

Invasive weed beds gone from Hawke's Bay lakes



MAF Biosecurity New Zealand's (MAFBNZ) eradication response for hydrilla, New Zealand's worst aquatic weed, is showing early signs of success. The annual survey of the Hawke's Bay Lakes Tutira, Waikopiro and Opouahi, carried out by NIWA scientists has shown that almost all (99.3%) the hydrilla plants have been eliminated by the grass carp introduced in December 2008.

The grass carp were introduced as a form of bio-control, specifically to rid the lakes of hydrilla. Their introduction follows their success in eliminating hydrilla from nearby Lake Elands and their use elsewhere around the country to control other invasive water weeds that are destroying many of our treasured lakes.

Trout fishing in the Hawke's Bay lakes has reportedly improved, with lines no longer getting snagged in the extensive weed beds. Fish size and condition has also been good.

Importantly, the NIWA scientists report that the native aquatic plants have not changed much since the grass carp were introduced.

Once the risk of hydrilla being spread is lowered, cages will be put into Lake Opouahi to keep the grass carp out and provide a refuge for native plants and animals. This will aid the restoration

process once the hydrilla is eradicated from the whole lake.

Numerous baby freshwater mussels were found in Lake Waikopiro this year, compared to last year when only a few adult mussels were found. NIWA scientists think this may be a recolonisation of the area that used to be smothered by dense, tall hydrilla beds.

Bird numbers and species found at the hydrilla affected lakes have stayed much the same. The bird survey showed that the only notable changes are lower coot numbers now that the hydrilla has gone and increased shag numbers.

Hydrilla is one of the worst invasive water weeds in the world, and controlling it costs hundreds of millions of dollars each year in the United States. Because it has only been found in the four Hawke's Bay lakes, it is possible to eradicate it completely from



Eel holes were also seen at most places surveyed in Lake Tutira (photo courtesy of the National Institute of Water and Atmospheric Research).

New Zealand, before it spreads. If hydrilla were to get into other iconic lakes such as Lake Waikaremoana or Lake Taupo, it would be devastating, and eradication would be impossible. Spread from lake to lake is caused by people moving boats or fishing equipment contaminated with fragments of hydrilla.

Grass carp are the only bio-control available and the only other way of controlling hydrilla in New Zealand is a herbicide, which effectively controls but will not eradicate hydrilla.

Hydrilla is one of 11 established pests that MAFBNZ is managing as National Interest Pest Responses.

The MAFBNZ hydrilla eradication report is available at www.biosecurity.govt.nz/pests/hydrilla

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Stakeholder update



Hydrilla Eradication Response Update: 8 February 2010

A site visit last November found that grass carp at Lake Opouahi have been active in the shallows around the jetty and the site of the containment fence despite the cooler lake temperature over winter 2009. A warm summer is expected to increase fish activity in the wider lake.

As you can see from the photo, the jetty area is almost free of weed growth, with the lake bottom clearly visible.



The weed matting visible in the picture is a remnant from previous control work by the then Ministry of Agriculture and Fisheries in 1986. The Environment, Conservation and Outdoor Education Trust (ECOED) has advised that the matting has now been removed. In other news from Lake Opouahi, MAF Biosecurity New Zealand (MAFBNZ) will fund tree wattle removal from around the lake edges, to ensure that the trees do not fall into the lake and create a refuge for hydrilla that the fish cannot reach. This work is scheduled to be carried out by ECOED in February 2010.

In Lake Tutira, grass carp are often seen in schools of up to twenty fish. Some estimates put the fish at about two kilograms, although accurate measurements will not be available until the April survey, subject to fish being caught.

Anecdotal reports from fishers spoken to at Lake Tutira indicate good quality trout are being caught, with the lowered hydrilla weed beds reducing the number of snagged lines.

Problems with the water quality monitoring buoy in Lake Tutira have been resolved and data is being logged every 15 minutes. A link to the live data download is on the hydrilla eradication website below.

The annual monitoring programme for the lakes will be undertaken by NIWA in April. The completed report will be sent to iwi and stakeholders, and posted on the hydrilla eradication website www.biosecurity.govt.nz/pests/hydrilla

For more information about the hydrilla eradication response, please contact

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Hydrilla Eradication Response Update: 11 June 2010

The annual monitoring of the hydrilla lakes has been completed by NIWA, with great results.

