High-Risk Pests Caught at New Zealand's Border

HIGHLIGHTS:



- **On average, from 2008-17, there were ten border interceptions each year of exotic mosquitoes. Most (>83%) interceptions occurred in Auckland.**
- **Twenty types of high-risk mosquito species of public health concern were caught, 2008-17. *Aedes aegypti, Culex quinquefasciatus, Aedes albopictus and Aedes vexans* were the most commonly intercepted species. They are capable of spreading serious diseases.**
- **Most (64%) intercepted suspected mosquitoes originated from the Asia-Pacific region. Australia was by far the biggest source by country.**
- **54% of interceptions of suspected mosquitoes of overseas origin were found transported alongside 'other cargo' (e.g. household goods, shipping containers—contents not specified).**

Foreign pests, particularly mosquitoes, are bad for our health

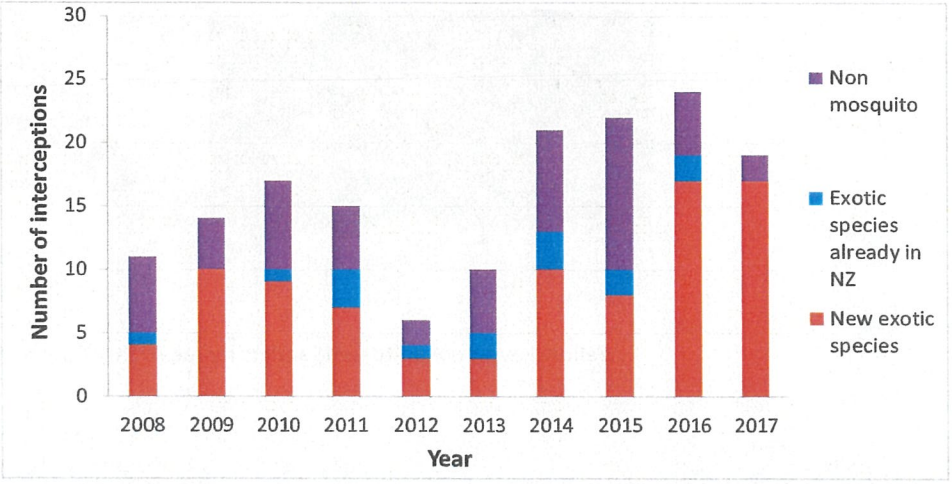
Insects, especially mosquitoes, are experts at international hitch-hiking: e.g. hiding in aircraft holds, laying larvae in puddles on ships. Exotic mosquitoes are highly unwanted in New Zealand due to their ability to spread serious mosquito-borne diseases (e.g. Dengue Fever, Malaria).

Various international activities help prevent pests crossing borders. For example, international aircraft are regularly sprayed with insecticide, and freight cargo are sealed until entering inspection zones. National mosquito surveillance takes place at New Zealand's border: international airports and sea-ports. This helps capture exotic mosquitoes to prevent them from establishing. It also tells us which exotic mosquitoes are arriving at our borders, where they are coming from, and how they are travelling (e.g. air, sea, cargo).

Suspected mosquito interceptions of foreign origin, 2008-2017.

Between 2008 and 2017, there were **103 interceptions of exotic mosquitoes** which were thought to have travelled from overseas to New Zealand (i.e. not local mosquitoes inadvertently caught) (Figure 1).

Figure 1: Number of suspected mosquito interceptions at the New Zealand border, of probable overseas origin, 2008-17



Data Source: NZ BioSecure, 2018a

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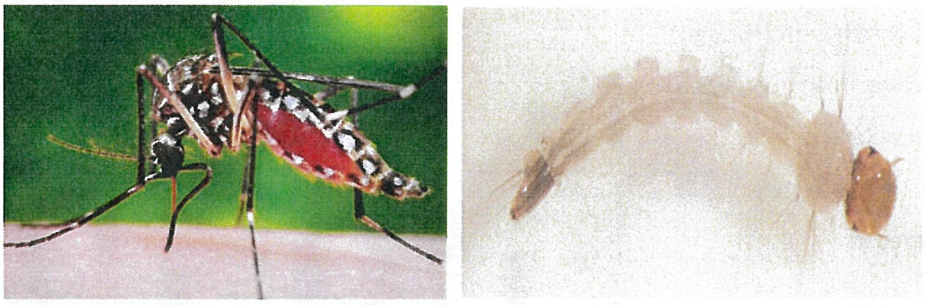
An interception means at least one suspected mosquito was identified at the border at one place and time (e.g. in a shipment of bananas). Each year, some interceptions turn out to be insects of other types (non-mosquitoes) or exotic mosquito species already established in New Zealand (Figure 1). These interceptions help flag potential routes for high–risk pest entry across our border.

Over one third of interceptions of exotic mosquitoes (36/103) took place from 2016-17. It is difficult to tell if year-to-year variation in interception numbers are statistically different due to small annual numbers and gradual improvements in the border surveillance programme over time. On average, there were ten border interceptions of exotic mosquitoes originating from overseas each year, between 2008 and 2017.

