

# TRADESCANTIA STEM BEETLE

*Lema basicostata*

## The history of tradescantia stem beetles in New Zealand

The tradescantia stem beetle is native to south eastern Brazil and north eastern Argentina. It was first imported from Brazil by Landcare Research into containment for testing in 2009. Permission to release this beetle was granted by ERMA towards the middle of 2011, but releases did not begin until 2012 because of the need to clear the beetle of a gut parasite. The beetle is establishing well and showing early promise with widespread releases continuing. This beetle has not been used as a biocontrol agent anywhere in the world before.

## How would I find tradescantia stem beetles?

Adults may be seen feeding or resting on the upper leaves and shoots during the warmer months but have a strong tendency to fall or fly away when disturbed. They are shiny black in colour with a distinct knobby appearance when viewed close-up. Adults are about 4–5 mm long and females are usually slightly larger than males. The adults are probably fairly long-lived, as they have survived for up to 5 months in captivity.

Females lay yellow eggs on the lower surfaces or undersides of the leaves or in leaf axils, mostly singly but sometimes in clusters. It is not



known how many eggs they can lay but 100–200 eggs over several months seems likely.

The eggs hatch after about a week into pale greyish-brown larvae which either mine the leaves and leaf stems or bore into mature stems. Larvae themselves will therefore be hard to see, but their damage (collapse and necrosis of stems) and brown frass may be visible. The larvae feed and grow through 4 or 5 instars before emerging to pupate.

The pupal cocoons are extremely unusual and may be visible in the litter/soil, especially around the base of damaged plants. They are white, star-shaped and resemble styrofoam in texture and appearance. This may be another survival mechanism, as predators may be fooled into thinking they are larvae infected with a fungus. New adults emerge from cocoons after about 2 weeks.

Development from an egg to an adult takes about 10–12 weeks at warm temperatures. It is not yet known how many generations the beetles will be able to complete each year in New Zealand, but 2–3 are likely.

You may confuse some life stages of the stem beetle with other tradescantia biocontrol agents. Tradescantia leaf beetle (*Neolema ogloblini*) and tip beetle (*Neolema abbreviata*) adults are a similar size but have different colouration. Leaf beetle adults are dark metallic bronze and tip beetle adults are black with yellow wing cases





Release point cleared by stem beetles

with black markings. Pupal cocoons made by the three species will be difficult to tell apart, but stem beetle pupae are more likely to be found lower down or in the litter.

See *Tradescantia leaf beetle*, *Tradescantia tip beetle*.

### How do tradescantia stem beetles damage tradescantia?

The adults chew elongated windows in the upper surfaces of leaves, and may consume entire leaves but do not feed on the stems or actively growing tips. The main damage is caused by the larvae which bore into the mature stems causing them to collapse.

### Will tradescantia stem beetles attack other plants?

The stem beetle is highly host-specific and it is highly unlikely that anything other than tradescantia (*Tradescantia fluminensis*) will be attacked. It is possible that some other very closely-related ornamental species (such as *T. albiflora*) may be attacked to a lesser degree.

### How effective are tradescantia stem beetles?

It is too soon to know what impact the stem beetle will have here, but tradescantia has been

cleared already at the release point at some sites and laboratory studies have shown that they can be extremely damaging to tradescantia. Few parasitoids are believed to occur in New Zealand that could attack this beetle. The tradescantia stem beetle should complement attack by the tradescantia leaf beetle and tradescantia tip beetle. A monitoring programme to measure the effectiveness of the three beetle species is underway.

### How can I get the most out of tradescantia stem beetles?

The beetles are not expected to disperse rapidly so it would be worth helping to establish them in all areas where they are needed.

### How do I choose a release site?

Read *Guidelines for selecting release sites for biocontrol agents*.

### How do I collect tradescantia stem beetles for release?

It may be possible to collect adults with a garden-leaf vacuum machine, modified so that the beetles are collected and not sucked through. However, because the adults drop so readily it may be necessary to collect and shift damaged, infested plant material on a tarpaulin or wool pack instead. Note that to use this method you will need an exemption from the Ministry for Primary Industries.

If you can collect adults aim to shift at least 50 adults in the spring. Use a pooter to separate them from other material collected during the vacuuming process, which may include pests.

### How do I manage the release sites?

Avoid any activities that will interfere with the beetles, such as herbicide application. If you need to undertake control measures then avoid the release site.

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