BORDER HEALTH MANUAL

SECTION 6

Pest and Vectors

Contents

Contents 2

Purpose 3

Introduction 3

6.1 Appointment of officers under the Biosecurity Act 1993 4

6.1.1 Chief Technical Officer (Health) 5

6.1.2 Authorised persons 5

6.1.3 Accredited persons 7

6.1.4 Inspectors 8

6.2 Exclusion of pests of public health significance 8

6.2.1 Inspection and disinsection of craft and risk goods 9

6.2.2 Role of the MPI's Quarantine Service (MQS) 11

6.2.3 Surveillance 11

6.2.4 Operational mosquito trapping and treatment reminders 13

6.3 Response 15

6.3.1 Investigation of public information or complaints 15

6.3.2 Powers available in response to suspected (detection response) or confirmed (interception response) exotic mosquitoes of public health significance 16

6.3.3 Mosquito detection at the border 16

6.3.4 Mosquito interception at the border 18

6.3.5 Exotic Mosquito Incursion Response 19

6.4 Control measures 20

6.5 Cost recovery 22

Purpose

This section provides guidance relevant to pests of public health significance. While there is a particular focus on activities relating to exotic mosquitoes of public health significance, local offices of the NPHS also need to be mindful of, and give appropriate attention to, other pests of potential public health significance (e.g., rats).

The key procedures covered include:

- appointments of officers under the Biosecurity Act 1993
- exclusion of public health pests (including border control activities and surveillance)
- responses to an interception or incursion
- control measures.

This section should assist local offices of the NPHS with the practical interpretation and application of the Biosecurity Act 1993, and parts of the Health Act 1956

Introduction

The Biosecurity Act 1993 provides a legislative framework for measures to control the importation of goods and organisms that are a risk to human health. Biosecurity activities complement, and need to be co-ordinated with, the implementation of related public health legislation, such as the Pae Ora Act 2022, Health Act 1956, the Hazardous Substances and New Organisms Act 1996, and the Resource Management Act 1991.

NZ BioSecure (NZB) – Southern Monitoring Services, Medical Vectors – *An Education Guide for Border Health and Integrated Pest Management* http://www.smsl.co.nz

This guidance should be read in conjunction with the technical workbook '*Medical Vectors – An Education Guide for Border Health and Integrated Pest Management'*. This workbook provides detailed technical guidance about vector biology, vector borne diseases, surveillance techniques and controls. The surveillance techniques are endorsed by the Health New Zealand and should be adopted as recommended practices

Communicable Disease Control Manual: https://www.tewhatuora.govt.nz/for-health-professionals/clinical-guidance/communicable-disease-control-manual/

Vectors are a public health concern because of the role they play in the transmission of diseases. A vector is defined in the IHR (2005) as *"an insect or other animal which normally transports an infectious agent that constitutes a public health risk*". Sometimes referred to as a medical vector. They can carry pathogens from one host to another (such as viruses, bacteria, protozoan parasites).

New Zealand has remained free from many exotic diseases and vectors. It is important that effective biosecurity and public health quarantine frameworks are in place (including exclusion, surveillance, and response activities) and complement each other, because there is a clear overlap in their core objectives.

Unwanted organisms can have detrimental implications to both public health and biosecurity. Unwanted organisms are defined as *any organism that a chief technical officer believes is capable or potentially capable of causing unwanted*

harm to any natural and physical resources or human health. Our quarantine and biosecurity frameworks are supported by natural barriers, such as New Zealand's geographical separation from other countries. Both help to prevent the entry and establishment of new diseases or disease vectors.

The Ministry for Primary Industries (MPI) has primary responsibility for broadly managing biosecurity risks. Currently, exotic mosquitoes are the main unwanted organisms of public health significance for which the health sector has some responsibility under the Biosecurity Act 1993 and Health Act 1956.

Health New Zealand are responsible health operational delivery and hence for the health related biosecurity risks at Points of entry.

Key biosecurity activities undertaken by NPHS staff include import controls on conveyances, goods and cargo, controls on international travellers, and vector controls. NPHS staff should advocate for the use of Integrated Pest Management practices in the control of pests of public health significance (refer **Appendix C7**). Effort should be concentrated on maintaining effective border control to avoid the high cost of fixing problems arising from an importation and establishment of an unwanted organism.

Accordingly, it is necessary to provide for:

- effective management of significant public health risks associated with importation of risk goods
- continuous monitoring of New Zealand's status regarding pests and unwanted organisms
- appropriate public health precautionary actions, emergency and other urgent arrangements, and pest management strategies
- effective prevention, management, or eradication of unwanted organisms if emergencies or other urgent needs occur
- actions to enable New Zealand's international reporting obligations and trading requirements to be met insofar as they relate to public health,
- effective interagency collaboration such as joint protocols to manage critical biosecurity risks,
- operating to be within the wider framework of the Strategic Approach to Health at the Border work programme.

6.1 Appointment of officers under the Biosecurity Act 1993

Biosecurity Act 1993

Criteria for the appointment of Statutory officers (Dec 2022), Ministry of Health

The Biosecurity Act 1993 provides for the appointment of a range of statutory officers, with varying powers, to support the implementation of the Act. Such officers include:

- chief technical officers (Health) (CTO)
- deputy chief technical officers (Health) (DCTO)
- authorised persons
- accredited persons
- inspectors

The CTO (Health) appoints NPHS employees only as authorised or accredited persons and only delegates limited powers to them.

6.1.1 Chief Technical Officer (Health)

Biosecurity Act 1993 s.101(2)

One or more CTOs (Health) may be appointed by the chief executive of a department recognised by a responsible Minister (e.g., the Minister for Primary Industries).

Biosecurity Act 1993 s.101(3)

The Director-General of Health has been recognised by the Minister of Biosecurity as having responsibility for human health and may appoint CTOs (Health). CTOs may exercise all the powers and perform all the functions and duties conferred on a CTO by the Biosecurity Act 1993 for exotic mosquitoes of public health significance (except powers under ss.103(1), 116 ,126 and 127).

