al.*, (1978) have provided criteria for the identification of these forms.

The four specimens of *Eptesicus* from Tasmania examined by McKean *et al.*, (1978) were allocated to *E. vulturnus*, a small forest roosting species which then became the only member of the genus known from Tasmania. The name *E. pumilus* was reserved for two subspecies from northern and eastern Australia, *E.p. pumilus* and *E.p. caurinus* which roost in caves.

On 15 October 1979 Mr. P. Tonelly found a small bat in a log near Latrobe and subsequently forwarded it to me for identification. It was an *Eptesicus sp.* but not *vulturnus* because its forearms exceeded the maximum length known for that species. The bat was then positively identified by Mr. G.C. Richards of the CSIRO Division of Wildlife Research, Canberra, as *E. sagittula*, a larger forest roosting species. *E. sagittula* had just been described as a new species from the south-eastern states of the Australian mainland and Lord Howe Island (McKean *et al.*, 1978).

Since then it has become apparent that both *E. vulturnus* and *E. sagittula* may occur widely in Tasmania. A maternal colony of *E. sagittula* was found south-east of Oatlands in January 1980 (D.G. Peters, pers. comm.). Museum collections in Tasmania contain specimens ranging in size from the smallest to the largest species of *Eptesicus* (R.H. Green pers. comm.).

Another forest roosting species, *E. regulus* also occurs in southern Australia (McKean *et al.*, 1978) but, so far, it has not been recorded from Tasmania. Positive identifications of these species cannot be made by external examination alone but they may be preliminarily identified by using the measurements in the table below. I wish to thank Mr. P. Tonelly and Mr. G.C. Richards.

Eptesicus spp. Forearm lengths (mm) from McKean *et al.*, (1978) and Carpenter *et al.*, (1978)

	Males	Females
<i>E. vulturinus</i>	x = 28.2 ± 1.10 (26.5 to 30.2)	x = 30.1
<i>R. regulus</i>	x = 31.2 ± 1.24 (28.8 to 33.7)	—
<i>E. sagittula</i>	x = 34.2 ± 1.38 (31.6 to 36.1)	x = 34.6

Carpenter, S.M., McKean, J.L. and Richards, G.C. 1978. Multivariate morphometric analysis of *Eptesicus* (Mammalia: Chiroptera) in Australia. **Australian Journal of Zoology** 26: 629-638.

Green, R.H. 1965. Observations on the little brown bat *Eptesicus pumilus* in Tasmania. **Records of the Queen Victoria Museum** No. 20.

Green, R.H. 1973. **The Mammals of Tasmania**. Launceston. The Author.

McKean, J.L., Richards, G.C. and Price, W.J. 1978. A taxonomic appraisal of *Eptesicus* (Chiroptera: Mammalia) in Australia. **Australian Journal of Zoology** 26: 529-537

A STRAY? DIVING PETREL

On 6 January 1974 Nigel Brothers picked up a beach-washed Diving Petrel on a small island off Bluestone Bay, Freycinet Peninsula. Because its measurements were slightly outside the normal range for the Common Diving Petrel which frequents our coastal waters the specimen was referred to F.C. Kinsky of the Dominion Museum, Wellington, N.Z., as he is a recognised authority on seabirds.

Mr. Kinsky's report was that the bird was a Common Diving Petrel, but belonging to the sub-species *chathamensis* from Chatham Island, south of New Zealand, and that it was a young bird only fledged a few weeks.

Could it be that there is a breeding colony of this sub-species on our east coast?
L.E.W.

GREY-TAILED TATTLERS PERCHING

At South Arm on 18 February 1978 I disturbed two tattlers from rocks on the north side of "West Bay". They flew to and alighted on stakes standing in the water, a habit quite unusual among wading birds. I saw a similar occurrence in the same spot on 25 February, 1951.

L.E.W.