WINNEY BAY STUDY & RESTORATION

Location: Winney Bay, Copacabana, Central Coast Council LGA

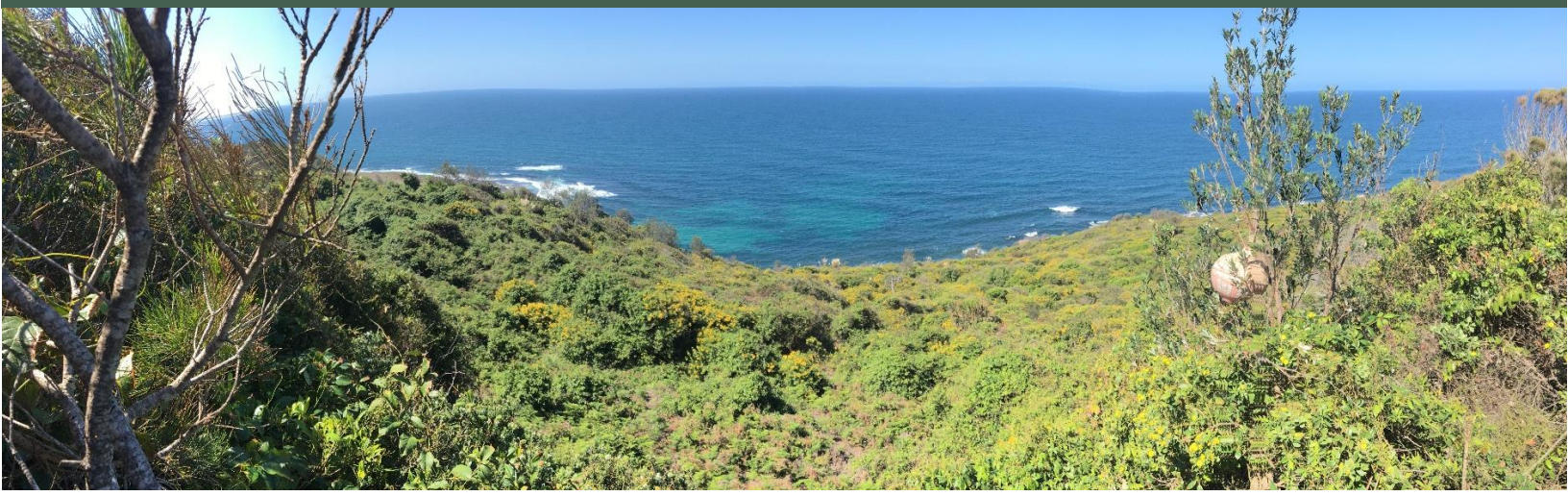
Date: 2020-2024 Ongoing

Client: Central Coast Council

Site Description:

The site encompasses approximately 3 Ha of maritime influenced Coastal Headland Low Forest and Shrubland. The area holds valuable biodiversity and community assets, a popular tourist attraction for whale watching and the 5-lands walk.

A significant priority weed infestation of Boneseed (*Chrysanthemoides monilifera* ssp. *monilifera*), Bitou bush (*Chrysanthemoides monilifera* ssp. *rotundata*) and numerous hybrid forms (*Chrysanthemoides monilifera* ssp. *rotundata* x *monilifera*) have altered the micro-climate and degraded native vegetation over many years.



Project Objectives .

- Design and implement a pilot project to research, test, compare and evaluate meaningful qualitative and quantitative data:
    - Of several treatment methods to manage and control the Bitou x Boneseed priority weed infestation most effectively
    - Measure the response of the native vegetation to these treatments
    - To identify phenotypic differences and extent of the priority Bitou x Boneseed hybrid swarm
- Effectively and efficiently control priority weed infestations to restore native vegetation and community amenity

Description of Works

- Research and literature review of the latest science to better understand the biology, life history, phenotypic morphology, impacts, best practice control methods (biological, fire, chemical and mechanical) and hybridisation of Bitou x Boneseed infestations.
- Survey, record, map and report priority weeds across the site using GPS and GIS applications
- Floristic data was collected pre and post treatment, within each of the 36 x 100m2 quadrats stratified across the site
- Six treatment methods were randomly applied to the thirty-six quadrats stratified across the site with a replication n=6. Treatments involved using Glyphosate 360mg/L (Yates - ZeroAqua) Group M herbicide and included: Stem Injection, Cut and Paint, Splatter/Gas Gun, Backpack Spray, Fire and Control.
- Statistical data analysis using ANOVA (Analysis of Variance) to establish treatment efficacy.
- Control and removal of large areas of Bitou x Boneseed infestation using evidence-based techniques and adaptive management.

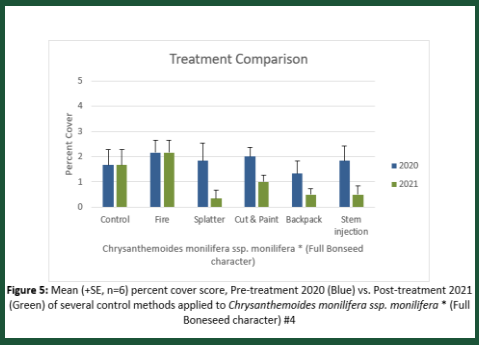


Figure 5: Mean (+SE, n=6) percent cover score, Pre-treatment 2020 (Blue) vs. Post-treatment 2021 (Green) of several control methods applied to *Chrysanthemoides monilifera ssp. monilifera* * (Full Boneseed character) #4

Outcomes Achieved

We are proud to have delivered optimum solutions through evidence-based recommendations to achieve the most cost-effective and ecologically sustainable outcomes for the site.

- All weed control methods demonstrated a significant difference ($P<0.05$) in reducing the mean percent cover of all *Chrysanthemoides monilifera* spp. across treated plots in the first year.
- Effectiveness was substantial, with treatments typically reducing *Chrysanthemoides monilifera* spp. percent cover by >50%, many areas were >90% reduction
- Native vegetation response within treated plots showed an increase in species richness by 16% and the occurrence rate of individual species being sampled increased by 23%.
- Substantial increases in new native species were seen across Small Tree, Shrub, Herb, Grass and Climber vegetation types adding to structural diversity
- No reductions in native flora forms or species were found
- An integrated management regime and ongoing maintenance has continually suppressed further infestation and liberated a stand of critically endangered Scrub Turpentine (*Rhodamnia rubescens*)