update

NIWA
Taihoro Nukurangi

National Centre for
Aquatic Biodiversity
& Biosecurity

protecting our natural heritage

Rock snot is a tenacious beast

The invasive alga *Didymosphenia geminata* (didymo) has now been found in several significant fishing rivers in the South Island.

NIWA scientist Cathy Kilroy discovered didymo for the first time in New Zealand about a year ago. Since then, we have been working intensively behind the scenes providing research and scientific advice to Biosecurity New Zealand so that it can make well-informed decisions on containment and/or eradication measures.

Research we have conducted for Biosecurity New Zealand includes:

1. The effect of floods on didymo
We have discovered that didymo can withstand much bigger floods than typical nuisance algae found in New Zealand rivers, especially if the riverbed is stable. This means it will persist for much longer than current algal species when a bloom occurs.

2. Suitable conditions for didymo
Didymo will grow in a very broad range of river conditions. It is not too choosy about the depth of water or the speed of the river flow so it is unclear whether manipulating flow will be effective against didymo. We estimate that over 50% of New Zealand's rivers contain suitable habitat for the establishment of didymo, with most of those rivers being in the South Island.

Each didymo plant is microscopic, but they grow in extraordinary abundance. We have measured it at up to 10 times the national guidelines for acceptable algal biomass.

3. Didymo's effect on the food chain
In areas where didymo has become established we see many more invertebrates. However, they tend to be smaller than in unaffected areas, and there are much higher proportions of invertebrates normally associated with polluted or low quality water. Such invertebrates are considered poor quality food for fish. However, the effects of didymo on fish have yet to be investigated.

NIWA also tested methods for cleaning items, such as kayaks, which have been exposed to affected waters. For more information: www.biosecurity.govt.nz/didymo

As this newsletter went to press, a nationwide survey was underway for Biosecurity NZ to check for the presence of didymo in susceptible rivers. NIWA is involved in the field sampling, and is analysing all the samples to look for didymo.

NIWA scientist wins award

Dr Dennis Gordon has won the prestigious New Zealand Marine Sciences Award for his outstanding contribution to marine sciences, particularly marine biodiversity. Dennis is a global authority on aspects of bryozoa. His many professional roles include chairing the Royal Society's Biodiversity Committee and membership of two international editorial boards (*Species Diversity, Zootaxa*). Dennis has been the driving force behind *Species 2000: New Zealand* – a review and inventory of the country's biodiversity, and plays a leading part in NIWA's marine biodiversity and biosecurity programme.

Dennis Gordon with two bryozoans, previously known only from Chinese coastal waters, found in Golden Bay several years ago.

Gypsywort warning

NIWA has found that gypsywort (*Lycopus europaeus*) is likely to be at least as invasive in Auckland as it has been in Waikato, where it forms dense patches on lake edges, displacing native rushes.

Gypsywort was first recorded in Auckland in 1982. The ARC has classified it as a 'research organism' under its Regional Pest Management Strategy. This means the plant has the potential to significantly affect the natural or production environments of the region, but that further research and consultation is required before designating it a pest.

The ARC asked NIWA to review gypsywort's biology, ecology, distribution, and weed potential. The study included experiments to assess the plant's growth and flowering under a range of climate conditions using innovative controlled temperature tanks developed by PhD student David Burnett.

Gypsywort smothering raupo in a Waikato lake.

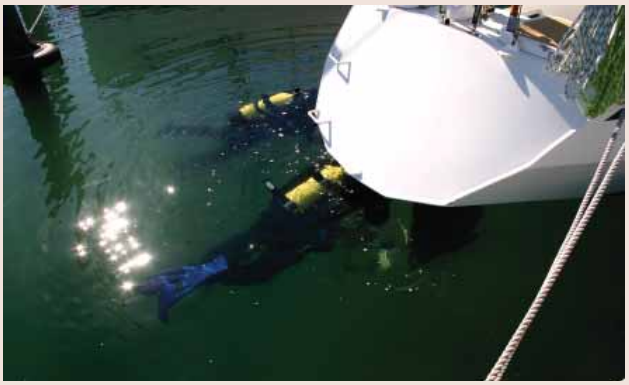
Gypsywort is a perennial herb in the mint family (Lamiaceae), which grows to about 1 m tall and produces white flowers with purple markings in summer. It spreads by long stolons (horizontal runners that take root at several points to form new plants), and sets considerable amounts of water-dispersed seed.

Foreign yachts inspected for marine invaders

Levels of hull-fouling plants and animals growing on foreign yachts are literally under the spotlight.

Over the next two years, staff from NIWA and the Cawthron Institute will be diving under the hulls of yachts arriving in New Zealand to photograph, video, and collect samples of non-indigenous species hitching rides into New Zealand's coastal waters. The sampling on yachts is part of a major Biosecurity New Zealand research project which includes a wide range of vessel types. The project builds on earlier NIWA research, such as the development of a 'fouling index' (for ranking the extent and severity of fouling on yacht hulls) which is incorporated into the study. NIWA will identify the species collected, using in-house and external taxonomic experts.

Fifteen yachts have been surveyed at selected ports since August. The results are yet to be analysed.



Scientists search for invasive sea squirt

As this newsletter goes to press, NIWA divers are searching Auckland's Waitemata Harbour, and Waikawa Marina near Picton, for the invasive sea squirt known as the club tunicate (*Styela clava*).

Biosecurity New Zealand commissioned these rapid surveys after the club tunicate was found in the Viaduct Harbour, and provisionally identified on the hull of a yacht which sailed from there to Waikawa Marina. A survey of Lyttelton Harbour is also planned.

The club tunicate can grow up to 160 millimetres long and reach densities of up to 500–1500 individuals per square metre. It competes for space and food with other marine species and is causing problems in northern hemisphere marine farms.

For more information on NIWA's National Centre for Aquatic Biodiversity & Biosecurity, contact:

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