

## Otama Beach Dunes (Coromandel)

### Weed inventory and threat assessment

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#### Inspection

David Stephens carried out one inspection, on foot on 16<sup>th</sup> November 2001. This was confined to the dune system proper and did not include the beach area to the east across the Otama River.

#### Observations and issues

##### General

The duneland falls naturally into three zones, (1) the area to the rear, (2) the mid-dune zone, and (3) the foredune.

Zone 1 is separated by the road from farmland at the western end, and the adjacent Otama wetland reserve (T10 040-042) at the eastern end. It is remarkable for the presence of a band of residual ecotone vegetation at the landward foot of the mid-dunes capable of reaching a stable, more or less geographically fixed, equilibrium with sand movement. Principal species are manuka, karo, mingimingi, mapou, *Coprosma australis*, and bracken. Other indigenous species include *Menhadenbeckia complexa*, *Isolepis nodosus*, and shore bindweed, with occasional flax, pohutukawa, kawakawa and localised *Carex dissita*, cabbage tree, and giant umbrella sedge. Various exotic weed species, (also mainly localised), are present at low densities throughout. These include wild carrot, field bindweed, marram, pasture grasses (such as prairie grass, tall fescue, cocksfoot, and timothy), blackberry, pampas, wilding pines, English oak and *Eucalyptus* spp. and tree lupin. Gorse, Spanish heath and *Hakea sericea* are present also. Generally, however, provided the current ecotone vegetation is preserved and enhanced, and exotic weeds are controlled, Zone 1 is appropriately vegetated. Eleven wilding pines were counted at various places about the intersection of this zone and Zone 2.

Zone 2 is intermediate between Zone 1 and the foredune system (Zone 3). It contains two large eroding middens about 500m from the western end of the beach, and at least five others (Easedale & Jacomb, 1982). About 300m past the large middens, this system curves back towards the road, meeting it about the river bridge over the Otama River, and forming a large shallow hollow. This contains frequent *Coprosma acerosa* and *Ozothamnus leptophyllus* and dense populations of sand wind grass and haretail. There are small patches of marram, and of *Carpobrouss edulis* (both also localised elsewhere in this zone). Patches of pingao on this flat area, and behind the two large middens, show the effects of exotic vegetation encroaching over Zone 2 towards Zone 3, and also indicate the extent to which this species originally spread back across the dunes. Where this hollow area meets the true western bank of the Otama River there are populations of *Isolepis cernua*, *Zoysia minima*, and oioi backed by patches of marram, and the river margin contains extensive coastal paspalum. A solitary (seeding) *Austrofestuca littoralis* plant was found in open sand just above the riverine margin here. Indigenous vegetation includes pingao, *Isolepis nodosus*, shore bindweed, sand wind grass, *Disphyma australe*, occasional flax, and extensive spinifex and *Coprosma acerosa*. Pasture species such as sweet vernal, cocksfoot and Yorkshire Fog, and tree lupin are present at low densities across Zone 2. Dense infestations of haretail extend into the foredune area (Zone 1) in places. Occasional tree and shrub species in this zone include *C. robusta*, pohutukawa, kawakawa, *Coprosma rhamnoides*, and weed species Mexican devil (two plants), Spanish heath and *Prunus*. Other weed species include large quaking grass, pampas and montbretia. Generally, however, Zone 2 still contains extensive areas of open sand.

Zone 3 contains unusually dense, frequent, populations of pingao, all seeding and looking very healthy. Spinifex and sand bindweed are the other major components. In all, 30 plants of *Austrofestuca littoralis* (including 7 seedlings) were discovered along the top edge of the foredune, with the greatest population at the point where the mid-dune system (Zone 2) begins sweeping back towards the road. All plants looked healthy, and mature specimens bore 4-6 seedheads. This species seemed to prefer open sand areas with only low densities of spinifex, pingao, and sand bindweed present. Markedly, it did not grow where haretail had pushed to the top of the foredune. *Ozothamnus leptophyllus*, particularly at the eastern end, and *Coprosma acerosa*,

are frequent in this zone. There are occasional individual (small) plants of marram. One pine seedling was seen.

## Conclusions

1. The duneland system at Otama has been compromised by the partial removal of a marginal ecotone containing a mix of indigenous species that can reach a stable, more or less fixed, geographical equilibrium with sand movement. However, the presence of the wetland reserve to the south, and a residue of appropriate species between the road (and farmland) and the mid-dune area, have buffered the consequences, such that the Otama duneland is still the best representative example remaining on the Coromandel Peninsula. Exotic weed species (e.g. marram, haretail and pasture grasses) have formed the basis for a vegetation cover that inhibits perpetuation of open sand areas in Zone 2. Notwithstanding this, there are still extensive patches of bare sand in that zone and Zone 3 functions as an effective foredune containing large healthy populations of pingao, and more than 30 plants of the rare and severely threatened sand tussock, *Austrofestuca littoralis*. Importantly these species bore heavy loads of seed.
2. The riverine margins of Otama River and Gwaimata Stream (to the west) are densely covered in coastal paspalum.
3. Only one nesting pair of New Zealand dotterel was seen.
4. There is a constant seed source for wilding pines from mature stands covering hillsides to the west. Generally, these and pampas, Spanish heath, exotic iceplant and marram, are present in controllable, low, densities.
5. Remedial and preventative measures should include:
  - (i) Monitoring and eradication of exotic species that increase the problems evident in Zones 1 and 2, particularly marram, wilding pines, pampas, gorse, Spanish heath, needle bush and exotic iceplant. This should include general “housekeeping” to eradicate individuals (eg the one arum lily, and two Mexican devil plants seen).

