Pre-release habitat assessment for the release of the rust fungus, *Puccinia rapipes* – a biocontrol agent for African boxthorn

Thank you for your interest in participating in the release program for *P. rapipes*, a rust fungus that has been approved as a biocontrol agent for African boxthorn in Australia. This project has been proudly supported by the **NSW Government through its Environmental Trust**.

The CSIRO is supporting targeted releases of the rust fungus on African boxthorn populations across **NSW only**, in partnership with public sector stakeholders, community groups and private landholders. The project will run from **November 2023** to **June 2026**, with releases typically made in spring and autumn each year.

Expressions of interest need to be accompanied by a list of **proposed release sites** (habitat description and GPS coordinates), **photographs** of the host boxthorn infestations and the surrounding habitat at those sites, and other information.

There is no limit to the number of sites that can be included in the expression of interest, or the number of times that a participant may request a supply of the fungus for release into the environment. Supply is dependent upon availability of fungal material and demand for participation.

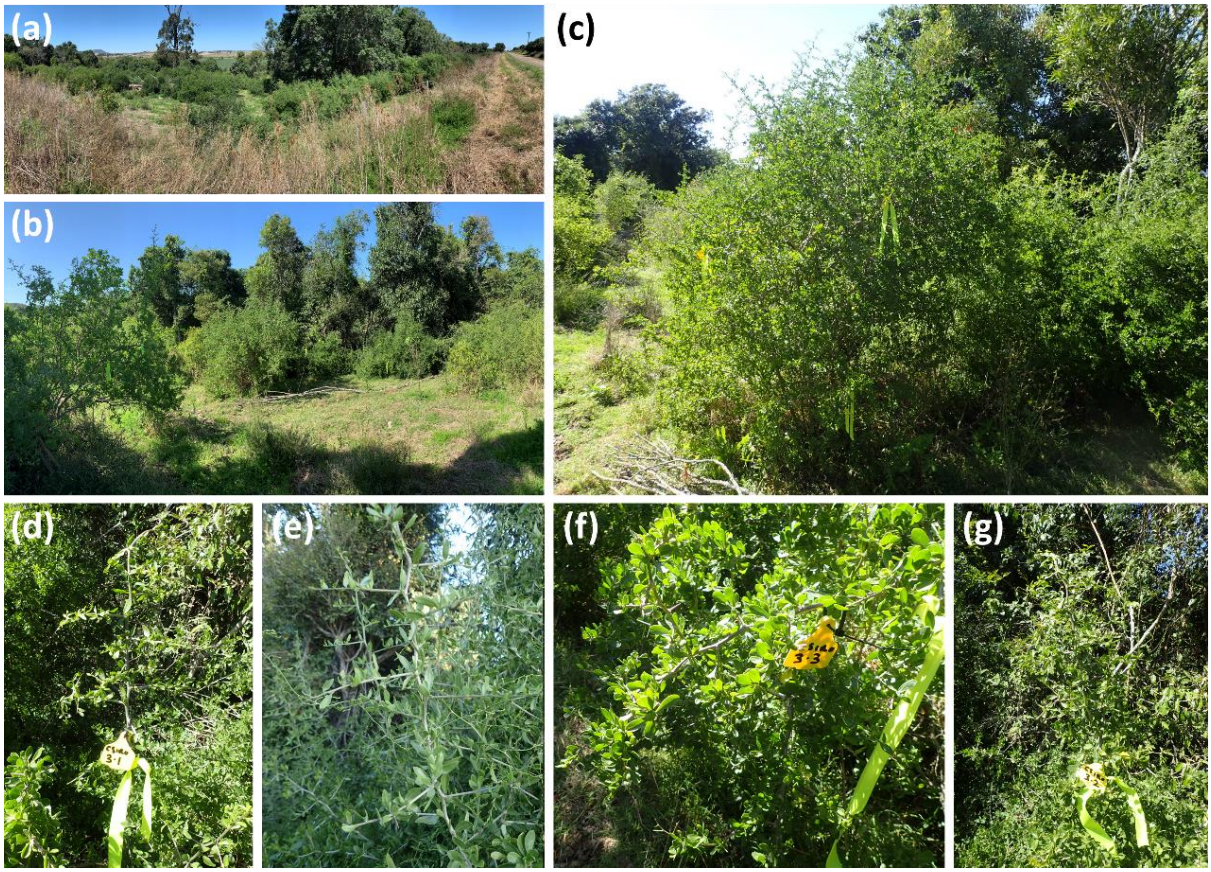
Questions, expressions of interest and pre-release habitat information should be sent via email to:
boxthornbiocontrol@csiro.au

