Member experience on prevention and control for Vector Borne Disease

New Zealand

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World Organisation for Animal Health
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Vector Borne Disease situations

Disease	Country status	Most likely risk pathways	Impact
Japanese encephalitis virus (JEV)	Absent	Windspread mosquitoes Hitch hiking mosquito lifestages Migratory viraemic birds	Locally significant for human health. Minimal for animal health
Bluetongue virus (BTV)	Absent	Windspread culicoides	Locally significant for animal health Significant for trade in animal health products
West Nile virus (WNV)	Absent	Hitch hiking mosquitoes	Locally significant for human health and animal health

Detection capacity

- A brief description of surveillance and laboratory diagnosis capacity for Vector Borne Diseases

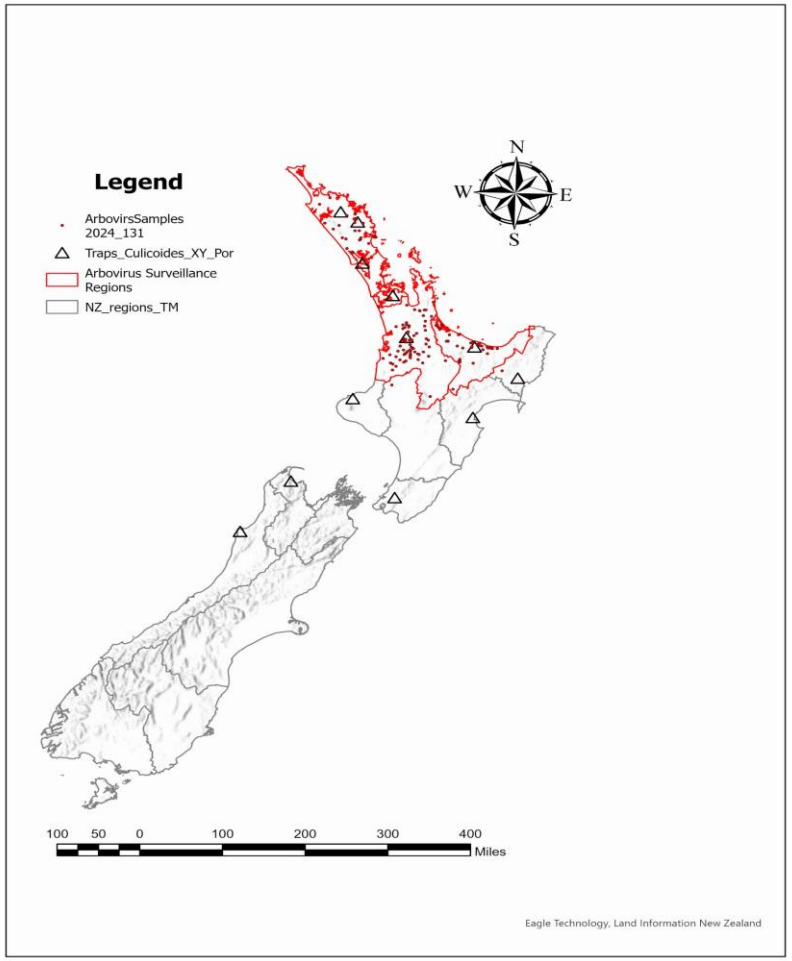
Disease	Surveillance in place	Laboratory capability
Japanese encephalitis virus (JEV)	General (pigs, horses, mosquito) Targeted (vector traps at ports) (serological - cattle)	RT-PCR Sequencing Virus Isolation Generic Flavivirus ELISA
Bluetongue virus (BTV)	General (sheep) Targeted (vector traps, risk areas) (serological cattle)	RT-PCR Sequencing Virus Isolation cELISA
West Nile virus (WNV)	General (birds, horses, mosquito)	RT-PCR Sequencing Virus Isolation Generic Flavivirus ELISA

Current targeted arbovirus serological surveillance

All samples tested for:

