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## CONSERVATION ADVISORY SCIENCE NOTES

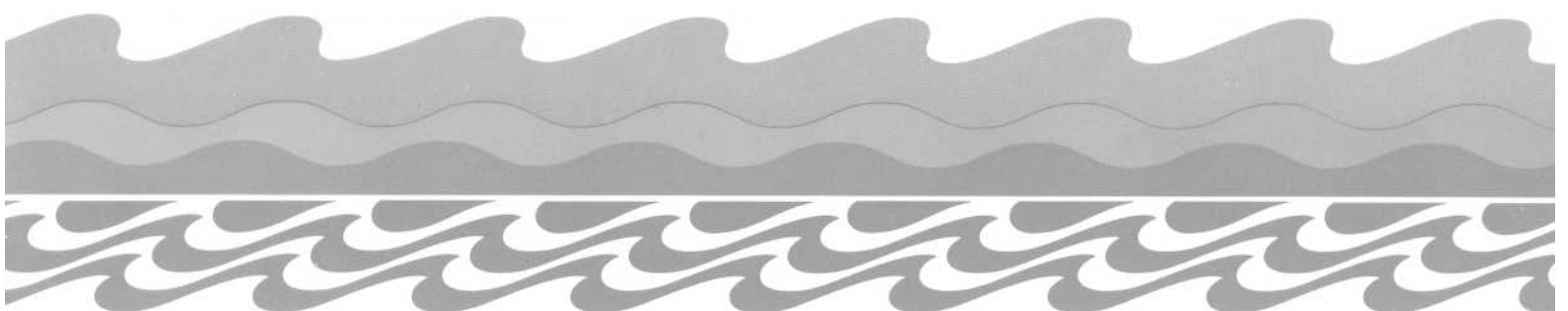
No. 5

### ECOLOGICAL RESTORATION OF MANA ISLAND : THREATENED PLANTS

(Short Answers in Conservation Science)

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## **ECOLOGICAL RESTORATION OF MANA ISLAND THREATENED PLANTS**

### Threatened plants in relation to other management objectives

Threatened plant conservation is affected by several distinct restoration objectives on Mana Island. These include the restoration of Mana Island's indigenous biotic communities (and possibly several mainland communities as well), the continuing protection of threatened plants and animals that are relict on the island as a result of reductions in their former range, and the use of the island as a habitat for nationally or regionally threatened plants and animals not known to have been definitely present originally. Although there will be conflicts of interest between these objectives at times, it is important to recognise that all are legitimate aims in their own right, deserving of intensive efforts to reconcile with each other.

### The current situation - what has been achieved

One relict species on Mana Island is a nationally threatened plant: Cook's scurvy grass (which is a native cress). Nationwide this species is rare and on Mana it is restricted to one small nutrient-rich locality. Plants have been propagated in at least 2 gardens (one on Mana) but so far there has been little success with re-establishing them in the wild.

### What could be achieved?

What threatened coastal or even lowland plants elsewhere in New Zealand would one consider establishing on Mana Island? For example, suggestions have been made that some of the threatened plants of the Poor Knights or Three Kings Islands could be established on Mana. Leaving aside the question of ecological suitability of Mana for such plants, such suggestions are unnecessary because recovery of most threatened coastal plants could be achieved within the area of their natural range, sometimes in suitably protected mainland sites. There is not the general need for use of predator-free islands as habitats for threatened plants as there is for many threatened animals; nevertheless, islands free of mammalian browsers may be required for some threatened species of mistletoe and *Dactylanthus taylori*. It has generally been accepted that Mana's use as a habitat for threatened plants is concentrated primarily on regionally threatened species from the Sounds-Wellington Ecological Region, including some that are nationally threatened as well. This guideline parallels the use of the Region as the primary source of plants for community restoration on the island (Timmins et al. 1987).

### Boundaries of the Wellington Ecological District

The boundaries of this district, which is one of five ecological districts within the Sounds-Wellington Ecological Region, are relevant to this discussion. At present Mana and Kapiti Islands, together with the adjacent coast, are placed in the Cook Strait Ecological District which includes the northern and eastern coastline and outer islands of the Marlborough Sounds. Colin Ogle has argued that these District boundaries bring together parts of the North and South Islands between which there are significant differences in plant and animal species. It would therefore be more useful to include Mana and Kapiti Islands within the Wellington Ecological District and separate this district from those of the Sounds.

