

Invasive Weeds Project (2021 – 2026)

Project summary

Funded through the Environment Levy, the Invasive Weeds Project has three main objectives:

1. Undertake a variety of weed management control options and trials at two locations at Maleny and Witta demonstration sites
2. Explore other weed management practices using innovative technology for invasive plant identification, management, monitoring and surveillance
3. Sharing information with our community about trial outcomes and opportunities.

1) Demonstration sites

Maleny Community Precinct, Maleny

This site is located within the Maleny Community Precinct and bordered by the Obi Obi Creek and Maleny Golf Course.

This demonstration site has been divided into nine different 'zones' to trial a range of mechanical management, chemical treatments, native plantings and native plant regeneration as well as one zone being a control.

The key messages for this site will touch on working near waterways, the importance of maintenance and follow up treatments, working to budget, time or other constraints and weeds in the broader environmental context.

This demonstration site is targeted to newer landholders that may not know where to start with weed management and restoration.



Maleny Community Precinct demonstration site zones

Curramore Road Stockpile, Witta

The site is just under three hectares and has steep terrain, located between Curramore Road and Maleny-Kenilworth Road, Witta.

The area is heavily infested with lantana, vine species and other woody weeds. This demonstration site is also divided into different 'zones' and will be focussing on remote management options, innovative new technologies, and bush regeneration techniques.

This site is still an active Department of Transport and Main Roads site so access outside of organised field days is restricted.



Witta stockpile demonstration site

2) Exploration of innovative technologies

Drone Mapping – Proof of Concept

Trial project using a drone to identify the weed tree Broad leaf pepper from Point Cartwright to Wurtulla

Broad leaf pepper (BLP) is a weed tree growing in the foreshore along the coastal strip from Point Cartwright to Wurtulla

It has the potential to impact the environment by smothering and transforming ecosystems, outcompeting native plant recruitment, and reducing the ecological values of natural areas.

We are trying to understand the current spread of BLP trees in the area.

To do this, we are trialling new techniques using a drone to identify BLP trees and their location.

The trial will also help us see if these types of drone mapping techniques can be used to identify other weeds across the region.



Broad Leaf Pepper Tree in Fruit (Image credit CSIRO)

Technical Details

We are investigating three main mapping techniques, all using images captured by a drone. The three techniques include:

1. Creating an orthomosaic for each bushland reserve with manual mapping of BLP

2. Training Artificial Intelligence (AI) algorithms to identify BLP
3. Capturing multispectral mapping for BLP identification and health

These three techniques will provide different outputs that we will then compare to ground-truthed BLP mapping, allowing us to identify how accurate the techniques are.

Council will then have detailed mapping of BLP spread, informing us where encroachment has occurred and to see where additional BLP control may be required. We will also have a better understanding of other opportunities where we could use these mapping techniques and what limitations they also face.



Aspect UAV undertaking drone footage



Environmental DNA (eDNA) Trial

Exploring environmental dna (eDNA): vertebrate biodiversity assessment and detection of Madeira Vine trial

Weed species have the potential to change ecosystems, outcompete native species and choke waterways. Species, such as madeira vine, are transformational species meaning they can change an entire ecosystem negatively impacting the biodiversity and health of an area.

Early identification of these weed species before they become established in an environment can decrease the labour, time and money required for ongoing monitoring and management. However, this can be difficult to do, with practices often requiring on-ground assessments which is not always possible due to the terrain, accessibility, knowledge of species and ability to find them.

Environmental DNA (eDNA) is a relatively new method which could help make this

process easier. It is a quick, cheap and non-invasive way to monitor larger areas and capture useful data.

