JUNE 2022

Project Report

Gorse Biological Control Project

Prepared by Landcare Tasmania June 2022

Landcare Tasmania

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1.0 Project context

Gorse is a highly invasive, nationally declared weed that is widespread throughout Tasmania. It has significant detrimental impacts upon agriculture and the environment, and is highly challenging to control effectively.
The main methods of gorse control include spraying with herbicide, manual removal coupled with painting of herbicide, slashing, and biological control. There are numerous species of insects and fugus that are used for biocontrol of gorse. It has been found that severe damage can occur to gorse when two biological control agents occur on gorse concurrently. These are the gorse soft shoot moth (Agonopterix umbellana) and the fungus Paraconiothyrium sp.

The main objectives of this project were three-fold:

►To spread biological control agents of gorse in the North and North West of Tasmania with a specific focus on the gorse soft shoot moth and Paraconiothyrium sp.
►To further the understanding of biocontrol of gorse; and
►To share knowledge regarding gorse control with landholders and Landcare members.

This project was supported by funding from the JM Roberts Charitable Trust through the Tasmanian Landcare Fund.

Image: Soft shoot gorse moth larvae

The objectives were all met by the project. Gorse soft shoot moth was collected from a known site where the gorse moth interacted with the Paraconiothyrium sp fungus. Samples from the main nursery site at Strathroy (17115 Midland Hwy Breadalbane) were transported to 11 different sites, spanning from Campbell Town and Longford in the Midlands to Stanley on the North West Coast. Before release, the Gorse Soft Shoot Moth was found to be present at only one site, which indicates that the Project spread the moth in to new areas. Landcare Tasmania held a public information session on biological control of weeds, including gorse. This workshop connected the public with biocontrol expert and researcher, John Ireson, who presented at the event. John was also invited to speak at another event in May 2022 delivering the same presentation. This was recorded and is being edited for public viewing.

Data on the release has been uploaded to a national database, recording the distribution of biological control agents for gorse. This information is publicly available, and can be used to further the understanding of gorse biocontrol. Long-term monitoring of the release sites will enhance the quality of this data. With further funding, Landcare Tasmania will coordinate review of the releases.

Image: Moth webbing on gorse, collection day

2.0 Project delivery

2.1 Site selection and landholder liaison

Landcare Tasmania's Project Bank, Local Councils, the Tasmanian Land Conservancy (TLC), Tasmanian Parks and Wildlife and Forico were consulted to establish potential release sites for the biological control agents. Eleven of these sites were selected based upon landholder consent and suitability. It is notable that each site has a high likelihood of not being treated or controlled via non-biological means (e.g. slashing, spraying) to enable the biological control to establish and spread over time. Please see Appendix A for a map of the sites.

The sites were as follows:

Site Type	Site Description	Site Location	Larvae released (approx. number)	Natural presence of soft shoot moth	Partners Involved
Covenant on agricultural land	Eucalyptus viminalis forest	Longford	500	None detected, probable that it is present	Tasmanian Land Conservancy
	Eucalyptus viminalis forest	Longford	500	Detected	Tasmanian Land Conservancy
	Threatened Eucalyptus amygdalina forest, directly adjacent to wetland	Campbell Town	500	None detected, probable that it is present	Tasmanian Land Conservancy
Landcare Tasmania Members	Waterbody on Farm	Cluan	500	None detected, probable that it is present	
	Remnant vegetation	Forth	500	None detected	

Site Type	Site Description	Site Location	Larvae released (approx. number)	Natural presence of soft shoot moth	Partners Involved
Private forestry reserve	Inland wetland, reserved for conservation	Hampshire	500	None detected	Forico
Parks and Wildlife State Reserve	The Nut	Stanley	500	None detected	Parks and Wildlife
	The Nut	Stanley	500	None detected	Parks and Wildlife
Private land owners	Remnant vegetation	Upper Burnie	500	None detected	Burnie City Council
	Remnant vegetation	Upper Burnie	500	None detected	Burnie City Council
	Farming property	Hampshire	500	None detected	Burnie City Council

Table: Site selection type and location

2.1 Staff training and biocontrol collection

Two Landcare Tasmania staff members attended a training workshop in the Northern Midlands, which was held by the Tasmanian biological control specialist, John Ireson. The site had received some of the first gorse soft shoot moth brought in to Tasmania in 2007.