I agree with this argument. In my view the decision to separate a Cook Strait Ecological District was based mainly on the strong influence of climate, particularly effects of wind-carried salt, which are expressed in the vegetation of both sides of the Strait. There are, however, other parts of New Zealand, e.g. Foveaux Strait, Cape Egmont, where this climatic factor is of great importance but where it has not been used as a basis for separating off a whole ecological district. Separation of a Wellington Ecological District would leave the boundaries of the Sounds-Wellington Ecological Region to draw attention to the fact that, as well as differences, there are important ecological similarities between the North and South Islands in the Cook Strait region.

I therefore concur with Colin Ogle's suggestion, that for the purposes of Mana island restoration work at least, the island is included in the Wellington Ecological District, the western boundary of which is re-drawn to take in not only Mana and Kapiti Islands, but also all the mainland coast from Paekakariki south to Sinclair Head.

With respect to regionally threatened plants that could be introduced to Mana Island, it seems sensible to concentrate on those that are threatened within the Wellington Ecological District (as redefined) in the first instance. It is likely that island or mainland sites can be found in the Sounds for most plants threatened there. Where this is not so, and Mana appears to be a suitable recovery site, a special case can be made.

### Checklist of threatened plants for Mana Island

The species commented on here are taken from Appendix 2 supplied by Colin Miskelly for the Mana Island restoration meeting, 9 July 1992 together with addition of two species of mistletoe. Threatened species that require wetland habitats are not included in this report as a final decision on whether or not to establish a wetland on the island has yet to be made.

### Key to symbols

- \*\*** Suggested as a top-priority species for action owing to its nationally threatened status.
- \*** Suggested as high-priority for action owing to its regionally threatened status.
- (\*)** Suggested as high-priority for investigation to determine whether suitable habitat is available or could be made available on Mana Island, or whether source material should be used from beyond the boundaries of the Wellington Ecological District.

Herbs	Additional comments
<i>Coprosma acerosa</i> *	Occurs on dune sands and fine gravel. Possibly extinct in Sounds-Wellington E.R. Suitable habitat on Mana may be very restricted. Otari Gardens hold plants from Red Rocks.
<i>Discaria toumatou</i> *	Once present in Wellington E.D.
<i>Hebe elliptica</i> var. <i>crassifolia</i>	Habitat on Kapiti is crevices in <u>solid</u> rock at shoreline. Disagreement between C. Ogle and writer as to whether suitable habitat is available on Mana.
<i>H. speciosa</i>	Formerly present in Wellington E.D. Should consider recovery at Titirangi Bay (which is not in Pelorus Sound) before Mana.
<i>Ileostylus micranthus</i> *	This species of mistletoe, widely threatened by possums in the North Island requires forest or scrub.
<i>Muehlenbeckia astonii</i> **	Nationally threatened species: Category A.
<i>M. ephedroides</i> (*)	Possible source is Cape Palliser.
<i>Pimelea aridula</i> var. *	The very local distribution of this distinct race shows that the programme to establish a wild population on Mana should continue.
<i>Pimelea urvilleana</i>	This is mainly a sand plant in dunes; possibly insufficient habitat on Mana for a viable population.
<i>Tupeia antarctica</i> **	A mistletoe extremely threatened by possums in the North Island and requiring forest or scrub.

<b>Herbs</b>	<b>Additional comments</b>
<i>Clematis afoliata</i> *	Present at Red Rocks, Wellington, but very local distribution.
<i>Scandia geniculata</i>	Apparently not threatened in the Wellington E.D. although uncommon.
<i>Tetragonia tetragonioides</i>	Being a strand plant it has a rather erratic distribution in space and time. This rare species, although indigenous, is not endemic. Plants located at places such as Petone may be garden escapes.
<b>Ferns</b>	
<i>Asplenium lyalli</i>	A calcicole and therefore probably not suitable for Mana. (C. Ogle questions this view).
Remaining ferns	None of the remaining ferns appear to be sufficiently threatened to justify the resources needed to establish them on Mana. <i>Pleurosorus rutifolius</i> has specialised habitat requirements and is difficult to transplant. It is locally common at Cape Palliser. (C. Ogle disagrees with this view in respect to <i>Asplenium obtusatum</i> ).
<b>Grasses and sedges</b>	
<i>Rytidosperma petrosum</i> *	Very local distribution occurring on exposed rocky cliffs and ledges.
<i>Austrofestuca littoralis</i>	Insufficient habitat on Mana for this dune plant.
Remaining grasses	Not threatened but some species such as <i>Zoysia minima</i> could be valuable for restoring special habitats.
Sedges	The conservation gain by introducing these species is generally small but <i>Carex appressa</i> should be considered if a suitable source can be found.
<b>Herbs</b>	
<i>Leptinella nana</i> **	Nationally threatened species: Category B.
<i>L. pusilla</i> (*)	Very rare in Wellington and elsewhere but present at Baring Head. A plant of sand and fine gravel.

