

Quarterly report of investigations of suspected exotic marine and freshwater pests and diseases: October to December 2019

Diseased scampi, Chatham Rise

During routine scampi surveillance on the Chatham Rise, nine scampi (*Metanephrops challengeri*, Balss, 1914) out of 4,500 (0.2 percent) showed signs of “white scampi”. This is a syndrome where freshly caught scampi appear pale in colour instead of the normal pink and red. Five of the scampi were fixed individually in 10 percent formalin, as well as five that appeared healthy. MPI was notified and the 10 scampi were submitted to the Animal Health Laboratory (AHL). Histology revealed that the healthy scampi had no abnormalities, but the five diseased animals had moderate to marked microsporidiosis in the skeletal and cardiac muscle. This was consistent with infection by *Myospora* sp., a microsporidian parasite endemic to New Zealand. As there were no biosecurity issues, the investigation was stood down.

Perkinsus in greenshell mussels

MPI was notified of chronic low-level mortality in greenshell mussels (*Perna canaliculus*) being held for research. The mussels had been held in three different environmental regimes, only one of which was experiencing mortalities. Histological testing at the AHL showed the presence of *Perkinsus* sp. at low levels in five of 10 animals and the species was identified as *P. olseni*. This species is endemic in New Zealand and has been previously detected in mussels in several areas of New Zealand. The results were conveyed to the notifier, added to the OIE quarterly report, and the investigation was stood down.

Pāua mortality, Kaikoura

A new pāua (*Haliotis iris*) facility notified MPI of high mortality in adult broodstock collected locally. All animals were about the same size (125–135 mm). When collecting samples, they are sexed by pulling up the frill to check the colour of the gonad. While doing this, damage can occur and cause stress to the animals.

Exotic marine and freshwater pest and aquatic disease investigations are managed and reported by Diagnostic and Surveillance Services 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 2019.

The facility is maintained at a constant temperature of 14–15°C and the water had been run through the system with no animals for 7 days before the broodstock arrived. All water parameters were checked and were within normal range, and the stocking density was low. Some of the pāua had been induced for spawning a few days after entering the facility, and both induced and un-induced animals were affected by mortalities. Sick animals were slow to respond to stimuli and did not right themselves. After all the sick animals were moved into a quarantine tank, a peak of mortalities occurred. Four days after the mortalities had begun to subside, a failure with the cooler in the facility caused the water temperature to rise by almost 2 degrees, to 16.5°C, and there were further mortalities.

Samples of animals from both mortality peaks were submitted to AHL for disease testing to rule out the endemic *Perkinsus olseni*, the exotic abalone virus gangleoneuritis virus (AVGV), and withering syndrome. Additionally, a general health screen was performed using histology, which microscopically examines sections of tissue for signs of disease. Ten representative animals were tested. AVGV, *P. olseni* and withering syndrome were ruled out by specific PCR, culture, and histology respectively. Histology revealed changes to the haemolymph, which are commonly associated with slow haemolymph flow, decreased muscle tone and possibly an increase in haemolymph proteins, which are all likely to be associated with stressors or underlying disease. In five of these pāua, bacteria were present in the gills, and in two of them bacteria were present in the haemolymph.

Pāua from the second mortality peak showed dominant growth of two

indigenous *Vibrio* spp. (most likely *V. splendidus* and *V. tapetis*) and histology revealed an active bacterial infection in the vascular channels, digestive gland and tubular kidney. These bacteria are abundant in the marine environment and several species, including *V. splendidus* and *V. tapetis*, can be pathogenic to aquatic animals. No other pathogens were detected by histology or bacteriology.

The cause of these mortalities was most likely multifactorial. The reason for the first peak of mortalities remains unknown but it is thought to have been due to a stress response induced during capture and confinement (including handling and induction of spawning). The second peak of mortalities occurred after a temperature increase in the facility. Even a change of just one Celsius degree can stress aquatic animals, reducing their immunity, providing an environment for the proliferation of bacteria and leading to disease. The cause of these mortalities was suggested by histology and bacteriology, which showed an active infection of *Vibrio* spp. and inflammation in the tissues around the foci of bacteria. Results were communicated to the facility, along with information on ways to reduce future stress and thus infection. As testing revealed no biosecurity concerns, the investigation was stood down.

