

# Plant health surveillance and incursion investigation report: October to December 2019

The Ministry for Primary Industries (MPI) Incursion Investigation team and Plant Health and Environment Laboratory (PHEL) investigate and diagnose suspect exotic pests and diseases in the plant and environment sectors. Incursion Investigators (IIs) and scientists are based in Auckland, Wellington, Rotorua and Christchurch. These teams provide field investigation, diagnostic testing and technical expertise to detect and report new pest and diseases affecting plants and the environment. They support surveillance and response functions, including carrying out research and development for better diagnostic tools and processes to manage biosecurity risks.

Incursion Investigators received 369 plant and environment notifications during the 3-month period from October to December 2019 (Figure 1), continuing the trend of increased post-border notifications compared to the same quarter in 2018 (309). Investigators immediately stood down 90 cases because biological risk was ruled out, and 22 more cases were redirected to other agencies responsible for managing the pest concerned.

The resulting 257 cases that required further investigation to rule out a biological risk, represented a 20 percent increase compared with the same quarter in 2018 (207). Significant cases involving pests of concern commonly notified this quarter included a variety of seed with dubious import pathways and the brown marmorated stink bug.

## Seeds not compliant with Import Health Standard

MPI has a multi-layered biosecurity system to deal with risk. This includes import risk analysis, international agreements, permits, diagnostics, Import Health Standards (IHSs), pathway risk analysis, detector dogs and passenger and mail inspection. Despite the robustness of the system, not all risk goods will be detected; for example e-commerce trade in seeds is a difficult pathway to manage.

The Biosecurity Surveillance & Incursion Investigation Plant Health (BSIIPH) team investigated 28 seed cases this quarter and investigators concluded only five were negative for the presence of a biological risk. To protect our primary industries from exotic pests

and diseases and minimise costly eradication events, the importation of seed into New Zealand is regulated by the applicable IHS and non-compliance may result in prosecution.

Seed and nursery stock can be imported into the country only for species approved by MPI, listed on the Plants Biosecurity Index (PBI) and compliant with the IHS 155.02.05: *Seeds for Sowing*. Packages must have a clear customs declaration describing the contents and identifying the species, which must not be listed in Schedule 1 or 2 of the Trade in Endangered Species Act 1989 unless accompanied by the appropriate permits from the Department of Conservation (DOC). In addition, packages must display the scientific name and be free of any weed seeds or other contaminants such as soil. Non-compliant seeds often arrive via the e-commerce pathway from China, the US, UK, Greece, Egypt and Australia. MPI is often notified via social media networks of potentially incorrectly imported vegetable seeds and ornamentals being traded in New Zealand. All cases are investigated and, in most instances, the seeds and

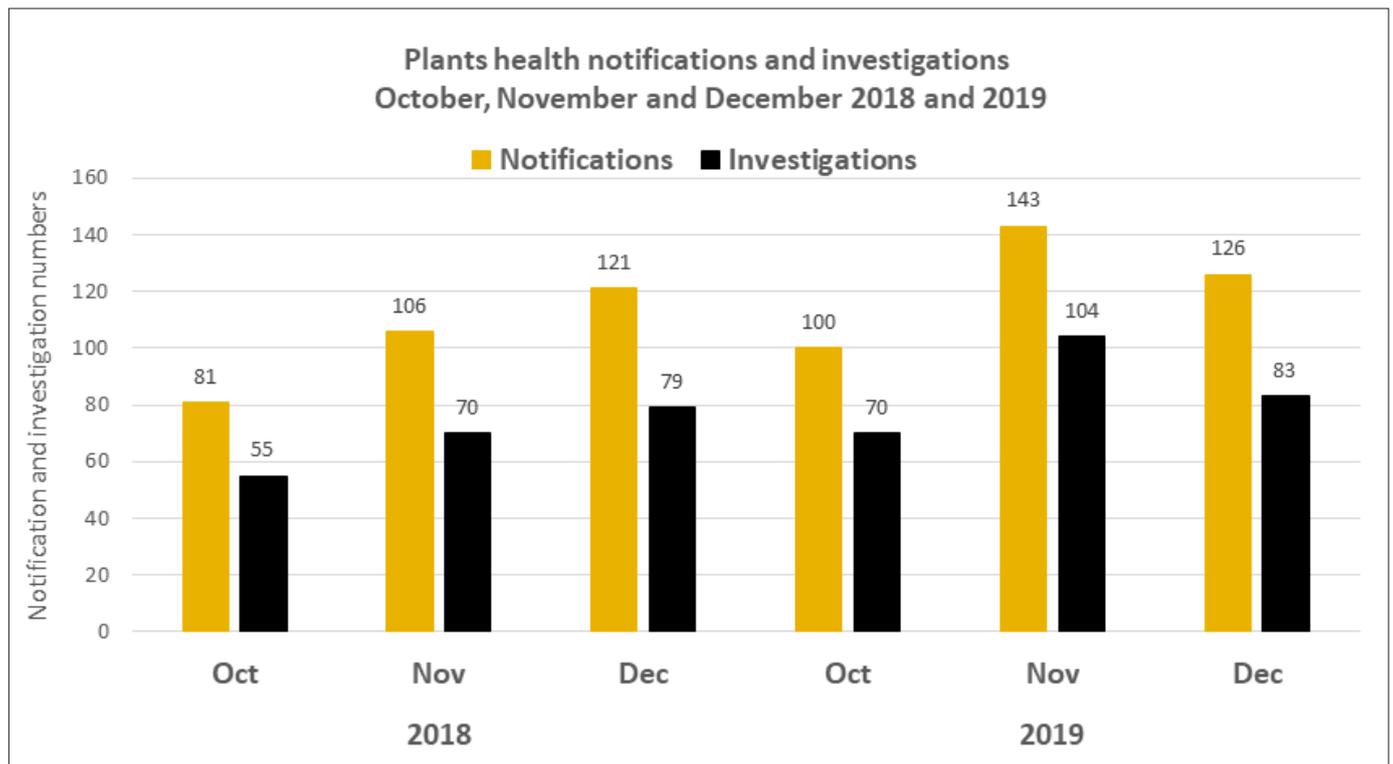


Figure 1: Plant health notifications, investigations and other outcomes, October–December 2018 and 2019

any resulting plants are destroyed. Some example are provided below.