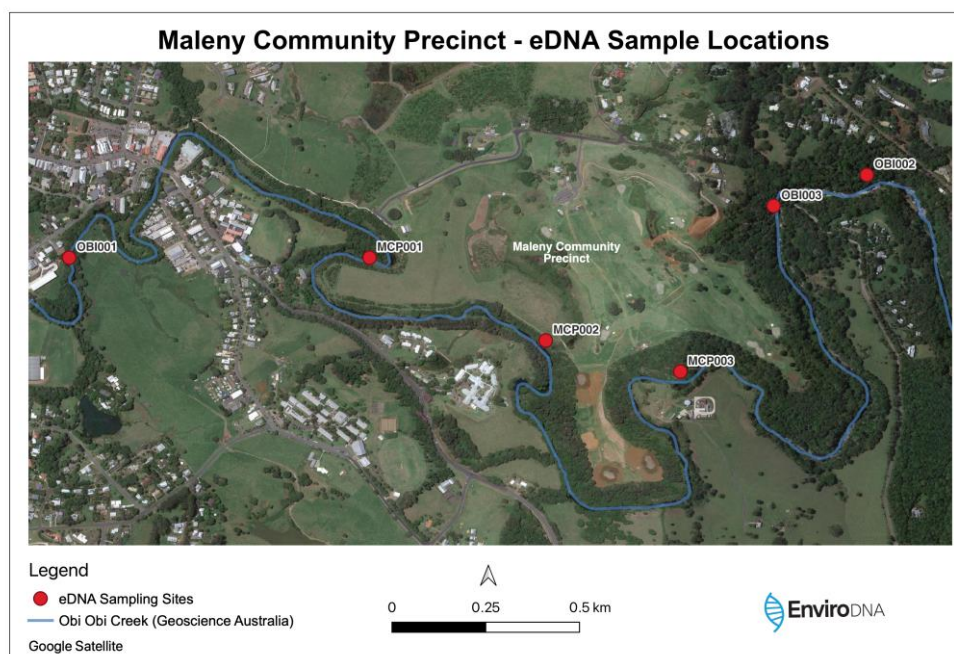
eDNA refers to the genetic material that an organism leaves behind in its environment. eDNA captures the invasive plant's DNA in an area and is tested to detect it even when plant numbers are low. Samples are collected in several ways, with water sampling being the most common method.

In May 2022, we trialled this method at the Maleny Community Precinct (MCP) to understand the process and if it could be used to detect madeira vine within the Obi Obi creek system.

Field Testing

Working with EnviroDNA, 12 eDNA samples were taken.

Using EnviroDNA sampling methods, three sites within the MCP, one site upstream and two sites downstream were tested to look at biodiversity (vertebrate) markers and target species assessment (Madeira vine).



Location of eDNA sampling sites within the Maleny Community Precinct and Obi Obi Creek (EnviroDNA trial report, 2022)

What did we find?

Madeira vine eDNA was detected at all six sites samples. However, further sampling is required including testing at sites where madeira vine is not known to occur and testing against closely related species.

Biodiversity assessment testing detected 37 vertebrate species including 12 fish, two frogs, 12 birds and 10 mammals. This included threatened species including platypus and the grey-headed flying fox.

Next Steps

Further testing is needed. This is planned for the madeira vine to validate and ensure correct identification.



3) Sharing Information

Communication and Engagement

Everyone is a stakeholder when it comes to weed management, and although we come from different areas with different priorities, the information from this project can be useful in many situations.

Weeds are also not a standalone process, to look at invasive species within the Sunshine Coast region, we also need to look at the broader environmental contexts and restrictions stakeholders face.

Building partnerships and sharing information is an important part of the Invasive Weeds Project. To do this I am:

- Attending events throughout the region
- Providing presentations and sharing of information with interested parties
- Hosting field and information days
- Creation of the Rural Landowners Guide
- Installing site specific signage
- Creating and sharing project news
- Working with organisations on reports and scientific papers
- Sharing the information internally and externally through social media
- Sharing project news with distributed newsletters such as Bush Hands
- Meeting different stakeholders to identify potential joint projects, gaps in invasive species research and trials
- Working with other Council teams to identify research gaps, shared benefits, resources, and information.

Further information

To contact Council's project team please email naturalareas@sunshinecoast.qld.gov.au