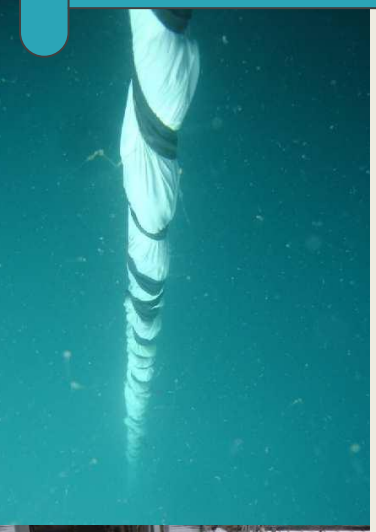
Partners Newsletter

Keeping you informed

March 2015



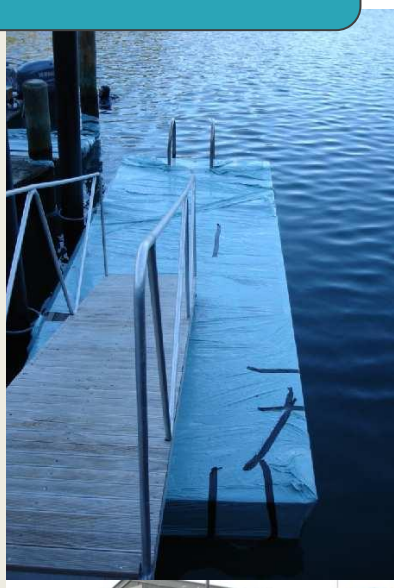
Wrapping technology

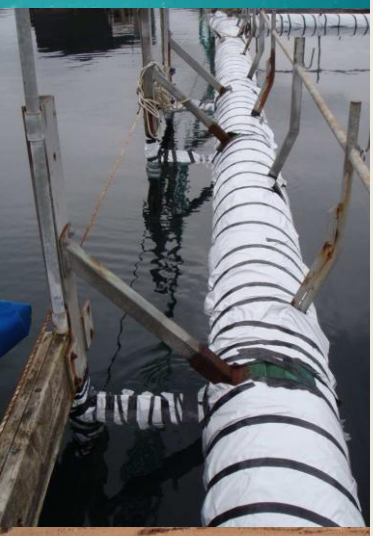
Bruce Lines of Diving Services NZ has been at the forefront of wrapping up vessels and structures since this technology was first used as part of the *Didemnum* response in Marlborough a decade ago.

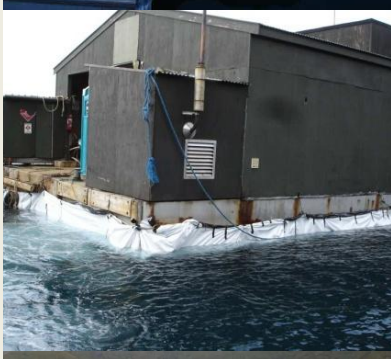
Bruce says “Encapsulating harmful marine organisms is one of the few effective ways of dealing with new incursions. Wrapping the whole vessel or structure in plastic film not only immediately prevents the organism from spreading, but in most cases is an effective way of eliminating it. Wherever there is heavy fouling, the organisms use up all the available oxygen and start to die off within a matter of days. Most cases can be dealt chemical free, although they have been experimenting with chlorine dosing in Whangarei and we have used acetic acid (the acid in vinegar) here”.

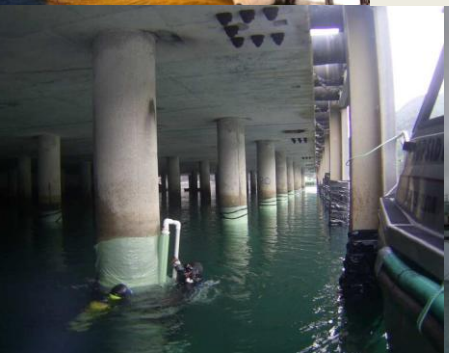
Bruce has done wrapping projects from Northland to Bluff. One of his bigger projects was wrapping 600 piles in the Bluff Harbour. Bruce said “We can wrap a pile in a matter of minutes and even a large vessel like the 35m Voyager P only took a day when we wrapped it for MPI last year in Nelson. The basic technique is simple but there is a lot to learn to make it safe and effective. We use a range of plastic films depending on the job and the nature of the fouling. Handling these big sheets under water has its own hazards including trapping the divers. There are limits to where we can work and strong currents and breaking waves can make it impractical.”