### Seeds from an overseas website discussed on Facebook

A member of the public alerted MPI to a Facebook posting where suspected illegally imported seeds were being grown in pots. Using MPI's Intelligence Team, the II obtained contact details of the person of interest (POI) and determined that 44 packets of "edible seeds" had been ordered from the Chinese website "Wish". Only one seed line sprouted, which was supposed to be sugarcane but the plant did not look like it so the POI sought advice from Facebook plant hobbyists. In response, Facebook members warned the importer of the biosecurity risk posed by imported seeds from non-reputable sources.

Apparently, the packet description was in Chinese script and the POI was unsure what it said or whether botanical names were provided. One packet was simply labelled "persimmon". The POI had previously received a letter from MPI relating to other non-compliant seed imports that had been seized at the Auckland International Mail Centre (AIMC). Her explanation for planting these seeds was that "since they were delivered they must have undergone biosecurity clearance at the border". All the potted plants were destroyed with the assistance of Horizons Regional Council (HRC), Taumarunui. It is frustrating that even though members of the public are advised by MPI how to correctly import seeds, they continue to purchase from overseas websites, thereby risking New Zealand's biosecurity.

### Cucamelon seeds sold on Trademe

A member of the public who had previously been investigated for importing cucamelon seeds alerted MPI to a Facebook discussion about "recently purchased" cucamelon (*Melothria scabra*, Cucurbitales: Cucurbitaceae) seeds being sold on Trademe. Cucamelon, also known as dragon's eggs or Mexican sour gherkin, is not listed on the PBI. It is not known to be present in New Zealand and therefore is a suspect new organism under the Hazardous Substances and New Organisms (HSNO) Act 1996. Since the notifier's originally imported cucamelon seeds had been destroyed, there was concern as to the

origin of the new Trademe auction. Facebook members were contacted and a subsequent phone interview with the new seller revealed the seeds had been purchased earlier in the year and not recently as implied. With the assistance of Trademe administrators, the investigation determined the seeds had been purchased in the earlier auction but were not known about during the earlier investigation so had not been seized. Two potted plants and the remaining seeds were incinerated by the owner.

In comparison to the previous seed investigation, the notifier in this case had taken on board the seriousness of biological risk associated with importing and growing seeds and co-operated with this investigation. While online trading of risk goods creates much work for plant health investigators, the forum can also work in MPI's favour by educating a wide audience.

### Brown marmorated stink bug investigations

New Zealand is on red alert for an invasion of the brown marmorated stink bug or BMSB (*Halyomorpha halys*), considered one of this country's greatest biosecurity risks. It feeds on a wide variety of plants, including pipfruit, stonefruit, grapes and kiwifruit. If established here, it could potentially feed on all our fruit and vegetable crops. Since 2018, farmers across Europe have reported record crop devastation, in some instances so high that the cost of production is not viable. The bugs are very good at spreading on agricultural machinery, vehicles and inanimate goods and this "hitch-hiker" behaviour poses the greatest risk of the bug reaching New Zealand. For example, in 2018 there were 17 male and 9 female live stinkbugs accidentally imported with a pair of shoes from West Virginia, USA. Fortunately the purchaser was aware of BMSB and immediately called the MPI exotic pest and disease hotline (0800 80 99 66).

During this quarter 60 suspected BMSB cases were reported and an investigation was initiated for each one, resulting in 20 positive BMSB identifications where urgent measures were undertaken by the II to mitigate the risk of establishment. A further 37 cases investigated were negative for BMSB (see **Table 1**), which illustrates the species diversity, region and host range of notifications

received that were negative for BMSB but still required investigation. BMSB notifications are treated with urgency and some positive cases are described below.

### Suspect BMSB, Christchurch Airport

A solitary live suspect BMSB was reported to MPI by Qantas staff at the oversized luggage belt in the Christchurch International Airport terminal. At the time of detection the insect was sitting on the strap of a passenger's backpack. The duty Chief Quarantine Officer (CQO) was notified and arranged submission of the bug for identification to PHEL, where it was confirmed to be a female BMSB, non-reproductive and unmated. The traveller was an American citizen en route to Asia via Australia after travelling through New Zealand. The investigation revealed that after spending one night in motel accommodation on arrival in Christchurch, he spent the following 17 days travelling in a campervan around the South Island. For most of this time he was accompanied by his son, who arrived in Queenstown from South Australia. They travelled to Gore Bay, Arthur's Pass, Mt Cook, Wanaka, Queenstown, Curio Bay, Portobello, Temuka and Akaroa, staying in camping sites and sleeping in the campervan and a tent the son had brought with him from Australia.

Investigators contacted the father and son and inspected their belongings for BMSB. People associated with the facilities they had used during their trip were contacted and BMSB pamphlets were provided for staff and for public awareness. The campervan was inspected and nooks and crannies sprayed with an insecticide as a precautionary measure. In addition, the vehicle was sealed and a can of insecticide applied to the interior. On inspection no BMSB were found. The camping equipment was inspected and frozen for a week at MPI and no BMSB were found. It was possible that the BMSB might have arrived at the airport in other luggage and just happened to find its way on to this passenger's backpack.