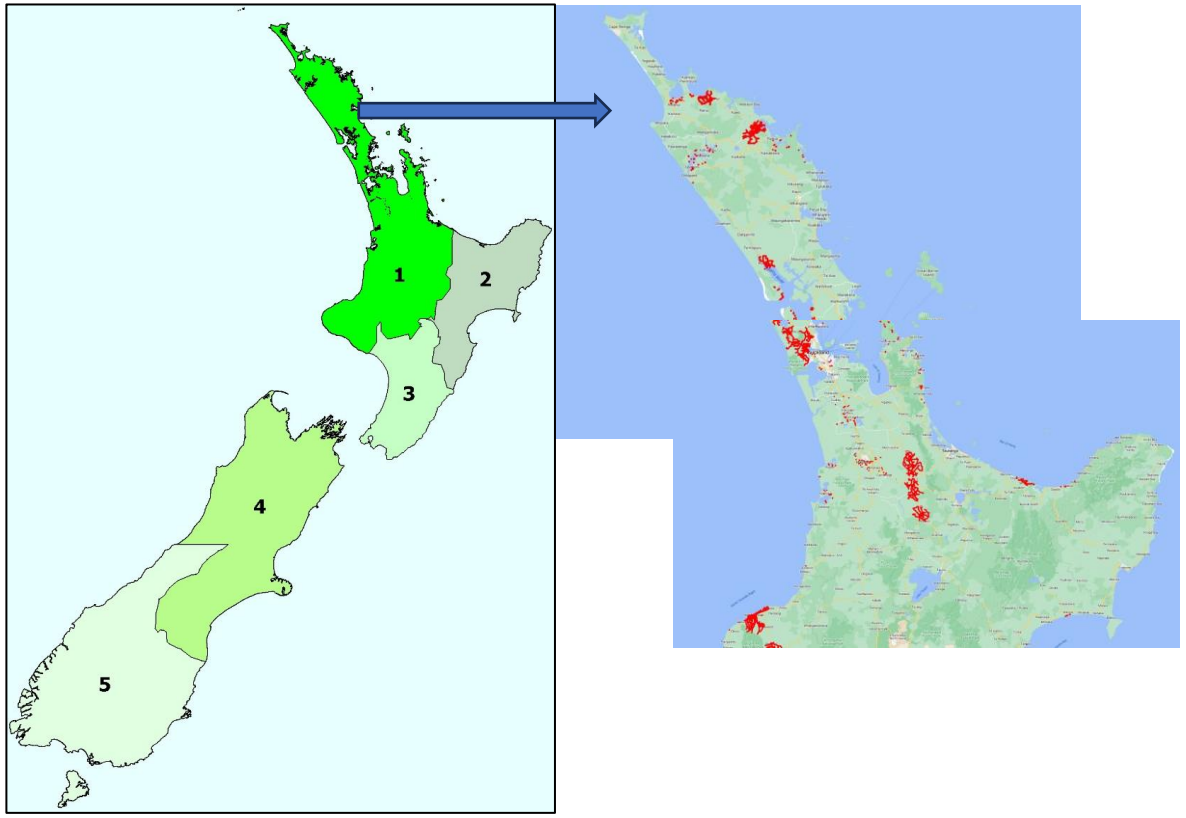
- Bluetongue virus
- Epizootic haemorrhagic disease virus,
- Akabane virus and
- Bovine ephemeral fever virus
- Japanese encephalitis virus