Perhaps most significant is the part that reads “ No hydrilla weed beds were recorded from the profile sites in any of the three lakes (Tutira, Waikopiro and Opouahi). Hydrilla where present, was limited to a few plants and was small in stature. This is a significant change from the autumn 2009 survey when Lakes Tutira and Opouahi still had extensive weed beds.”

Importantly, the report also notes that “In all three lakes the shallow water turf community is similar in composition to pre-grass carp impact and is dominated by native species. Amongst the native flora, *Myriophyllum triphyllum* in Lake Tutira and *Chara globularis* in Lake Tutira and Opouahi appear to be species less preferred by grass carp. *C.globularis* is now the dominant submerged species in Lake Opouahi.”



Photo: *Myriophyllum triphyllum* in Lake Tutira (R. Wells, NIWA)

There is more good news. The numbers of invertebrate species found are much the same as previous years, with more of individuals of some species and fewer of others. Mussels were present mainly in shallow water in all lakes. Juvenile mussels were seen throughout Lake Waikopiro this year compared with last year when only a few adult mussels were found at a single site. This may be a recolonisation of the area previously covered by the hydrilla beds.



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Eel holes were also seen at most places surveyed in Lake Tutira.



Photo: Eel holes (R Wells, NIWA)

While the grass carp in Lake Tutira are now bigger than those in Lakes Waikopiro and Opouahi, bodyweights for all carp have increased by 2 to 3 kilograms since they were released.

Bird numbers and species of birds present have changed little except for shags and coots. As expected, coot numbers have dropped as the hydrilla beds declined in 2009 or have gone in 2010. Shag numbers have risen attracted by better fishing after the loss of the hydrilla beds.

A copy of the report has been posted on the MAF Biosecurity New Zealand hydrilla eradication website www.biosecurity.govt.nz/pests/hydrilla and is available to download. If you would prefer a hard copy of the report please contact Victoria at the address below.

For more information about the hydrilla eradication response, please contact:

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Hydrilla Eradication Response Update: August 2011 - Monitoring and Surveillance Brings Good News.

NIWA has completed its annual monitoring and surveillance of the hydrilla affected Lakes Tutira, Waikopiro and Opouahi, and the news continues to be good.

No hydrilla weed beds were recorded in any of the lakes. The only hydrilla found was a few small plants amongst *Myriophyllum triphyllum* in Lake Tutira and some vegetative turions in Lakes Tutira and Waikopiro.

In all three lakes shallow water turf plants and marginal emergent plants continue to be found, including in areas previously occupied by the hydrilla beds. With the spate of high lake levels, there are signs that grass carp have been browsing the marginal plants now that their preferred food, hydrilla, is all but gone.

Grass carp continue to be challenging to catch even for NIWA, however, the two caught in Lake Waikopiro indicate that they are continuing to grow even though they have relatively little to eat.

The number of macroinvertebrate species in the lakes is much the same as in past years, although population numbers have changed. **There are more mites, fewer water-boatmen and more mussels.**

The continued presence and increase in juvenile mussel numbers is particularly exciting, as they are now being found at depths where only dead mussels or empty shells were found previously. Juvenile mussels are also being found at more sites around Lake Tutira, this year at 13 of the 15 survey sites. Mussels are filter feeders that remove suspended material from the water, helping to maintain water quality.

Not much is known about freshwater mussel reproductive patterns and reports tell us that juvenile mussels are a rare find and increases are often sporadic. While it is possible that the removal of hydrilla beds has provided more prime mussel habitat, further monitoring will better track the development of mussel populations.

Bird species and numbers on all three lakes have fluctuated over the last four years. This year fewer bird species were noted than in 2010, but numbers are similar to those recorded in 2008, before the response began. Once again, the number of some species went up, such as shags, whilst others declined, such as black swans.

Surveillance of urban and regional sites at high risk of having hydrilla found no signs of it. With these results and the removal of hydrilla weed beds from the lakes, NIWA have recommended that surveillance be deferred for three years.

With the hydrilla weed beds gone, NIWA have considered possible management of marginal vegetation affected by grass carp browsing as well as the potential for enclosure cages to be put in the lakes to provide refugia for flora and fauna. Recommendations are included in their monitoring and surveillance report for April 2011 and are being considered by MAF for inclusion in future operations.

NIWA's monitoring and surveillance report for April 2011 is available on the MAF website www.biosecurity.govt.nz/pests/hydrilla. Hard copies are available on request. (Note: the report contains a number of photographs and will not be emailed).

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