### Live BMSB in suitcase ex Italy

MPI was notified of a suspect BMSB found among the luggage of a family returning to New Zealand after 3 months in Emilia Romagna, northern Italy, where they had observed large numbers

**Table 1: Suspect live BMSB notifications investigated and determined to be negative (36 native and one exotic species)**

Species	Region	Host
<b>Native to New Zealand</b>		
Coreid bug, <i>Acantholybas brunneus</i>	Auckland	Aluminium furniture
Brown soldier bug, <i>Cermatulus nasalis</i>	Auckland	Commercial nursery
	Auckland	Tie-down straps
	Awakeri	Kiwifruit orchard
	Hamilton	Residential kitchen
	Paengaroa	Kiwifruit orchard
	Papamoa Beach	Garden
	Port of Tauranga	Chair
	Tauranga	Kiwifruit packhouse
	Tauranga	Kiwifruit orchard
	Tauranga	Garden centre
	Tauriko	Kiwifruit orchard
	Te Puke	Curtain
	Waimauku	Persimmon orchard
Brown shield bug, <i>Dictyotus caenosus</i>	Wellington (Lower Hutt)	Vehicle
	Wellington	Vehicle
	Whangarei	Farm
	Whakamarama	Avocado orchard
	Auckland	Air conditioning units
	Auckland	Silver beet
	Auckland	Vehicle
	Auckland	Mail
	Christchurch	Pallet at Transitional Facility
	Invercargill	New farm machinery
Pukekohe	House doorstep	
Temuka	Holiday park	
Te Puke	Kiwifruit orchard	
Te Puke	Lawn	
Native bronze beetle, <i>Eucolaspis</i> sp.	Auckland	Aeroplane cabin
Pittosporum shield bug, <i>Monteithiella humeralis</i>	Christchurch	Hotel
	Nelson	Residential house
Green vegetable bug, <i>Nezara viridula</i>	Lower Hutt	Roof racks
Schellenberg's soldier bug, <i>Oechalia schellenbergii</i>	Marlborough	Plant
Forest shield bug, <i>Oncacantias vittatus</i>	Tauranga	Ceramic plant pot
Family <i>Reduviidae</i>	New Plymouth	Vehicle
<b>Exotic to New Zealand</b>		
Western conifer seed bug, <i>Leptoglossus occidentalis</i>	Christchurch	Office at Transitional Facility

of stink bugs on window shutters at their accommodation. A family member and entomologist had alerted the group to the possibility of live insects hitchhiking in their personal belongings and advised taking extra care when packing. On arrival into New Zealand, the family specifically asked border clearance

staff to inspect their luggage because they were aware of the heightened risk. Quarantine Officers (QOs) at Auckland International Airport found one stink bug, which was identified by a PHEL entomologist as *Acrosternum* sp. (Hemiptera: Pentatomidae), not known to be present in New Zealand.

As the QO found no further insects, the luggage was released to the family. On returning to their homes in the Bay of Plenty and Waikato, in closed rooms family members unpacked their luggage and found two and three suspect BMSB respectively, which they placed in the freezer. The insects were submitted to PHEL who identified a male and female BMSB (in the Bay of Plenty case); a male and female BMSB and one *Acrosternum heegeri* (in the Waikato case). This investigation highlights the elusive nature of this pest. When BMSB have been found in clothing, all items have been inspected and sometimes washed in hot water. If the II believes any risk remains, the risk goods are fumigated.

### Positive – Biosecurity response initiated

The complexity and biosecurity risk associated with some notifications results in the investigation being transferred to MPI's Response Group who, with the assistance of the IIs and PHEL, conduct responses to eliminate, reduce or contain the threats and potential impacts of biosecurity incidents.

### Dodder seed contamination in clover seeds from Egypt

AsureQuality (AQ) notified MPI that *Cuscuta* sp. seeds were found as a contaminant in a 5-tonne shipment of berseem clover (*Trifolium alexandrinum*) from Egypt. The shipment arrived in late December 2018 and was cleared by MPI in early January. The importer requested germination and purity tests from AQ for the new sowing season. The seed contamination level detected by the purity test was one *Cuscuta* seed in a 60-gram sample. *Cuscuta* spp., commonly known as dodders, are parasitic plants and regarded as a weed worldwide, with adverse effects on native flora and on crop production.

Of the seed shipment, 1.9 tonnes had already been distributed domestically for sowing for pasture or as a cover crop. A hold was put on the seed line. The *Cuscuta* seeds were submitted to PHEL Botany and identified as dodder (*Cuscuta pedicellata*, Solanales: Convolvulaceae). This dodder is native to the eastern Mediterranean, central Asia and northeastern tropical Africa, and parasitises legume crops. It is not known to be present in New Zealand.

Border Clearance Services (BCS) was engaged to collect samples from the importer's warehouse at five times the International Seed Testing Accreditation (ISTA) standard, consistent with Border Operating Procedures. AQ tested for the presence of further contaminants and found a total of 44 contaminant seeds, representing 6 species. The contaminants included dodder (*Cuscuta pedicellate*) x 2, white clover (*Trifolium repens*) x 2 red sorrel (*Rumex acetosella*) x 1, chicory (*Cichorium intybus*) x 36, wheat (*Triticum aestivum*) x 1 and alfalfa (*Medicago sativa*) x 2. The latter two species require additional measures to meet entry requirements under the IHS, and Egypt is not recognised as an approved country for the importation of *T. aestivum*. Germination tests were conducted on the *C. pedicellate* seeds to determine if they were viable, and returned positive results. The white clover, red sorrel and chicory are listed as basic on the PBI and do not require additional measures under IHS 155.02.05.

Discussions between BSIIPH, BCS, Plant Imports and Risk Assessment teams determined that destruction of the affected seed line was the only viable option to manage the risk. However, given that much had already been sold on the domestic market, it was not feasible to manage that risk under investigation and the investigation was transferred to the Response Group to manage the residual risk.

## Investigation positive; urgent measures prevent establishment

These investigations found organisms that were not known to be present in New Zealand, under circumstances that enabled treatments to be applied and biosecurity mitigation confirmed. They typically involved imported goods and containers.

## Ant investigations

BSIIPH investigated nine notifications of possible exotic ants. Only two investigations established exotic species.

