



Australian Government

Land & Water Australia

Defeating The Weed Menace R&D: Project Summaries

Fourteen projects addressing four separate themes were selected during an initial funding round. These were:

Developing 'best practice' early detection, survey and eradication of potential weed species

- **Managing weeds under future scenarios for environmental flows in the Murray River**
CSIRO Entomology

This project aims to determine site indicators that will clarify risk with respect to weed invasion, and how this risk is affected by patterns of flooding. This will assist in reducing the spread of weeds in riparian and floodplain environments and in restoring native vegetation in systems that are degraded.

Assessing risk of different pathways of weed ingress

- **Modelling climate change impacts on sleeper and alert weeds**
CSIRO Entomology

This project will model the change in distribution of sleeper and environmental alert species due to climate change, and will assist in preparing a climate change weed risk map for Natural Resource Management regions across Australia.



- **Pathway risk analysis for weed spread within Australia**
University of New England

This project is designed to ascertain the ways in which weeds spread once in Australia and to assess the relative risks or threats from different pathways of weed spread. This will enable better targeting of efforts to reduce the movement of high risk weeds around Australia.

- **Serrated Tussock: Managing native pastures to prevent invasion**
Charles Sturt University

This project aims to develop better management practices to stop the spread of Serrated Tussock to new paddocks, new regions and uninfested native grasslands, by better understanding the management and biophysical factors that affect its spread on-farm.

For more information on these research projects, please contact:

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Identifying biocontrol agents for priority weed species

- **Biological control & ecology of Alligator Weed**
CSIRO Entomology

This project builds on the outcomes of an NHT-funded project (2003-06) to continue host testing of insects for the biological control of Alligator weed and to continue ecological studies to underpin better management of the weed in Australia.

- **Development of new biocontrol agents for Parkinsonia**
CSIRO Entomology

This project will continue surveys of Parkinsonia in Central America, to identify a larger pool of potential biological control agents and to prioritise them, based on safety and efficacy, ready for use in controlling this Weed of National Significance in Australia. Working in parallel with studies on Bellyache Bush, currently funded by Meat & Livestock Australia, will bring significant efficiencies for this project.

- **Improving management of Salvinia in temperate aquatic ecosystems**
University of Wollongong

This project is designed to improve understanding of the effects of invasion by the aquatic weed Salvinia, a Weed of National Significance in temperate regions, and to test biocontrol agents showing promise for controlling it in non-tropical areas.

- **Importation and release of a new biological control agent for Scotch Broom**
Victorian DPI

This project aims to introduce and test a new biocontrol agent, currently available in New Zealand, to better control the invasive weed, Scotch Broom.

- **Boneseed Rust: A highly promising candidate for biological control**
CSIRO Entomology

This project aims to improve the effectiveness of the biological control program against Boneseed, a Weed of National Significance, which occurs mainly in Victoria, South Australia and Tasmania, using a rust species likely to bring good results.

- **Enhancing Noogoora Burr biocontrol in northern Australia**
CSIRO Entomology

This project aims to improve biological control of the highly invasive weed Noogoora Burr in tropical northern areas of Australia, using a rust species with good prospects of activity.

- **Importation, rearing and field release of the Cape Broom Psyllid**

SA Research and Development Institute

This project is designed to enable the importation, rearing and trial release of a sap-sucking insect (psyllid) effective in controlling the invasive woody legume Cape Broom, infestations of which occur across all temperate states in Australia.

Land use change impacts on weed incursion

- **Land use effects on soil nutrient enrichment: Risks for weed invasion**
CSIRO Entomology

By improving understanding of interactions between disturbance levels associated with land use change, nutrient levels in the soil and weed invasion, this project will assist in reversing the degradation of native remnants on productive land and in near-urban areas which are heavily impacted by weeds.

- **Effect of land use and peri-urban development on aquatic weeds**
CSIRO Entomology

By quantifying the current aquatic weed problems in peri-urban areas that are undergoing rapid development, and determining the extent to which both weed introduction and changed environmental factors influence aquatic weed spread, this project will assist in improving management practices to reduce weed impacts.

- **Understanding and determining mechanisms to prevent weed invasion in coastal vegetation**
University of Wollongong

By improving understanding of which types of land disturbance influence weed invasion and how weeds replace native species, this project will assist in designing management practices to restore native vegetation in coastal areas without the need for long-term maintenance.



Eleven projects, addressing three separate priority themes were selected for funding during a second funding round. These were:

Developing new integrated weed management strategies that incorporate an understanding of landscape scale ecological processes

- **Developing a model for environmental weed management in fragmented landscapes: A case study**

Department for Environment and Heritage, SA

This project is focused on landscape scale weed management in South East South Australia. It is designed to test the scientific merit, acceptability and usefulness of a new integrated planning tool that takes account of the interactions of weeds and natural systems across entire landscapes. The management tool has been developed to assist in prioritising environmental weed management actions based on the risks posed.