The biological control agents were collected for immediate distribution at the selected sites. The site was also tested for the presence of Paraconiothyrium sp. At the time of testing, none was obvious. This however is not an indication that the fungus is not present, as the fungus has been identified at previous analysis events conducted by John Ireson and his team.

Image: Biocontrol collection

2.2 Biocontrol release

All sites visited had serious infestations of gorse.

The largest infestations in size were on the farming properties. Vast amounts of gorse are found on agricultural land throughout Australia, and Tasmania is no exception. The widespread gorse infestations results in substantial losses of usable farming land, increased intensity of fire, compromised ecosystem function in remnant native ecosystems, and very significant long-term investments in gorse control. In order to contribute meaningfully to the nation-wide effort to control gorse, Landcare Tasmania provided farmers with "another tool in the toolbox" to tackle this weed.

Of the four farming sites, three were on covenanted land. Gorse in these valuable natural environments has significant negative effects on these ecosystems, as such gorse control on this land is of high importance. We worked with the Tasmanian Land Conservancy to select these sites.

Image: Gorse moth release Dec 2021

The presence of gorse adjacent to waterways is of concern. The gorse alters and dominates the riparian ecosystems, and the flow of the water is able to carry gorse seed well beyond the local gorse population. It is often not feasible to control gorse near waterways via non-biological means (e.g. mechanical, chemical), due to lack of access for machinery, as well as ecological concerns related to chemicals and damage from machinery. As such, waterbodies were also targeted by this program. Waterbodies on farms, as well as on Forico-managed reserves were selected (Forico is a privately owned plantation forestry business).

Three of the sites were a mix of gorse and remnant native vegetation, surrounded by expanding sub-development. Native vegetation in urban areas is valuable as habitat for wildlife, for the ecosystem services it provides, as well as for the mental health benefits provided to residents of the area. By releasing the biological control agents in such areas, Landcare hopes to restore these values where gorse has degraded the land, and maintain them where the native vegetation communities are intact. We worked with the Burnie City Council to select suitable sites for two of these releases.

Image: Gorse moth release site, Cluan

The releases on the Nut in Stanley compliment the on-going effort by Parks and Wildlife to manage the serious gorse infestation on parts of this iconic land feature. The sheer slopes of the Nut are extremely difficult to access for manual removal, and as such these were the areas that were targeted for the release. Park and Wildlife staff will monitor the sites to determine the success and efficacy of the biocontrol releases.

All sites were monitored for signs that the biological control agents had distributed to those areas by natural means. The gorse soft shoot moth was found at only one site in the northern midlands. The gorse soft shoot moth has naturally dispersed across large areas of the Midlands, and John Ireson – the expert involved in this project – strongly suggests that the moth would be found at the other two release sites in the Midlands involved in the Project. This suggests that more monitoring could reveal their presence there. From consultation with John Ireson, as well as the monitoring conducted during the Project, it has been deemed very unlikely that the gorse soft shoot moth is present at the release sites outside of the Midland's area. This indicates that the Project spread the moth in to new areas.

Image: Gorse moth release site, Stanley

2.3 Landholder training

Interaction at each release site involved land holders gaining an understanding of the biological control process.

Landcare Tasmania also held a community information session in Sheffield to inform landholders about biocontrol of a variety of weeds, gorse among them. Biocontrol expert, John Ireson, led the workshop. Twenty three people from the North and North West of the State attended this event.

Please see section *2.7 Communications* for links to media coverage of this event.