A member of the public bought five paintings at a private sale in Hawai'i. One of them was submitted to the Auckland Art Gallery for conservation work. A painting conservator discovered live insects causing extensive damage in the

frame so the painting was subjected to an anoxia treatment for 3 weeks. This is a treatment commonly used for artworks and artefacts to avoid damage to valuable items, and requires that a very low level of oxygen is achieved and maintained for at least 21 days, with temperature and humidity controlled. On finding that the larvae were still alive at the conclusion of the treatment, the gallery contacted MPI. The notifier was advised to remove the painted canvas from the frame, seal it in plastic and place it in a freezer overnight before submitting it to PHEL for identification. Live West Indian drywood termite *Cryptotermes brevis* (Blattodea: Kalotermitidae) and two ant species, little fire ant (*Wasmannia auropunctata*) and a dead yellow crazy ant (*Anoplolepis gracilipes*) (Hymenoptera: Formicidae), were identified from the sample. The life state of the little fire ant could not be determined. A PHEL entomologist, along with Fly Busters Antians (FBA) Consultants, conducted an inspection of the gallery to determine whether ants and termites had escaped from the frame. Monitoring stations were deployed for ant surveillance but no ants were detected. However, considering the cryptic nature of the termites and ineffectiveness of the anoxia treatment, two IIs conducted a site inspection of the property of the owner of the paintings. Other paintings and the wooden packing crates were inspected. Though the risk of an infestation appeared to be low, the packing crate was sent for fumigation and destruction as a precautionary measure. Substantial damage was evident in the frame, with obvious frass, but it was not clear whether this was due to recent activity or an old infestation. All frames were delivered to the Auckland Museum and subjected to an MPI-approved treatment. Over a period of days, oxygen was reduced to an effective level by introducing on-site-generated nitrogen gas, then the frames remained in the anoxic atmosphere for 21 days. All variables were constantly monitored, logged and adjusted over the treatment period. In lieu of a treatment certificate, Auckland Museum provided the II with the data output for the duration of the treatment as validation. The gallery was informed that the biological risk had been mitigated and the frames could be returned to their owner.

During the compliance inspection of a vehicle recently imported from

Singapore, live ants and eggs were found underneath rubber seals in the boot. Once disturbed, the ants retreated further into the vehicle and the inspection was halted so as not to further disturb them. An approved MPI ant treatment contractor was commissioned to spray the perimeter of the vehicle and all risk areas such as the underside and wheels to prevent the ants from dispersing. PHEL Entomology identified the ants as the ghost ant (*Tapinoma melanocephalum*, Hymenoptera: Formicidae), not known to be present in New Zealand. The vehicle was further treated by fogging with insecticide to kill all the ants. Following treatment, an unusual dead wasp was found in the vehicle and identified by PHEL Entomology as *Aphidius* sp. (Hymenoptera: Braconidae: Aphidiinae). The Aphidiinae is a subfamily of tiny parasitoid wasps that use aphids as their hosts. Several species have been introduced and released worldwide for aphid pest biological control, including in New Zealand. The MPI Treatments & Inanimate Pathways Team was informed.

## Wood borers

There were eight investigations of suspect exotic borer beetles. Two of them were positive for an exotic species *Heterobostrychus aequalis*, (Coleoptera: Bostricidae) in barber chairs and a garden umbrella imported from China. The risk was mitigated by freezing the risk goods. The importers and the Chinese manufacturer were informed about the New Zealand IHS for wooden ware from all countries, <https://www.biosecurity.govt.nz/dmsdocument/1221-woodware-from-all-countries-import-health-standard>. The other six investigations established no biosecurity issues: beetles were found to have been dead for a long time or the species was determined to be already established in New Zealand and not a high-impact pest.

## Suspect new bacteria in agricultural chemicals

MPI was notified of suspected new to New Zealand bacteria isolated from an agricultural product manufactured in Germany and imported for biological control of *Pseudomonas syringae* pv. *actinididae* or psa (Pseudomonadales: Pseudomonadaceae). The product contained *Aureobasidium pullulans* (Dothideomycetes: Dothioraceae), a yeast used as a biological agent against Psa. In 2019, 5,536 kg of the product

was imported in 14 batches consisting of three separate consignments. Samples from each batch were submitted to Plant & Food Research (PFR) for quality-control testing, including checking the levels of *A. pullulans* and possible contamination. The tests revealed that most batches were contaminated: only two tested negative. Samples from four contaminated batches were sent to Manaaki Whenua Landcare Research (MWLR) for identification. MWLR found two bacterial species not previously reported from New Zealand, in three of the batches. One species was *Enterobacter hormaechei* (Enterobacteriaceae), a bacterium associated with the human gut and considered an opportunistic pathogen in immunocompromised people; it is not a plant pathogen. The second bacterium could not be identified as it was a species new to science. After receiving the identification results from MWLR, the importer initiated recall of all product as directed by the II. Investigation determined that 74 kg of the product had been released to two retailers based in Pukekohe and Cambridge and subsequently sold to kiwifruit growers. All the products were removed from sale and contained, except for 1 kg that had been sprayed onto an orchard. However, that batch had tested negative for contamination. The biosecurity issue and human health risk had been contained. A Notice of Direction under s122 of the Biosecurity Act 1993 was issued requesting that all products imported in 2019 be sent for destruction by deep burial. Interwaste was contracted to complete the task. The German manufacturer was informed about the contamination of the product and its failure to meet New Zealand import requirements.

### Investigation positive; urgent measures limit harm

These investigations resulted in detection of organisms that were not known to be present in New Zealand, and in circumstances where treatments could be applied to all retrievable items (usually recent imports), treatment was applied. There may be some residual risk associated with items that could not be retrieved.

### Pine pollen stopped at border

An importer submitted a complaint at the Auckland International Mail Centre (AIMC) after he learned that a parcel had been detained on arrival in New Zealand in September 2019. He was seeking clarification as to why the parcel was stopped when the same product, purchased online 5 months earlier from the same supplier, had been cleared without problem. The importer advised AIMC that he had received five products in May: nettle root extract, pine pollen tincture, Ashwagandha spagyric tincture, nettle root tincture and pine pollen megadose. The II established that the pine pollen product had been infused with 80 proof vodka for 30 days, and was therefore not a biosecurity issue. The September consignment also contained pine pollen megadose, as well as ground roots and stems of *Cistanche tubulosa* (Lamiales: Orobanchaceae), a parasitic desert plant traditionally used for medicines and foods in China. In order to clarify the border requirements concerning these products, the MPI Plant Import Team contacted the importer to explain the relevant sections of IHS: [Stored Plant Products for Human Consumption](#), where, according to section 5.12(1), pollen of *Pinus* spp. is prohibited. This product was destroyed. However, the ground *C. tubulosa* roots and stems fell under section 5.4 (dried herbs, spices, roots and beverages etc.) and this material was cleared to enter New Zealand.

