

## National interest pest responses: responding to established pests of national interest

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**Summary** In 2005, MAF Biosecurity New Zealand assumed new responsibilities for biosecurity including the management of pests of national interest. Initially 11 pest species were identified for eradication or control. Progress on eradicating two of those pest species, pyp grass (*Ehrharta villosa*) and hydrilla (*Hydrilla verticillata*) is examined. Work on integrating the reporting of existing pests that constitute emerging threats into the current Biosecurity Response System is outlined.

### INTRODUCTION

In 2005, MAF Biosecurity New Zealand (MAFBNZ) was given a new responsibility for national pest management programmes. This included responding to risk organisms that are already known to be present in New Zealand and that are of national interest. This typically entails intervention to eradicate a pest or disease from New Zealand. In some exceptional cases this may mean containment to a specified area, for example exclusion from either North or South Islands. This change ensured that a single agency has an oversight role to look at established risk organisms and identify opportunities to intervene when it is most cost effective to do so for the benefit of the whole of New Zealand.

MAFBNZ, regional councils, Department of Conservation (DOC), Land Information New Zealand (LINZ), Ministry of Health (MOH) and Ministry of Fisheries (MFish) identified a number of pests they wished to see under national management. Representatives from each of the above agencies met in December 2006 to undertake a one-off prioritisation exercise that considered the technical, practical, cost-benefit, strategic and acceptability aspects of each pest. Eleven national interest pest responses were identified (some existing, some new), with most focussing on eradication as the response goal (Table 1).

### EXAMPLES OF RESPONSES AND PROGRESS

**Pyp grass response** Pyp grass (*Ehrharta villosa* Schult.f.), a rhizomatous dune grass originating in South Africa, is known to be present at three coastal sites in the North Island: Turakina beach, Waitare Forest in the Manawatu and Blackhead in the Hawke's Bay. It was imported into New Zealand in 1956 by the then Ministry of Agriculture to be tested at sites in the

Manawatu as a sand dune stabiliser. Although trials were carried out, no documents have been located to date that show it being advocated as a species for further development. It has been reported (K. Griffiths personal communication) that pyp grass material was transferred from the original trial sites to the current Hawke's Bay site in the 1960s by the then owner of the land.

It was not until 1998, when pyp grass was identified by DOC at the sites in the Manawatu and Hawke's Bay, that it was recognised as being highly invasive. Pyp grass has the potential to damage New Zealand's threatened ecosystems, particularly back dune habitats, affecting biodiversity, landscape, cultural and historic values.

DOC commenced a control programme for pyp grass using a grass-specific haloxyfop-based herbicide (Gallant®) with c. 80% efficacy. However, for unknown reasons the results were variable, with parts of the infestations not dying.

**Table 1.** National interest pest response organisms.

Species	Goal
Salvinia ( <i>Salvinia molesta</i> )	Eradication
Water hyacinth ( <i>Eichhornia crassipes</i> )	Eradication
Johnson grass ( <i>Sorghum halepense</i> )	Eradication
Cape tulip ( <i>Moraea flaccida</i> syn. <i>Homeria collina</i> )	Eradication
Pyp grass ( <i>Ehrharta villosa</i> )	Eradication
Phragmites ( <i>Phragmites australis</i> )	Eradication
Hydrilla ( <i>Hydrilla verticillata</i> )	Eradication
Hornwort ( <i>Ceratophyllum demersum</i> )	Eradication and exclusion from South Island
White bryony ( <i>Bryonia cretica</i> subsp. <i>dioica</i> )	Eradication
Rainbow lorikeet ( <i>Trichoglossus haematodus</i> )	Control to zero density
Manchurian wild rice ( <i>Zizania latifolia</i> )	Eradication of outlier populations, containment in Northland

In 2005, the pyp grass programme was transferred from DOC to MAFBNZ as part of the restructuring of central government biosecurity responsibilities. In 2006 pyp grass was identified for a national interest pest response, with the goal of eradication.

