

Flora of Burns Beach Coastal Reserve

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Landscape

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WESTERN AUSTRALIA

From the seashore inland, a series of plant communities can be observed. First a coastal cliff is encountered, then a relatively flat plain or low dunes are encountered on top of the cliff. After this is a low depression, or small valley. Then the land rises to a low limestone hill, behind which is a deep valley. The land then rises again into a series of undulating dunes of Spearwood sands and limestone ridges. Each of these land forms has a characteristic vegetation association, and a typical vegetation. A diagrammatical transect (Figure 1) of this landform is included (detailed site descriptions from each community are also appended):

Vegetation

AT the coastal margin the zonation of the plant communities is very abrupt, and a table of species distribution is appended to illustrate this (Table 1)
Considering the plant communities, in detail from the coast inland.

A: Cliff slopes

Community 1 on the seaward cliff slope
Nitraria billardieri low shrubland (No Detailed Site, species listed in table 1)

B. Edges of cliff

Community 2 on the shallow soil over limestone:-
Frankenia pauciflora and *Sarcocornia quinqueflora* low open shrubland over *Sporobolus virginicus* herbland. (Site 1)

C: Small dune or exposed limestone behind the cliff

Behind the cliff, either exposed limestone or small sand dunes are found.

Community 2 on the slightly deeper sandy soil on the dune:-
Scaevola crassifolia low closed to open shrubland (Site 2)
OR Community 3 where the limestone is exposed:-
Melaleuca cardiophylla low heath (Site 3).

D: Depression behind *Melaleuca cardiophylla*

Behind the cliff top communities and before the limestone hill a shallow valley is found (see Transect) Depending on the depth of sand over limestone, either
Community 5
Acacia rostellifera shrubland (Site 5)
or
Community 4 on shallow soil over limestone in a depression:-
Dryandra sessilis heath (Site 4)

E: Limestone Hill

Next a steep hill is encountered, dominated either by the *Dryandra sessilis* community or :
Community 6 mixed species heath (Site 6).

F: Dunes and ridges of Spearwood Sands

Behind this first hill on higher sandy soils there are

F: Spearwood Dunes

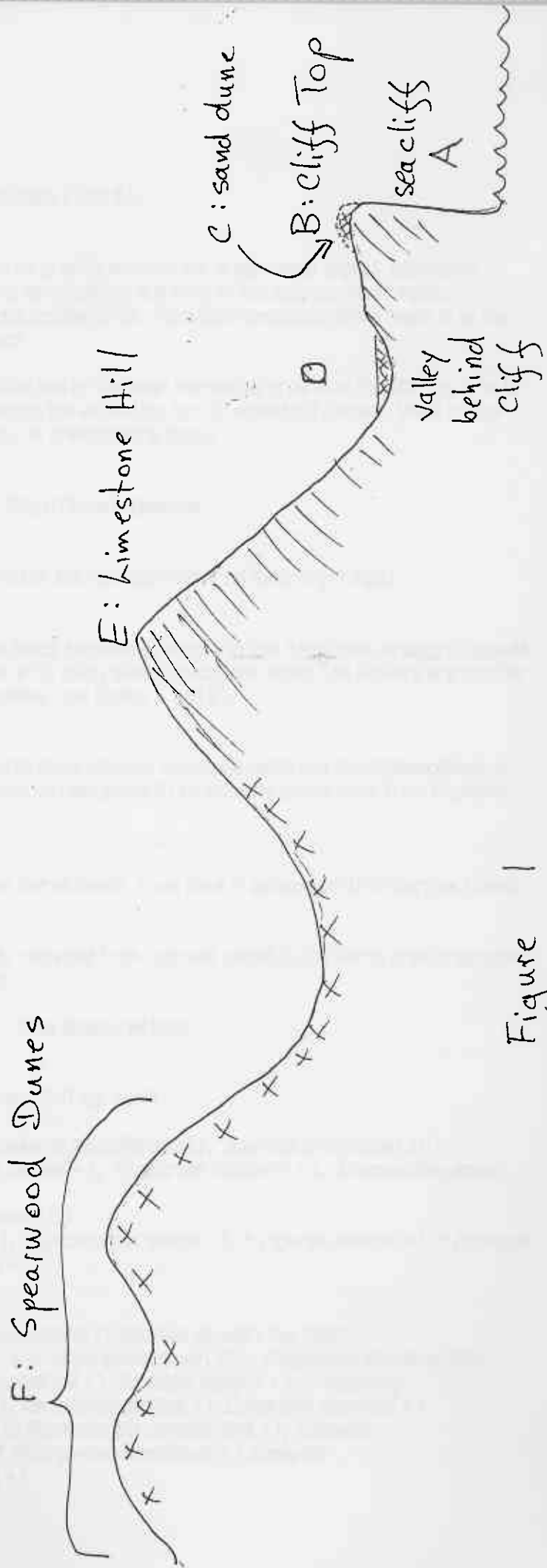


Figure 1

Banksia woodlands (Site 7)