Ascidians identified

MPI was contacted by a member of the public who had found several long red fleshy organisms washed up on a beach near Manganese Point, Whangarei Harbour. Photos were sent to the Marine Invasives Taxonomic Service (MITS) for identification as a sample could not be collected. A MITS taxonomist identified

the organisms as the native colonial ascidian *Syonicum kuranui*, which is known to occur in Whangarei Harbour. *S. kuranui* often forms into a long sausage-shape in areas of high current.

Mass mortality of fish, Matarangi Beach

A member of the public reported a mass mortality of fish washed up on Matarangi Beach, Coromandel Peninsula. Photos were requested, which confirmed that the fish were jack mackerel (*Trachurus* sp.), all of a similar size. The AHL sent a sampling kit to the notifier to collect samples for rule-out of exotic disease, and Fisheries NZ was also notified in case this might be a dumping incident. The Waikato Regional Council was also notified. However, when the samples were received at the AHL they were of poor quality owing to transport delays, and no testing could be carried out. The results were inconclusive, but the possibility that the mortality event was caused by predators chasing prey on to the shore, or a dumping of unreported commercial fish, cannot be excluded.

Salmon mortalities at fish farm, South Island

A land-based salmon farm reported that more than 200 salmon had died over a 5-day period. The salmon farm had recently received a new transfer of live fish and considered it likely that poor transfer conditions, including a large amount of scale loss, was the cause of the mortalities. All transfers of new fish to this facility were put on hold while the dead fish were tested at the AHL to rule out exotic aquatic disease. Histology and bacteriology results were negative and transfer authorisation was renewed because the biosecurity risk appeared to be low.

Green liver in kahawai

MPI was notified after one of four kahawai (*Arripis trutta*) caught near Lake Ferry, Wairarapa, was found to have a mossy-green liver. The notifier said that apart from the colour, the liver was normal in appearance. Green liver syndrome has been reported in farmed fish as a sign of nutritional deficiency. However, the sample was too degraded for analysis and the case was closed as inconclusive.

Unusual jellyfish washed up on Gisborne beach

The MPI Communications team was contacted by a news reporter in Gisborne requesting information about jellyfish. A large number of jellyfish had washed up in the area over the previous weekend. Photos were sent to MITS for identification and an expert in Australia tentatively identified them as *Desmonema gaudichaudi* (Cnidaria: Scyphozoa), the speckled or spotted jellyfish. MITS was unable to confirm the identification without a specimen but *D. gaudichaudi* is indigenous to New Zealand and no biosecurity risk.

Lesions on mussels, Coromandel Peninsula

A member of the public found several greenshell mussels (*Perna canaliculus*) with unusual reddish orange growths on the gonads, and sent photos to a NIWA fisheries scientist for advice. NIWA was unable to rule out disease by examining the photos and contacted MPI. The mussels had been collected near Whitianga, and had been steamed and frozen before MPI was notified. As the cooking process had likely destroyed the causative agent, fresh samples were required to identify it. Several attempts were made to contact the notifier for more information but they did not respond.

Several days later another member of the public reported unusual orange/red “blisters” on the gonads of greenshell mussels collected at Whangamata. The photos showed signs that were very similar to those in the earlier notification, and samples were requested for laboratory testing to rule out exotic disease. The mussels had been collected at the mouth of a tidal estuary where the water is constantly moving, and the water temperature at the time was 18°C. Two affected mussels were tested and both had a marked trematode infestation of the gonad, most likely caused by *Cercaria haswelli*. This condition has previously been reported in *P. canaliculus* from both the North and South Islands, and may be common in some parts of New Zealand (M. Bradstock, pers. comm.). As testing revealed no biosecurity concerns, the investigation was stood down.

Suspect sea squirt, Coromandel

A member of the public called MPI to report a suspect *Clavelina oblonga* sighting near Coromandel town. This potentially invasive ascidian was first reported from Great Barrier Island, in May 2019. Five sites (including the initial site of detection) near Coromandel town were intensely investigated by divers but no *C. oblonga* were found. The relevant regional councils, MPI’s Biosecurity Response team, and local mussel farmers were notified and the investigation was stood down.

The 2019 find was referred to the Response group and a delimiting survey was carried out which showed it was widespread in Smokehouse Bay, Great Barrier, at least 1.5 km out from the initial detection site. Owing to its limited distribution, it is important to know whether this organism has spread.