Biosecurity Act 1993 s.102
Biosecurity Act 1993 s.22

Deputy CTOs may also be appointed.

Currently the Manager, Environmental Health, Health New Zealand is the CTO (Health), and there is one DCTO (Health) who is principal advisor/acting manager in the Border Health Team.

Biosecurity Act 1993 s.103(2) and (7)

The CTO (Health) may recommend the making of an import health standard under the Biosecurity Act 1993. However, NPHS clearance at the border is not required under the Act as MPI is responsible for providing such border services.

Health New Zealand has a policy on circumstances where the CTO (Health) may declare that an organism is unwanted. This process can be found in Pikau. Location will be advised through the circular letter.

Biosecurity Act 1993 s.128

The CTO (Health) or DCTO (Health) may appoint authorised persons or inspectors for the purposes of administering and enforcing the provisions of the Biosecurity Act 1993 insofar as they relate to public health. The CTO (Health) and DCTO (Health) can also accredit persons for the purposes of performing particular functions that are consequential upon the exercise of powers under this Act by an inspector or authorised person, or that have been prescribed in regulations made under the Biosecurity Act 1993.

Where a notice is given requiring specific actions and those actions have not been undertaken within the time specified, or within a reasonable time, the CTO (Health) may cause the actions to be undertaken; and then recover the costs of those actions from the person who failed to undertake them.

6.1.2 Authorised persons

Biosecurity Act 1993 s.103

Authorised persons are appointed to help support the implementation of the Biosecurity Act 1993. For local offices of the NPHS, these are usually qualified health protection officers or medical officers of health working to support the implementation of the Biosecurity Act – usually undertaking activities relating to mosquito surveillance and other port health responses.

A letter of appointment, accompanied by a summary of provisions of the Biosecurity Act 1993, is issued to all authorised persons at the time of their appointment confirming, amongst other things, any restrictions on the appointment.

Depending on the terms of their appointment, authorised persons may have a range of powers under Part VI (Administrative provisions) of the Biosecurity Act 1993. Only authorised persons and inspectors, appointed by a CTO (Health) or DCTO (Health), may administer and enforce Part III of the Act (relating to border control activities undertaken by MPI).

Biosecurity Act 1993 ss.43, 106, 109(1)(b) – (c), 109(2)-(4) 112, 113, 114(a)-(b), 115, 119, 121, 121A, 122(1)-(2)

The Biosecurity Act 1993 contains various powers, which an authorised person may exercise. Health New Zealand limits the powers and responsibilities to those that it believes are necessary for routine biosecurity activities and can limit the powers available to authorised persons.

Officers should always check their letters of appointment, which identify the powers they can use. The powers usually issued to authorised persons include powers to:

- require information to be provided (s.43)
- employ or request any person to assist them (s.106)
- enter and inspect any place other than a dwelling house, marae or building associated with a marae (ss.109(1)(b)-(c), 109(2)-(4), 112)
- record information (s.113)
- use general powers to eradicate or manage a pest or unwanted organism (s.114(a)-(b))
- use devices (s.115)
- seize abandoned goods (s.119)
- examine organisms, organic material, goods or material (s.121)
- apply an article or substance to a place to ascertain the presence or absence of a pest or unwanted organism(s.121A)
- give directions to treat goods, water, places, equipment etc; to destroy any pest or unwanted organism or harbourage; or take steps to prevent the spread of any pest or unwanted organism (s.122(1)-(2)).

The exercise of these powers is subject to the following:

Biosecurity Act 1993 ss.103(4), 104, 163, 164

- the authorised person must have the appropriate experience, technical competence and qualifications to be appointed (s.103(4))
- the authorised person must comply with instructions from the CTO (Health) (s.104)
- the authorised person must act in good faith, with reasonable cause, and take reasonable care at all times and if so, the authorised person is protected from liability. (ss.163, 164).

Authorised persons must produce their letter of appointment if they are exercising a power of entry, and on every occasion they exercise that power (even on subsequent visits).

The appointment letter for an authorised person must be kept secure. It is proof of appointment and has to be produced in certain situations as proof of the

authorised person's status under the Biosecurity Act 1993 (e.g., see s.112). Copies should be carried with the officer so they can produce it if required (e.g., in their on call bag).

Biosecurity Act 1993 ss.55, 103(6), 110, 111, 112, 118, 120, 123, 130, 133, 134, 152, 154, 155, 161

Conversely, Health New Zealand considers that the following powers are NOT likely to be required by an authorised person on a routine basis. Accordingly authorised persons are not authorised to use them, unless they receive further written notice from Health New Zealand (refer s.103(6)). Should an authorised person expect to need to use any of the powers listed below, they should contact the CTO or DCTO urgently to discuss the matter:

- applications for warrants to enter and inspect marae or dwelling houses etc. (ss.110, 112)
- applications for warrants for the entry and search of any place where an offence punishable by imprisonment may have occurred or be occurring (s.111)
- seizing evidence (s.118)
- intercepting and inspecting baggage and parcels etc. (s.120)
- vaccinating organisms (s. 123)
- declaring a restricted place (ss.130, 133, 134)
- carrying out steps as directed by the chief technical officer as required in a provisional control programme (s.152)
- investigating and/or instituting enforcement action for offences under the Biosecurity Act 1993 (ss. 154, 155, 161)

Biosecurity Act 1993 s.43

Biosecurity Act 1993 s.109

With respect to the provisions of the Biosecurity Act 1993, authorised persons should note:

- who should be providing information about pests and unwanted organisms
- how these provisions may be useful in the course of monitoring (e.g., for exotic mosquitoes of public health significance) .
- what powers of entry they have (except to enter dwelling places and marae without a search warrant) to confirm the presence of an unwanted organism
- what general powers they have for preventing the spread of an unwanted organism if they have lawfully entered a place. These powers would include the removal or treatment of potential habitats.

