

## Coordinated regeneration programs in coastal vegetation on the Tomaree Peninsula – a decade of bitou bush control

Melissa Schroder<sup>A</sup>, Geoffrey James<sup>A</sup> and Anthony Marchment<sup>B</sup>

<sup>A</sup> Parks and Wildlife Group, Department of Environment and Climate Change, Locked Bag 99, Nelson Bay, New South Wales 2317, Australia.

<sup>B</sup> Port Stephens Council, PO Box 2324, Raymond Terrace, New South Wales 2324, Australia.

### Abstract

Coordinated weed control programs focussing on the weed bitou bush (*Chrysanthemoides monilifera* subsp. *rotundata* (DC.) Norl.) have been undertaken on the Tomaree Peninsula on the mid-north coast of New South Wales (NSW) since the development of a co-operative control plan in 1997. The Port Stephens Bitou Bush Management Plan was developed by the Port Stephens Coastal Weed Action Group with members from Port Stephens Council, NSW National Parks and Wildlife Service (now the Department of Environment and Climate Change), Department of Land and Water Conservation (now Department of Lands) and various community bush regeneration groups. The Plan has taken a cross-tenure approach to the prioritization of control programs. This has ensured success and enabled the implementation of strategic coordinated programs that utilize consistent control methodology. The programs are committed to the protection of significant native vegetation communities and promotion of natural regeneration.

Bitou bush infests over 1600 ha of the 10 000 ha Tomaree Peninsula. Distribution and density mapping was first undertaken in 1997 using aerial photography and ground truthing. Density was mapped at the shrub layer level in four categories; high >50%, medium 10–50%, light 1–10% and scattered <1%. This information assisted in the establishment

of priorities. Mapping was replicated in 2007. After ten years of coordinated bitou bush control, comparisons indicate a significant reduction in the density of bitou bush. This includes a 17% reduction in high density infestations, 44% reduction in medium infestations and a 36.7% reduction in light infestations. Whilst the density of the weed has been reduced, the distribution has increased by 3.5% in the ten year period. This reflects reinvasion from infestations outside of the Tomaree Peninsula and illustrates the difficulties in controlling dispersal mechanisms such as birds and ocean currents.

Programs are prioritized to control bitou bush at locations where significant vegetation communities, such as endangered ecological communities and threatened plant species occur. Observational data collected throughout the control program has provided important information on the ecosystem resilience of coastal vegetation communities following the control of bitou bush. Ecosystem resilience was lower in fore dune and hind dune vegetation with high density (>50%) bitou bush infestations. These areas require revegetation to stabilize dunes and reduce secondary weed invasion. Coastal vegetation communities (such as coastal heath and forest on clay soils) demonstrated higher ecosystem resilience and were able to recover from light, medium and high density bitou bush invasion over the ten year

period. This information has informed the selection of future bitou bush control sites and facilitated better site management.

Despite the success of bitou bush control, secondary weed incursions, including weeds previously not widely recorded in NSW such as *Asystasia gangetica* (L.) T. Anderson, *Crithmum maritimum* L., *Eryngium maritimum* L. and *Tetragonia decumbens* Mill, have established in sites where bitou bush infestations were treated. These sites occur in proximity to urban townships, where refuse dumping and bird dispersal remain two key vectors for secondary weeds. Dispersal by ocean currents has also been linked to at least two new secondary weed incursions. Some of these secondary weeds are more difficult and expensive to control than bitou bush, thus increasing original follow-up cost predictions. Regardless, once a program has commenced, the commitment to continue follow-up of all weed species is integral. This includes continuing to support community engagement as a component of the programs. Active community support has contributed greatly to the success of holistic weed control at a number of sites.

Ignoring boundaries and developing priorities across land tenure has increased the success of coordinated bitou bush (and other weed) control. Undertaking programs cooperatively is the most effective way to deal with landscape weed invasion. This program is an example of what can be achieved when different land managers and community groups can develop and implement strategies together and forge a commitment for consistent follow-up. Given the continual dispersal of bitou bush (and other weeds) and the constant risk of reinvasion, long-term control will continue to be an ongoing part of managing coastal vegetation communities on the Tomaree Peninsula.

### Acknowledgments

We thank all of the community groups who have dedicated their time and energy towards removing weeds across the Tomaree Peninsula.