

Quarterly report of investigations of suspected exotic marine and freshwater pests and diseases: January to March 2019

Mantis shrimp range extension, Auckland

MPI was notified by NIWA that a suspect *Oratosquilla oratoria* (Japanese mantis shrimp) had been collected by fishermen in the Manukau Harbour during a research project. *O. oratoria* is considered an established pest, but had not previously been found this far south. A sample was submitted to the Marine Invasives Taxonomic Service (MITS) at NIWA, and confirmed to be *O. oratoria*. This represents a significant range extension for the species. Auckland Council was made aware of the range extension and the investigation was stood down.

Pipi mortality investigated, Whangarei

Northland Regional Council staff contacted MPI to report mortality in pipi (*Paphies australis*) at Munro Bay, Whangarei Harbour. Samples were collected and submitted to MPI's Animal Health Laboratory (AHL) to rule out exotic disease and add to the wider work being carried out on shellfish health. Results of disease testing showed no significant abnormalities in the shellfish. *Rickettsia*-like organisms (RLOs) were present in the gill epithelium and digestive tubules but were not associated with any haemocyte infiltrate. RLOs are commonly associated with shellfish mortalities but their significance is unknown. As no exotic disease was detected and the mortality event appeared to have finished, the investigation was closed.

Fanworm investigated, Russell

Northland Regional Council contacted MPI to report that a vessel recently hauled out from Matauwhi Bay, Bay of Islands, was suspected of carrying *Sabella spallanzanii* (Mediterranean fanworm). This established pest is only present in some parts of New Zealand. Steps are being taken by regional councils and MPI to try and prevent its spread, which largely occurs via biofouling and vessel movements. A sample submitted

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 January to March 2019.

to MITS was identified as a native fanworm (*Branchiomma* sp.). As this did not represent a biosecurity risk, the investigation was closed.

Green-lipped mussel mortality investigated

An aquaculture facility notified MPI of mortality in green-lipped mussel (*Perna canaliculus*) broodstock. Cumulative mortality over several days was recorded to be around 30–35 percent. The broodstock mussels were held in a secure room, isolated from other operations, with dedicated equipment. The broodstock received water and food from earthen seawater ponds that could get very warm and showed wide fluctuations in temperature, food, pH and oxygen levels caused by diurnal cycles and algal growth. Warm summer conditions can be challenging for broodstock and some mortality is expected. However, this summer very high mortality occurred rapidly, raising concerns that there might be other causal factors.

Ten animals were selected for gross and histological examination. Samples were taken for bacteriology, culture and molecular testing for *Perkinsus* spp. Bacteriology showed mild to moderate growth and common isolates of *Vibrio* and *Photobacterium* spp. Histology revealed *Perkinsus* cells in only one animal. Bacteria were seen within inflammatory cells and areas of tissue inflammation were seen in one animal. Culture for *Perkinsus* showed light to moderate infection in nine of the 10 samples. Quantitative PCR was positive for *P. olseni* (endemic) and negative for *P. marinus* (exotic). There was no obvious pathology associated with *Perkinsus* and it was not considered to be the cause of this mortality event.

The mortality rate dropped off over the 2 weeks after notification, quickly returning to a baseline of nearly zero. The mortality was deemed to have been caused by a combination of elevated pond temperatures, opportunistic bacteria and perhaps the presence of *P. olseni*. No exotic disease was identified and the investigation was closed.

Goby species investigated, Coromandel Peninsula

An ecologist undertaking a survey of an estuary in Bay of Plenty found an unfamiliar fish in a fyke net. The ecologist notified MPI to determine whether this was a new to New Zealand species. The Incursion Investigator obtained photographs of the specimen and sent these to a Te Papa fish taxonomist for species determination. The fish was identified as *Parioglossus marginalis*, commonly known as the dart goby. This species is typically found in shallow estuarine and coastal marine environments in association with sand and rocky substrata. It is known from southeastern Australia and there are two records from New Zealand, at Great Barrier Island and in Northland. The dart goby is likely to have been introduced by a vessel visiting from Australia. The larvae could not cross the Tasman Sea in currents, so they were probably sheltering in niche areas of the ship, such as the sea chest. As this is not a new to New Zealand species, the investigation was closed.

Mussel species investigated, Auckland

A diver notified MPI of a suspected Asian green mussel (*Perna viridis*) after undertaking a pre-voyage biofouling survey of a vessel moored in Auckland.

The vessel had returned from an overseas voyage in October 2018. A single specimen of the mussel sent to MITS was identified as *Perna canaliculus*, the New Zealand green-lipped mussel. As this is an endemic species there was no biosecurity risk and the investigation was closed.

Goby species investigated, Tauranga

A community group monitoring and restoring the Te Rereatukahia Estuary, near Katikati, found an unfamiliar fish in the sediment and notified MPI, concerned that it could be a new to New Zealand species. They had released the fish but taken photographs. The Incursion Investigator requested that a fish taxonomist examine the photographs and attempt to identify the species. The taxonomist narrowed it down to two possibilities: *Arenigobius bifrenatus* (the Australian bridled goby) or *Acentrogobius pflaumii* (the Asian goby), but could definitively identify it from the photos alone.