6.1.3 Accredited persons

Biosecurity Act 1993 s.103(7)

Accredited persons are appointed by the CTO (Health) or DCTO (Health) under the Biosecurity Act 1993 to perform functions under the Act, insofar as they relate to public health. A letter of appointment, accompanied by a summary of the provisions of the Act, is issued to all accredited persons confirming, among other things, any restrictions on the appointment. The appointment letter must be kept secure as it is proof of appointment and has to be produced in certain situations as proof of the accredited person's status under the Act (e.g., see section. 112).

The role of an accredited person is subject to the following:

- the accredited person must have appropriate experience, technical competence and qualifications (s.103(7))

- the performance of any function is consequential upon the exercise of powers under the Biosecurity Act 1993 by an inspector or authorised person
- the accredited person must act in good faith, with reasonable cause, and take reasonable care at all times (ss. 163, 164)
- the accredited person must use best endeavours to comply with, and give effect, to any relevant performance or technical standards

Some local offices of the NPHS employ health assistants or technicians, who work under the direction of authorised persons, and do routine activities relating to mosquito surveillance and other port health responses. These accredited persons are not health protection officers or medical officers of health, but their appointment recognises that they have undertaken the required training courses and have particular skill sets.

Biosecurity Act 1993 s.103(7), 163, 164

Accredited persons are accredited for the purposes of performing functions consequential upon the exercise of powers under the Act by an authorised person or inspector. This means that accredited persons may only carry out functions that are necessary due to the exercise of powers by an authorised person or inspector. This may involve administrative functions or other follow-up activity (such as conducting tests on goods or specimens) once an authorised person has exercised certain powers. It does not necessarily imply that the accredited person must perform functions under the supervision or direction of the authorised person or inspector.

6.1.4 Inspectors

Biosecurity Act 1993 s.103(2)

Biosecurity agencies have agreed that the appointment of inspectors will be limited to staff who are directly employed by a government agency and who need to exercise all the powers of inspectors. The CTO (Health) or DCTO (Health) has in the past, appointed the Health New Zealand's enforcement officers as inspectors under the Biosecurity Act 1993. There are currently no inspectors appointed by Health New Zealand under the Biosecurity Act 1993.

6.2 Exclusion of pests of public health significance

International Health Regulations 2005 Articles 22 and 34

The IHR (2005) require that, as far as practicable, facilities used by travellers at Points of Entry, are maintained in a sanitary condition and kept free of sources of infection or contamination, including vectors and reservoirs. In addition, containers and container loading areas within the point of entry are to be, as far as practicable, kept free from sources of infection or contamination, including vectors and reservoirs.

Health New Zealand via the Ministry of Health reports annually to the WHO demonstrating the extent to which the ports and airports are kept free from disease vectors, including mosquitoes (refer to **Section 5**).

Sighting of **rodents** at Points of Entry are covered under **Section 1** of the Border Health Manual and the form in **Appendix A6** should be used for notification purposes. In the event of other unwanted organisms where there is a public health

risk, this form may also be amended to notify the discovery of other unwanted organisms.

Managing the public health risks from exotic mosquitoes is a high priority. There is a focus on exclusion and surveillance activities undertaken by MPI under operational agreements, or directly by local offices of the NPHS.

Activities overseas will, to an extent, reduce the likelihood of vectors entering New Zealand. Regular monitoring of controlled breeding habitats in and near New Zealand port environments may be of use in preventing incoming mosquitoes from escaping the port areas. Mosquito exclusion activities should be integrated with surveillance programmes. Integrated Pest Management practices should be strongly encouraged as a risk minimisation strategy.

There are two key components of a programme to exclude pests of public health significance. Both should be recognised as being critical and both need to be well maintained:

(1) border health activities such as inspection and decontamination, disinfection, disinsection, and deratting of vessels, aircraft and risk goods to deter incursions of exotic species, and

(2) surveillance at and near Points of Entry to detect incursions of exotic species of concern or any presence of local species to identify potential habitats that may be utilised by exotic species if these escape detection on arrival.

6.2.1 Inspection and disinsection of craft and risk goods

Health (Quarantine) Regulations 1983 reg.5

Health New Zealand and MPI are engaging on ways to work effectively together in relation to biosecurity activities – in particular, around the exclusion and control of exotic mosquitoes of public health significance. The Biosecurity Critical Response Protocol is an example of this joint approach to biosecurity issues. Once this protocol is finalised it will also be made available through controlled documents in Pikau.

Schedule of Aircraft Disinsection Procedures for Flights into Australia and New Zealand V4.1 Feb 2024. MPI. Available at: http://www.agriculture.gov.au/biosecurity/avm/aircraft/disinsection/procedures/schedule-aircraft-disinsection

MPI acts as the border control delivery agency for Health New Zealand and is responsible for:

- implementing aircraft disinsection
- the inspection of imported risk goods
- implementing systems for the inspection and treatment as set out in import health standards for goods such as forestry and agricultural equipment from any country.

MPI will also advise the relevant local office of the NPHS of all detections of suspected exotic mosquitoes within one hour of such a detection. MPI will also continue to undertake animal *Culicoides* surveillance in accordance with the relevant MPI standard.

MPI Requirements for Vessels Arriving in New Zealand. Available at: https://www.mpi.govt.nz/import/border-

NZ legislation requires that every aircraft arriving from a foreign place has been disinsected to destroy all mosquitoes (if any) in the aircraft. An approved insecticide and methodology must be used. MPI implements the national disinsection programme.

clearance/ships-and-boats-border-clearance/arrival-process-steps/

Subject to the provisions of relevant legislation, all international first port of call vessels (including yachts), will, as far as is practicable, be inspected by MPI for biosecurity risks including the presence of exotic mosquitoes (all life stages) or of actual or potential breeding sites for exotic mosquitoes.

Border Health staff are expected to maintain operational relationships with MPI staff. The contact for MPI nationally is via the MPI National Operations Centre: noc@mpi.govt.nz or 0278015590.