Image: Weeds biocontrol info event May 2022

2.3 Partners

Throughout the Project, Landcare Tasmania worked with the following external bodies:

- ► Forico
- ► Tamar NRM
- ► Biosecurity Tasmania
- ► Burnie City Council
- ► Devonport City Council
- ► Parks and Wildlife Tasmania
- ► Tasmanian Land Conservancy
- ► Mount Roland Rivercare
- ► Central Coast NRM
- ► Latrobe Council
- ► Kentish Council

Image: Biocontrol release site, Longford

2.6 Data collection

The new release/nursery sites have been mapped for future investigation. These sites have also been added to the National Database for Biological Agents – The Biohub, Atlas of Living Australia - which is publicly available. The link to this database is as follows:

https://biocollect.ala.org.au/biocontrolhub/project/index/f8b5dfbf-1eca-4091-be68-0a958292ba66

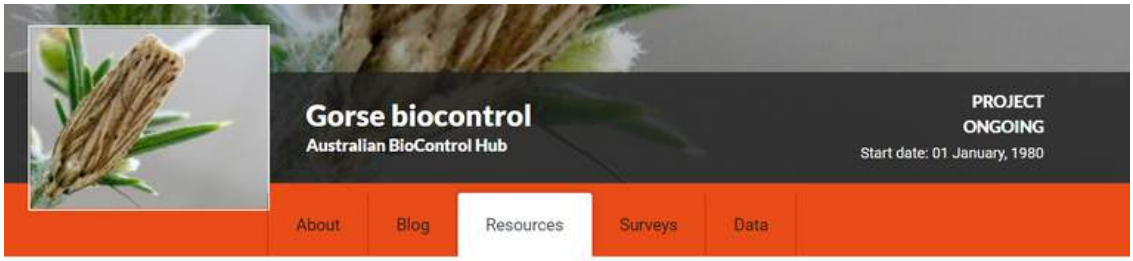

Image: Gorse biocontrol project database

2.7 Communications

Community Engagement is key to ongoing delivery and understanding of the project and the biological controls that have been released. Below are details of our communications to our members, supporters and the general public.

►Newsletter

- Dec 2021
- April 2022
- May 2022

►Blog

- The release
- Post info event

►Website event

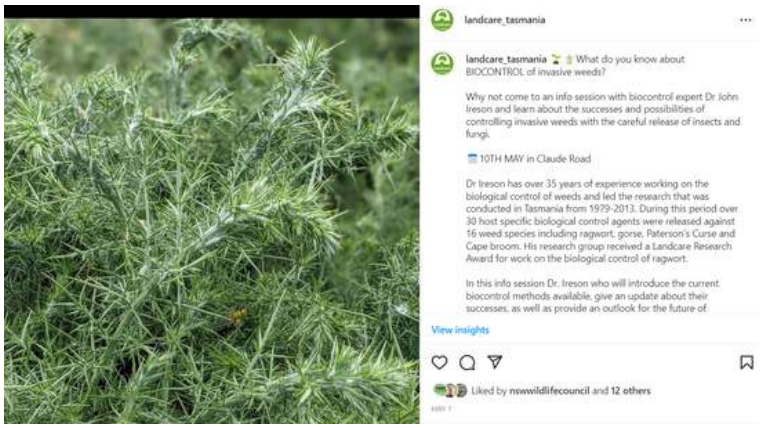

Image: Instagram post

►Facebook

- Pre info event
- Pre info event
- Post info event

►Instagram

- Pre info event
- Pre info event
- Post info event

►Targeted member emails

►Post-event email

3.0 Impact and future direction

If the biocontrol agents establish successfully, this project will give landholders in the North and North West access to another much-needed gorse control method.
Review of sites will need to be conducted in the Summer of 2022/23 when the biological control is visible. We will be seeking additional funding to coordinate this review, which will involve landholders who may be able to do the assessment with the support of a coordinator.

Establishing multiple nursery sites across the North and NW of the state through this project will allow easier collection and release by community members. Establishing more nursery sites will also provide 'safety net', ensuring that there will be healthy populations of control agents even if some sites are inadvertently destroyed (e.g. through fire or spraying).