In preparing the response operational plan MAFBNZ sought scientific advice from AgResearch (T.K. James personal communication) on the most effective herbicide for use on pyp-grass. On the basis of the recommendations, the herbicide was changed to glyphosate (Roundup Transorb®), applied at a 5% rate specifically for rhizomatous species. Site inspections and treatment were increased from one per season to five treatment visits throughout the growing season.

The change in herbicide, combined with the more frequent treatment and inspection has achieved very good results. The Waitarere Forest site, rediscovered in 2008 with 100% pyp grass cover and treated as described above, currently has no known live pyp grass plants. At the Turakina beach site, live plant numbers have decreased from 150 large infestations at the end of the 2008/2009 season to 50 small infestations at the end of the 2009/2010 season. At the Blackhead site, just two live plants were found at the end of the 2009/2010 season. Sites will continue to be managed until all live plants are destroyed. A monitoring period of 10 years will follow, to ensure total eradication.

**Hydrilla response** *Hydrilla verticillata* (L.f.) Royle, is a highly invasive aquatic weed known in New Zealand from four lakes in Hawke's Bay – Lakes Tutira, Waikopiro, Opouahi and Elands. First confirmed in Lake Tutira in 1963 (Clayton *et al.* 1995), hydrilla spread to Lake Waikopiro a short time later through a narrow culvert. Lakes Opouahi and Elands were found to have hydrilla some years later, probably from contaminated fishing or eeling equipment.

Initial efforts to control hydrilla in Lake Elands using herbicide were unsuccessful, and grass carp, *Ctenopharyngodon idella* (Valenciennes 1844), were introduced in 1988. By 1995 only a few stunted plants remained from the germination of hydrilla tubers (Clayton *et al.* 1995). A grass carp population was left in the lake to graze regrowth. As a result no viable hydrilla material, including turions and tubers in sediment, has been found in the last 7 years (D.E. Hofstra personal communication). Monitoring will continue for another 3 years before eradication is declared.

Based on the results from Lake Elands, the Inter-agency group assessing pests for national interest pest responses considered eradication of hydrilla from the remaining three lakes was achievable. Following a

lengthy process of consultation and approvals, approximately 3000 grass carp were introduced into the hydrilla-affected lakes in December 2008.

Prior to the release of the grass carp, areas of high risk for the transfer of hydrilla fragments such boat launching areas were treated with the herbicide endothal to reduce the biomass to acceptable levels.

When herbicide use at a high risk site at Lake Opouahi became problematic, the site was surrounded by a containment fence and grass carp released inside to concentrate feeding. The result was the complete removal of the hydrilla bed within the fenced area in less than 3 months. The grass carp were then released into the lake and the fence removed.

Baseline flora and fauna surveys were completed in 2008 prior to the grass carp being released. The surveys have been repeated annually to monitor changes. By April 2009 grass carp browsing had removed the hydrilla beds from Lake Waikopiro. By April 2010 grass carp browsing had removed the hydrilla beds from Lakes Tutira and Opouahi (D.E. Hofstra unpublished data). As viable turions and tubers persist in lake sediments, regrowth of hydrilla will continue to occur for some years, to be controlled by grass carp grazing.

Regular surveys of the lakes' flora and fauna will continue, annually at first and then less frequently as the rate of change dictates.

#### FUTURE NATIONAL RESPONSES

Following the initial prioritisation exercise and subsequent development of the responses for the national interest pests, MAFBNZ has been developing new processes to encourage reporting of established risk organisms that pose emerging threats or where opportunities (such as a new treatment) arise, to respond to established organisms where these should be managed at a national level (MAF 2008).

The new reporting processes will build on existing relationships to capture the wealth of expertise and surveillance capability that exists in central government, regional government and research organisations.

Emerging threats will be assessed for priority alongside incursion (new to New Zealand) threats, allowing resources to be targeted where they will achieve greatest benefit.

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