Pre-border inspection and clearance of risk goods

The first line of defence against the importation of exotic mosquitoes includes the pre-border clearance of risk goods conducted by MPI Quarantine officers at off-shore sites. The programmes for residual spraying with insecticides of aircraft that fly international routes are another component of the integrated exclusion strategy.

Vessels and cargo inspection/disinsection

The inspection of sea vessels (including yachts) arriving at ports, the disinsection of untreated aircraft arriving at airports, and the inspection of their high-risk cargo, are other lines of defence. These activities are undertaken by MPI Quarantine officers.

Transitional facilities (TF)

https://www.mpi.govt.nz/import/border-clearance/transitional-and-containment-facilities-for-border-clearance/finding-a-facility/

Imported goods, especially plants, animals, and related products, need to first go through a transitional or containment facility and may need to be quarantined. Import health standards specify what is required for certain goods.
A list of all transitional facilities is available on the MPI website.

Transitional facilities are approved by MPI to receive containers and goods that may pose a biosecurity risk. Goods or containers may need to be inspected or treated at the facility before they can be 'cleared' for entry into New Zealand. Every transitional facility has to have an MPI-approved transitional facility operator and, if receiving containers, an accredited person available (who may also be the operator) who has been approved by MPI.

Transitional facilities can hold, inspect, treat, identify, or destroy and dispose of uncleared risk goods. Types of goods that need to go to transitional facilities include:

- agricultural chemicals and veterinary medicines
- animals and animal products
- biologicals
- food products
- plants and plant products
- other organisms
- used machinery or vehicles
- wood and wood products.

Link to the standards, operator manuals and other requirements for Transitional facilities. Available at: http://www.mpi.govt.nz/importing/border-clearance/transitional-and-containment-facilities/

Facilities need to meet the physical and operational requirements contained in the MPI Standard. Facilities will have a supporting biosecurity procedures manual, and site plans are prepared specifically for each, describing all biosecurity activity.

The use of transitional facilities to hold and manage imported risk goods is becoming increasingly prevalent and their potential risk as a site for interceptions of pests of public health significance is also increasing. Local offices of the NPHS should have an awareness of transitional facilities in their region including their location, in particular those considered to pose a high public health risk due to the nature and quantity of imported goods and/or the management practices. On occasion it may be useful to accompany MPI staff when they undertake audits of these high-risk sites.

6.2.2 Role of the MPI's Quarantine Service (MQS)

- MQS staff will inform the local office of the NPHS of any suspected exotic mosquitoes identified on vessels or risk goods
- MQS staff will hold specimens for local offices of the NPHS to forward to NZB for identification (or may forward specimens directly in some rare circumstances)
- MQS will arrange for the urgent treatment of the risk goods
- MQS will inspect risk goods which may be contaminated, including the treatment of risk goods where appropriate.

MQS will arrange for the recall and re-inspection of released risk goods where appropriate.

MPI /Health handover certificate

If MPI have notified the detection, MPI will complete a handover certificate to formally handover the sample and responsibility for the operational response to NPHS staff, who then take the lead in the operational response. MPI continues to be responsible for management of any risk goods.

The certificate used in a handover, along with supporting guidance, is provided at **Appendix D4.**

6.2.3 Surveillance

Part IV of the Biosecurity Act 1993 provides for the continuous monitoring of New Zealand's status in regard to pests and unwanted organisms. Surveillance is one aspect of the monitoring programme. Health New Zealand, through the local offices of the NPHS, continue to take responsibility for surveillance for exotic mosquitoes at POE.

Surveillance for exotic mosquitoes at Points of Entry

Medical Vectors – An Education Guide for Border Health and Integrated Pest

Guidance about managing samples, the sample collection form, mosquito surveillance equipment and techniques, and the locations of traps is provided in the referenced *Medical Vectors* resource. This has been provided to all local offices of the NPHS and is available online. It has been endorsed by the Ministry of Health and Health New Zealand, and is used as part of the Health New Zealand's

Management. Available at: https://www.smsl.co.nz/site/southernmonitoring/Medical%20Vector%20Handbook%202019.pdf

Border Health training courses for health protection officers and medical officers of health.

The monitoring of mosquito populations at ports and airports is another line of defence against importations of exotic mosquito species. Either local offices of the NPHS or port/airport companies may do this. If port/airport companies undertake this function for any given port or airport, then the results of surveillance should be audited by the relevant local office of the NPHS. This surveillance also provides critical data regarding the potential for ports/airports to export endemic species to other countries.

Vector surveillance and control is a constant cycle of evaluation, risk assessment, surveillance, evaluation and response (if needed).

WHO pamphlet (vector surveillance and control at POE) https://www.who.int/publications/i/item/9789241549592

The generic monitoring methodologies that are currently employed variously across the range of ports and airports are:

1. larval traps (sentinel tyre traps and less frequently ovitraps)
2. larval surveys (ground pools and receptacles)
3. adult traps (CO_2 light traps, BG and GAT traps).

All of these methodologies are acceptable, but an effective programme will utilise them all as part of a suite of trapping techniques to monitor for the target species at various stages of the insect's life cycle.

The primary aim of port/airport surveys and other monitoring (now being conducted on an on-going basis by most local offices of the NPHS) is to support other biosecurity activities by:

- checking for the arrival/establishment of exotic mosquitoes of public health significance
- identifying potential mosquito breeding sites and arranging for these sites to be eliminated or to be the subject of active, ongoing control measures
- recording the distribution and habitat of mosquito species in New Zealand. Such information can be used in predictive models for the establishment of new exotic species.

In most circumstances, sampling is targeted at specific phases of the insect's life cycle. Ovitraps collect eggs, larval traps collect larvae and adult traps collect female adults. The type of trap used will reflect the sampling programme and it is essential that the sampling programme is shaped to provide the most efficient use of resources. Health New Zealand supplies standard mosquito monitoring equipment to local offices of the NPHS.

