

Coordinated control of parthenium weed in the Maranoa-Balonne catchment

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Summary Parthenium weed, a weed of national significance, is an aggressive annual herb, prevalent in central Queensland, Australia. This paper will discuss the various management techniques that are being trialled and applied across the Maranoa-Balonne Catchment to reduce the impact of current infestations and prevent further spread.

Keywords Parthenium weed, impact, prevention.

INTRODUCTION

One of the Queensland Murray-Darling Committee's (QMDC) purposes is to foster relationships with the community and to encourage uptake of natural resource management (NRM) activities whilst still achieving production related outcomes. QMDC understands the value of research and is often the link between researchers and land managers to ensure research results equate to on-ground management and outcomes. The projects discussed in this paper have derived from parthenium-related research and are tools used to further extend this information to ensure that on-ground application occurs.

Parthenium weed (*Parthenium hysterophorus*) is a native to North and South America. The weed can germinate at any time, although conditions are generally best between September–November and March–May. A single plant can produce approximately 28,000 seeds. Seed dormancy has been recorded to be up to 6 years, but anecdotal evidence suggests the seed bank lifespan may be even longer. Parthenium can germinate, grow, mature and seed within 28 days, so that, along with the ability to be allelopathic, the plant can quickly dominate pastures, particularly if ground-cover is low. Social impacts include its toxicity to both humans and stock (Chamberlain and Gittens 2004).

Parthenium weed currently infests a vast area of central and south-western Queensland. Core infestations north of Mitchell and west of Injune occur in the head waters of the Murray-Darling Basin. Land managers are at the forefront of attempts to slow the spread, as the weed slowly progresses south to the New South Wales border (The Injune and district parthenium action group 2003).

While there are certainly environmental restraints that confine the spread of parthenium (including soil

type and temperature), the potential of the weed to spread farther south is unclear and hard to predict. QMDC's current focus is to restrict the spread of parthenium weed within the Queensland Murray-Darling Basin.

QMDC is a not-for-profit, community-based organisation that supports communities and a variety of stakeholders within the region to achieve sustainable natural resource management outcomes. QMDC undertakes projects grouped under three broad categories: prevention, control and management. It is hoped a combination of methods – the foundations of which were developed through research integrated across organisations and in coordination with land managers on-ground – will contain and reduce parthenium weed infestations and its southerly descent.

While QMDC does have a strong focus on research extension, this is done within the context of practice change. QMDC's ethos is to encourage long-term, sustainable changes within its stakeholder groups to ensure the viability of communities, industries and most importantly, landscapes. The goal of any extension work is to ensure the relevant stakeholder group takes ownership of the activities recommended in order to ensure this practice change into the future.

PROJECT DETAILS

Prevention – rapid and strategic response QMDC, along with neighbouring NRM groups, Biosecurity Queensland and regional councils across the region, recognised the need to establish a process that would ensure landholders in the Queensland Murray-Darling Basin (QMDB) would be able to rapidly respond to new outbreaks of parthenium weed. The purpose of the program is to coordinate resources and respond to new outbreaks and prevent the weed spreading to neighbouring shires or regions. Parthenium infestations targeted for eradication are those located outside of and isolated from the core infestations. Assistance is available to landholders on private land for up to 30% of the cost of on-ground activities to control isolated, strategic infestations. The service is provided as a 'one off' incentive with the understanding that the ongoing monitoring and management of the outbreak is the responsibility of the landholder.

Wash down has been identified as an effective preventative mechanism to reduce the spread of parthenium weed. QMDC runs an incentive program to install wash down facilities on private land across the QMDB. The program was based on a 70:30, landholder:QMDC funding ratio. A combined project between QMDC, Maranoa Regional Council and Western Downs Regional Council to install or upgrade public wash down facilities is also in process in an attempt to form a preventative buffer across the catchment. The public wash downs are mainly targeted at contractors and others moving machinery and/or vehicles between areas with and without parthenium weed infestations. These facilities will have a long-term benefit not just for the QMDB but also for other regions in Queensland and New South Wales.

