



CONSERVATION
TE PAPA ATAWHAI

CONSERVATION ADVISORY SCIENCE NOTES

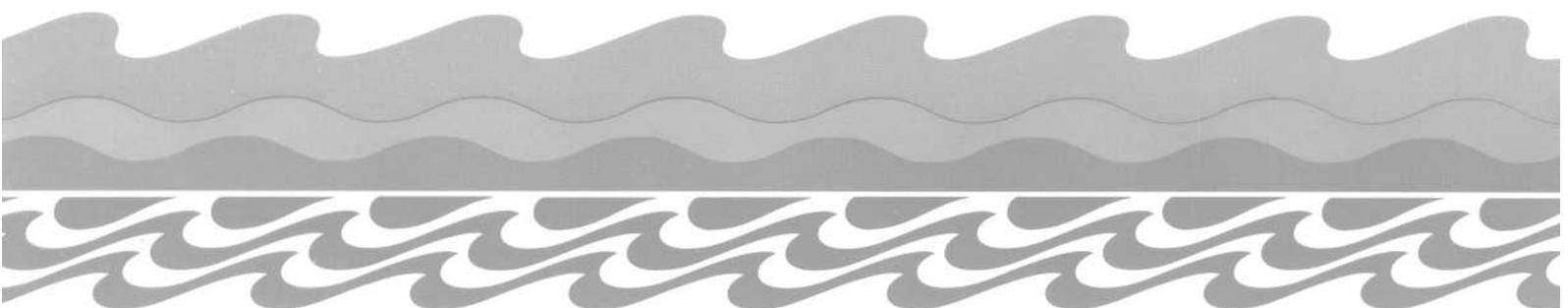
No. 6

MATAI BAY DEPARTMENT OF CONSERVATION CAMP :
DEFOLIATION OF AMENITY PLANTINGS

(Short Answers in Conservation Science)

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MATAI BAY - DEPT OF CONSERVATION CAMP

(DEFOLIATION OF AMENITY PLANTINGS)

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Brief

1. To investigate the cause of Ngaio dieback.
2. To investigate insect involvement in Pohutukawa damage.
3. To provide a written report to the manager.

Summary

Amenity plantings established at Matai Bay on the Karikari peninsula had serious crown defoliation and subsequent die-back associated with insect attack.

Severe crown and foliage loss was in many cases 100% and the death of fine branching had occurred. Current mid crown foliage regrowth and small stem activity (buds) suggests partial recovery of species, in particular Ngaio (*Myoporum laetum*).

The primary group of insects collected are listed and discussed separately as these were considered only part of the defoliation damage of Ngaio.

Collections and field sample of insect damage foliage was identified by the forest health officer and confirmed by FRI entomologists.

The continued damage to crowns is unlikely as seasonal variation usually moves the insects to other individual trees in subsequent years.

Although both camp sites were examined, damage severity was more prevalent within the Top Camp confines and the main sampling was centred here. Pathology samples showed no fungi causing twig die-back.

As appended, map shows sampling locations.

DISCUSSION

Myoporum laetum (Ngaio)

Foliage Sampling

No *Lepidopterous* larvae on new foliage or leaf chewing insects such as weevils were found. Damage to crown foliage shows previous chewing patterns typical of the sub-family *Melalonthinae* which included grass grubs *Costelytra zealandica*, *Odontria silvatica* and the large green chafer *Stethaspis* spp.

It is only the adult beetles which cause this typical heavy and destructive leaf damage.

Ground Sampling

Friable sandy loams under the damaged Ngaio were checked where only remnants of insects found. These included *Elytra* (wing cases) of all the above species plus 2 live *Odontria* adults which had recently emerged.

Wiseana spp. Porina (Lepidoptera)

Pupal cases and fragments - numerous under soil. Larvae up to 6 cm long nocturnal feeders on grass roots etc. A recognised pasture pest. Not considered to have any role in the defoliation as the moths do not feed on foliage.

Heteronychus orator Black beetle (South Africa)

Both adults and larvae recovered under Ngaio root masses. The larvae and adults would only be feeding on grass or light root systems especially paspalum, a favoured plant.