### Uncleared woodware from Indonesia

The Incursion Investigation Team was notified by BCS of a non-compliance issue where uncleared goods (woodware and wood furniture) had been released from a Transitional Facility (TF) prior to inspection and clearance by an MPI QO. The goods had been manufactured in Indonesia and imported by a wholesaler into Australia, where they were stored prior to shipment to New Zealand. The importer was asked to place a hold on the goods pending inspection by border staff, as per the Border Operating Procedures. The goods were found to be free of any contaminants and the consignment was cleared. However, one item had been sold before the II initiated contact with the importer. No contact details for the customer were held by the importer. Given that BCS had

cleared the remaining items, the risk of a contaminant being present on that good was considered low and no further action was taken. The Australian Department of Agriculture's strict biosecurity requirements were taken into account: the goods would have undergone inspection at the Australian border prior to being released to the wholesaler.

### Fungal cultures for mushroom cultivation from the US

An importer received a direct delivery by express courier from the US of a consignment of fungal cultures (*Pleurotus ostreatus*, Agaricales: Pleurotaceae) growing on petri dishes. These were starter cultures for mushroom propagation. Since the packaging was unopened on arrival, the importer realised the cultures had not been inspected by MPI at the border, nor validated by PHEL as the fungal organism stated on the manifest, and this was an IHS requirement: [Import health standard for microorganisms from all countries](#). PHEL had received a number of supposedly *P. ostreatus* samples from border staff which, on analysis, were identified as hybrids or new species historically misidentified as *P. ostreatus*. To import a new species into New Zealand, importers are required to seek approval from the Environmental Protection Authority (EPA) and obtain an import permit from MPI Plant Imports. The II alerted the MPI Target Evaluation Team who contacted the importer and sent one of their team to collect the consignment, which was quarantined until the cultures were formally identified by PHEL. The consignment was redirected to Border Clearance Services (BCS) for assessment of the importation documents by the Target Evaluation Team and to initiate the border assessment pre-clearance process. PHEL mycologists determined that some of the cultures were a hybrid of at least two fungi that belong to the *P. ostreatus* species complex, but the identity of the parents could not be resolved; the other cultures were not *P. ostreatus*. The importer was advised that as the cultures were not pure *P. ostreatus* the consignment was not eligible for entry, and was required to either re-ship or destroy the consignment. Not all import requirements are specified in the above IHS, and more information can be found on the MPI website, import

permit and here: [steps to importing fungi for growing](#).

## Investigation positive; no action taken

These investigations revealed organisms that were not previously known to be present in New Zealand, but no action was taken. Typically they included cases where a risk assessment indicated that a potentially new to New Zealand organism (or a newly described indigenous organism) had established and was considered unlikely to damage economic, environmental, social and cultural values. Alternatively, the organism may have already been established and been under management by MPI and/or local authorities.

## New to New Zealand yeast and bacteria

The current popularity of kombucha (a fermented tea beverage) and its commercial production led to taxonomic clarification of the fermentation agents present in the symbiotic culture of bacteria and yeasts (SCOBY) used in kombucha production. Initial diagnostic testing of SCOBY was undertaken by MWLR under contract to a commercial kombucha producer, and identified microbial species not previously reported as present in New Zealand, despite kombucha's historical use here. Cultures of three microbial species were submitted to PHEL's Mycology and Bacteriology Team for validation of the species, and to Plant Health Incursion Investigation for review of their biosecurity significance to New Zealand. The three bacteria were identified as *Acetobacter musti*, *Acetobacter papaya* (Rhodospirillales: Acetobacteraceae), and the yeast *Pichia manshurica* (Saccharomycetales: Pichiaceae). All three are known to be associated with natural fermentation processes in nature. They are not plant pathogens and there was no evidence of any biological risk associated with these species. Reference cultures were lodged with the International Collection of Microorganisms from Plants (ICMP), and MWLR has applied to EPA for clarification of their new organism status under the HSNO Act. No further MPI actions were planned.

## New to New Zealand fungus

The fungus *Mariannaea camptospora* (Hypocreales: Nectriaceae) has not previously been detected in

New Zealand, but was recently identified during an investigation into unusual disease symptoms observed on radiata pine trees, *Pinus radiata* (Pinales: Pinaceae), at Kaukapakapa, Auckland. Although little information is available on *M. camptospora*, it is considered likely a saprophytic fungus. Certainly it was not considered the cause of the symptoms observed on the *P. radiata* trees, as it was isolated from only one of multiple samples collected. Known microbial pathogens were also isolated and are considered more likely candidates for disease causation. *Mariannaea* spp. are mostly known to colonise dead plant material including wood, bark and pine-needle litter. They also occur in soils and have been isolated from diseased plant roots. Of the 15 currently accepted *Mariannaea* spp., only *M. elegans* is reported as present in New Zealand, where it has been associated with kohekohe, *Dysoxylum spectabile* (Sapindales: Meliaceae), *P. radiata* and matai, *Podocarpus spicatus* (Pinales: Podocarpaceae) as a saprophyte. Internationally, *M. camptospora* has been isolated from dead oak wood, *Quercus* sp. (Fagales: Fagaceae), forest soils and *Podocarpus* sp. No reports were found suggesting *M. camptospora* is a plant pathogen, and its distribution in New Zealand is limited to this single record. The site was in a rural area, with no obvious pathway of entry into New Zealand. Established populations of this fungus are assumed to exist at this location. It is considered very unlikely that the distribution of this fungus within New Zealand is limited to this single location, so populations are highly likely to be elsewhere. No further action is planned in response to this detection.