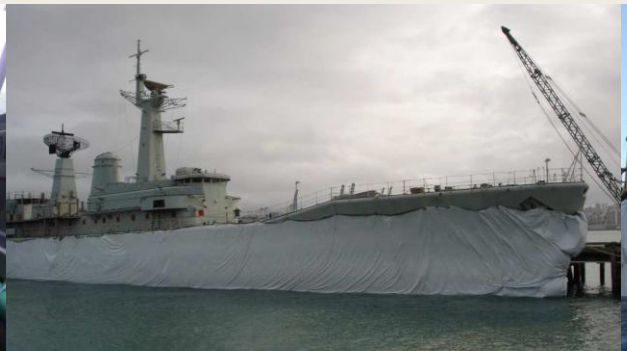
Wrapping technologies have been used on vessels from small yachts to the 110m frigate Canterbury. They have also proven effective on fixed and floating structures and on the seabed. For more information contact Bruce Lines at Diving Services NZ divingservicesnz@xtra.co.nz phone 03 5469964.











Barrie's Bilge

What is the 'next pest'?

Each of our newsletters has featured one of the recognised pests from the Ministry for Primary Industries' Marine Pest Identification Guide[1]. The article in this newsletter on the Asian kelp *Undaria* is the last of the 11 pests described in the guide. In addition to these 11 recognised pests, various scientific studies highlight hundreds of invasive species world-wide that can impact marine ecosystems and associated industries such as aquaculture. However, predicting which species could be introduced to New Zealand and cause problems is very difficult.

Part of the difficulty lies in the fact that a problem species in one location may not be a problem in another. For example, a recent global review for shellfish aquaculture revealed that the dominant pests and the problems they cause can vary among locations, and even among seasons and years in the same locality. New Zealand has not yet been greatly impacted by the introduction of a number of pests that have caused havoc overseas. On the other hand, the sea squirt *Didemnum vexillum* did cause localised fouling problems in Marlborough after it turned up in 2001, despite having no prior history of invasiveness. Another introduced sea squirt, *Ciona intestinalis*, became so prolific in parts of the Marlborough Sounds in 2000-2001 that there were fears for the long-term viability of the mussel industry. Although populations in Marlborough have since subsided, in Nelson the species is one of the most prolific summer foulers of boats and floating pontoons in the marina.

The reasons for bizarre abundance patterns often shown by marine pests are a mystery and make it difficult to decide on the species that should be given the greatest management priority. One of the best insurances against unpredictable future problems is to try and prevent the spread and introduction of all species, even if they have no history of causing adverse impacts. This is one of the reasons that a big part of the Partnership's present focus is to look at ways that risks from vessels and other 'pathways' can be most effectively managed.

[1] www.biosecurity.govt.nz/files/pests/salt-freshwater/2012-New-Zealands-Marine-Pest-Identification-Guide.pdf


Photo 1


Photo 2

Photo 1. The introduced sea squirt *Didemnum vexillum* can hang beneath floating structure in drooping 'mega-colonies' over 2 m long.

Photo 2. The sea squirt *Ciona intestinalis* smothering mussel lines in eastern Canada. This species caused localised devastation to mussel aquaculture in Marlborough during 2000-2001, but the population there has since subsided.

In-water and intertidal cleaning of boats

Keeping your hull free of fouling is the main thing you can do to help marine biosecurity in the Top of the South region. This can be achieved through some careful in-water cleaning and intertidal cleaning which can be allowed if you follow the local rules.

Note that cleaning your boat while it is in the water or on the foreshore is not permitted in Picton, Waikawa Bay or Havelock marinas under any circumstances. In-water and inter-tidal cleaning of vessels is discouraged by all three Councils as an alternative to using shore-based facilities for anti-fouling coating maintenance. The Council staff can advise on particular requirements in their area.

In-water cleaning can only be done so long as no contaminants are released into the environment. This means that in-water cleaning should only be done to wipe a slime layer from a vessel where the antifouling is sound and less than a year old. Slime removal should only be done with a soft cloth. No vessel that has been outside the Top of the South since its last antifouling treatment should be cleaned in-water.

The cleaning of vessels in approved facilities on land is always preferable to intertidal. Where that is not possible follow these guideline in areas where there are no local rules banning intertidal cleaning:

1. Pressure water blasting and abrasive grit blasting should not be conducted in the intertidal environment. Mechanical or manual buffing and scraping can be used if solid wastes are retained for disposal.
2. All waste and debris should be collected using tarpaulins or drop-sheets and by avoiding work during windy conditions. Removal of coatings by wet sanding or scraping is preferred. Do not use chemical paint stripping as it creates toxic waste material.
3. Any removed material or liquid should not be allowed to enter the intertidal environment.
4. All residues, solid coatings, liquid or any other form of waste, including removed biological material and used product containers should be collected and stored for disposal in line with the requirements of the relevant authority.
5. Anti-fouling coatings should not be incinerated as this may generate toxic fumes, smoke and gases.

Pete's Ponderings

Pathways, a decade on ...