OR

various combinations of mixed species heath (Site 8),

These rapidly changing plant communities greatly enhance the areas visual appeal, especially during winter and spring. Such cliff top communities are rare in the metropolitan region, especially those dominated by *Melaleuca cardiophylla*. *Melaleuca cardiophylla* low heath is at the southern end of its range at Burns Beach.

The vegetation of this area has been disturbed by the ever increasing growth of the cliff top 4 W.D. tracks extending through the area. although the vegetation is still essentially intact, these tracks allow weed invasion and erosion to occur at unacceptable levels.

Significant Species

Alogyne huegelii var *glabrata*

This coastal endemic is poorly conserved in the Metropolitan area (Keighery, 1992).

Hibbertia spicata ssp. *leptotheca*

A coastal limestone endemic. At Burns Beach the species occurs in the *Melaleuca cardiophylla* heath as a low densely branched domed shrub, with shiny almost succulent leaves. The flowers are smaller than usual, pale yellow with reflexed petals (see photos 1 and 2).

Carpobrotus sp (GK 11,518)

Plants of this taxon were located on burnt sites between limestone heath and *Banksia* woodland on land immediately behind the coastal reserve (see photo 3). Previously only known from Hepburn Heights.

Melaleuca cardiophylla

This species is at the end of its range at Burns Beach, from here it extends north to Barrow Island

Plantago exilis

A poorly known species, previously only recorded from Rottnest Island in the Perth area, is abundant under the *Melaleuca cardiophylla* heath.

Site descriptions

Site 1

Rhagodia baccata and *Frankenia pauciflora* Cliff top heath

(50-70 % cover, 20-30 cm. tall)

Stratum 1: *Rhagodia baccata* (20), *Frankenia pauciflora* (20), *Scaevola crassifolia* (20), *Threlkeldia diffusa* (+), *Templetonia retusa* (+), *Myoporum insulare* (+), *Eremophila glabra* (+), * *Tetragonia decumbens* (+)

Stratum 2 Sedges: *Acanthocarpus preissii* (5)

Stratum 3: Herbs: * *Romulea rosea* (+), * *Sonchus oleraceus* (+), * *Lagurus ovatus* (+), * *Medicago polymorpha* (+), *Bromus arenarius* (+).

Site 2

Scaevola crassifolia, *Spyridium globulosum* and *Myoporum insulare* low heath

Stratum 1: *Scaevola crassifolia* (25), *Spyridium globulosum* (25), *Myoporum insulare* (25), *Olearia axillaris* (20), *Santalum acuminatum* (+), *Rhagodia baccata* (+), *Eremophila glabra* (+), * *Tetragonia decumbens* (+), *Threlkeldia diffusa* (+), *Exocarpus sparteus* (+).

Stratum 2: Vines/Perennial herbs: cc=10: *Hardenbergia comptoniana* (+), *Kennedia coccinea* (+), *Kennedia prostrata* (+), * *Palargonium capitatum* (+), *Cassytha racemosa* (+), *Carpobrotus virescens* (+).

Stratum 3 Sedge-like plants: cc=10: *Stipa flavescent* (3), *Tricoryne elatior* (+), *Isolepis nodosa* (5), *Conostylis aculeata* (+) *Sporobolus virginicus* (2)
Stratum 4 Herbs cc=2: *Senecio laetusa* (2), * *Vulpia bromioides* (+).

Site 3

Melaleuca cardiophylla low shrubland (10-20 cm. tall, 30-60% cover, on cliff top)

Stratum 1: *Melaleuca cardiophylla* (45), *Acrotriche cordata* (30), *Nemcia reticulata* (30), *Hibbertia racemosa* (10), *Hemiantra pungens* (+), *Olex benthamiana* (+), *Rhagodia baccata* (+), *Acacia truncata* (+), *Acacia cochlearia* (+), *Olearia axillaris* (+), *Scaevola crassifolia* (+), *Templetonia retusa* (+), *Thomasia cognata* (+), *Leucopogon parviflorus* (+), *Eremophila glabra* (+), *Hardenbergia comptoniana* (+).