When planning surveillance activities, priority should be given to:

- ongoing surveillance of habitats (or potential habitats) for fresh water container-breeding mosquitoes within a minimum of 400m around international points of entry (ports, airports) and removal or treatment of all larval habitats where feasible for mosquitoes within the 400 m port/airport zone within three working days of detection
- ongoing surveillance around international yacht berths (first port of call), and premises of importers of high risk goods on a case by case basis.
- Survey/surveillance of 400m to 1km buffer zone of ports and airports.

Medical Vectors – An Education Guide for Border Health and Integrated Pest Management. Available at: https://www.smsl.co.nz/site/southernmonitoring/Medical%20Vector%20Handbook%202019.pdf

Local offices of the NPHS are expected to:

- maintain staffing capability to undertake mosquito surveillance and response activities
- prepare and manage samples in accordance with Health New Zealand guidance
- maintain surveillance equipment with support from New Zealand BioSecure (NZB)
- maintain accurate records
- provide timely surveillance reporting via the national mosquito surveillance database.

Routine weekly port surveillance: Routine weekly surveillance must be undertaken for fresh water and container-breeding mosquitoes within a minimum of 400m around international points of entry (ports, airports) with arriving international first port of call craft. This includes yacht marinas. Routine surveillance must use a combination of tyre, CO_2 baited light, BG and GAT traps. Larval sampling is expected to be undertaken weekly in summer and fortnightly in winter. Adult traps must be checked weekly throughout the year. CO_2 baited light traps are expected to be used all year round. Surveillance includes checking traps as well as checking and treating or mitigating any habitat identified. This recommendation is based on the fact that different traps target different mosquito species. GATs, BGs and tyre traps collect container breeding mosquitoes, such as *Aedes aegypti* and *Aedes albopictus*, and CO_2 baited light traps collect other unwanted species such as *Aedes camptorhynchus, Culex annulirostris* and *Anopheles spp*. All these traps should be deployed in the highest risk areas in POEs.

400m Point of Entry mega surveys: It is recommended that "mega surveys" within the 400m minimum perimeter of the port be conducted at least once a year, preferably twice a year in different climatic (wet and dry) conditions . The purpose of the mega surveys is to identify (and sample) mosquito larvae or adults and breeding habitats that require treatment or mitigation. Mega surveys can include other agencies and key personnel such as port/airport site managers who will then be taking responsibility for follow up of any actions required.

1km surveillance: Wider intermittent surveillance (every 2-3 years) of at least 1km radius around the port is recommended. This should be a combination of desktop mapping and site visits to identified risk sites for a 1km radius around the port and should include mapping of the location of Transitional Facilities.

6.2.4 Operational mosquito trapping and treatment reminders

Resources for sampling and surveillance including on how to set up larval and adult mosquito traps can be found on NZB's website using this link: https://www.smsl.co.nz/NZBEL/Resources+for+HPOs.html

Local offices of the NPHS should transition to the increased summer surveillance frequency or be planning for this as soon as adults or larvae are detected in their surveillance. Winter surveillance is generally between June and October. Local activity and climatic conditions should be considered for transitioning to the winter or summer schedule. Eg 3 weeks of no larval activity in traps is the indicator to switch to winter, and larval finds in traps for two consecutive checks or adults then switch to weekly for summer surveillance. Ensure surveillance equipment has been

updated and interception response kits prepared. Below is a reminder about trapping techniques.

- *Sample size:* All larvae and adults mosquitoes must be collected from traps and forwarded to the laboratory for analysis, NOT a representative sample.

- *Traps:* The choice of traps for an interception response should be suitable for the target species. NZB will provide advice on the most suitable trap for the species intercepted. Use of "over-the-counter" UV-based traps is discouraged for routine port surveillance. Here are some general guidelines:

Traps attractive to ovipositioning females:
  - Tyre traps – for container breeders species - collects larvae
  - GAT – for container breeders species - collects adults
  - Dipping water bodies – saltmarsh and freshwater breeders - collects larvae

Traps attractive to host-seeking females (Adult traps):
  - CO_2 baited light traps – for night-active species
  - BG-Sentinel trap – for *Aedes* species, *some Culex species* and species active during the day

BG and tyre traps should be located either on the ground or off the ground no higher that 30cm. Both BG and GAT traps need to be placed in sheltered locations. It is highly recommended putting them indoors, close to high-risk areas, such as warehouses where imported goods are unloaded. An alternative site would be an office or building close to high-risk areas.

Local offices of the NPHS staff are responsible for managing and maintaining their CO_2 cylinders and regulators. They must have adequate stock or ready access to this equipment as they may need to set up traps for interception responses at any time. The regulators and body of the trap are to be sent to NZB for calibration and maintenance once a year, preferably during the colder months.

- *Attractants and lures:* The CO_2 is necessary to ensure the attraction of host-seeking females and is the most efficient way to catch mosquitoes. The location of the CO_2 outlet on light traps should be above the trap hat. This is because the CO_2 flows more slowly to the ground and therefore has more time to disperse. It is recommended CO_2 is used with all light traps. Chemical lures such as octenol or lactic acid increase trap attractiveness for some target species and are expected to be used in BG traps. These are now being supplied by NZB.
- *Use of Bti dunks and S-methoprene*: Surveillance larval traps at POE **must always** be treated with S-methoprene. In interception responses, when wider treatment is required of standing water, use *Bti* dunks or S-methoprene. S-methoprene can be used in surveillance sites at POE **or** registered MPI transitional facilities (in accordance with the EPA permission) **or** as directed by the CTO or DCTO. Outside of these parameters, S-methoprene can only be used as directed by the CTO or DCTO. Labelling where S-methoprene is used needs to include the Eco-toxic symbol and the wording: "the site contains a

An information pamphlet on S-methoprene and *Bti* is available on the SMS website:
https://www.smsl.co.nz/site/southernmonitoring/files/NZB/Literature/MoH2mosresponsefliermeth.pdf

https://www.smsl.co.nz/site/southernmonitoring/files/NZB/Bti%20vs%20S%20Methoprene.pdf

hazardous substance that is hazardous to the aquatic environment". It also needs to include a 24-hour emergency contact number.