In 2003 the Biosecurity Strategy said *marine biosecurity is in its infancy globally. Although pathways for marine risks have been identified, many are not yet being effectively monitored. It is imperative to improve their management. New Zealand must quickly develop and fund a comprehensive marine biosecurity programme.*

Over the last decade we have seen increasing pressure from harmful marine organisms and, while there has been progress in marine biosecurity management, it could hardly be said that we have a comprehensive programme. Port inspections by NIWA, ballast water controls, the Craft Risk Management Standard, and changes to the Biosecurity Act to allow for pathways management and for Government/ industry agreements (GIA) for readiness and response are all good building blocks. Each of these, though, has a long lead-in time, and ballast water treatment, enforceable rules on hull fouling, regional and national pathways plans and marine GIA agreements are all still in the future.

Over the next months we will be exploring with a range of stakeholders how they can contribute to reducing biosecurity risk on marine pathways and what needs to be done on a practical level.

Let us know if you want to be involved or have ideas we should know about.

Email: tosmarinebio@gmail.com

Feature Marine Pest

Japanese kelp, *Undaria pinnatifida*

Status in New Zealand: Established

In the TOS, *Undaria* was first recorded from Picton in 1991, Port Underwood and Port Nelson in 1997 and Golden Bay in 1998. From the first colonising plants, the Marlborough populations have spread extensively throughout much of the Sounds, largely as a result of vessel movements and aquaculture activities. *Undaria* is prolific on vessels and artificial structures throughout the Sounds, and can be a fouling nuisance on mussel farms is some locations. It also occurs widely in natural rocky habitats, although some of the most remote areas of the Sounds are still *Undaria*-free.

In Tasman and Golden Bays, *Undaria* hasn't been reported to have spread beyond the environs of Port Nelson and marine farms in places like Wainui and Collingwood. The natural habitat of the Bays appear relatively resistant to *Undaria*, possibly because grazing by marine life such as kina (sea urchins) acts as a natural biocontrol.

As well as having a reputation as a pest, *Undaria* is edible. It is commonly known as Wakame, and is widely cultivated in Asia. If you've wondered what the greenish 'vegetable' is in your miso soup, now you know – it's *Undaria*. Because of its economic potential, wild harvest of Undaria has been permitted in some areas in the TOS, and aquaculture zones in the Sounds have been identified.

It may seem ridiculous at face value to think that a well-established species like *Undaria* should still be considered a pest from a management point of view. However, the reality is that vessel movements and other human-activities still have the potential to further spread *Undaria* to remote areas it couldn't reach by natural mechanisms. So keeping your vessel hull well-cleaned and antifouled can be beneficial to reduce the ongoing spread of Undaria, and for similar species with a limited capacity for natural spread.

Key features:

- Brown to yellow green coloured kelp, 1-2 metres length.
- Frilly "sporophyll" near base of mature plants.
- Strap-like midrib in mature plants.
- Smooth thin blades or leaves that stop well short of base.

Guest Spot – Cawthron Institute

Good science underpins good biosecurity

From humble beginnings researching *Undaria* cultivation, Cawthron's biosecurity expertise has steadily grown from research programmes that have investigated ballast water, hull fouling, algal bloom and aquaculture-related biosecurity risks. Perhaps the most exciting advancements have been in technologies that once belonged in science fiction movies – once we looked down the microscope to identify plants and animals; now we use DNA analysis to detect pests of all shapes and sizes.

Our scientists work closely with NIWA on addressing New Zealand's most pressing biosecurity research needs, while the biosecurity team also undertakes research that aims to protect and grow the shellfish industry. Recent projects include the characterisation of biofouling communities on mussel farms in the Marlborough Sounds; gaining better insights into marine farmers' views on biosecurity risks; evaluating the efficacy of biofouling mitigation tools; and investigating natural compounds as alternatives to toxin-based antifouling paints.

Improving the way we manage the domestic spread of marine pests and diseases is a significant challenge for New Zealand. Cawthron works closely with councils as well as the Top of the South Partnership to improve their preparedness for marine biosecurity events. At the border, we work closely with clients bringing vessels and oils rigs into New Zealand, to ensure that they meet the recently introduced Craft Risk Management Standard for biofouling – one of our first lines of defence in preventing new species arriving in the country.

This summer, we have a student from the University of Birmingham, Rebecca Stafford-Smith, undertaking New Zealand's first investigation into whether bilge water from boats move marine pests around the region. If you see her down at the Nelson marina or boat ramp, feel free to say 'Hi', and ask her about her research.

For more information on our biosecurity projects, Contact Grant Hopkins (grant.hopkins@cawthron.org.nz) or visit our website at http://www.cawthron.org.nz/biosecurity/.


Photo 1


Photo 2

Photo 1: Inspecting a semi-submersible rig prior to transport to New Zealand. Photo: Cawthron Institute.

Photo 2: University of Birmingham student Rebecca Stafford-Smith and Dr Lauren Fletcher (Cawthron) collecting bilge water from a yacht in the Nelson marina. Photo: The Nelson Mail.

www.marinebiosecurity.co.nz

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