Costelytra zealandica (Grass grub)

Larvae feed on grasses (paspalum) and other fine roots. Adults will swarm onto trees causing heavy leaf damage; both larvae and adults found under Ngaio and numerous remnants of *elytra* (wing cases) in the under tree debris. Adults considered to be one of the main damaging agents to these trees.

Odontria sylvatica

Same damage as the above where adults mass emerge at night and actively foliage feed. In warm conditions, feeding will extend through the night. Daylight sees the insects drop off the feed trees and burrow back underground.

Also considered a major defoliater in the Ngaio problem.

Stethaspis spp (Large Green Chafer)

Adult wing cases and larvae found. Basically, same life cycle as the above. Large larvae can cause root structure damage, but the adults nocturnal feed swarms certainly responsible for leaf damage. Coastal sites with Marram etc would certainly harbour these insects.

Other amenity species inspected.

Metrosiderous excelsa (Pohutukawa shrubs).

Small trees, leaf chewed again by *Odontria* adults and leaves "shot hole" damaged by a small weevil *Neomycta rubida*.

Comprosmia repens

No insect damage at all; covered in new shoots and flowering en masse.

Dodonea viscosa (Akeake)

Crown loss mainly marginal trees from *Odontria* adults feeding. Some *Psyllids* spp. (Hemiptera) recovered from tip bud growth which cause tip leaf curl or distortion but not a defoliating agent of mature foliage. Sample sent to FRI for identification of *Psyllids* species.

Appended photos depict defoliation damage.

Conclusions

Top Camp Matai Bay was planted up in native trees to give amenity and shelter for the existing camp sites.

Constant climatic pressure from salt winds, harsh soil sites and recent unseasonal weather has been a contributory factor as far as tree stress goes. This plus the fact that rough pastoral areas, swampy land and coastal scrub lands have seen a population build up of Melalonthenes. There seems to be no doubt that the major crown damage was caused by these insects which congregated on the open margins and perimeters of the surrounds. This being evident by many trees being virtually undamaged within the main control Bottom Camp Block where many trees are heavily in flower with clean undamaged crown structures, in particular within the inner sheltered camp sites.

The chance of a recurrence of the above would depend on the discussed factors where the continued high standard of maintenance by mowing, pruning trees etc be continued and perhaps to boost exposed perimeter trees by slow release fertiliser.