Control Sub-catchment planning is a QMDC program that supports groups of landholders working together to identify NRM issues and develop local solutions. This program provides opportunities for people to share ideas, gather information, support one another through difficult times, and most importantly, tackle natural resource issues in a coordinated way. Supporting sub-catchment planning is a major part of QMDC's business. People in more than 30% of the region are now involved in Sub-Catchment Planning activities, and new groups are being formed each year. Currently, about 120 groups are working with QMDC, 22 of which have received funding to implement their sub-catchment plans. As a component of their sub-catchment plan, land managers are required to develop a plan to specifically address their weed and pest animal issues, including parthenium weed, and work together to address the impacts. Again, this is part of QMDC's overall strategy to ensure long-term, sustainable, on-ground outcomes from any awareness, extension or research work.

Management The QMDC held a large-scale workshop including representatives from Biosecurity Queensland, Environmental Protection Agency, regional councils, the then Queensland Department of Primary Industries and Fisheries (now the Department of Employment, Economic Development and Innovation) and Landcare. Various weed and pest animal species were reviewed and regional targets agreed upon. These targets can now provide the foundation of local government Pest Management Plans. The aim of this project is to achieve a more consistent coordinated approach at a larger scale.

To assist with the long-term management of parthenium weed, QMDC in partnership with the University of Queensland, is undertaking two research

programs. The first is to understand the reproductive biology of parthenium weed and its spread by seeds, including dispersal on machinery, in sludge pits of wash down facilities, in water sediments and animal vectors. The second involves the use of competitive plants to provide a more sustainable method of managing parthenium weed in areas where it is well established. It is hoped that the outcome of these projects will provide useful information regarding the effectiveness of current parthenium weed management practices and future management efforts.

QMDC aligns projects within four fundamental pillars: planning, education, regulation and incentive. Integrated planning across organisations takes national, state, regional and local priorities into perspective. Education of the community and land managers highlights identification of existing, new and emerging weed and pest species and solutions for management and control. Regulation is achieved through partnerships with Biosecurity Rural Lands Protection Officers and regional council officers. Financial incentives are provided on a 70:30, landholder:QMDC ratio. The outcomes of these combined projects are the building of cross organisational partnerships and good relationships with land managers across the QMDB.

DISCUSSION

Any form of group management can be challenging. One of the biggest challenges, and the one land managers have least control of, is the weather. Drought has had a negative impact on land managers and their ability to undertake natural resource management activities within the region, and with money being directed elsewhere, preventative methods in the battle against parthenium weed tend not to be as important as supplying feed and water to starving stock. In some parts of Australia, it is not uncommon for regions to experience extended dry periods of up to 5 years or more. In January 2002 the Maranoa Balonne catchment became 'Drought Declared' by the Department of Employment, Economic development and Innovation. The situation remained unchanged until May 2010, when there was substantial rain, which subsequently resulted in major flooding, and new flood level records for the region (Department of Employment, Economic Development and Innovation 2010). During these times, landholders' direct spending was to urgent measures and survival requirements/tactics. The focus is usually on stock maintenance or meeting immediate requirements rather than on undertaking preventative or restorative works. Eight years of drought left many areas of the catchment bare, and only now that the flood waters have subsided and areas are beginning to recover is the extent of the parthenium weed and its

spread becoming apparent. Anecdotal reports suggest that the weed has spread and is being found in areas previously parthenium-free, and where it was found it is thriving.

Another major challenge for the extension of parthenium research was lapses in communication as a result of staff changes within QMDC. This created setbacks in the project as new staff members needed to build trust and relationships with stakeholders before progress could be made, thus slowing the whole process. This tends to lead to a loss of motivation and participant interest. QMDC has found that strong community partnerships are required to ensure the success of the project but with every change in staff, this process was hampered as new relationships had to be formed.

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