

The Bugs' Informer

SOUTHLAND BIOCONTROL NEWS
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Biological control (or 'biocontrol') is the use of living organisms to suppress the population density or impact of a specific pest organism, making it less abundant or less damaging than it would otherwise be.

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Recently released broom shoot moth

A new ally against broom

In January 2009 a new moth was released in Southland to target broom. The broom shoot moth (*Agonopterix assimilella*) was first brought to New Zealand in 2006 on behalf of the Canterbury Broom Group and is the fifth broom biocontrol agent to be released in Southland. A native of Western Europe, this moth can tolerate a wide range of climatic conditions and it is hoped that in New Zealand it will be able to establish wherever broom is found.

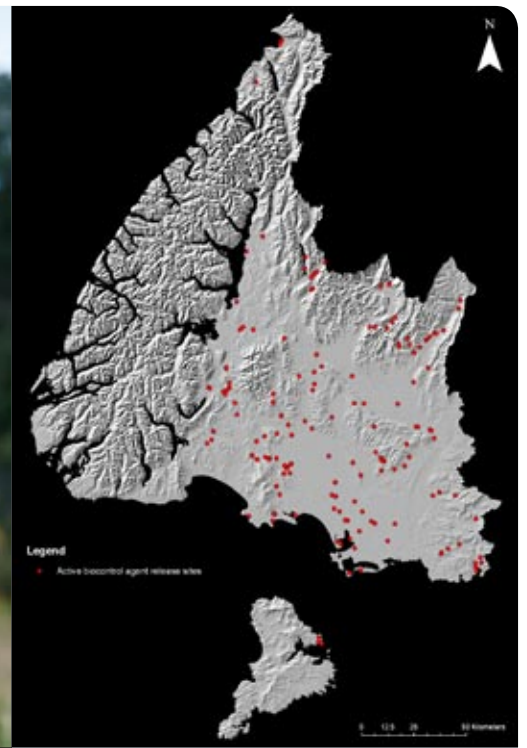
The caterpillars of this moth damage broom by feeding on leaves and can sometimes kill off stem tips and branches by ring-barking them. Together with the broom leaf beetle (first released in Southland in 2007) the broom shoot moth can sometimes strip a broom plant bare. The five different broom agents target the seeds, stems and leaves of the broom plants throughout different seasons. This sustained attack is difficult for broom to recover from and decreases the spread of broom by reducing the health of plants and the amount of seed produced.

Over 200 hundred adult broom shoot moths were released in a sheltered, healthy patch of broom near Monowai by biocontrol contractors Peter Ayson and Jesse Bythell. This site will be checked again next year to see whether the moths have settled in and produced a new generation. Once we know this agent can establish in Southland, additional releases will be made. Hopefully in time these established populations will supply moths for further releases across the whole region.



Peter Ayson and Jesse Bythell

Photo: Kineret Yardena



Distribution of biocontrol agents in Southland

Celebrating 25 years of biocontrol in Southland

This January marks 25 years since the first biological control agent was released in Southland. Over these years 27 different biocontrol agents have been released to target weeds such as broom, gorse, old man's beard, ragwort and a range of thistle and hawkweed species. Biocontrol agents used in Southland include beetles, flies, midges, mites, moths, psyllids, thrips, wasps, weevils and fungi.

Agents such as the broom psyllid (*Arytainilla spartiophila*), broom twig miner moth (*Leucoptera spartifoliella*), gorse spider mite (*Tetranychus lintearius*) and the ragwort flea beetle (*Longitarsus jacobaeae*) have established well and are now present across most of the region. At many sites these agents are now abundant enough that they can easily be collected and released elsewhere. Many other

agents are doing well but the populations are too small to harvest from at present. It is too early to determine how several of the other agents are doing. Currently we work with 17 different kinds of biocontrol agents at over 200 sites across Southland.

Biocontrol is not an instant solution to our weed problems – biocontrol agents take time to establish and disperse from their release sites. Considering the size of the agents and the size of Southland it is easy to understand why we need to speed up the process by spreading them around. For example, the ragwort flea beetle may only travel up to 100 metres per year. Over the last 20 years 45,000 ragwort flea beetles have been collected from Southland sites and released in new parts of the region.

Busy beetles

The two release sites of the new green thistle beetle (*Cassida rubiginosa*) were checked for the first time this spring. Feeding damage and one adult beetle were spotted at the Hokonui site. Lots of feeding damage and some eggs were discovered at the Mandeville site, although none of the well camouflaged adult beetles were seen. This means the male and female beetles at the Mandeville site emerged safely this spring to mate and produce eggs. These are encouraging results and confirm that carrying releases out in autumn does not hinder the beetles' ability to become established.