Bti is the alternative for a quick knockdown and in water bodies where S-methoprene is not approved for use, such as flowing water. The disadvantage of *Bti* is the short residual time, the large amount needed to treat middle-large sized water bodies and the reduced effectiveness when used in water with high levels of organic material.

NZB is available to provide further information about treatment including dosage and frequency if needed, including during interceptions. They may also provide advice on alternative products such as aquatain in some circumstances.

Guidance on using phone GPS and camera available on SMS website: https://www.smsl.co.nz/site/southernmonitoring/files/NZB/How%20to%20take%20a%20picture%20of%20a%20mozzie.pdf

- *GPS and camera*: Feedback from public health staff is that using GPS apps on cell phones (rather than a separate GPS device) recommended by NZB works well (eg. GPS tour for Apple, GPS handy for Android). When sending photos for initial lab ID, the photos taken need to be in focus, reasonably magnified and with adequate resolution (a good cell phone is required for this). A macro lens for cell phone is strongly recommended.
- The phone app Kobo is used during events by local offices of the NPHS and is enabled by NZB. Local offices of the NPHS must request NZB to provide a link to Kobo for each new interception. GIS mapping products such as Google Earth Pro used by trained HPOs has also proved useful with delimit surveys.
- All surveillance sample sites are expected to be entered in the on-line National Mosquito Surveillance Database. Information on using the database, entering the data and using the data can be found here Online National Mosquito Surveillance Database (smsl.co.nz).

6.3 Response

6.3.1 Investigation of public information or complaints

Reports from the general public to local offices of the NPHS of any exotic organisms other than mosquitoes should be urgently reported to the MPI exotic disease and pest emergency hotline, 0800 809 966 (either by the complainant or local office of the NPHS).

Reports of organisms of public health significance already established in New Zealand may be responded to as a nuisance under the Health Act 1956 (e.g., Australian Redback spiders, wasps, ants, etc).

Follow-up investigation and taxonomic identification of suspected exotic mosquitoes submitted by the general public should be undertaken within three working days of the complaint being received (unusual biting activity led to the discovery of *Ae. camptorhynchus* in Napier in 1998 and in Blenheim in 2004).

6.3.2 Powers available in response to suspected (detection response) or confirmed (interception response) exotic mosquitoes of public health significance

A mosquito response is defined as any actions taken to prevent the establishment and spread in New Zealand of an exotic mosquito of public health significance. This will include similar actions taken in the event of a mosquito detection, interception, incursion, or establishment; however, the scale of the response may vary.

Response measures for exotic mosquitoes need to be based on relevant legislation (including International Health Regulations 2005, Resource Management Act 1991, Health and Safety at Work Act 2015, Biosecurity Act 1993, and Health Act 1956).

Biosecurity Act 1993 ss.43, 106, 109, 112, 113, 119, 121

Authorised Officers should check their warrants of appointment but, in general, persons authorised under the Biosecurity Act 1993 have the following powers for use in a response:

- may require information to be provided (s.43)
- employ or request any person to assist them (s.106)
- enter and inspect any place other than a dwelling house, marae or building associated with a marae (ss.109(1)(b), (2)(a), and (4), 112)
- record information (ss.113)
- general powers (114 (a) and (b)
- use devices (s.115)
- seize abandoned goods (s.119)
- examine organisms, organic material, goods or material (s.121)
- apply article or substance to place (121A)
- give directions (122(1) and (2))

The mosquito response will be triggered by the reporting of suspected or confirmed exotic mosquitoes (usually from surveillance or exclusion activities).

6.3.3 Mosquito detection at the border

An exotic mosquito response may be initiated by the detection of mosquito biomass in or on risk goods by MPI staff at the border (i.e. an airport or port), the identification of an exotic mosquito (larvae or adult) from a trap, or from the identification of a specimen handed in to the local office of the NPHS by a member of the public, workers at a devanning site, or other organisation or agency

The **detection** response begins when one or more adult mosquitoes or larvae have been found at or before the border, or in association with recently arrived risk goods or travellers, and laboratory identification has not yet confirmed it is an exotic species.

The **initial steps** in responding to a mosquito detection and/or an interception are:

- Refer to 'Checklist for HPOs for Suspected Mosquito Interception' (**Appendix D1**) for an overview of process
- Refer to the '**Task Table for a Detection or Interception Response to an Exotic Mosquito' (Appendix D3)** for steps required for response to a detection and interception at the border. These include:

- Completing the Initial Notification Report (**Appendix D2**)**.** Steps include reporting; Notify NZB laboratory and NPHS Border team; gather information on the circumstances of the find; arrange to collect the sample; send a photo of the sample to NZB laboratory (**Appendix D7**) and arrange for the sample to be sent to NZB laboratory.
- Begin the activity log (**Appendix D6**)
- If the detection has been reported by MPI complete the **MPI/Health Handover** form transferring the responsibility for the sample from MPI to health (**Appendix D4**).

Detection responses must be reported to the Border Team within 2 hours of the local office of the NPHS being notified. During office hours (0800-1700hrs) email notifyenvhealth@tewhatuora.govt.nz. Afterhours call 0800 GET MOH and select environment and border option.

Following the initial steps, the risk assessment, preliminary or confirmed identification the following secondary steps will then be taken:

- treatment of risk goods (MPI responsibility but NPHS may need to make recommendations)
- establish enhanced surveillance traps (NZB laboratory and NPHS Border team can provide advice on most suitable traps and locations)
- delimiting survey and treatment (larvicide (with slow release or residual products)) of all habitats out to a minimum of 100m radius from find (with this being extended to 400m dependent on circumstances of find)
- possible adulticide treatment of area where risk goods have been transported and/or disembarked and surrounding adult resting sites

Delimiting survey guidelines can be found on NZB website: https://www.smsl.co.nz/site/southernmonitoring/NZB%20Delimiting%20survey%20guidelines%20v3.pdf.