Herbs	Additional comments
<i>Acaena pallida</i> (*)	Nationally threatened species: Category B. Occurs along shoreline sands or fine gravel and in open tauhinu shrubland.
<i>A. juvenca</i> *	Occurs in shaded stony sites within forest.
<i>Convolvulus verecundus</i> (*)	Possible source is Cape Palliser.
<i>Crassula</i> spp.	Questionable whether they are threatened to a degree that would justify the labour of translocation and establishment.
<i>Daucus glochidiatus</i>	
<i>Eryngium vesciculosum</i>	
<i>Euphorbia glauca</i> **	Nationally threatened species: Category B. Grows on talus as well as sand. The nearest source may be in Egmont Ecological District.
<i>Lepidium obtusatum</i>	Possible source of material not known. A South Island report of this species (from limestone) requires confirmation.
<i>L. tenuicaule</i> *	Possible source of material not known.
<i>Mentha cunninghami</i>	Although uncommon in the southern North Island this status does not justify action.
<i>Pelargonium inodorum</i>	Almost certainly adventive.
<i>Rumex</i> spp.	More information needed on status and possible sources.
<i>Theleophyton billardierei</i>	A plant of beach sand within the tidal zone and therefore suitable habitat is lacking on Mana.

- Note:** (1) The milk tree (*Streblus banksii* = *Paratrophis banksii*) could be considered threatened in the Wellington E.D. I believe it was formerly a major component of Mana Island's vegetation and therefore the remnant population on the island should be used as a source of material for community restoration.
- (2) Some plants listed, e.g. *Scandia geniculata*, should be established on Mana Island as a safeguard against mainland reductions of their populations even though they are not immediately threatened.

### Potential problems

Some localities identified as possible source areas for threatened plants, e.g. Cape Palliser, Egmont Ecological District, are at considerable distances beyond the

Wellington-Sounds Ecological Region. A decision to use these sources should be made in the context of a national perspective on the recovery action needed for the species concerned. Care should be taken not to jeopardize the future of any source populations that are used to establish the species on Mana Island.

Difficulties will be encountered with establishing some threatened species, e.g. *Leptinella nana*. To overcome these a proper understanding of the requirements of each species will be needed but this fact does not imply that detailed studies are necessary. Each will require certain micro-habitats. In total, the area required for threatened plants is likely to be very small in relation to the area of the island so that conflicts with the major planting programme seem unlikely. Protection from herbivorous animals, however, may well be needed for some species.

### The Future

Success with restoring threatened species on Mana Island cannot be measured by counting the number of such species that can be grown on the island. The only satisfactory criterion of success will be that populations of the threatened species are largely self-sustaining with respect to reproduction so that any human intervention needed is minimal.

### Summary

Of the 37 potentially or actually threatened species identified in this report as possibly suitable for introduction to Mana Island, 3 are identified as top-priorities for action, 8 require a high priority for action, and a further 4 should be investigated as soon as possible to determine whether suitable habitat exists on Mana Island.

With respect to visitors, people place a premium on rarity. Populations of threatened plants, suitably protected from misuse, will become point sources of enjoyment for people interested in plants.

### Reference

Timmins, S.M.; Atkinson, I.A.E.; Ogle, C.C. 1987. Conservation opportunities on a highly modified island: Mana Island, Wellington, New Zealand. *New Zealand Journal of Ecology* 10: 57-65.

### Acknowledgements

I am indebted to Tony Druce, Colin Ogle, and Susan Timmins for discussion of several aspects of this report and for information relating to the current status of some of the species discussed. I have tried to indicate where disagreements occur between us; these issues require further information.

I.A.E. Atkinson 14 July 1992
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