For more information about the biocontrol agent, please visit our website:
https://research.csiro.au/african-boxthorn/our-research/

Participant information
Participant name:
Preferred postal address (Please note that the biocontrol agent will be sent as a priority mail package via a courier, and for this reason, we are asking for a physical address, not a PO Box if possible. If you only have a PO box, then this is fine to use):
Preferred telephone number:
Are you planning to release the biocontrol agent as a private citizen (e.g., landholders releasing on their own properties) or as part of a coordinated community group activity or government agency?

Potential release site(s) information		
Planned release date/s:	Site name/s:	Affiliated organisation/s:
Habitat description:		
Proposed release site(s) GPS coordinates (degrees latitude/longitude):		

Examples of the photos requested are presented in figure below:
(a-b) general habitat context,
(c) close-up photo of the African boxthorn plants upon which the fungus may be released,
(d-g) additional photos showing evidence of young stems and fresh growth at the proposed release location.



FAQs

What is the process of releasing the biocontrol agent and how much of the agent should I receive?

CSIRO will provide participants "biocontrol agent release kit(s)" via post that contains a vial of the rust fungus spores, along with the materials and detailed instructions to prepare and apply the spores to the African boxthorn plants. One biocontrol "kit" will contain enough material to apply the agent to 8 or more boxthorn branches at one registered site.

Over time, as the African boxthorn plants become infected, the fungus develops pustules on the leaves which produce spores. Those spores will naturally spread to nearby plants via wind or water, and continue the spread of the fungus.

If you intend to release the fungus multiple times with multiple kits, ensure that each kit released is separated by at least 200 m to enable broadscale distribution of the fungus in the local landscape.

What effect will the biocontrol agent have on African boxthorn populations? How quickly does the fungus kill African boxthorn?

In the Australian environment, the fungus is **not** expected to kill African boxthorn. Provided that the biocontrol agent establishes widely and causes severe disease symptoms on African boxthorn, it is expected to reduce the reproductive output and vegetation growth of the weed in the long term. This will in turn reduce its invasion potential in various ecosystems, but will not eradicate it altogether.

How quickly will the fungus spread?

The rate of spread of the fungus will be ascertained by long term monitoring. It is expected that the fungus will spread from one plant to the next very slowly, but the rate of spread will accelerate once the overall abundance of the fungus builds up in the local African boxthorn population. Based on our knowledge of other successful biocontrol agents that have been released previously in Australia, broadscale spread of the fungus would be expected to take several years and will not occur within the first season of release. As such, 'success' in the short term for this research project is to first establish the presence of the fungus in the Australian environment.

Can use of the biocontrol agent replace herbicide application or other control methods?

Biocontrol may provide a sustainable, landscape-scale approach for African boxthorn management with no chance of off-target damage to crops or native vegetation. Given that the fungus will not kill African boxthorn altogether, it will complement but not replace the need for other control methods. However, widespread establishment and spread of the fungus may gradually reduce the quantity of chemical herbicide required to suppress weed populations.

What happens if I cannot detect the fungus after release? Has it failed?

It is important to note that the fungus will only infect African boxthorn at high severity under optimal conditions for growth and spread – that is, when warm and moist and the host African boxthorn plants are healthy and vigorous at early stages of growth. As such, we expect that the fungus will not establish in all instances. The fungal spores are delicate and require specific microclimate requirements for germination and infection. The fungus will only become widely established in the Australian environment after many years of sustained releases by various participants.

As such, participants are encouraged to release the fungus on multiple occasions where the initial releases may have failed.