Quarterly report of investigations of suspected exotic marine and freshwater diseases: October to December 2018

Exotic marine and freshwater pest and aquatic disease investigations are managed and reported by MPI Diagnostics & Surveillance Directorate, Wallaceville. The following is a summary of investigations of suspected exotic marine and freshwater diseases and pests during the period from October to December 2018.

Didemnum vexillum and *Sabella spallanzani* range extension, Matakana

A regional council biosecurity officer contacted MPI to report what was suspected to be *Didemnum vexillum* and *Sabella spallanzani* on a boat that had been lifted out of the water at Matakana River, Mahurangi. The officer was asked to collect samples, which were submitted to the NIWA Marine Invasives Taxonomic Service (MITS) for identification. MITS confirmed that these species were *D. vexillum* and *S. spallanzani*. This represents a minor range extension for both species. The council was notified and the investigation stood down.

Yersinia ruckeri in salmon, Christchurch

A veterinary pathologist from a private laboratory in Christchurch called the MPI pest and disease hotline to report a positive test for *Yersinia ruckeri* (the aetiological agent of enteric redmouth disease) in salmon samples they had received from a facility. This is an important disease of salmonids and can cause significant economic losses, with different strains of *Y. ruckeri* known to have differing pathogenic effects. The serotype 01b (Biotype 1) of *Y. ruckeri* is considered endemic in New Zealand and has previously been isolated from salmon hatcheries on the east coast of the South Island. It is generally considered a production disease and an indicator of underlying environmental or husbandry issues, which can be prevented by improving water quality and reducing stress on the fish. Endemic *Y. ruckeri* is generally confined to salmon cultured in fresh water, and is not considered a threat to marine systems. Exotic strains, including the Hagerman strain, are Unwanted Organisms under the Biosecurity Act 1993, so an investigation was initiated to rule out the exotic strain. The samples were sent to the Australian Animal Health Laboratory for serotyping, which confirmed the endemic strain of *Y. ruckeri* (01b). As this is an endemic disease, the notifier was contacted and the investigation closed.

Blisters on geoducks

Researchers reported blisters on adult geoducks and warts on juvenile geoducks. The notifier suspected that the blistering might have been caused by mechanical damage. Samples were collected by a warranted MPI official, to legally remove the organisms from a controlled area. Samples of affected and unaffected adults and juveniles were submitted to the MPI Animal Health Laboratory (AHL) for diagnostic testing. In all samples, histology showed mixed populations of fungi, bacteria and other organisms on the surface of the periostracum, which is not unexpected.

A PCR test for apicomplexans (APX) was also carried out on two samples. APX is a large and diverse phylum of parasites, some of which are known to infect shellfish. APX-like cells were observed by histology in all geoducks. Using a generic apicomplexan PCR, two different APX DNA sequences were recovered. One sequence was 99 percent similar to APX, while the other could not be assigned a species-level identification. No exotic disease was identified. The notifier was informed of the findings and the investigation was closed. However, research to identify these parasites to species level and to understand this host-parasite relationship is being carried out.

Sick paua, Chatham Islands

MPI was notified via the exotic pest and disease hotline after wild-caught paua (*Haliotis iris*) from the Chatham Islands were found to have a low meat-to-shell ratio. It was suspected that this was due to localised starvation as a result of recent adverse weather, but there was concern that it could be due to *Perkinsus* infection. *P. olseni* has been observed in New Zealand before, but *P. marinus* is considered exotic. Whole paua were collected from the wild and submitted to MPI's Animal Health Laboratory for disease testing.

Gross pathology showed distinct atrophy of the gut in some of the paua. Ray's culture (*Perkinsus* testing) was negative for both species. Histopathology showed some moderate haemocyte infiltrate around the digestive gland and below the intestinal epithelium. This infiltrate is considered a non-specific reaction to various insults including environmental, pathological and toxic. There were no other indications of disease in the histology slides. Based on the lack of evidence of disease and the presence of organic matter and sand in the foregut of the paua, the signs were attributed to a period of impeded feeding and the investigation was closed.

Unusual starfish, Leigh Harbour

An experienced diver called the MPI exotic pest and disease hotline to report unusual-looking starfish in Leigh Harbour, which he had not seen before. He described them as abundant, "invasive-looking" and said they had a purple tinge. This raised particular concern as it could be a description of the northern Pacific seastar, *Asterias amurensis*, an exotic species that would have significant negative impacts on the marine environment. NIWA divers based in Whangarei and University of Auckland researchers were contacted to see if they had noticed any unusual starfish in the area but all only reported seeing the native *Coscinasterias* and *Patiriella* species.

A local dive shop was contacted with information to ask divers to report unusual starfish to MPI. Given that the NIWA divers had not noticed anything unusual and there were no further reports of unusual starfish in the area, the investigation was closed. The caller was notified that whatever he had seen, it was unlikely to be an exotic species.

Fish mortality, Mangonui

A member of the public called the MPI exotic pest and disease hotline to report a large number of small baitfish that had washed up dead at the south end of Coopers Beach the previous day. There had been no unusual weather in the area recently and there was concern that there might be a disease involved.

Asked to collect samples for disease testing, the caller returned to the beach but found that all of the fish were gone, presumably eaten by birds or washed back out to sea. Without samples, the options for further investigation were limited, but the Northland Regional Council was contacted to see if they knew anything about the case, or significant events that might have happened in the area. They had no knowledge of the event.

Specialists at MPI were contacted to ascertain whether there had been any ichthyotoxic algal blooms in the area. *Alexandrium pacificum* was the only ichthyotoxic species present at the time, but not at concentrations high enough to cause fish mortalities. The nearest samples had been taken from Mangonui wharf, which is close to Coopers Beach but in an estuary so the environmental conditions would be different.

No further mortalities were reported in the following weeks. The mortality was attributed to a one-off event, perhaps related to predation pressure on the baitfish forcing them into the shallows and becoming stranded by the tide. The investigation was closed.

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