

A history of boneseed control in the You Yangs Regional Park, Victoria

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Introduction

The You Yangs is a 2000 ha regional park situated between Victoria's two largest cities – Melbourne and Geelong, and is home to one of the countries densest boneseed (*Chrysanthemoides monilifera* subsp. *monilifera* (DC.) T.Norl.) infestations. Boneseed was thought to have been planted in the park as an erosion control measure in the late 1940s, but exact introduction details are unknown. Boneseed quickly established in the park, initially taking a strong hold on the low fertile granite slopes and progressively spreading to the open woodland in the foothills. By 1963, the District Forester reported approximately 30% of the park or 650 ha (1600 acres) having moderate to heavy infestations of boneseed, particularly in the steep rocky country. The current boneseed infestation covers more than 1300 ha of the 2000 ha park and dominates the landscape, particularly in the rocky granite hills.

The dense boneseed infestation has had devastating consequences for the native flora and fauna within the You Yangs. Much of the native middle and lower story flora has been lost in infested areas and replaced with a monoculture of boneseed. The competition provided by boneseed has inhibited regeneration of eucalypt seedlings, particularly *Eucalyptus leucoxylon* F.Muell., *E. polyanthemos* Schauer, *E. macrorhyncha* F.Muell. ex Benth. and *E. sideroxylon* Woolls, which has long term effects on canopy trees and reliant fauna species. The volume of dormant boneseed seeds present in the soil (2000–19 000 seeds m⁻²; Brougham *et al.* 2006), means that any treatment or disturbance of mature boneseed plants results in vigorous boneseed recolonization, which effectively out-competes native species.

The success of boneseed management in the You Yangs Regional Park has been influenced by a number of factors including sufficient funding, appropriate resources, continuity of staff, community engagement, wildfire events, technology advancements, research and changes in land use and public expectation. The control of boneseed over a 50 year period has relied on local strategies and a combination of control methods.

Control strategies

Boneseed control strategies implemented across the park have included all the recognized techniques: manual control,

chemical control, mechanical control, the use of fire regimes and biological control. No single method has been successful in controlling boneseed, however an integrated approach using a combination of several of these techniques has provided the most productive and sustained results.

Manual control

The history of manual boneseed control in the park can be traced back to 1958, when the Bird Observers Club identified boneseed as a significant threat to the natural bushland due to its rapid spread and initiated an annual 'boneseed pulling' working bee. Over a period of 25 years, this group along with the Geelong Field Naturalists Club successfully controlled boneseed over an area of 120 ha. Other volunteer groups including many schools, service clubs and the Guides and Scouts organizations, still contribute frequently to the manual removal of boneseed through the 'Adopt a Block' initiative, which invites community groups to undertake boneseed control in a specific area of the park, where they are recognized for their efforts with signage. Revegetation following the manual control of boneseed has resulted in over 26 000 native trees and shrubs being planted in treated areas.

Chemical control

Current chemical programs for boneseed focus on areas where known significant natural values are present, in particular areas of brittle greenhood (*Pterostylis truncata* Fitzg.) colonies, a threatened orchid species present in large numbers within the park. Glyphosate is widely used along roadsides and around key visitor areas to control a range of weed species including boneseed, bridal creeper (*Asparagus asparagoides* (L.) Druce) and capeweed (*Arctotheca calendula* (L.) Levyns). Chemical control was also applied as a broad acre aerial application following a significant wildfire in 1985, however the program ceased due to high costs.

Mechanical control

Slashers, groomers, brush cutters and heavy machinery have been used as a knock down approach for the control of boneseed in the park. These techniques have been restricted to the large infestations where there is an absence of the native shrub layer and a monoculture of boneseed. Mechanical approaches provide

access into thick infestations for follow up chemical control and have worked well as part of an integrated program. Initially it was hoped mulching of the boneseed would result in suitable fuel to conduct large scale burning of mature plants, however this was not achieved because plants were mulched too finely by the slashers.

Biological control

Six biological agents have been introduced into the You Yangs to control boneseed since the early 1990s. The advent of biological controls provided great hope and enthusiasm to land managers and volunteer groups. Unfortunately, the agents have provided little control for boneseed due to a number of factors including predation of the agents by native fauna and environmental conditions such as drought and extremes in temperature. Although not yet successful at controlling boneseed, a real benefit of the biological control programs is the positive messages surrounding integrated pest management and the education value to local schools and environment groups visiting the park.

Where to from here?

Parks Victoria has continued working with the challenge of large scale management programs for the control of boneseed. Twelve priority management zones were established across the park in 1999 to focus control efforts and limited resources on protecting the threatened brittle greenhood orchid and areas of known significant natural values. Weed control strategies produced by Parks Victoria and The University of Ballarat for boneseed and bridal creeper at the You Yangs Regional Park led to the development of these zones (Miller and Eales 1999).

Future management of boneseed in the You Yangs will involve a combination of methods as described above, with a greater emphasis on the role that fire can play in the landscape. As the community develops a greater acceptance of fuel reduction burning and a greater understanding of the benefits of ecological burning on public land, the opportunity to integrate fire management techniques with chemical and manual control of boneseed may be a cost-effective management option for the You Yangs into the future.

References

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