Over 83% (85) of all interceptions of suspected mosquitoes of foreign origin took place in the **Auckland** region between 2008 and 2017. Christchurch was the next most frequent location (8) and then Wellington (6).

37 types of exotic mosquito species were intercepted, 2008-17

37 types of exotic mosquitoes were caught at the New Zealand border, 2008-17 (NZ BioSecure 2018a). Twenty were high-risk species, i.e. on New Zealand's list of exotic mosquitoes of public health concern (NZ BioSecure 2018b). These included 18 interceptions of *Aedes aegypti* (the 'Yellow Fever mosquito'; a severe-risk species for many diseases e.g. Chikungunya, Zika, Dengue and Yellow Fevers), seven interceptions of *Aedes albopictus* (the 'Asian Tiger mosquito'; a severe-risk species for many diseases e.g. Chikungunya, Ross River Fever and West Nile Virus), and six interceptions of *Anopheles* species (with Malaria carrying potential). ***Aedes aegypti, Culex quinquefasciatus, Aedes albopictus and Aedes vexans*** were the species most commonly intercepted. A table summarising all foreign suspected mosquito interceptions, between 2008 and 2017, can be viewed on the EHINZ website.



Yellow Fever mosquito (left) and its larvae (right). Source: Wikipedia

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Most interceptions of foreign suspected mosquitoes were from countries in the Asia-Pacific region

Sixty-four percent (87/136) of exotic mosquito and non-mosquito interceptions of foreign origin were thought to have come from the Asia-Pacific region (Table 1) (NZ BioSecure 2018a). The proportion was the same for mosquito interceptions alone (66/103). By country, Australia was by far the main source (40 interceptions: 12 non-mosquito, 28 exotic mosquito). The next most frequent sources were Ecuador (12), USA (8) and Japan (7).

Table 1: Number of suspected mosquito and non-mosquito interceptions at the New Zealand border of probable overseas origin, 2008-2017.

Region of Origin	Country of Origin (Number of mosquito and non-mosquito interceptions)	Percent of total interceptions	Mode of travel
Asia	Bangladesh (1), Cambodia (1), China (2), Hong Kong (2), India (4), Japan (7), Korea (2) Malaysia (1), Philippines (3), Singapore (2), Taiwan (1), Thailand (3), Vietnam (1) **Total = 30**	22.1	70.0% Sea 30.0% Air
Europe	Germany (2), Netherlands (1), UK (2) **Total = 5**	3.7	100.0% Sea
Pacific	Australia (40), Fiji (6), New Caledonia (2), Niue (1), Papua New Guinea (1), Samoa (2), Tahiti (1), Tonga (1), Vanuatu (3) **Total = 57**	41.9	73.7% Sea 26.3% Air
Americas	Argentina (1), Chile (1), Colombia (1), Ecuador (12), Panama (1), USA (8) **Total = 24**	17.6	87.5% Sea 12.5% Air
Other/Unknown	Unknown (20) **Total = 20**	14.7	20.0% Sea 75.0% Air 5.0% Unknown

Data Source: NZ BioSecure, 2018a*

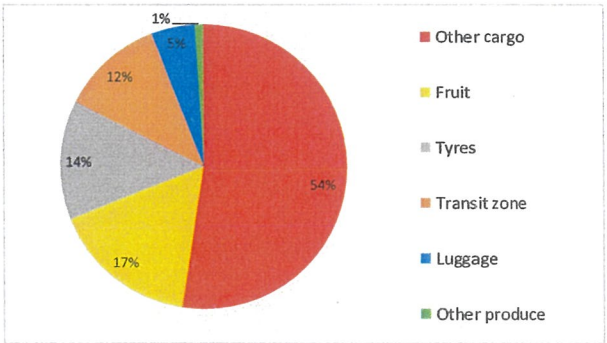
These patterns may reflect the closer travel and trade relationships New Zealand has with Asia-Pacific countries, particularly Australia. Of note, there has been an increase in interceptions from South America in the last decade when compared with historical records prior to this (Derraik 2004). This may be related to increasing globalisation of travel and trade.

High-risk pests most often travel by sea and general cargo

Between 2008-17, 68% of mosquito and non-mosquito interceptions were suspected to have travelled by sea (Table 1) (NZ BioSecure, 2018a). In 2017 over 99% of imported goods to New Zealand were transported by sea (Statistics NZ, 2018).

Between 2008-17, 54% of interceptions of suspected mosquitoes of overseas origin were found transported alongside 'other cargo' (e.g. household goods, shipping containers—contents not specified). 'Fruit' (e.g. bananas, mandarins) and 'tyres' also made up significant proportions of goods mosquitoes travelled into New Zealand with (Figure 2).

Figure 2: Pie chart of suspected mosquito interceptions of probable overseas origin, by location of discovery at the New Zealand border, 2008-17



For more information, a table of annual intercept counts and locations is presented on the EHINZ webpage for this indicator. Data Source: NZ BioSecure, 2018a

References

Derraik JGB. 2004. Exotic mosquitoes in New Zealand: a review of species intercepted, their pathways and ports of entry. *Aust N Z J Public Health* 28(5): 433 – 44.

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