There are many possible scenarios following a detection of a mosquito at the border. **Appendix D5** is a guide to responding to these. The presence of larvae and/or pupae and/or adults, whether the sample was found in association with recently arrived travellers or goods, or during routine port/airport surveillance influences the risks and response steps.

Low risk
Exotic eggs or live larvae detected in recently arrived goods or in an association with a traveller BUT no evidence of pupae or adults and the biological profile AND overall risk assessment indicates adults unlikely to have been present.

Medium risk
Live late instar exotic larvae and/or evidence of pupae, or adult exotic mosquitoes in recently arrived goods or in an association with a traveller. One or more adults may have escaped into New Zealand during the time between arrival and inspection.
Adult exotic mosquitoes detected in routine port/airport surveillance**.** One or more adults may have escaped into New Zealand.

High risk
Eggs or exotic larvae detected in routine port/airport surveillance. One or more adults more likely to have escaped into New Zealand.

If the laboratory identification confirms the sample is an endemic mosquito species further actions such as a comprehensive delimit survey, enhanced surveillance and situation reporting will **not** be required. However, an email summary of the actions taken must still be sent to the NPHS Border team.

6.3.4 Mosquito interception at the border

An interception is defined as *"the confirmation that adult mosquitoes or larvae detected at or before the New Zealand border, or in association with recently arrived travellers or goods such as at an MPI approved transitional facility, are exotic mosquitoes of public health significance"*.

An interception response is required when an adult exotic mosquito or larvae is found during an inspection of imported item(s) at the border (port, airport, or importer's premises), or when an adult exotic mosquito or larvae has been confirmed during routine port/airport surveillance activities, and the identification as exotic is confirmed by NZB. In an interception response the initial and secondary steps outlined above will be required.

Refer to task table in **Appendix D3** for further information on steps to be taken.

Exotic mosquitoes found during routine surveillance at the point of entry

In this scenario, an exotic mosquito has breached the quarantine system and a generation of breeding may have already occurred. Because endemic species are currently found by both trap methods, a response is initiated **after** the confirmation of exotic specimens has been made by NZB. This means that all specimens collected from surveillance should be dispatched to the laboratory without undue delay.

Delimiting survey guidelines can be found on NZB website: https://www.smsl.co.nz/site/southernmonitoring/NZB%20Delimiting%20survey%20guidelines%20v3.pdf

A delimiting survey and enhanced monitoring must be urgently activated. Advice on undertaking a delimit survey can be found on NZB website. Adulticide treatments of appropriate harbourage sites must be undertaken. These decisions need to be technically based and tailored to suit the specific profile of the exotic mosquito or mosquitoes being dealt with. NZB will provide advice on response actions specific to the exotic mosquito species. See **Appendix D8** for a suggested list of equipment for conducting delimiting surveys.

If an exotic mosquito is confirmed, an Initial Notification Report must be submitted to Border Health Team within 24 hours of the local office of the NPHS being notified (email: notifyenvhealth@tewhatuora.govt.nz).

See **Appendix D2** for the Initial Notification Report template.

Following the initial summary report, regular situation reporting will then be required for the duration of the response. NPHS Border team will confirm the frequency of the reporting, but this is likely to be 2-3 times a week but may start

out being daily. See **Appendix A7** for the Situation Report Template for a Border Response.

Enhanced surveillance following an interception

Enhanced surveillance must be continued for a minimum of three mosquito breeding cycles (generations). The length of the mosquito breeding cycle can vary depending on temperature and species, however one week is used as an average breeding cycle. Enhanced surveillance therefore must be in place for at least three weeks in most responses (and longer if any additional exotic species are detected during this time). NZB will provide advice on the length of the breeding cycle for the species and the climate. NPHS Border team and NZB will provide specific advice on trap types and locations and if there are any indications in specific responses where the enhanced surveillance period needs to be longer than three weeks. Surveillance includes checking traps as well as checking and treating or mitigating any habitat identified. Enhanced surveillance traps established following an interception should be checked Monday, Wednesday and Friday. All adult traps must be checked and emptied on these days. Larval (tyre) traps must be left for at least three days before being checked for the first time, and after that must be checked once a week but preferably not on Fridays with the water being changed and retreated on these days. If a positive sample is obtained, the tyre must be brushed and rinsed with aged water. In some cases, the trap checking frequency will be adjusted due to response logistics.

NPHS maintains responsibility for the interception response within 400 m of the find but surveillance may extend beyond 400m in some instances. MPI may assist NPHS with surveillance within the 400m zones. Breeding outside the 400m indicates an incursion response and will be MPI's responsibility. A process of transferring the response from interception to incursion will be managed by MPI and NPHS national teams. Public health staff are expected to cooperate with, and work alongside, MPI staff until a transition is seamlessly completed.

6.3.5 Exotic Mosquito Incursion Response

Communicable Diseases Manual: https://www.tewhatuora.govt.nz/for-health-professionals/clinical-guidance/communicable-disease-control-manual/arboviral-diseases/

An incursion response is initiated following the confirmation of the post-border detection and breeding of exotic mosquitoes of public health significance not previously known to be established in New Zealand and not in direct association with recently arrived travellers or goods. Immature or adult stages of exotic mosquitoes may be confined to one small area (e.g., a property or suburb) or may be found at multiple locations or over a widespread area.

The Biosecurity Critical Response Protocol will be activated. This protocol outlines the joint Ministry of Health, Health New Zealand and Biosecurity New Zealand arrangements for the identification, notification and integrated response to multi-district, national or nationally important biosecurity incidents or emergencies - termed critical biosecurity events. The protocol provides the operational basis for the organisations to jointly respond to critical biosecurity events and sets clear expectations for the agencies and for their respective personnel. The protocol is currently being finalised and will be available once this has occurred.

