Partners' Newsletter

Keeping you informed

Winter 2020

Summer survey finds fanworm

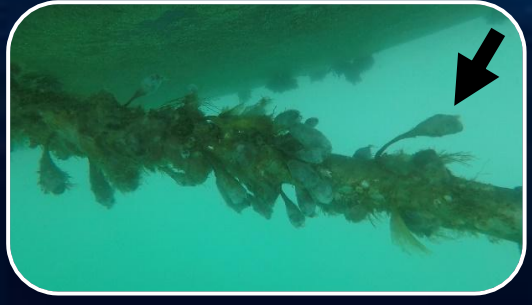
Over five years of summer survey by the Top of the South (TOS) Marine Biosecurity Partnership, four boats have been found outside the main ports and marinas with Mediterranean fanworm in their hull fouling - three in the latest survey).

These fanworm boats had all spent time in infested locations outside of the TOS. Out-of-region visiting boats are a significant threat in terms of introducing new pests. This risk would be far less if out-of-region boats were subjected to risk screening on entry to the TOS region, e.g. before being given a marina berth (see separate article).

We finished the summer biosecurity survey in late March, with boat support from harbourmasters in Tasman, Nelson and Marlborough, and DOC in Picton. You can find a summary of the work, as well as results from surveys carried out over the last five years, at this website: https://marinebiosecurity.gitlab.io/report

Diving and inspections took 15 days across the length and breadth of the top-of-the-South. We checked for marine pests, assessed general fouling levels on hulls, and talked to boaters. Over a three month period we checked 469 boats (mainly recreational), 349 coastal structures and 53 seabed sites. This effort meant that over the last five years, checks have been made of 1,947 boats, 1,507 structures (90% of which are swing moorings) and 100 seabed sites. This was in addition to pest surveys conducted by dive teams every six months in the region's main ports and marinas and the six-monthly port surveys conducted for Biosecurity NZ.

Resident boats in the TOS remain the primary pathway spreading established pests around the region. Around 20-25% of active boats exceeded a 'light fouling' threshold, meaning they have conspicuous growth on the hull. Our data showed a clear trend for marine pests becoming more prevalent with increasing fouling levels. However, even vessels with light fouling can have pests hidden away in 'niche' areas, such as on the bottom of the keel. We've been trying to encourage regional boaters to have their vessel water blasted before heading out for their summer holiday, but we're aware that this is not always possible due to limited hard stand space. The result is that many of the boaters clean their hull in-water while moored or anchored in one of their holiday spots, spreading pests directly to pristine, remote and high-value areas across the region.

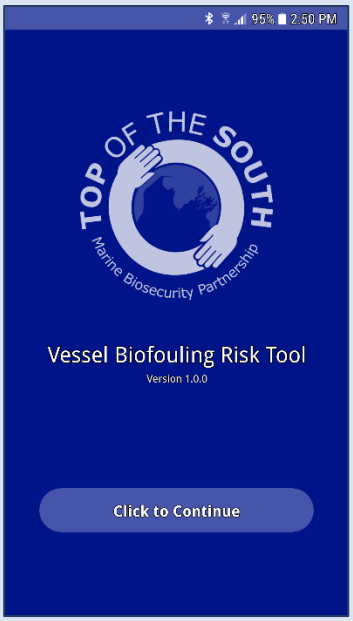


Vessel risk profiling app

Many recreational boats are entering the top of the south region from external locations without being subject to any form of marine pest risk assessment. This situation has led to the development of a decision tree to guide practitioners (e.g. marina operators) in how to appropriately deal with vessels arriving from outside the region, based on the assessed biofouling risk.

The decision tree is basic, as it is intended as a screening tool to identify boats that fall into one of three categories: (1) they 'fail' entry criteria and need to be hauled out and cleaned; (2) they pass entry criteria, and can carry on with no remedial action (e.g. can be given a marina berth); or (3) they fall in the 'grey' area between - these are boats for which a hull inspection and/or a more detailed risk profiling is needed.

The screening approach incorporates some key factors that determine marine pests risk: (1) the origin of the vessel and/or locations visited since last being antifouled; (2) the age of the antifouling coating; (3) the time since the vessel was last hauled out and water blasted; (4) the 'level of fouling' visible from above-water inspection; (5) whether designated marine pests are visible from above-water inspection; and (6) the planned length of time the vessel will remain in the region. The decision tree is built around these risk factors, and the logic behind it has been developed into a prototype android app for evaluation by TOS councils, marina operators and others.