- **Optimising management of core Mesquite infestations across Australia**

CSIRO Entomology, QLD

Using previous cross-regional NHT-funded research, this project aims to test the extent to which the invasiveness of Mesquite and its response to various management strategies differs in response to the species or hybrid involved, the climate and a range of landscape scale ecological processes. Analysing previously collected data on a regional basis will inform improved management of Mesquite in different regions across northern Australia.

- **Elucidating relationships between distribution and invasion in riparian zones**

Department of Primary Industries, Vic

Building on previous research funded by the CRC for Australian Weed Management, this project will analyse the linkages between flood events and related disturbance, recruitment of native tree species and weed invasion at key riparian sites across Victoria. The results will enable land managers to plan and undertake riparian weed management at the most appropriate times in the flood cycle.

Developing efficient methods for surveying and eradicating agreed emergent weeds, and options

- **Best practice for on-ground property weed detection**

University of New England, NSW

Through phone surveying of landholders and noxious weed officers, this project will better identify current weed surveillance levels and practices on farms and ways to improve weed detection. Because of the large area of Australia owned and managed by farmers and graziers, the project will use this information to develop a simple guide for landholders, on how to look for weeds, get them identified and report them to the relevant authorities.

- **Exploring agents of change to peri-urban weed management**

Upper Murrumbidgee Catchment Coordinating Committee, ACT

This project, which targets rural lifestyle land owners, aims to determine the drivers and/or inhibitors of land use change relating to weed invasion. The outcomes will guide future management and incentive programmes to improve weed management in one of the problem locations, peri-urban areas.

- **Cost-effective surveillance of emerging aquatic weeds using robotic aircraft**

University of Sydney, NSW

This novel approach tests the use of small robotic helicopters to locate and identify weeds in inaccessible aquatic locations. Using a combination of visual and infrared spectral data, significant weed invasions will be identified and their extent mapped by on-ground operators. This will enable spot spraying in locations previously difficult to access or treat safely. This pilot project involving the University of Sydney, the national Aquatic Weeds of National Significance coordinator and a spraying contractor, will focus on two WoNS (Alligator Weed and Salvinia), which will be used to develop this weed monitoring and treatment technique.



Quantifying the impacts of weeds on sustainability and the environment (including the ecological costs of weeds) and the relative benefits and costs of different control measures

■ **Quantifying costs and benefits of buffel grass**

CSIRO Sustainable Ecosystems, NT

Through an initial literature review, focus groups and interviews, this project aims to quantify the impacts of Buffel grass on sustainability and the environment, and to assess from both environmental and pastoral perspectives, the relative benefits and costs of different approaches to management. The results will provide improved management recommendations that are credible to land owners and managers as well as to environmental policy makers.

■ ***Pinus radiata* in bushland: Assessing the issue in the Green Triangle.**

Department for Environment and Heritage, SA

Pinus radiata is recognised, both in Australia and elsewhere, as a potential weed impacting on natural areas and habitat values. This project will quantify the extent and distribution of pine wildlings as they invade remnant native vegetation areas. It will provide outcomes that inform the plantation industry and NRM planners on improved management of *Pinus radiata*. Although focused on the Green Triangle in SE South Australia and SW Victoria, the project will also include other pine growing areas.

■ **Quantification of the environmental and control costs of weeds**

Charles Darwin University, NT

This project, which builds on previous work, aims to fill two identified gaps in Australia's post-border weed risk management. Using Gamba grass and Para grass as pilot species, the project will develop and trial models for evaluating the benefits and costs of differing control methods in limiting the negative impacts of invasive grasses which are described as 'conflict of interest' species because of their competing economic benefits and associated environmental costs.

■ **Evaluating the environmental benefits from managing WoNS in natural ecosystems**
CSIRO Entomology, ACT

Using desktop studies to analyse existing WoNS data for Bitou bush and Bridal creeper, this project aims to document the environmental benefits of controlling Weeds of National Significance in natural ecosystems and the extent to which these invaded ecosystems recover following successful removal/control of WoNS. The project will clearly define the relationship between weed removal and ecosystem recovery and it will provide recommended procedures to facilitate natural system recovery.

■ **Ecological, economic and social considerations of spray control for *Hymenachne***

Central Queensland University, QLD

This is an action research project that aims to determine the ecological effects of current *Hymenachne* spraying regimes and ecosystem responses to the removal of the aquatic Weed of National Significance, *Hymenachne*. Working with graziers, State agency staff and local government pest control officers, the project team will use the results obtained to develop and disseminate best practice tools to improve *Hymenachne* control.

