Forest Health News

MYRTLE RUST REPORTER

Myrtle rust is a serious biosecurity threat that affects a number of New Zealand's native plants, including pōhutukawa, ramarama, northern and southern rātā and mānuka. We need your help to protect our natural and productive environments. As citizen scientists one way to help is by finding and mapping potential host plants, and then monitoring them periodically for signs of the disease.

The Myrtle Rust Reporter is a new tool in our fight against this disease, brought to you by Northland Regional Council, Scion, Envirolink, Te Tira Whakamātaki (Maori Biosecurity Network), Biological Heritage National Science Challenge, and the Ministry for Primary Industries (MPI).

The Myrtle Rust Reporter app is freely available in the iPhone and Android app stores by searching for 'myrtle rust reporter'. We encourage you to give this new bilingual app a go and use it to record a dozen potential host plants in your community. You will become the caretakers of these specific plants. Check these plants regularly and look for telltale yellow spores on the new growth (some excellent examples are found inside the app). If you think you've found myrtle rust, remember not to touch the plant or the symptoms. Take a picture, submit your record using the app and then immediately phone MPI on 0800 80 99 66. The biosecurity response officer on the phone will use your app username to look up your record and discuss the photo you have submitted.

The app works with NatureWatch NZ so that all New Zealanders have the tools to participate in the myrtle rust surveillance campaign. The connection of the app with the NatureWatch NZ community links you with other interested naturalists and experts that can give you a hand to identify plants to ensure you are monitoring potentially susceptible plants from the myrtle family. Suspect records of potential myrtle rust infections are reported to MPI that feedback response outcomes to users via the myrtle rust reporter project on NaturewatchNZ (http://naturewatch.org.nz/projects/myrtle-rust-reporter)

It is critical that you do record your host plants so that we all know which plants you are looking after. Myrtle rust has so far been found in Northland, Auckland, Waikato, Taranaki, Te Puke, and Wellington, however New Zealand is a big place and myrtle rust has microscopic spores so as a group we need to make sure we cover as much of New Zealand as possible.

Steve Pawson (Scion)

RED GUM LERP PSYLLID ADDENDUM

In our last edition we introduced the new, to New Zealand red gum lerp psyllid, *Glycaspis brimblecombei*. We were remiss to not acknowledge the excellent work of Paul Bradbury (SPS Biosecurity) in recognising it as likely a different species in the field. The dedicated staff at SPS do an excellent job at recognising new organisms in New Zealand.

Andrew Pugh (Scion)

TROJAN APHIDS USED TO IMPORT PARASITOIDS

After two attempts, the braconid parasitoid, *Pauesia* sp., has been successfully imported into Scion's containment facility in Rotorua. Pauesia sp. is a potential biological control agent for giant willow aphid (GWA; *Tuberolachnus salignus*) in New Zealand, and is being investigated as part of MPI's Sustainable Farming Fund project: Management of Giant Willow Aphid.

This parasitoid naturally occurs with populations of GWA in other parts of the world. It kills the aphids by laying a single egg inside each aphid (Fig. 1A). When the egg hatches the developing larva consumes the aphid from the inside (Fig. 1B). Later, the aphid dies and becomes 'mummified' (immobile and swollen) and soon after an adult wasp emerges (Fig. 1C).
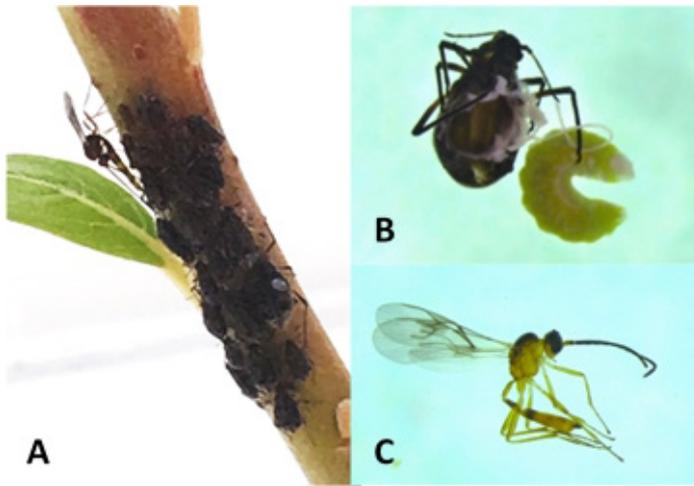

Fig. 1. A: *Pauesia* **sp. oviposition. Note the abdomen curled under her body to reach the aphid; B: A** *Pauesia* **sp. larva dissected from a living GWA. Photo: Roanne Sutherland; C: An adult** *Pauesia* **sp. (body length 2-3 mm).**

A 2016 scouting trip determined four locations in California where GWA was present and revealed evidence of parasitism at two of these. However, the level of parasitism occurring in GWA, the life cycle of the wasp, and even its specific name are all unknown. Thus efforts to import *Pauesia* sp. were somewhat of a risk, and our first attempt at importation from California in October 2017 was unsuccessful.

We did not know whether the imported aphids contained any wasp larvae because the aphids died quickly after import, apparently unable to live on the fresh spring willow shoots we provided as food. This was a learning process for us and may relate to the difficulty of finding GWA in the natural environment in springtime. Another factor was the struggle to find large numbers of aphids in California where they are very scarce, presumably in part because they are kept in check by the parasitoid.

With the scarcity of GWA in the USA in mind, citizen science was employed to enlist keen Californians to help find populations of aphids for a future import. Through iNaturalist we contacted professional and amateur ecologists that had previously recorded seeing GWA, and some that had recorded willow. As a result of this call for help, and with the assistance of collaborators from the USDA Forest Service, a much greater number of aphids were collected on the second attempt in December 2017 (Fig. 2).

Fig. 2. Dr Steven Seybold (USDA Forest Service) and Stephanie Sopow (Scion) collecting parasitized GWA in Oakland, California, December 2017. Photo: Lori Nelson (USDA Forest Service).

Approximately 900 aphids were collected, and from these, 34 *Pauesia* sp. emerged, some during transit across the Pacific Ocean inside a secure chilly bin. Only 10 were females, but these gave rise to almost 500 new individuals when reared on NZ GWA. This first 'New Zealand born' generation began to emerge on New Year's Day with a second generation emerging by late January.

We are currently learning about their life cycle and behaviour in preparation for non-target host specificity testing to ensure the safety of other species of aphids in New Zealand, should *Pauesia* sp. eventually be released into the New Zealand environment.

Stephanie Sopow (Scion)