

It is likely therefore that there is a level of infection present normally in *Ecklonia radiata* populations. Adverse environmental conditions, which favour the pathogen, can result in larger scale infestations or epidemic situations, to which older plants are more susceptible. These can lead to mass mortalities of mature plants, allowing a new generation of recruits to establish themselves. It is probable therefore, that *Ecklonia radiata* dieback has a role in turnover of the forest and in renewing populations, as the density of the forest normally precludes any large scale recruitment.

From this research it appears that viruses are associated with *Ecklonia radiata* dieback, however these are not easily transmissible. They are associated with environmental triggers, the specifics of which are unknown, and may play an important ecological role within the marine ecosystem.

References

- Babcock R. C. and Cole R. G. 1993: The extent of die-back of the kelp *Ecklonia radiata* in the Cape Rodney to Okakari Pt. Marine Reserve. *Conservation Advisory Science Notes No. 44*. Department of Conservation, Wellington. 27pp.
- Babcock R. C. and Cole R. G. 1994: Mass mortalities of the kelp *Ecklonia radiata* in northeastern New Zealand. Submitted to *Marine Ecology Progress Series*.
- Don G. L. 1975: *The effects of grazing by Evechinus chloroticus (Val.) on populations of Ecklonia radiata (Ag.)*. Unpublished MSc Thesis. University of Auckland.

Work Prepared during Thesis Production

MSc (Environmental Science/Botany) Thesis Title
Ecklonia radiata Dieback: The Role of Viral Pathogens.

Publications

Virus-like particles in the brown alga *Ecklonia radiata*. In preparation for Marine Ecology Progress Series.

Detection of a potyvirus in the brown alga *Ecklonia radiata* using a commercially available antibody. In preparation for Diseases of Aquatic Organisms.

Conference and other presentations

Poster Paper for Marine Sciences Society Annual Meeting.

Seminar for Environmental Science, University of Auckland.

Seminar for Plant Science Research Group, University of Auckland.

Special Recognition

Student Prize for Best Poster Paper, Marine Sciences Society Annual Meeting.

Reports

Department of Conservation - 22 April 1994; 17 October 1994; 6 March 1995.

Lotteries Science - 10 March 1995.

Field Trip, Pukenui, Far North 25 - 30 January 1995

Phil Gardner

If, after Maureen Young has done a fantastic job of organising 36 people for six days of botanising, she asks you sweetly to write a chatty article for the Journal - how can one refuse?

On January 25 the Forest and Bird Arethusa Cottage at Pukenui became the centre of a tent city. Next morning we motored to the Shenstone Block at Te Pahi. Notes were kept of species observed and a number of new recordings were added to the existing species list. Particularly noteworthy was

a new site for *Cyclosorus interruptus*. It was also found at Arethusa but was probably planted there. Also at Shenstone a number of plants of *Todea barbara* received more than their fair share of viewing.

Some time was spent examining the diagnostic characters of some genera and species such as the zigzag rachilla of *Schoenus* and the "square, hairy shoulders" on the leaf sheaths of *Dracophyllum lessonianum*. A small upright *Pimelea* with the suggested name of *P. prostrata* var. *erecta* left one feeling slightly ambivalent.

Morning rain on the 27th did little to dampen the enthusiasm at Te Arai Sanctuary on the coast south west from Te Kao. The sanctuary is a unique remnant of pohutukawa forest. What appears to be a large clump of pohutukawa trees growing at odd angles from a large mound of partially stabilised sand, is believed to be the top branches of a single tree which has been progressively buried in sand. Thus, whether the stand consists of 30 trees or 1,000, depends on interpretation. Sanctuary is certainly an apt term for the cathedral-like atmosphere within the stand.

In the sanctuary the rare *Pseudopanax ferox* grows in association with *P. lessonii*. Not only do these species appear to be freely compatible, but also their hybrids are probably compatible with one another as well as with their parents. There is a possibility of some *P. arboreus* pollen involvement also. The result is completely incestuous mixture of forms.