Arenigobius bifrenatus was first discovered in the Waitemata and Whangateau Harbours on the northeast coast of North Island in 1998. It is thought to have been introduced when juveniles or larvae were transported in ships' ballast water released in ports of call. This species is endemic to southern Australia, from Moreton Bay (Queensland) to the Perth region of Western Australia and around Tasmania. It inhabits burrows in the muddy areas of shallow bays and estuaries in 0–10 m. *Acentrogobius pflaumii* was first reported in New Zealand in about 2001 when it was collected from the upper reaches of the Waitemata and Whangapoua Harbours. It is likely this species was also introduced in ships' ballast water. It may have arrived directly from its native range in the northwest Pacific Ocean (where it is native to Japan, China and Korea), or indirectly via Australia, which it invaded before 1996. Both gobies have been found only on the east coast of the North Island. As they are already established in New Zealand the investigation was closed.

Paua mortality investigated, Marlborough

Commercial divers noticed unusual paua mortality in the Marlborough

Sounds and notified MPI. The divers saw around 100 dead shells and a small number of moribund black-foot paua (*Haliotis iris*) and yellow-foot paua (*H. australis*). Specimens of both species were collected and submitted to the AHL to test for causal pathogens. Ten animals of each species were selected for gross and histological examination. Samples were taken for bacteriology, fungal culture, *Perkinsus* culture and molecular testing for abalone viral ganglioneuritis virus (AVGV).

Vibrio splendidus was identified biochemically and confirmed by DNA sequencing. *Vibrio* spp. are common marine bacteria, but because this species was isolated from only one of the 20 specimens it was probably not significant. Results were negative for *Perkinsus* and AVGV.

None of the black-foot paua showed any significant abnormalities on macroscopic examination and after removal of shell. Six of the yellow-foot paua had macroscopic abnormalities of the shell and epithelial surface. All yellow-foot paua showed evidence of helminths present in their connective tissues. These would present an opportunity for the entry of bacteria (e.g. *Vibrio* spp.) or fungi that could cause a secondary infection. Further, the helminth infestation could predispose them to a weakening of the foot, resulting in poor attachment to the substrate (Bower, 2001).

It is possible that infection of the shell can predispose the animals to morbidity, although there is no evidence that this causes mortality in paua species. However, with severe infections there may be development of systemic disease (especially where *Vibrio* spp. are present) that can cause mortalities (Bower, 2017). As no exotic disease agents were found the investigation was closed.

Rash on trout investigated

Fish & Game Otago contacted MPI about a single brown trout (*Salmo trutta*) caught in the lower Taieri River, which had a rash on the underside of the stomach. The fish was otherwise in good health. Up to 10 other brown trout in the area had presented similarly.

A sample was collected but was not able to be sent to the AHL before it deteriorated. Fish & Game were asked to collect another fish for testing but a

period of bad weather made for poor fishing conditions. No other affected fish were caught and after two months there were no more reports to MPI or Fish & Game. The investigation was closed at this point.

Marine slime investigated, Nelson

Staff at Nelson Marina contacted MPI about a peculiar-looking slime forming clear structures on the bottom of a yacht. The boat had been lifted and cleaned 3 weeks previously and had been used regularly. A sample was collected, frozen and submitted to NIWA for identification. Getting species confirmation was made difficult by freezing, which can degrade samples. However, NIWA was able to determine that it was most likely ordinary boat slime made up of microalgae and diatoms bound in sediment and mucus. The notifier was advised of the result and as there was no identified biosecurity risk, the investigation was closed.

Crab mortality investigated, Tauranga

A member of the public contacted MPI to report a large number of crabs washed up on the mudflats in Welcome Bay, Tauranga Harbour. The crabs were in varied states of degradation, from moribund to rotten. They were white and 30 mm in length. The caller was unable to collect samples. MPI fishery officers in Tauranga were contacted and visited the site next day but did not report seeing any crabs washed up on the beach. As no samples were available for testing the investigation was stood down but the member of the public was asked to notify MPI and collect samples if he sees the event again.

Fish mortality investigated, Taupo

Members of the public at Oruatua Bay, Lake Taupo, notified MPI after noticing a mass mortality of what they said were small trout, just a couple of metres from shore. The Incursion Investigator contacted the Taupo District Council to organise sample collection but by the time the field officer arrived the only fish remaining already appeared to be decomposing and were unsuitable for analysis. Also, the field officer ascertained that these were a native species of bully

(family Eleotridae), not small trout. The field officer referred to a similar case in the past year where common bullies were found dead at Taupo. The fish had been heavily infested with parasites, and the situation was aggravated by localised stressful post-spawning conditions, so it was considered that they had died of natural causes.

Events like this are common and are thought to be due to local weather effects such as elevated water temperatures. It is also thought that natural post-spawning attrition may be common and possibly exacerbated by heavy parasite loads in the fish. Given the very large numbers of bullies in these lakes, living mainly on the margins, the scientists considered this to be a natural event with no general threat of actual population decline.

Lacking fresh samples for analysis, this investigation was closed as it was likely to be a similar natural event to those that had been described before.

References

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