The *Anogramma* — *Targionia* Association

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INTRODUCTION

Anogramma leptophylla is dispersed widely throughout the North and South Islands. When conditions are right small colonies of the fern may be found during the months of winter and spring. Quite often amongst the *Anogramma* ferns and creeping over the substrate is a thallose liverwort, *Targionia hypophylla* (Fig. 1). Because the fern and liverwort occasionally grow on their own, it would seem that there is no association such as symbiosis involved, but that the two plants grow together simply because they need the same sort of habitat. If the habitat remains stable, these two plants can be expected to remain in the same locality year after year.

HABITATS AND HABITS

Anogramma and *Targionia* both like banks that are damp but well drained during the winter and spring and which dry out severely during summer and autumn. The drying out eliminates most of the plants' competitiors. The fern sporophytes die away after a few months but the gametophytes are reported (p 133, Duncan and Isaac 1986) to be perennial while the liverwort survives by a form of aestivation which involves a period of dormancy and shrinkage. The preferred habitats may receive a little direct sunlight during the winter and spring while the sun is lower in the sky, but during the drier seasons when the sun is higher the sites are usually shaded by overhead vegetation such as trees and/or grasses. The banks concerned usually face the east or south. Both the fern and liverwort may be more common than is realised at present as they are small and rather insignificant plants. The fern is only a few centimetres tall and of a rather pale green colour. *En masse* a colony of *Anogramma* looks much like a patch of many juvenile ferns, especially when viewed from above. It is almost surprising to see sporangia on the undersurfaces of such small fronds.

The sporangia are distinctive, being scattered and not grouped into sori. They ripen at different rates and when fully mature appear black against the pale undersurface of the frond.

Targionia is a smallish thallose liverwort without gemmae. Under the tips of many of the larger stems are pairs of curved black scales which often protrude beyond the growing apex. These constitute the "perianth" out of which small stalked sporophytes occasionally can be seen growing. This peculiar shiny black perianth is diagnostic of *Targionia.*

OCCURRENCES LOCALLY

The best known — and the longest known — colony of *Anogramma* and *Targionia* in the Wellington area is at Seatoun, not far from the wharf. Unfortunately I cannot recall the name of the botanist who first showed me this colony, but it must have been in the mid 1940's that I was let into the secret of its location. I have kept no records of numbers of fern plants present nor when they first appear each year. Each plant has only a few fronds which develop fairly

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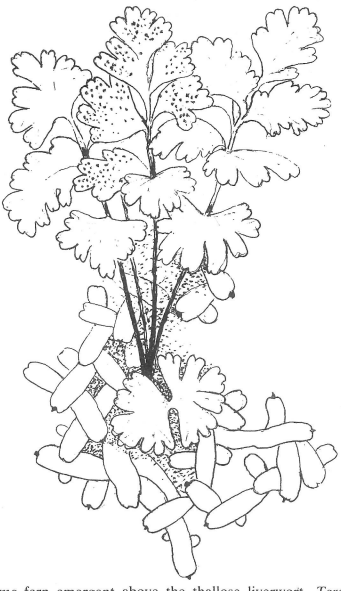


Fig. 1. *Anogramma* fern emergent above the thallose liverwort, *Targionia.*

rapidly and die away just as speedily after a few months. This Seatoun colony of *Anogramma* and *Targionia* has been invaded by *Tradescantia* and *Allium triquetrum,* both of which are most active in growth during winter and which can survive summer drought. The site is by a path, on a man-made bank, and is shaded by adventive tree lucerne. A further feature of the Seatoun locality is large number of small seedlings of introduced parsley which are strangely similar in colour and appearance to *Anogramma.*

There could well be other colonies of *Anogramma* and *Targionia* on the Miramar Peninsula hidden away on private property because many sections are too steep or rocky to lend themselves to intensive horticulture. Perhaps the Wellington Botanical Society should slip a pamphlet in the letterbox of every householder with a "likely" section on the Miramar Peninsula asking land-owners to keep a lookout for these two small plants and report their presence?

Further afield, *Anogramma* and *Targionia* have been seen together in a small patch on the south east cliffs of Mana Island, not far from the Hole in the Rock stack. However, the site was not carefully marked and has been lost in a sea of cocksfoot and *Muehlenbeckia complexa.* This Mana site is valuable as the island is a reserve. Much of the south-east cliffs which have a fair amount of soil

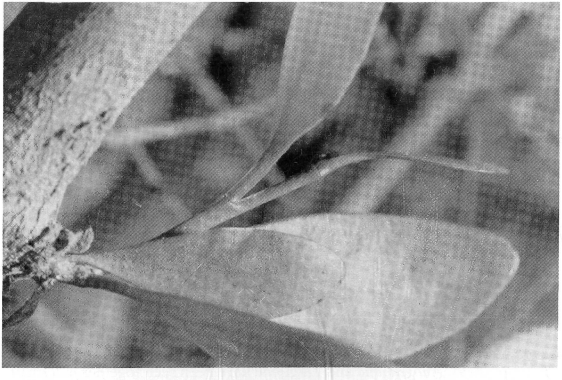
amongst the rock could be made into *Anogramma* and *Targionia* habitat by planting in coastal forest. A track or tracks constructed on these cliffs would enhance human (and penguin) access from the shores to the plateau, and I feel confident that *Anogramma* and *Targionia* could be established along such pathways. If we are to learn from the Seatoun site, some tree lucerne would possibly prove a quick growing tree that is *Targionia*-compatible, as well as providing a winter nectar source for bellbirds and leaves for native pigeons. It would be a handy tree to help shade out the cocksfoot.

About a year ago a thriving colony of *Anogramma* and *Targionia* was located on private property just south of Carter's Bush, a few kilometres north-east of Carterton. This colony is shaded by willows, which of course shed their leaves in winter allowing a little of the morning sun to penetrate. It is so sited that its survival here for many years seems assured.

Targionia is not only an interesting plant itself, but, because it is visible all year round, it acts as a "marker" for a possible *Anogramma* site. Last winter *Targionia* was seen on the coastal cliffs past the Pencarrow Lakes. Perhaps *Anogramma* will be discovered here if the area is examined carefully at the appropriate season.

REFERENCE

Duncan, B D and G Isaac, 1986. *Ferns and allied plants of Victoria, Tasmania and South Australia.* Melbourne University Press 258 p.



Mistletoe (*Ileostylus micranthus*) seedling on a garden shrub of *Coprosma rotundifolia* at Pukerua Bay, 25 December 1987. This is the plant that was shown in the previous bulletin (p 29, Wellington Botanical Society Bulletin 43), photographed one year later, ie 19 months after the seed was placed on the host plant. Photo: Colin Ogle