In the afternoon, after various peregrinations in four wheel drive vehicles, we arrived at Waimaharu Stream somewhere north west of Ngataki. This proved to be a great site for "belly plants" including *Glossostigma*, *Limosella*, *Myriophyllum votschii* and the threatened *Eleocharis neozelandica*. The adder's tongue ferns, *Ophioglossum*, were common, both *O. coriaceum* and typical *O. petiolatum*, together with what appeared to be an intermediate form, which was probably a larger variant of *O. coriaceum*.

The next day we headed south to the Ahipara Gumfields. This fascinating area of infertile gumland has been much modified by burning and gum digging and now supports a stunted cover of shrubby vegetation and sedges, with a number of smaller rare and unusual plants. Particularly notable was *Lycopodium serpentinum* together with *L. laterale*, with other more common lycopods. In wetter areas *Drosera spathulata* and *D. binata* were growing in association with the bladderwort *Utricularia delicatula*. In one area *Korthalsella salicornioides* was common as a parasite on *Leptospermum*.

The final day was spent at various sites on the Karikari Peninsula. First at Lake Ohia, which was originally kauri forest which became flooded to form a lake, killing the trees but preserving the roots in the anaerobic conditions at the bottom of the lake. The lake has since dried to expose the flat peaty and sandy lake bed, with emergent kauri roots and stumps. The minute *Drosera pygmaea*, with the whole plant not much more than 1 cm across, often less, was common growing in dry dusty peat. This species shows interesting adaptations to a dry difficult environment where nothing much else can grow. As it is insectivorous the lack of nutrient is not a problem and the small red rosettes, smaller than a 5 cent piece, have a prominent silvery cone of stipules in the centre to protect the apical meristem when the dusty peat becomes very hot and dry.

At Matai Bay a break for swimming and lunch was followed by a walk out along the peninsula to Jolliffe Point. *Ipomoea cairica* (*I. palmata*) growing in its natural habitat, was of interest although it also was growing at Arethusa, but probably planted. At the end of the road at Puheke Beach, were several plants of *Pimelea arenaria* and on the rocks nearby a large clump of *Asplenium obtusatum* subsp. *northlandicum* attracted interest.

There was a brief stop at the lake east of Rotokawau near Puheke where there was some excitement over an unknown plant until it was realised it was a *Centipeda*. It was here that one of the more enlightening incidents was observing a large group of normally sane botanists emulating ostriches, with their heads down and bottoms up, while they tickled the genitals of *Glossostigma* in order to watch them open up (see illustration).

The 30th was break camp and homeward bound, with time for a stop at Foleys Reserve just north of Kaitaia. This is an area of bush which has been grazed by cattle but has recently been reserved and fenced off. It is one of the last sites of *Christella dentata* which is almost extinct in New Zealand. Other relatively rare plants in this reserve include *Pittosporum obcordatum*, *Bulbophyllum tuberculatum* and *Mazus novaezeelandiae*. After Mr Foley had cracked the whip we all departed.

Thanks especially to Maureen and Frank as leaders and those who helped them with the organising, and also to everyone else on the trip for a very enjoyable six days.

Illustration: Bot Soccers emulating ostriches.



***Senecio esleri* makes it into the Waikato**

P. J. de Lange

Senecio esleri is an adventive species of erectitoid *Senecio* first described as new to science from New Zealand material collected from the Auckland area (Webb, 1989). At that time the species was known only from Auckland and parts of Northland (*loc. cit.*). However as has already been observed with other erectitoid *Senecios* in New Zealand e.g., *S. hispidulus* (Drury, 1974) and *S. diaschides* (de Lange, 1990), the spread of this species into the Waikato seemed inevitable (C. J. Webb *pers. comm.*, 1991).

While stuck in the tedium of a south-bound traffic jam near the railway crossing at Huntly (NZMS 260 S13 010023) on the 19 of September 1993, I observed 12 or so immature plants of *Senecio esleri* protruding from the gravel bordering the railway track. Having nothing better to do, I got out of my vehicle and collected a specimen (AK 222882 duplicate in CHR). This collection appears to be the first time this species has been discovered south of Auckland City. At the time I assumed that having made it into the Waikato *S. esleri* would spread rapidly through the region. Oddly, despite looking, I