Stratum 2: Sedges; cc=10: *Lepidosperma gladiatum* (10), *Lepidosperma angustatum* (+)

Stratum 3: Herbs; cc=5: * *Silene gallica* (+), * *Sonchus oleraceus* (3), *Senecio laetusa* (1) * *Lagurus ovatus* (+), * *Romulea rosea* (+), *Plantago exilis* (+), * *Anagallis arvensis* (+)

Site 4

Dryandra sessilis low dense heath

Stratum 1: Shrubs; 50cm - 1m, cc=70: *Dryandra sessilis* (60), *Melaleuca huegelii* (4), *Calothamnus quadrifidus* (4), *Spyridium globulosum* (+), *Olearia axillaris* (+), * *Pelargonium capitatum* (+)

Stratum 2: Vines; cc=1: *Hardenbergia comptoniana* (+), *Cassytha racemosa* (+).

Stratum 3: Sedges; cc=+: *Isolepis nodosa* (+)

Stratum 4: Herbs; cc=5: *Conostylis aculeata* (3), *Sporobolus virginicus* (1), * *Solanum nigrum* (+), *Daucus glochidiatus* (+)

Site 6

Melaleuca huegelii low dense heath

Stratum 1: shrubs; 30cm - 1m, cc=60: *Melaleuca huegelii* (45), *Dryandra sessilis* (12), *Olearia axillaris* (2), *Leucopogon australis* (+), *Rhagodia baccata* (+), *Phyllanthus calycinus* (+), *Grevillea thelemania* (+),

Stratum 2: Vines; cc=5: *Hardenbergia comptoniana* (5), *Cassytha flava* (+), *Thysanotus patersonii* (+).

Stratum 3: Sedges/Grasses; cc=5: *Acanthocarpus preissii* (3), *Loxocarya flexuosa* (2), *Lomandra maritimum* (+), *Stipa flavescent* (+).

Stratum 4 Herbs; cc=5: *Crassula colorata* (4), * *Anagallis arvensis* (1), *Tricoryne elatior* (+), * *Catapodium rigidum* (+), *Heliopsis corymbosum* (+), *Brachycomesp* (+).

Site 5

Acacia rostellifera tall closed shrubland

Stratum 1: Shrubs; 4m, cc=100% *Acacia rostellifera* (91), *Acacia cyclops* (9)

Stratum 2 shrubs 50cm - 2m, cc=3: *Melaleuca huegelii* (2), *Rhagodia baccata* (1), *Spyridium globulosum* (+), *Phyllanthus calycinus* (+), *Enchylaena tomentosa* (+), *Dryandra sessilis* (+), * *Pelargonium capitatum* (+)

Stratum 3 Vines, CC=+: *Hardenbergia comptoniana* (+).

Stratum 4 Prostrate shrubs, cc=+: *Carpobrotus virescens* (+).

Stratum 5 Herbs cc=20: * *Crassula glomerata* (15), * *Lagurus ovatus* (5), * *Solanum nigrum* (+).

Site 7

Xanthorrhoea preissii low open heath

Stratum 1: shrubs; 1-2m, cc=1: *Xanthorrhoea preissii* (1)

Stratum 2: shrubs; 30-50cm, cc=30: *Hibbertia hypericoides* (15), *Calothamnus quadrifidus* (5), *Acacia pulchella* (5), *Jacksonia sericea* (5), *Allocasuarina humilis* (+), *Conostephium pendulum* (+), *Hakea prostrata* (+), *Melaleuca acerosa* (+), *Hakea lissocarpa* (+).

Stratum 3: shrubs; 5-20cm cc=20: *Petrophile brevifolia* (4), *Bossiaea eriocarpa* (4), *Astroloma pallidum* (4), *Petrophile macrostachya* (4), *Dryandra nivea* (2), *Scaevola canescens* (+), *Pimelea sulphurea* (+), *Astroloma microstachya* (+), *Gompholobium aristatum* (+)

Stratum 4: sedges; cc=2: *Loxocarya cinerea* (2), *Conostylis aculeata* (+).

Stratum 5: herbs; cc=5: *Trachymene pilosa* (5), * *Heliophila pusilla* (+), *Calandrinia granulifera* (+).