## Golden dodder in wetlands, Waikato

The Department of Conservation (DOC) reported a localised low-cover infestation of golden dodder, *Cuscuta campestris* (Solanales: Convolvulaceae) at Whangamarino wetland and Lake Whangape in Te Kauwhata, Waikato. *Cuscuta campestris* is an annual parasitic plant, native to North America, which can simultaneously parasitise several host plants and create dense mats over the top of host vegetation. Seed production is prolific: a single plant can produce up to 16,000 seeds, which can persist in the soil for up to 10 years. Golden dodder has a wide host range and is a serious pest of

crops from the family Leguminosae, such as alfalfa (*Medicago sativa*) and clover (*Trifolium* sp.) and, to a lesser extent, sugar beet, *Beta* sp. (Caryophyllales: Amaranthaceae), onions (*Allium* sp., Asparagales: Alliaceae) and tomatoes (*Solanum lycopersicum*, Solanales: Solanaceae). Investigation into the regulatory status of this organism found that *C. campestris* does not appear on the [National Pest Plant Accord](#) (NPPA), but is listed as an [unwanted organism](#) under its synonym *C. arvensis*. However, the plant has basic entry requirements under the [IHS 155.02.05 Seeds for Sowing](#). It has been naturalised since 1944, with a rare and localised distribution. On discovery of its naturalised status and wide distribution, a preliminary risk assessment was conducted by the II and PHEL. The climatic range for this species is tropical to subtropical. The optimum temperature range for seed germination is around 30°C, which may explain why this species has not become as aggressively invasive here as it has overseas. The risk of spread from the Waikato sites was uncertain, but likely to be low as the first record of the Lake Whangape population dates back to 1993. It is unknown how the infestation originated on this site and whether its presence was due to spread from one site or to multiple incursions. Given the wide distribution and naturalised status of *C. campestris* in New Zealand, it was considered not feasible to control, contain or eradicate this species and DOC was advised accordingly.

## New to New Zealand beetle, Whanganui

In 2016 a single live beetle found in a Whanganui house was identified as *Phacodes personatus* (Coleoptera: Cerambycidae), an Australian longhorn beetle not previously recorded in New Zealand and known to attack dead and dying trees. At the time, Incursion Investigators considered the detection of a single individual insufficient evidence to demonstrate the species had established and that an on-going population was present. However, two further independent detections of solitary *P. personatus* beetles now provide strong evidence this species is established in New Zealand: on *Eucalyptus* sp. trees at Turakina Beach settlement (January 2018), and near Marton (January 2019). The furthest distance separating any two of these three locations is 32 km.

New Zealand has a number of subcortical-feeding cerambycids originating from Australia, mostly associated with *Eucalyptus* spp. The timing of adult beetle detections was consistent with similar subcortical-feeding longhorn beetle species that attack *Eucalyptus* spp., have a single generation per year, and a peak adult flight time of January to March. Literature suggests the distribution of *P. personatus* is limited to New South Wales, Victoria and Tasmania, where it is associated with silver wattle, *Acacia dealbata* (Fabales: Leguminosae), green wattle (*A. decurrens*), black she-oak, *Allocasuarina littoralis* (Fagales: Casuarinaceae) and dally pine, *Psoralea pinnata* (Fabales: Leguminosae). A single report cited radiata pine (*Pinus radiata*) as a host in Tasmania, although enquiries to Tasmanian forest entomologists by Scion were unable to confirm this. The overall risk to New Zealand from *P. personatus* is considered low, and discussions with the forestry industry and Scion entomologists support this view. It has been added to databases of species detected in New Zealand and no further action is planned.

### New to science virus in native plant

SPS Biosecurity reported unusual vein patterns on leaves of a tutu, *Coriaria arborea* (Cucurbitales: Coriariaceae) plant collected on the Kepler Track in Fiordland National Park during High Risk Site Surveillance (HRSS). The symptoms were limited to a single area and similar to those seen with herbicide damage. PHEL Virology extracted two undescribed viruses belonging to the genus *Badnavirus* and the family *Alphaflexiviridae*. Ongoing diagnostics by PHEL may help to characterise these viruses, determine whether they are host-integrated or infectious, and understand the role of these two viruses. It was assumed that the symptoms observed were related to the alphaflexivirus but Koch's postulates have not been tested (i.e. the virus has not been re-isolated from the diseased host, grown in pure culture and the specific disease reproduced when the pure culture is inoculated into a healthy susceptible host.) It is possible that these are native species that have been undetected. DOC was notified of this investigation since it was associated with a plant in a national park.

### New to New Zealand viruses in hebe, Whanganui

A sample from hebe (*Veronica* sp., Lamiales: Plantaginaceae) showing viral-like symptoms was collected from Queens Park, Whanganui, during HRSS. An undescribed *Emaravirus* and a partial genome of a *Badnavirus* were detected. Inheritance of endogenous badnaviruses has previously been reported in several New Zealand native plants, including hebe. In this instance, the PHEL virologist believed the *Emaravirus* was the causal agent. Hebe samples from other areas in Queens Park, and additional samples from Cooks Gardens, about 400 m away, were collected to determine the spread of these viruses. The undescribed *Emaravirus* was detected in all the hebe plants sampled in Queens Park, including the endemic *Veronica bollonsii*. None were detected from Cooks Gardens. PHEL Virology is continuing diagnostics to try and characterise the undescribed *Emaravirus* and to determine whether the *Badnavirus* was host-integrated or infectious. The origin of these new viruses is unknown, but given their association with a native plant they could be native or endemic to New Zealand.

### New to New Zealand fungus on feijoa

The owner of a commercial feijoa orchard (*Acca sellowiana*, Myrtales: Myrtaceae) saw patterns and spots on the foliage of some feijoa plants in the orchard and was concerned the symptoms were caused by a disease. Diagnostic tests conducted by PHEL mycologists determined the fungus to be *Anthostomella ravennica* (Xylariales: Xylariaceae), a saprobic species described in 2016 and previously known only from European marram grass, *Ammophila arenaria* (Poales: Gramineae) in Italy. This fungus does not appear to pose a biosecurity risk; it is a saprobe (possibly an endophyte in living leaves) that has likely been in New Zealand for some time and is not associated with the spots seen. Many other species from this genus are present in New Zealand.

### Investigation for high impact pests; negative

These investigations resulted from reports of suspected high-impact pests or diseases and were proven to be not present in New Zealand, or investigations

established that they were already in the country.