New to New Zealand bryozoan, Auckland

NIWA detected a new to New Zealand bryozoan species while carrying out an ecological survey in Viaduct Harbour, Auckland, and reported the find to MPI. The bryozoan appeared to be *Nevianipora* sp., a tropical genus not previously known to be present in New Zealand. A UK-based taxonomist has suggested it may be *N. pulcherrima* (Bryozoa: Diaperoeciidae) based on skeletal morphology. However, there is poor systematic resolution in this bryozoan family. A Marine Exotic Species Note (MESN) was prepared by NIWA with more detailed information. NIWA believes it is likely the species will become established as the temperature range in northern NZ is similar to that of its native range. However, the impact is likely to be low as none of the species in this family are listed as pests.

Unusual alga growing on mussel lines, Coromandel

A Coromandel mussel farmer reported an unusual alga growing on mussel lines. The algal growth was believed to have inhibited the settlement of mussel spat on lines in the upper 3 metres of the water column. Photos were sent to MITS and the alga was identified as *Colpomenia* sp. Four species of *Colpomenia* are present

in NZ, including one non-indigenous species, so a sample was requested for rule-out. However, over the Christmas period the alga disappeared from the lines. The notifier will notify MPI again if it re-appears.

Large number of small jellyfish near Auckland

A member of the public notified MPI after she observed large numbers of small jellyfish around the Whangaparoa Peninsula over the course of a week. The notifier was concerned the jellyfish might be an exotic organism and dangerous to human health, and she sent photos to Biosecurity Surveillance and Incursion Investigation Aquatic & Environment Health for identification. Following a conversation with the notifier, the jellyfish were tentatively identified as crimson jellies (*Turritopsis rubra*), a common, fast-moving jellyfish species that proliferates in large numbers in coastal North Island areas. The species is not known to sting humans. The notifier was sent a digital copy of NIWA's "jiggling jellyfish" identification guide (Macpherson & Gordon 2019).

Mass fish mortality, Kawau Island

MPI received 11 notifications from members of the public after large numbers of dead fish were seen floating near Kawau Island in the Hauraki Gulf from 12 to 14 December 2019. The dead fish were identified from photos as blue mackerel (*Scomber australasicus*). Fisheries officers were notified and collected samples on 13 December but these were in an advanced state of decay, suggesting the fish had already been dead for several days.

Two members of the public sent samples to the AHL for analysis but both samples were in poor condition when they arrived and thus unsuitable for bacteriology and histology. However, AHL scientists were able to extract DNA from gill material and test it for pilchard herpesvirus, which periodically causes large mortalities of pilchards (*Sardinops sagax*). It is unclear from the literature whether blue mackerel are susceptible to this disease, but the samples tested negative for pilchard herpesvirus.

Fisheries NZ supplied information suggesting the mortality might be related to commercial fishing. A purse-seine vessel fishing in the area six days prior to the first notifications had reported that gear failures over two successive days had resulted in the loss of about 4 tonnes of blue mackerel.

Exotic bridled goby, Great Barrier Island

MPI was notified that a bridled goby had been found in the Kaitoke wetland at Great Barrier Island. The fish was caught in a fyke net set overnight and retrieved the following day. A photo of the fish was sent to MITS and confirmed to be the Australian bridled goby, *Arenigobius bifrenatus* (Kner, 1865). This is a burrowing coastal and estuarine goby from temperate Australia. The first record of this species in New Zealand from in the Whangateau Harbour in 1998. It is thought to have arrived accidentally in shipping ballast water. As this is not a new to NZ species and is a range extension, the investigation was closed and DOC was notified of the detection.

Suspected wasting disease of seagrass, Auckland

A member of an estuary environmental group notified MPI about large patches of dead seagrass seen while photographing seagrass (*Zostera muelleri*) beds at St Heliers Beach, Auckland. Her personal research indicated the cause might be wasting disease caused by the marine slime mould *Labyrinthula zosterae*. This organism is established in NZ and has caused significant declines in seagrass beds in the past, for example at nearby Okahu Bay in the 1960s. *Labyrinthula zosterae* has previously been detected in healthy seagrass beds, but blooms may occur when the plants are stressed and conditions are favourable (e.g. low light, high temperatures and high salinity). Seagrass beds are also sensitive to changes in environmental conditions and are known to change over time. As the cause appears likely to be either environmental conditions or an organism already present in NZ, the decline is outside of the scope of MPI's remit.

References

Macpherson D, Gordon D (2019). Jiggling jellyfish: a guide to the jellyfish of New Zealand. Retrieved from <https://edit.niwa.co.nz/static/web/MarineIdentificationGuidesandFactSheets/JigglingJellyfishApr2019-Ver1-NIWA.pdf>.

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