Image: Biocontrol release site, Longford

Appendix

Appendix A - Map of sites

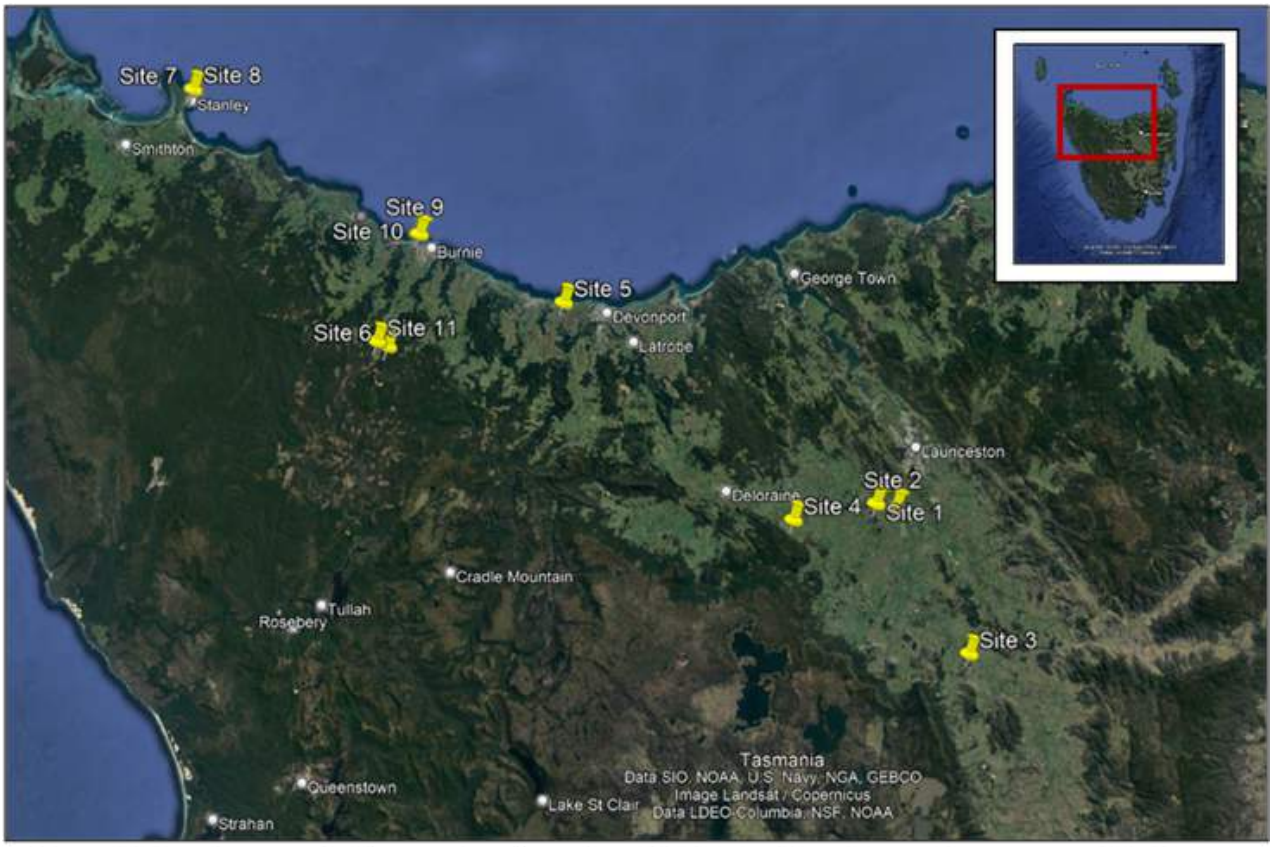

Figure 1. Map of gorse soft shoot moth release sites 2021 by Landcare Tasmania, as a part of the Gorse Biocontrol Project