### Fruit-fly investigations

During this quarter, the Plant Health Team investigated five notifications of suspected adult fruit flies (Diptera: Tephritidae). All were negative and were stood down, following advice from PHEL Entomology after studying photos provided by the notifiers. However, one unknown larva found alive in a mandarin from Australia turned out to be a member of the family Tephritidae. The single live larvae was reported as being found inside a mandarin purchased from an Auckland supermarket. The mandarin had no Price-Look-Up Code (PLU) label but the notifier believed it had originated from Australia. Two larvae found in the fruit by the PHEL entomologist were identified morphologically as Tephritidae and qPCR techniques confirmed the species was island fly (*Dirioxa pornia*). Tracing indicated that the mandarin was likely to have been imported from Australia, where *D. pornia* is considered a minor nuisance pest to horticulture. A meeting was held between all concerned MPI departments and the consensus was that this was an incidental import and no further action was required. It was considered that the climate was unlikely to be suitable for establishment in New Zealand. The Minister of Agriculture was briefed on the situation.

### Unknown mould on metal safe from Vietnam

A customer of a national hardware chain who had purchased a metal safe manufactured in Vietnam, reported mould on the surface of the safe. On checking retail stock in-store, another safe from the same consignment was also found to have surface mould. The retailer found that the silica gel sachets used to protect the product from moisture damage were swollen, indicating that moisture had seeped into the safe and provided ideal conditions for mould to grow. As a precautionary measure, the store was instructed to clean the safes with a hypochlorite-based product to kill mould. However, as the customer was still concerned about a possible biosecurity issue, further information regarding the importation of the consignment was requested. The safes were identified as arriving

into New Zealand in 2017. They had been held at a distribution centre in Auckland where two additional safes from the consignment were found to have the same mould. The distribution centre inspection team noted the pallets appeared to have been wrapped under humid conditions and moisture had seeped into the safes. The surface mould was therefore deemed not to pose a biological risk.

### Suspect velvet leaf, Coopers Beach

A property owner reported observation of an unusual plant in an adjacent property which, when investigated on-line, looked similar to velvetleaf, *Abutilon theophrasti* (Malvales: Malvaceae), a pest plant regulated in New Zealand. However, photos provided by the notifier were examined by a PHEL botanist and determined not to be velvetleaf, but most probably a young princess or empress tree (*Paulownia tomentosa*, Lamiales: Paulowniaceae), a species established in New Zealand.

### Suspect siroccoccus blight on cedar, Ashburton

Disease symptoms on three Himalayan cedar trees (*Cedrus deodara*, Pinales: Pinaceae) on a residential property in Ashburton were thought to be similar to those caused by siroccoccus shoot blight, *Sirococcus conigenus* (Diaporthales: Gnomoniaceae), a serious disease of *Cedrus* spp. overseas, but absent from New Zealand and an unwanted organism. The II contracted a forest biosecurity specialist to visit the site and collect foliage, branch and soil samples from and below the affected trees for PHEL mycologists to examine. Site observations suggested that although the symptoms were not considered indicative of any currently known biotic disorders on New Zealand *Cedrus* sp., root-related problems or environmental factors (including herbicides) were possible causes. Diagnostic tests ruled out the presence of *S. consigenus*, but isolated a number of tree pathogens that may have caused or contributed to the observed symptoms. These included *Pestalotiopsis* sp. (Xylariales: Sporocadaceae), *Ilyonectria* sp. (Hypocreales: Nectriaceae), *Microsphaeropsis* sp. (Pleosporales: Microsphaeropsidaceae) and *Pythium* sp. (Peronosporales: Pythiaceae). Regardless, the presence

of *S. consigenus* or any other exotic pathogen was ruled out.

### Suspect spotted winged drosophila

A home owner reported live insects on ripe strawberries grown in her Hamilton garden, and suspected they were the exotic spotted wing drosophila larvae (*Drosophila suzukii*) (Diptera: Drosophilidae). PHEL Entomology ruled out Drosophilidae larvae from a photo provided by the notifier. No strawberries were available for sampling so the II advised the notifier to wait for her strawberries to ripen, then inspect them again for larvae. A specimen was then submitted to PHEL Entomology, and yielded the spotted snake millipede, *Blaniulus guttulatus* (Julida: Blaniulidae), one of the most common millipedes in New Zealand gardens. They may feed on live plant tissue (roots and tubers) and on fallen fruit, and in areas of high population density can be a pest.

### Negative – Other

These investigations were negative for the presence of any biological risk.

### Stored products

There were 15 investigations of organisms associated with imported stored products, such as rice, dried figs, chilli, cereal and cane sugar. All investigations found common pests of stored products that are already established in New Zealand.

### Fresh produce

Another 14 notifications were associated with fresh produce such as strawberries, mandarins, bananas, mangoes and grapes. Two yielded organisms exotic to New Zealand: mango seed weevil, *Sternochetus mangiferae* (Coleoptera: Curculionidae), found alive in mango from Australia; and a snail (dead) of the family Achatinidae, on bananas (country of origin not provided). Mangoes from Australia had been investigated for a report of a lepidopteran pupa consistent with the family Tortricidae. Mangoes from Australia undergo irradiation, rendering the weevil sterile, and since the mango stickers indicated Australian origin the weevil did not pose a biological risk.

The rest of the investigations revealed common insect pest species already established in New Zealand and not

a biosecurity issue. They were mainly moths (e.g. noctuids *Helicoverpa armigera* and *Chrysodeixis eriosoma*), the tortricid *Cydia pomonella*, flies (families Psychodidae and Drosophilidae) and black rot, most likely the fungus *Alternaria* sp. (Pleosporales: Pleosporaceae).

### Travellers

Eight investigations were carried out on insect pests or fresh fruit and nuts imported by travellers visiting or returning to New Zealand from the Philippines, Bali, Australia, Thailand, Nepal and Fiji. Insects were found when unpacking luggage and thought to have been “incidentally imported” into the country. In one case the manuka beetle, *Pyronota festiva* (Coleoptera: Scarabaeidae) was discovered. This species is endemic to New Zealand and obviously not an incidental import.