A third green thistle beetle release was made in November 2008 at a site near Dipton West. Subject to availability, Environment Southland intends to carry out more green thistle beetle releases this autumn.



Adult green thistle beetle



Damage to Californian thistle caused by beetles

Marvellous moths

The first biocontrol agent to be released in Southland was the cinnabar moth (*Tyria jacobaeae*) in 1984 at a site near Colac Bay. Over the following years another seven moths have been released in the region to combat broom, gorse and ragwort.

Moths that target gorse include the self-introduced broom twig miner moth (*Leucoptera spartifoliella*) and the new broom shoot moth. The broom twig miner moth is thought to have arrived before the 1950s, possibly on ornamental broom species. A native of Europe, this moth has now been carefully tested to ensure that it only damages the weedy broom (*Cytisus scoparius*). Now found throughout New Zealand wherever there is broom, this tiny moth works well in conjunction with the broom psyllid (*Arytainilla spartiophila*). The caterpillars of the moth eat the green stem material of broom; if present in high enough numbers the larvae can kill branches and sometimes whole bushes.



Gorse colonial hard shoot moth caterpillar

Three gorse moths have been released in Southland so far: gorse colonial hard shoot moth, gorse soft shoot moth and the gorse pod moth. The caterpillars of all three moth species are the damaging stage of the agent. Soft shoot moth caterpillars feed on newly developing buds and soft new growth in spring. The colonial hard shoot moth caterpillars can eat the spines, buds, shoots

and flowers of gorse. The gorse pod moth completes the trio as its caterpillars feed on green seeds inside the gorse pod. Each pod moth caterpillar can destroy the seeds in two or three pods. The kind of damage caused by these gorse moths is not immediately obvious – rather than killing individual plants the caterpillars work to undermine the health of plants and reduce seed production. This lessens the number of future gorse plants.

Of the three moths that damage ragwort, the cinnabar moth is the most eye-catching. The caterpillars of this agent feed on the leaves and flowers of ragwort; when enough caterpillars are present they can completely strip plants. Unfortunately this agent has not established at many sites in Southland. Recent research suggests that the parasites of the endemic magpie moth (*Nyctemera annulata*) may also be affecting the cinnabar moth. The ragwort crown boring moth and ragwort plume moth damage the crown and sometimes leaves and flowers of ragwort plants. It is still unclear whether the crown boring moths have become established at the release site on Tiwai Peninsula. The plume moth is showing promise however, and has clearly become established at least one of the four release sites in Southland. Most of the plants within 60m of the successful release site are infested with plume moth caterpillars.



Broom damaged by psyllids and twig miner moth



Gorse soft shoot moth caterpillar



Adult cinnabar moth

Bags of bugs

The newly formed Te Anau Biocontrol Group held a successful field day in December 2008 at a site at Lagoon Creek near The Key. Here people were able to see severely damaged broom and get an idea how effective the broom psyllid and broom twig miner moth can be under the right conditions. People travelled from all over Southland and as far away as Naseby in Otago to learn about broom biocontrol options and to collect insects. Seventeen people attended the field day and took home enough bags of psyllids and twigminer moths to make 30 new releases.

The Group has been awarded \$6,000 from the Meridian Energy Community Fund. This money will be used to purchase new biocontrol agents and help with the cost of running future field days.

While the Group has a Te Anau focus anyone interested in biocontrol is welcome to join.

For more information contact the secretary, Jesse Bythell.
Phone: 027 356 7752
Email: jesse@biosis.co.nz



Mrs and Mr Williams collecting psyllids at the recent field day

Biocontrol in Southland

Biocontrol has been used in Southland since 1984 and so far 27 different biocontrol organisms have been released in the region (25 insects, one mite and one fungus). Today biocontrol work is administered through the Biological Control of Weeds Programme by Environment Southland. This involves monitoring and distributing existing biocontrol insects in Southland and coordinating the release of new insects when they become available.

Biocontrol insects are available free to the public through the Biological Control of Weeds Programme. Availability of insects is determined by insect numbers and the suitability of potential release sites. Biocontrol may be compatible with some herbicide use depending on the insect in question and the timing of herbicide application.

To find out more about biocontrol in Southland or to discuss releasing insects on your property contact Environment Southland:

Keith Crothers
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Phone: 0800 76 88 45
Email: keith.crothers@es.govt.nz



Biocontrol research

To find out more about the biological control of weeds in New Zealand visit the Landcare Research website:

www.landcareresearch.co.nz

Select the 'Research' menu, then 'Pests', and then 'Weeds' to navigate to the biocontrol pages.

You can also contact Lynley Hayes at:

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Lincoln 7640

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Landcare Research
Manaaki Whenua

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<http://tinyurl.com/bugsinformer>

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