Biological control of *Asparagus asparagoides* may favour other exotic species

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Environmental weeds can have an impact on native biodiversity and nutrient cycling. The aim of biological control of environmental weeds is to reduce these impacts and restore ecosystem health. A biological control programme needs to not only evaluate agent establishment and subsequent decrease in the target weed but also determine if the impacts of the weed have been reduced. This is a difficult task because few studies on weed impacts are undertaken before biological control commences. This is not the case for the weed *Asparagus asparagoides* (bridal creeper), which is targeted for biocontrol within Australia. *A. asparagoides* invasion has resulted in a decrease in number and cover of native plants. Areas of low species richness can be susceptible to weed invasions and therefore any reduction in *A. asparagoides* may result in the expansion of other weeds. Invaded areas also contained elevated soil nutrients, which in Australia favours exotic plants over natives. It has been suggested that restoration efforts should be dealt with post-control and is therefore a separate issue to biocontrol. However, our study clearly demonstrates that biocontrol must be coupled with other restoration techniques.

The past, present, and future of biologically based weed management on rangeland watersheds in the western United States

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Saltcedars (*Tamarix* spp.) are exotic, invasive perennials introduced into the western USA from Eurasia, and are among the most damaging weeds in western riparian habitats. Here we provide an update of *Tamarix* spp. control by *Diorhabda elongata* in the Intermountain West, and describe future research plans for the USDA-ARS Exotic and Invasive Weeds Research Unit in Reno, NV, USA. Our goal is to develop ecologically sustainable means of suppressing saltcedars and other exotic, invasive weeds of the region. We have adopted a ‘weed management pipeline’ approach that integrates classical biological control with ecological studies, aimed at maximizing the beneficial effects of biological control agents while minimizing their potential detrimental effects on the soil and native flora and fauna. This work includes use of hyperspectral imaging and other tools to characterize the spatio-temporal dispersal and impact of biological control agents on a region-wide, long-term scale. Other studies will address ecological interactions between biological control agents and their natural enemies, and the effect of plant–insect interactions on plant ecophysiology and hydrology. Successful control of a target weed usually requires decades of research; the proposed studies will be an important step toward ecologically rational management of some of the most important weeds in the western USA.