### Parcels, mail, packaging

There were 28 investigations that included risk goods imported from China, the US, Korea, Australia, Brazil, Ireland, Indonesia, Taiwan, South Africa and Canada. Two cases were reported from TFs at Tauranga and Auckland, where insects were found on wooden pallets and containers that had been de-vanned several days prior to detection, making it difficult to associate the insect with an imported good. In other cases there was no biosecurity issue because the species were present in New Zealand or were not viable. Dead organisms do not pose a biosecurity issue and often these investigations can be quickly closed. Often in these cases poor photos or no specimens are provided and the investigation outcome remains negative.

### Spider investigations

This quarter the BSIIPH team investigated 20 cases of possible exotic spiders, all negative for any biological risk (Table 2).

One case was referred to the MPI Compliance Team. It involved a Hokitika POI reported as having goods undeclared at the border: two baby tarantulas (Araneae: Theraphosidae) from Sydney, brought in January 2019, and a coral fragment collected from Rarotonga in November 2019. A search warrant was issued and MPI Compliance Officers with an II inspected both the POI's residential house and working place.

No live spiders were found. No coral was recovered but the POI provided a Trade in Endangered Species Act notice verifying seizure by border staff. The POI asserted that the notification of exotic spiders was “unjustified” and that the accusation had no substance and was most likely the result of a personal dispute with an ex-partner (the original notifier). When interviewed, the ex-partner remained adamant that the spiders had been smuggled into New Zealand, in January 2019. However, since no live spiders were found, no biosecurity issue was established and the investigation was closed.

found on a “weedy” *Cyperus* sp. (Poales: Cyperaceae) at the side of a track in Gittos Domain, Blockhouse Bay, Auckland. PHEL Entomology advised that the specimen was morphologically identical to two specimens deposited in the New Zealand Arthropod Collection (NZAC) and labelled as *Agandecca* sp. Specimens had been collected in 1980 and 1985 from the Northland and Wellington regions respectively. However, after consultation with Australian experts on this taxonomic group, it was concluded that the New Zealand specimens did not fit the description of *Agandecca*. They most probably are an

not been any reports of any Achilidae in New Zealand causing harm to plants. Owing to rare collections of this species in New Zealand and little knowledge, it is unknown whether it is endemic, native or adventive to New Zealand, or what its specific host associations are. The investigation concluded that this species is unlikely to pose a biological risk and the investigation was closed.

### Pine tree death, Kerikeri

The Incursion Investigation Team received a referral from Northland Regional Council biosecurity staff regarding a single dead *Pinus pinea* (Pinales: Pinaceae) tree at the Aroha Island Ecological Centre, near Kerikeri. At the time of notification the nature reserve was closed to the public owing to the hazard posed by the dead tree. As there was no obvious cause of the previously apparently healthy tree’s sudden death, the centre’s manager sought advice on how to rule out a biosecurity issue, determine whether the tree’s death resulted from microbial pathogens, and whether these pathogens might pose a risk to other trees in the reserve. The II advised the council to fell the tree, remove cut wood from the site and use it as firewood, and to mulch the remaining branches. Fungal staining was evident on the surface of the felled trunk. Samples of the stained wood were provided to PHEL Mycology for analysis but no pathogenic fungi were found. The cause of the tree’s death remains unknown but since no pathogens were identified it may have been abiotic factors. No further action was considered necessary.

### Oak tree dieback, Cambridge

An arborist at the Waipa District Council notified a PHEL mycologist about oak tree decline in the Cambridge oak arboretum. Two trees had been removed earlier in 2019 and samples submitted to Scion but nothing conclusive was found. With similar signs presenting themselves in a third tree, the opportunity to collect samples was offered to PHEL in the lead-up to the tree’s removal. Oak tree decline has been globally recognised, with the conclusion that no single pathogen readily accounts for the decline and a more likely explanation is a complex of primary and secondary pathogens capable of causing severe defoliation, dieback and thinning of tree canopies. Information about the

**Table 2: BSIIIPH investigations involving suspect exotic spiders**

Species	Region	Host
Flower spider, <i>Diaea</i> sp.	Geraldine	Banana
Slater spider, <i>Dysdera crocata</i>	Auckland	Crate at TF
Orbweb spider, <i>Eriophora pustulosa</i>	Bunnythorpe	Banana
	Auckland	Truck
	Auckland	Mailboxes
	Christchurch	Outdoor lights
	Parawera	Washing powder
Huntsman spider, <i>Isopeda villosa</i>	Auckland	Automotive parts
White-tailed spider, <i>Lampona cylindrata</i>	Palmerston North	Flat-packed outdoor furniture
Daddy longlegs spider, <i>Pholcus phalangoides</i>	Tauranga	Container at TF
Tunnel web spider, <i>Porrhothele antipodiana</i>	Lower Hutt	Residential garage
	Wellington	Box with baby bouncer
False katipo spider, <i>Steatoda capensis</i>	Christchurch	Garage door
House cobweb spider, <i>Steatoda grossa</i>	Christchurch	Surgical cabinets
No specimens provided	Auckland	Suitcase of a traveller
	Hamilton	Illegally imported tarantula
	Hokitika	Illegally imported tarantula
	Kaipoi	Package
	Masterton	Whole-leaf tea
	Wellington	Imported barbecue

### Inconclusive

These investigations have been stood down because results (or absence of results) cannot determine the presence or absence of a biological risk, and a decision has been made that further investigative activity is not warranted.

### Suspect new to New Zealand plant hopper

A suspect new to New Zealand plant hopper (Hemiptera: Achilidae) was

undescribed species that has been present in New Zealand since at least the 1980s, with a wide distribution from Northland to Wellington. The family Achilidae has a worldwide distribution, though it is a poorly known group. Compared with other members of the Fulgoroidea that feed on plants, the Achilidae (particularly the nymphs) are typically fungal-feeders, found in leaf litter, under logs or under the bark of host plants. There are no reported pest species and there have

arboretum management practices, watering provisions and source of tree stock were gathered. However, during the week after notification, the oak tree sprouted new growth and showed signs of improvement. Plans to cut down the tree and submit samples for analysis have been placed on hold pending surveillance on the resilience of the tree.

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