Marine biosecurity in the pandemic - Coordinator's perspective

By Peter Lawless, Coordinator TOS Marine Biosecurity Partnership

Operating in a pandemic presents new challenges for our marine biosecurity coordination team. On our last summer survey day in Nelson Haven, the deputy Harbour Master was checking the water depth at the Fisheries NZ dock in case it needed to be used for quarantine of incoming recreational vessels.

The actual lockdown was straightforward for the team. Move online, plan for a less certain future.

As far as we could tell most recreational boaties followed the lockdown rules. We could follow a few online who had ship tracking installed moving about the region, and no one was doing anything that looked unsafe for themselves or for the environment.

Lockdown meant less vessel movement overall, reducing the risk profile for the region. Marine farming was deemed essential and the barges were still operating. Luckily no biosecurity incidents emerged over that time.

In the long run I think it may be the associated financial instability that has a greater effect than the pandemic itself. In times of recession there is less money to go around. This means less money to upgrade or maintain facilities, or vessels. Some owners may defer maintenance, increasing risks from hull fouling. There may be more abandoned vessels. Even before the pandemic we were seeing more vessels with no home port. Mostly these were older men who seemed to be combining love of the sea with a cheaper housing option. These vessels are on average less well maintained than those owned by the better off.

So risks may rise, or fall, depending on how things go. The resources at risk are growing, including planned large development of marine farming happening in Golden Bay. From our point of view, the basic story remains the same, ***Clean Below, Good to Go***.

"Clean Below? Good to Go" is brought to you by a collective of councils and government organisations working together to stop the spread of invasive marine pests in the upper half of New Zealand's North Island. The "Clean Below? Good to Go" website has recently had a revamp – you can view it at www.marinepests.nz. The website has lots of useful resources for boat owners, such as biofouling rules per region and pests to look out for, and will include a regular newsletter with the latest marine biosecurity news and stories. You can read the first newsletter and subscribe here.

Lack of impacts of the sea squirt, *Pyura doppelgangera,* on rocky shore communities

Cawthron has been researching the impact of the non-indigenous solitary sea squirt, *Pyura doppelgangera* (*Pyura*) on natural and economic values of the Northland region. The species was first detected in New Zealand in 2007. Our research was intended to assess the degree of risk *Pyura* represented for our native biodiversity and mussel industry. Surprisingly, the results of two years of research indicate that the presence of *Pyura* does not significantly impact native rocky shore assemblages and the condition of green-lipped mussels.

The number and distribution of non-indigenous species in our waters is increasing, but our ability to manage this threat is limited by our understanding of how species behave in New Zealand environments and specific impacts to native species. The introduction of a non-indigenous species can impact several key ecosystem functions and services including alteration of flow regimes, nutrient cycling, and habitat availability.

Although it is not known how long *Pyura* had been present in New Zealand, it is not believed to be a recent introduction. *Pyura* is thought to be an aggressive interspecific competitor for primary space. As such, it was considered possible this species may negatively impact native green-lipped mussel beds in the area, with associated impacts on key social and cultural values in the Far North. Furthermore, the mussel industry is heavily reliant on wild caught spat from this region. As such, research into Piura's impact on mussel reefs in Northland was needed, to assess the degree of risk *Pyura* represented.

A field-based experiment was conducted to investigate how the presence of *Pyura* might modify natural intertidal rocky-shore communities through competitive exclusion (encroachment) of native species. Experiments focused (1) on the effect of *Pyura* on the green-lipped mussel (*Perna canaliculus*), an iconic and key rocky-shore native species within the low intertidal zone; and (2) on the establishment of rocky shore assemblages within patches of differing *Pyura* densities. Both experiments were conducted at two sites in the Tauroa Peninsula in Northland.

To our surprise, little evidence was found that mussel beds were impacted by *Pyura*. There were no differences on intertidal community development on pre-cleared plots within *Pyura* patches of low and high cover (30 and 80%, respectively) and controls. After two experimental years we recorded minimal recruitment of *Pyura* within pre-cleared plots, both within *Pyura* and control plots. Furthermore, green-lipped mussel transplanted within patches of low and high cover and almost in contact with *Pyura*, did not show changes in their condition or any sign of overgrowth by the sea squirt.