MPI will lead any incursion response but may require support from public health staff. This support may include alerting local iwi and Runanga (where applicable), Māori and Pacific health providers, stakeholders (particularly medical practitioners) or providing field assistance. Relationships with these groups should be developed prior to any incursion (or interception) response. Public health staff may also be required to initiate secondary disease control measures such as promotion of mosquito avoidance behaviour, provision of advice on arboviral disease risks and management, and enhanced arboviral surveillance.

Biosecurity Response Contingency Preparedness

Local offices of the NPHS need to be prepared for responding to biosecurity risks of public health significance.

Preparedness should include:

- ensuring emergency response plans include biosecurity events
- initial response, establishment of a control centre and Incident Management Team, and call in of personnel including Kaitaki Mana Whakahaere (Regional Māori Health leads) and Regional Pacific Public Health Directorate contacts
- assisting with local information releases
- provision of maps and aerial photographs
- appointing, equipping, and mobilising personnel undertaking a delimiting survey
- completing a delimiting survey and environmental review
- providing information to assist with the determination of the scale and nature of the response
- securing of resources to support ongoing response
- appointing, briefing, equipping and mobilising personnel required to undertake ongoing field work
- actively communicating and implementing a local control/eradication programme (where directed by CTO or DCTO)
- implementing enhanced surveillance
- quality auditing and follow-up to ensure efficacy.

Without being fully prepared for biosecurity events, the response to an interception or incursion could result in the following:

- delays while responsibilities are allocated and a response plan is designed. Crucial time may be lost while the mosquito population may disperse, increasing the expense and difficulty of successful eradication or management
- rapidly assembled ad hoc actions will not necessarily be the most efficient, nor most effective options.

6.4 Control measures

International Health Regulations 2005 Article 19

Control and elimination of larval habitats

The IHR (2005) requires that mosquito habitats detected within the 400m exclusion zones be removed or eliminated, or at least modified or treated to make them unproductive of mosquitoes. The mitigation of mosquito habitats within the international gateways should be an ongoing campaign that is pursued vigorously. All agencies and stakeholders need to be involved in ensuring this action.

At some airports, and at most ports, urban development and/or naturally vegetated areas exist within the 400m zone prescribed in the IHR (2005). The cooperation of local authorities should be sought with respect to an extension of surveillance and intervention activity if so required. However, the realities of this situation should serve to further emphasise the importance of the border control procedures, particularly vessel inspection and port sanitation, with respect to receptacles.

Health Act 1956 ss.23, 29, and 33

The nuisance provisions of the Health Act 1956 may be useful for undertaking surveillance for mosquitoes.

While territorial authorities (TA) are responsible for undertaking inspections and ensuring the abatement of nuisances, anyone may lay an injunction with the District Court to seek a court order for the abatement of nuisance conditions (Health Act 1956 s. 33). For example, stacks of used tyres providing breeding habitats for mosquitoes.

Biosecurity Act 1993 ss.106, 114, 121A, 122

Officers should check their warrants of appointment but, in general, persons authorised under the Biosecurity Act 1993 have the following powers for control purposes:

- employing or requesting any person to assist them (s.106)
- general powers to eradicate or manage a pest or unwanted organism (s.114(a) – (b))
- applying an article or substance to a place to ascertain the presence or absence of a pest or unwanted organism (s.121A)
- giving directions to treat goods, water, places, equipment etc; to destroy any pest or unwanted organism or harbourage; or take steps to prevent the spread of any pest or unwanted organism (s.122(1) – (2)).

Removal or treatment of larval habitats

Medical Vectors – An Education Guide for Border Health and Integrated Pest Management. Available at: https://www.smsl.co.nz/site/southernmonitoring/Medical%20Vector%20Handbook%202019.pdf

Source reduction, i.e., the removal of standing water is an important tool in mosquito control.

The Ministry for the Environment has developed a National Environmental Standard entitled the Resource Management (National Environmental Standards for Storing Tyres Outdoors) Regulations 2021 for the Outdoor Storage of Tyres, which can be found on their website. This will enable the risks associated with outdoor tyre storage to be managed.

If source reduction is not possible then habitats may need to be treated. A range of treatment options for the management of larval habitats is available. These are outlined in the Mosquito Control section of the *Medical Vectors* guidance.

S-methoprene

The EPA has issued approval for the use of *S-methoprene* by public health officials in mosquito monitoring and surveillance activities. This approval is valid until 31

December 2028. A copy of the permission is available on Pikau under controlled documents. The new permission has additional labelling requirements, which include the ecotoxic symbol and the wording: "*the site contains a hazardous substance that is hazardous to the aquatic environment".*

The EPA permits the application of *S-methoprene* to "non-dispersive" water bodies by persons who are not approved handlers. The use of *S-methoprene* in accordance with the EPA permission does not require local offices of the NPHS staff to be approved handlers.

Note, it is expected that *S-methoprene* is being routinely applied to surveillance larval traps as detailed in the *Medical Vectors* technical guidance. Supplies of *S-methoprene* are provided to local offices of the NPHS by NZB who can also provide further information about its use.

6.5 Cost recovery

Biosecurity Act 1993 s.122

In general, the costs for routine duties of public health staff are not recovered. There is no provision for a person directed under the Biosecurity Act 1993 to take action in response to a mosquito problem (such as eliminating or treating a habitat) to then charge the local office of the NPHS for any costs incurred in doing the work.

However, because this direction involves the exercise of a statutory power, it would be subject to judicial review if it had not been exercised properly. For example, if there was a lack of evidence of a mosquito problem requiring action or availability of alternative and less costly measures, then the direction could be challenged. Please see discussion regarding S.163 and 164 of the Biosecurity Act under Appointment of Officers (S.6.1) of this section of the Border Health Manual.

Biosecurity Act 1993 s.128(3)

Where a person fails to comply with a lawful direction or requirement under the Biosecurity Act 1993, and some action is required as a result of that failure, the CTO (Health) is able to recover the reasonable costs of that action.