- (ii) The planting of ecotone species along the length of Zone 1.
- (iii) The eradication of exotic weeds adjacent to or surrounding pingao and *Coprosma acerosa* in Zone 2, i.e. the provision of open sand.
- (iv) The protection of *Australofestuca littoralis*, seed collection, and restorative planting of this species. Protection may include hand-pulling of haretail and other weeds that may move to close proximity.

### Plant species inventory

* <i>Acacia mearnsii</i>	black wattle
* <i>Ageratina adenophora</i>	Mexican devil
* <i>Ammophila arenaria</i>	marram
* <i>Anthoxanthum odoratum</i>	sweet vernal
* <i>Briza maxima</i>	large quaking grass
* <i>Bromus diandrus</i>	ripgut brome
* <i>Bromus willdenovii</i>	prairie grass
* <i>Cakile maritima</i>	sea rocket
<i>Calystegia soldinella</i>	shore bindweed
<i>Carex dissita</i>	
<i>Carex pumila</i>	
* <i>Carpobrotus edulis</i>	exotic iceplant
* <i>Convolvulus arvensis</i>	field bindweed
<i>Coprosma acerosa</i>	
<i>Coprosma australis</i>	
<i>Coprosma rhamnoides</i>	
<i>Coprosma robusta</i>	
<i>Cordyline australis</i>	cabbage tree
* <i>Cortaderia selloana (jubata?)</i>	pampas
* <i>Crepis capillaris</i>	hawksbeard
* <i>Crococsmia x crocosmifolia</i>	montbretia
<i>Cyperus ustulatus</i>	giant umbrella sedge
* <i>Dactylus glomerata</i>	cocksfoot
* <i>Daucus carota</i>	wild carrot

<i>Desmoschoenus spiralis</i>	pingao
<i>Dichelachne crinita</i>	long-hair plume grass
<i>Disphyma australe</i>	ice plant
* <i>Erica lusitanica</i>	Spanish heath
* <i>Eucalyptus</i> spp.	
* <i>Festuca arundinacea</i>	tall fescue
* <i>Ficus rubiginosa</i> (needs confirmation)	Port Jackson fig
<i>Geniostoma rupestre</i> var <i>ligustrifolium</i>	hangehange
* <i>Hakea sericea</i>	needle bush
<i>Histiopteris incisa</i>	water fern
* <i>Holcus lanata</i>	Yorkshire fog
<i>Isolepis nodosa</i>	knobby clubrush
<i>Isolepis cernua</i>	slender clubrush
<i>Korthalsella salicornioides</i>	dwarf mistletoe
<i>Lachnagrostis billiarderei</i>	sand wind grass
* <i>Lagarus ovatus</i>	haretail
<i>Leptocarpus similis</i>	oioi
<i>Leptospermum scoparium</i>	manuka
<i>Leucopogon fasciculatus</i>	mingimingi
* <i>Lupinus arboreus</i>	tree lupin
<i>Macropiper excelsum</i>	kawakawa
<i>Metrosideros excelsa</i>	pohutukawa
<i>Microtis unifolia</i>	onion orchid
<i>Muehlenbeckia complexa</i>	pohuehue
* <i>Myosotis arvensis</i>	field forget-me-not
<i>Myrsine australis</i>	mapou
* <i>Orobanche minor</i>	broom rape
* <i>Oxalis corniculata</i>	horned oxalis
<i>Ozothamnus leptophyllus</i>	tauhinu
* <i>Paspalum vaginatum</i>	coastal paspalum
<i>Phormium tenax</i>	flax
* <i>Phleum pratense</i>	timothy
* <i>Phytolacca octandra</i>	inkweed
<i>Pimelea prostrata</i>	

<i>*Pinus</i> spp.	wilding pines
<i>Pittosporum crassifolium</i>	karo
<i>*Prunus</i> spp. (several)	
<i>Pseudopanax lessonii</i>	five-finger
<i>Pteridium esculentum</i>	bracken
<i>*Quercus robur</i>	English oak
<i>*Rosa rubiginosa</i>	sweet briar
<i>*Rubus fruticosus</i>	blackberry
<i>*Silene gallica</i>	catchfly
<i>*Solanum mauritianum</i>	woolly nightshade
<i>*Solanum nigrum</i>	black nightshade
<i>Spinifex sericeus</i>	spinifex
<i>*Stenotaphrum secundatum</i>	buffalo grass
<i>*Taraxacum officinale</i>	dandelion
<i>*Trifolium repens</i>	white clover
<i>*Ulex europaeus</i>	gorse
<i>*Zantedeschia aethiopica</i>	arum lily
<i>Zoysia minima</i>	