

Saving Australia's wetlands from tenacious willows

January 30 2013

Scientists have developed a new way to rescue the Bogong High Plains and their endangered alpine wetlands from invading European willows.

The new strategy calls for an exclusive focus on eradicating willows within the threatened bogs – patches of muddy ground where the soil is always wet, says Dr Joslin Moore from the National Environmental Research Program's (NERP) [Environmental Decisions](#) Hub and the [Royal Botanic Gardens](#) Melbourne.

"After a severe bushfire burned out most of the Bogong High Plains in 2003, the seeds of the grey sallow willow, a highly invasive shrub, began to spread along the Plains," Dr Moore explains. "The willows have since become a major threat to our alpine ecosystems, and this spells big trouble for the High Plains.

"They fight for water, space and nutrients with the [native plants](#) of our precious bogs, and are highly resilient, which means they can invade different environments, regenerate after fire and their seeds can disperse tens of kilometres."

While environmental managers have worked hard to destroy the tenacious invaders, they were often unsure where to focus scarce control resources, Dr Moore says.

"There are a lot of uncertainties in willow management – we don't know how often [bushfires](#) that encourage willow growth will occur, how far

the willow seeds have travelled and how long it takes bogs to recover after fire," she says.

With an increase in fire frequency expected due to [climate change](#), environmental managers are having to devote more and more resources to eliminating willows.

So hub researchers have developed a sophisticated decision system that will help them identify the best strategies for defeating the invaders. Using a modelling program, they can project how different management strategies will affect the amount of willows in the alpine landscape over the next 200 years, under 10,000 different scenarios.

"Our analysis shows that with the current budget, the most practical, long-term approach is to protect the threatened bog communities, instead of trying to control invaders across the region," says Dr Moore.

"This is because there are many more seed sources than there are bogs, and there aren't enough resources to reduce the seed volume enough to diminish the threat significantly."

The researchers also found that learning more about fire frequencies, seed dispersal distances and bog recovery rates is unlikely to improve the ability to manage willows.

"While these factors determine the spread of willow, our program shows that unless current budgets are increased substantially, the same strategy – only treating willows in bogs – is optimal for the nearly all of the 10,000 scenarios," says Dr Moore.

"In this case where we have a small-to-medium budget, having more knowledge is unlikely to help us," she says.

"So instead of investing our resources on gaining more information, our first priority is to manage willow populations in bogs and allocate effort elsewhere only when the budgets are large enough."

The research was carried out in collaboration with Parks Victoria and other land managers in the region and will inform the development of an Alpine Bog Recovery Plan.

The study "Combining structured decision making and value-of-information analyses to identify robust management strategies" by Joslin L. Moore and Michael C. Runge was published in *Conservation Biology*. See: www.ncbi.nlm.nih.gov/pubmed/22862796

Provided by NERP Environmental Decision Hub

Citation: Saving Australia's wetlands from tenacious willows (2013, January 30) retrieved 21 July 2024 from <https://phys.org/news/2013-01-australia-wetlands-tenacious-willows.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.