

USING TINGIDS AS BIOLOGICAL CONTROL OF CAT'S CLAW CREEPER

Introduction

Weed Warriors is a practical, hands-on program that has been developed to engage students in learning about and understanding local weed issues. Weed Warriors specifically draws attention to the use of biological control as a weed management strategy. Students, not only identify weeds in their area that are suitable targets for biological control, they actively rear bugs to assist in the management of local weed infestations.

This fact sheet will assist schools and community groups to establish practical, cost effective rearing facilities for Tingids, a biological control agent used in the management of Cat's Claw Creeper.

Tingids, *Carvalhotingis visenda*, are very small sap sucking insects (3-4mm). They are easy to rear; so it is possible to have very big numbers (1000's in the cage at a time).

Tingids like many insect breed faster in the warm season. First and fourth terms are the times when you will see most action and the best times to plan releases.

To keep a healthy breeding colony

To start the process a breeding cage is set up with 6-8 healthy plants which are then infested with a small (80-100) number of adult Tingids.

Once Tingids really start to breed they will consume the chlorophyll out of the leaves very quickly. Putting fresh plants in weekly and removing exhausted plants progressively allows Tingids to move from old plants to new and therefore reduce the number of bugs being lost as plants are taken out of the cage.

If there is space, a quarantine cage/ space is a good idea. Old plants are placed in the quarantine area with one or two fresh plants. As eggs hatch and juveniles grow they will move to the healthier plants. Every 2-3 weeks, the oldest plant goes outside to be rested, newly infested plants go into breeding cage and fresh plants are put into the quarantine area. This process allows time for eggs to hatch and also helps to minimise the number of insects accidentally removed from the breeding colony.

If you do not have a quarantine cage it is good idea to cut the plants back, remove any leaves and place on top of the plants remaining in the cage. This will prevent insects from being introduced to the food plants accidentally.

Tingids are very small and not good swimmers. When plants are watered encourage the students to put the water on the soil not over the top of the plants. If water is sitting in the saucers the day after watering reduce the amount of water. It is possible to over water weeds, especially in the cool weather. The soil will go smelly and the plants will start to rot.

Once the colony is large and breeding well, it is time to do the first release. This is usually 8-10 weeks if starting in summer.



*Electron Microscope scan of Tingid.
Courtesy of University of Queensland*

Preplanning

As a bare minimum each class/group/school will require

- 1 breeding cage
- Initial colony 80+ adult Tingids
- 20-50 healthy potted cat's claw plants
- Saucers that fit the pot to prevent water spreading around the cage when plants are watered.
- A shade house, or somewhere to keep plants not in the cage (must be off the ground)- a place where it will not get forgotten.
- Must be watered 2-3 times a week.

Useful additions

- Hand lens, magnifying glasses
- Microscope & digital camera (could be hired or borrowed)

Photo supplied by Boonah State School



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Selection of a release site

The release site needs to have a heavy infestation of Cat's Claw and particularly be growing along the ground with large dark green leaves. Consider the access and safety of the children when selecting the site. Is there a safe place to park a car or bus? How far will they have to carry the cage/box? Is there serious risk of meeting snakes in the long grass? And how steep and or loose are the creek banks?



Assuming the site is firstly safe for the children will it suit the Tingids? They are particularly wind sensitive, so if the site is very exposed they will not do well. Tingids are small and will be prey to ants, spiders and the like, so try to avoid being close to significant ant nests. Tingids also seem to do better in areas where there is some sort of canopy over the top (even if it is more Cat's Claw). Make sure you have permission from the land owners/ managers to do the release and that there are no plans to spray the area.

Releasing the Tingids

To release the Tingids take each potted plant infested with bugs and carefully lift it from the cage or box. Place it on the ground in amongst the dense Cat's claw runners and drape a few runners from the site over the pots to form a bridge to allow the Tingids to move easily to the new plants. Cluster the pots together and ideally have them at the base of a tree or against a log or some form of structure. It will not only be easier to find but will act as a wind break.

Recording the location

Put some sort of marker on the site (flagging tape, coloured flag, etc) write on it the date of the release. If it is possible to take a GPS reading, record it on the release form.

It is a good idea to establish one of two photo monitoring points on the day of the first release (or before). Take a number of photos to show the level of the infestation and the health of the plants.



Rosevale State School releasing Tingids



Monitoring

Depending on the distance required to travel to the release site, visit once a term would be informative but twice per year is enough. Best time to see significant damage will be the end of summer. It is a good idea to check on the progress/ survival rate at the end of winter.

Don't be surprised if you see very little evidence at this time. The adults seem to die off during winter and the little ones and eggs take time to get going in the cool weather.

The most likely evidence that your Tingids are present and doing their thing will be leaves with white patches (just like you had in the cage).

It is difficult to show this sort of damage in photos. Try placing a marker near the leaves that are showing damage. Measure the distance from the initial release (where you put the pots) to the furthest damaged leaves.

Continuing the colony

If you are planning to keep on breeding Tingids is it a good idea to keep two plants that are infested with Tingids (even juveniles) in the breeding cage. Add 4-6 healthy plants to the cage. Ensure that the plants are close enough for the bugs to move easily from one plant to the next.

Getting your own food plants

If you are going to continue to rear Tingids you will need a supply of potted Cat's Claw plants. You can easily collect small tubers from the infested area when you go out to release the bugs.

Use a garden fork or trawl to locate and dig up young cat's claw plants. Aim for plants that have a tuba about the size of a marble (or your thumb nail). You will often find them in areas where there has been soil disturbance.

Encourage the students to collect small plants. These will stress less and be less likely to be damaged in the process of collecting them. The larger the plant the longer the root system. Often students will want to dig up the biggest ones they can find, but if you take a pot with you they will quickly discover they just can't fit them in the pots available.

As the plants are collected with leaves and roots intact, place them in a box or container with a lid. Keep it in the shade and put a small amount of water over the plants if they are not going to be potted up immediately.

Tingid Cage at Boonah State School



*Electron Microscope scan of Tingid.
Courtesy of University of Queensland*





Potting up food plants

The aim of potting up the food plants is to provide as much leaf (and therefore chlorophyll) as possible in a limited space. Use good quality potting mix or compost. Work outside and ensure you have read the health warnings on the bag. Students should wear gloves and any asthmatic students need to be very closely watched.

About 1/3 fill the pot with mix. Collect 3 or 4 Cat's Claw plants and hold them together in the middle of the pot. Fill the pot and press the mix in firmly. Leave about 1-2cm of space at the top of the pot. This will allow the water to sit on the surface of the pot and soak in rather than rush over the edge when plants are watered.

When all plants are potted, place them in a tidy tray or similar container and soak the plant until the water is visible at the top surface. This will ensure the plants are properly wet and will assist the mix to settle around the roots. Place the new plants in the shade house or selected area with plenty of sun. Ensure the plants are not in contact with the ground.

It is possible that the plants will look sick in the next few days. They have been significantly disturbed. They will mostly reshoot in a matter of a week or so. It is a good idea to pot new plants a month to six weeks ahead of the time you expect to need them.

As silly as it may seem, if the plants look pale or are slow growing a liquid fertiliser such as Thrive, Aquasol or Triple Boost, watered over them about once a month will keep the plants dark green and in top condition for your bugs. Remember the better the food you provide the better the bugs will breed.

*Photo supplied by
St Mary's School, Beaudesert*



For more information

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