Site 8

Banksia menziesii low woodland

Stratum 1: trees; 2-3m.cc=20: *Banksia menziesii* (20)

Stratum 2: shrubs; 1-2m.cc=5: *Acacia saligna* (3), *Dryandra sessilis* (1), *Myoporum insulare* (+), *Xanthorrhoea preissii* (+), *Rhagodia baccata* (+), *Hardenbergia complanata* (+).

Stratum 3: shrubs; 15-80cm.cc=5: *Jacksonia sericea* (4), *Leucopogon parviflorus* (+), *Phyllanthus calycinus* (+), *Dryandra nivea* (+), * *Carpobrotus edulis* (+), * *Pelargonium capitatum* (+).

Stratum 4: Sedges; cc=15: *Lomandra maritimum* (10), *Loxocarya flexuosa* (2), *Conostylis aculeata* (2), *Lepidosperma angustatum* (1), *Schoenus grandiflora* (1), *Dianella revoluta* (+).

Stratum 5: Herbs; cc=5: * *Lagurus ovatus* (5), * *Ehrharta longifolia* (+).

References

Keighery, G.J. (1992) Significant Species of the Coastal Belt (Quindalup and Spearwood Systems) of the Swan Coastal Plain Internal Report, Dept. Conservation and Land Management.

Figure 1: Landform Transect

Photo 1: *Hibbertia spicata* ssp. *leptotheca*, habit.

Photo 2: *Hibbertia spicata* ssp. *leptotheca*, flowers.

Photo 3: *Carpobrotus* sp (GK 11,518)

Table 1: Cliff and Cliff-top Vegetation

Taxon	Key			
	A: Cliff slopes			
	B: Edges of cliff			
	C1: Small dune behind cliff			
	C2: Limestone flat behind dune			
	A	B	C1	C2
<i>Nitraria billardieri</i>	*	-	-	-
<i>Bromus arenarius</i>	-	*	-	-
<i>Acanthocarpus preissii</i>	-	*	*	*
<i>Eremophila glabra</i>	-	*	*	*
<i>Sarcocornia quiqueflora</i>	-	*	-	-
<i>Frankenia pauciflora</i>	-	*	-	-
* <i>Lagurus ovatus</i>	-	*	-	*
* <i>Medicago polymorpha</i>	-	*	-	-
<i>Myoporum insulare</i>	*	*	*	-
<i>Rhagodia baccata</i>	-	*	*	*
* <i>Romulea rosea</i>	-	*	-	*
* <i>Sonchus oleraceus</i>	-	*	-	*
<i>Scaevola crassifolia</i>	-	*	*	*
<i>Templetonia retusa</i>	-	*	-	*
<i>Threkeldia diffusa</i>	-	*	*	-
* <i>Tetragonia decumbens</i>	*	*	*	-
<i>Spyridium globulosum</i>	-	-	*	-
<i>Santalum acuminatum</i>	-	-	*	-
<i>Olearia axillaris</i>	-	-	*	*
<i>Isolepis nodosa</i>	-	-	*	-
* <i>pelargonium capitatum</i>	-	-	*	*
<i>Sporobolus virginicus</i>	-	*	*	-
<i>Conostylis aculeata</i>	-	-	*	-
* <i>Vulpia myurus</i>	-	-	*	-
<i>Kennedia coccinea</i>	-	-	*	-
<i>Kennedia prostrata</i>	-	-	*	-
<i>Hardenbergia comptoniana</i>	-	-	*	*
<i>Senecio lautus</i>	-	*	*	*
<i>Carpobrotus virescens</i>	*	-	*	*
<i>Cassytha racemosa</i>	-	-	*	*
<i>Stipa flavescens</i>	-	-	*	-
<i>Tricoryne elatior</i>	-	-	*	*
<i>Exocarpus sparteus</i>	-	-	*	*
<i>Melaleuca cardiophylla</i>	-	-	-	*
<i>Acrotriche cordata</i>	-	-	-	*
<i>Nemcia reticulata</i>	-	-	-	*
<i>Acacia truncata</i>	-	-	-	*
<i>Olax benthamiana</i>	-	-	-	*
<i>Hemianandra pungens</i>	-	-	-	*
<i>Hibbertia spicata</i> ssp.	-	-	-	*
<i>leptotheca</i>	-	-	-	*
<i>Acacia cochlearis</i>	-	-	-	*
<i>Thomasia cognata</i>	-	-	-	*
<i>Leucopogon parviflorus</i>	-	-	-	*
<i>Lepidosperma angustatum</i>	-	-	-	*
* <i>Silene gallica</i>	-	-	-	*
<i>Lepidosperma gladiatum</i>	-	-	-	*