Senior Forest Protection officer

MATAI BAY
Top Camp



Defoliation of Ngaio along South West margin



Partial crown damage
untouched *Coprosma repens*



Ngaio - severe crown damage



Ngaio - Bottom Camp
Severe defoliation of half a boundary tree

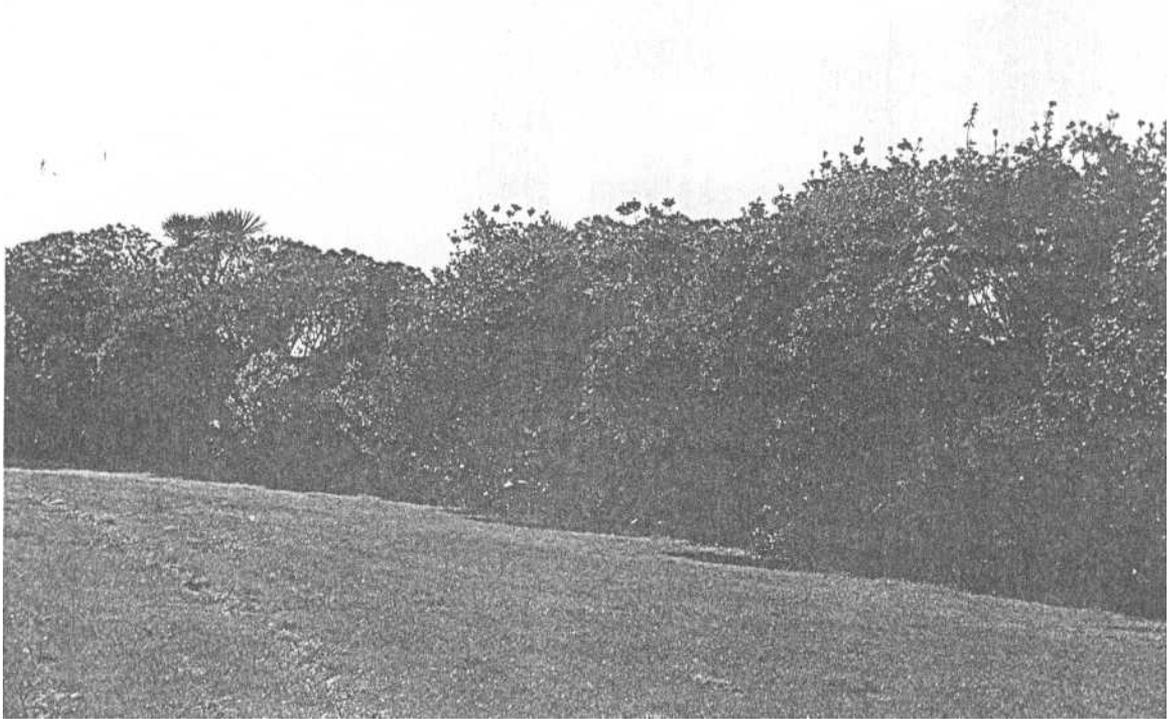


Pohutakawa - Shothole damage *Neomycta rubida* a small weevil



Akeake - Odontria sp. leaf chewing damage

Bottom Camp



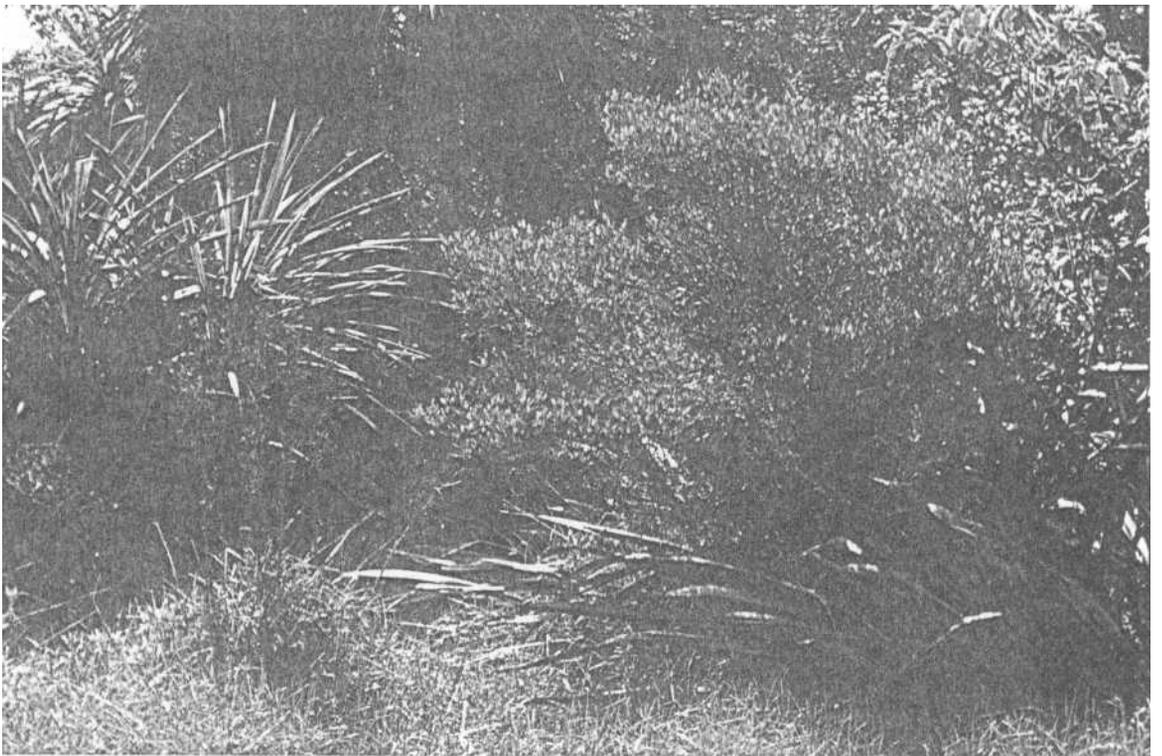
Sheltered aspect no defoliation damage



Healthy Coprosma cabbage tree & flax
Cabbage tree regen prolific & healthy



Ngaio - Full flower - no damage



Akeake - undamaged



Pittosporum crassifolium - Karo full flower

Matai Bay

Top Camp

Sample points *