Furthermore, according to our field assistant and iwi kaitiaki Patau Te Pania, the *Pyura* population in Tauroa Peninsula has been present for his lifetime i.e. (> 50-60 years). He can remember his grandparents talking about this ascidian, as they used to play in the intertidal and had noted its conspicuous and distinctive seawater skirt that ejected from the siphons when disturbed. Collectively, our research has shown that that *Pyura doppelgangera* is most likely neither an aggressive competitor nor a threat to green-lipped mussel beds in the area, as previously thought. It has also found that *Pyura* has a very limited natural spread potential and does not exhibit 'pesty' behavior. Finally, Mātauranga Māori indicates that *Pyura* has been present in the area for longer than previously thought, raising questions about its 'introduction' status and its current designation as an unwanted species.

This study was funded by the New Zealand Ministry of Business, Innovation and Employment, under the Programme What's at stake? — Enabling decision-making through better measurement, forecasting, and evaluation of the impacts of non-native organisms in NZ's changing ocean (C01X1511).

For more information: Javier Atalah, Cawthron Institute, javier.atalah@cawthron.org.nz

Field experiments were conducted at two sites in the Tauroa Peninsula, Northland, with the help of kaitiaki from the iwi Te Rarawa. Photo credit: Cawthron Institute.

To test the hypothesis that Pyura competitively displaces *Perna canaliculus*, adult mussels were transplanted inside *Pyura doppelgangera* beds using plastic mesh bolted to rocks that were removed after two weeks of the two-year experiment. Photo credit: Cawthron Institute.

TOS Committee member profile

Liam Falconer

Liam started at Marlborough District Council in November 2018 in a Biosecurity Officer role before moving into the Senior Biosecurity Officer Operations Lead role in mid-2019. His role involves leading a variety of pest animal and plant programmes ranging from the high county of the Molesworth Station to the seafloor in the Marlborough Sounds, along with everything else in between. Liam supervises a small team of staff along with managing numerous contracts to deliver various programmes.

Before starting out at Council he spent the previous nine years in pest plant and animal management in Marlborough. For the majority of that time he was based in the Marlborough Sounds, over that time he developed a passion for free diving and spear fishing.

Liam is the representative for the Top of the South Partnership and Marlborough District Council on the Advisory and Implementation Group for the Marine Biosecurity Toolbox programme, which is led by the team at Cawthron in Nelson. Liam hopes to see improved detection techniques for pest species at the end of this programme.

While Liam is still relatively new to marine biosecurity, he has appreciated the experience and knowledge sharing that goes on between the Top of the South partners. Liam is enjoying the extra challenge that marine work involves and is keen to see the Mediterranean fanworm programme continue to succeed.

Outside of work Liam is a keen outdoorsman and likes to give most things a go. He makes sure to keep the freezer full through hunting, spear fishing and running a small mob of sheep and cattle.

Update

Marine biosecurity workshops 2020 and 2021

In the coming year we will be offering a wider range of opportunities to get to grips with marine biosecurity.

At level 1 we can hold face to face sessions at marinas at industry and club meetings. Under lockdown people have become more used to online formats. For some, online saves travel time and adds efficiency to their busy lives.

Our marina workshops were well attended in Wellington in December 2019, but we had to cancel those planned for Nelson and Waikawa as the lockdown came into force. We will take this format of drop-in sessions run jointly with Altex Paints to some new locations in spring. There has been interest locally from Motueka, and Chaffer's Marina in Wellington is also keen. For these we have a fouled vessel hauled out so everyone can see the critters and weeds we are concerned about. Having Marcus Gardiner there from Altex has allowed practical questions on how to get the best value from your antifouling to be answered.

We are also offering talks from 20min to 2 hours as well as interactive sessions in your place.

We will build the online formats from these to meet differing needs. Some want to understand the ecology, others the rules and everyone wants to know how to play their part or tell us how we can do better!

If you would like a session or event for your organisation or your boating community, contact Charmayne at tosmarinebio@gmail.com

www.marinebiosecurity.co.nz

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