PLANT BIOSECURITY
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Expanding environmental biosecurity capacity to protect our unique ecosystems

Progress Report (PBSF012)

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1. Executive Summary

Exotic pests threaten cultural and environmental biodiversity values unique to Australia with prime topical examples being myrtle rust affecting Australian Myrtaceae and the more recent decline of Bunya pines in the Bunya Mountains National Park. This project aims to develop and deliver training that enhances environmental biosecurity awareness, thereby increasing the capacity of the Butchulla, the First Nationals People of K'gari (Fraser Island), to detect, monitor and report on priority pests that may threaten culturally and environmentally significant species within the Fraser Island (K'gari) World Heritage Area. Six Butchulla Land and Sea Rangers have completed a two-day training workshop consisting of theoretical and practical exercises in Brisbane and a myrtle rust study site in a subtropical rainforest ecosystem near Gondwana World Heritage areas. Since the training, Rangers have commenced surveys back on country. In August, a joint survey program will also be conducted on K'gari initially focussing on myrtle rust. This will result in the establishment of the first long-term myrtle rust impact monitoring program in Australia.

2. Introduction

Exotic pests threaten cultural and environmental biodiversity values unique to Australia. Myrtle rust is the second most significant plant pathogen to invade the native environment in Australia and several reviews have highlighted serious gaps relating to Australia's environmental biosecurity. Under the World Heritage Convention, the Federal Government (with day-to-day management devolved to the State) has responsibility for identifying and protecting the Outstanding Universal Value (OUV) and ensure its conservation for current and future generations. Australia's World Heritage properties are protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). World Heritage properties are recognised as a matter of national environmental significance under the EPBC Act's assessment and approval provisions. Therefore ensuring biosecurity risks, including myrtle rust are identified then managed effectively are paramount to fulfilling these obligations. This project addresses aspects of this by developing and delivering environmental biosecurity awareness and surveillance training, MYRTLE RUST identification and assessment methods and reporting to protect the OUV of the Fraser Island (K'gari) World Heritage Area.

3. Objective

This project aims to increase the capacity of First Nations People to detect, monitor and report priority environmental exotic plant pest and disease threats in a World Heritage Area. Additionally, this project will be used as a model to develop an environmental biosecurity awareness, surveillance and reporting training module that could be adopted nationally. Specific training focussed on identification *Austropuccinia psidii* symptoms and assessment of myrtle rust impact will be conducted. The susceptibility of Myrtaceae present on K'gari will be assessed during surveys and monitoring plots established based on these results. Information collated will be used to direct management strategies such as germplasm collection from resistant trees for storage and use in regeneration programs. This will include studies on *Syncarpia hillii* (Satinay), a culturally important species and one that forms part of the FIWHA OUV. Preliminary glasshouse studies have identified both susceptibility and resistance in seedlings from nearby Cooloola region.

4. Method/Process

In collaboration with Butchulla, DAF, BQ and DES, training packages have been developed for:

- myrtle rust identification, monitoring, impact assessment
- Environmental (Forest) biosecurity awareness and reporting processes

5. Achievements, Impacts and Outcomes

Biosecurity and myrtle rust identification training

A two-day training program was run for six Butchulla Land and Sea Rangers including presentations from Suzy Perry, Janet McDonald, Louise Shuey and Geoff Pegg. The training focussed on:

- Providing a background on general biosecurity – Suzy Perry
- An overview of Forest biosecurity and the shared responsibilities we all have when it comes to biosecurity awareness and reporting – Dr Geoff Pegg
- Introduction to Forest Priority Pests and Reporting – Janet McDonald
- Signs and symptoms and the disease triangle – Dr Louise Shuey
- Myrtle rust – what is it and how to identify it – Dr Geoff Pegg
- High risk site surveillance and sample collection – Janet McDonald

Two field tours were also conducted as part of the training:

- Mt Coot-tha Botanic Gardens – General Forest health awareness, sample collection, photography and myrtle rust symptoms
- Tallebudgera Valley – Myrtle rust symptom identification and impact assessment training

Butchulla Land and Sea Ranger forest biosecurity and myrtle rust training day at Mt Coot-tha botanic gardens

Symptom identification and photography training at Mt Coot-tha Botanic Gardens

Demonstration of the disease screening processes used to help determine the risk myrtle rust poses to Myrtaceae species and to assist in identifying resistant germplasm

Midgen berry (*Austromyrtus dulcis*) – “bush tucker” common on K’gari with immature and mature fruit affected by myrtle rust

Myrtle rust impact assessment training in the field at Tallebudgera Valley.

Two *Syncarpia hillii* (Satinay) exposed to myrtle rust at Ecosciences Precinct Laboratories

Butchulla activities

Post training activities the Land and Sea Rangers have started conducting surveys of K'gari Myrtaceae to:

- Document environmental and physiological characteristics of Myrtaceae species and geographical features of associated sites
- Record presence/absence of myrtle rust symptoms on K'gari Myrtaceae
- Document the Butchulla names for the different Myrtaceae and record their cultural significance

Joint surveys focussed primarily on myrtle rust will be conducted on K'gari in August 2019. Additional forest health training will be conducted at a later date (yet to be decided).

Other activities

Forest plot data and seed collection

DAF has maintained records of old growth measure plots that were establishing on K'gari during logging operations activities on the island. These records are currently being examined and information used to identify possible plots for future forest health monitoring programs. Discussions will also be had to ensure Butchulla have access to all the current and historical data. Training in tree measurement methods will be offered to the Butchulla Land and Sea Rangers along with methods of seed collection and storage. This will be essential in initiating a species conservation program and for assisting in identifying resistance patterns to myrtle rust.

Outcomes

- Increased environmental biosecurity awareness, detection and reporting capacity
- Contribution to reporting species and community impact – Theme 3 Myrtle Rust Action Plan
    - Surveys of K'gari Myrtaceae
    - Establishment of impact monitoring plots
    - Establishment of studies examining traditional burning regimes and the influence myrtle rust has on species recovery and opportunities to select disease resistance
- Shared Traditional Owner knowledge of the cultural importance of myrtle rust-susceptible plant species
- Enhanced awareness of required and accepted scientific reporting and monitoring methodology within First Nations Peoples
- Improved capacity to report on forest health status, in particular myrtle rust impacts, as per Australian Government environmental department's international and statutory responsibilities relevant to invasive species (EPBC Act, Convention on Biological Diversity).

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