- Plus trapping for Culicoides midges

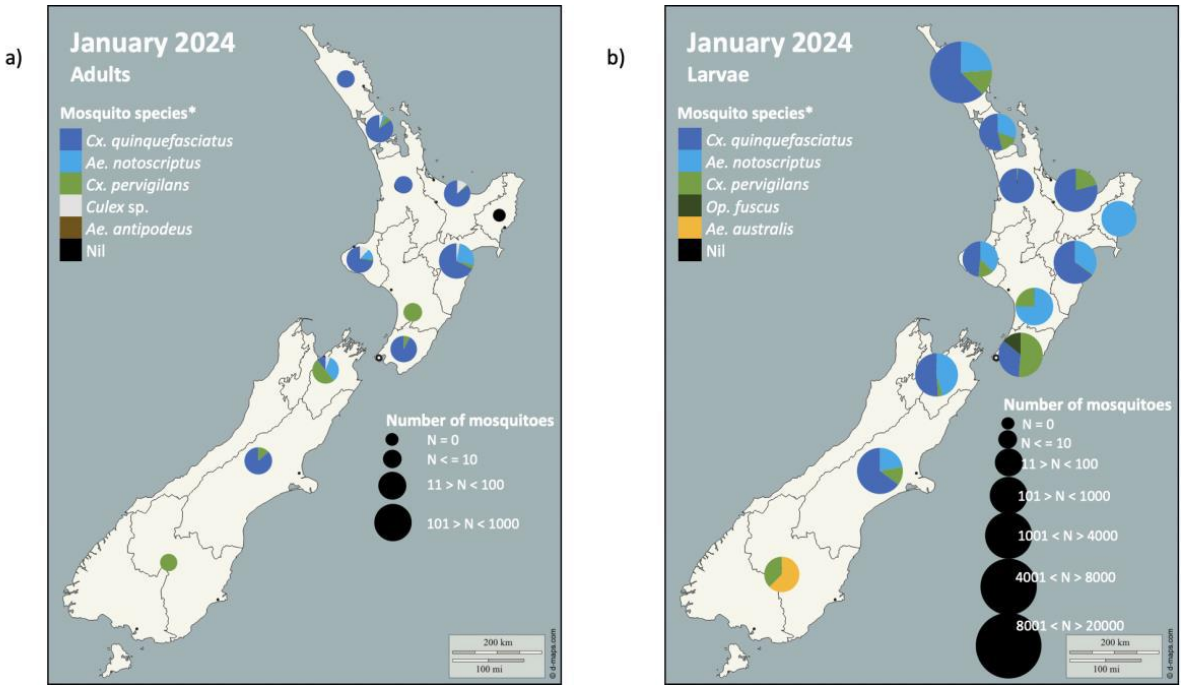


133 Farms, 5 cattle/farm over 4 Regions
=133 farms, - 665 samples
All tested for the programme diseases (5)

Examples of New Zealand mosquito surveillance programmes



Risk regions from MPI National Mosquito Surveillance Programme with sites



Ministry of Health Border Health mosquito surveillance programme

Response to Vector Borne Diseases

	JEV	BTV	WNV
Preventive measures to avoid introduction	Vector traps at ports, airports and transitional facilities Inspection, dissinsection at ports	No live animal imports, dissinsection at ports	Vector traps at ports, airports and transitional facilities Inspection, dissinsection at ports No live bird imports
Response surveillance (proposed)	Scanning (pigs, horses, people) Targeted (vector traps in risk areas) (serological - cattle, dogs, pigs) (molecular -pigs)	Scanning (sheep) Targeted (vector traps in risk areas) (serological cattle)	Scanning (birds, horses, mosquito)
Response and control	N/A	N/A	N/A
Vaccination (if applicable)			
Contingency plans available	Generic: Confirm diagnosis Movement controls Delimiting extent of infection, increased surveillance, investigation Epidemiological assessment Communicating risk areas to human health responders Determine vectors involved Mosquito control around pig farms Enhanced passive surveillance through communications Vaccination at risk people Consider vector control/eradication Current research on risk areas and vector feeding preferences	Generic: Confirm Diagnosis Movement controls Delimit extent and type of infection Increased surveillance and tracing/ testing/ investigation Epidemiological assessment/ response options Consider localised vaccination	Generic: Movement control domestic birds Confirm Diagnosis Delimit extent and type of infection Increased surveillance, testing, investigation Epidemiological assessment and response options development Communicate risk areas to human health responders Consider localised vaccination Consider vector control/eradication

Impact of the actions

- A brief description of the impact of risk mitigation measures implemented to prevent and control Vector Borne Diseases

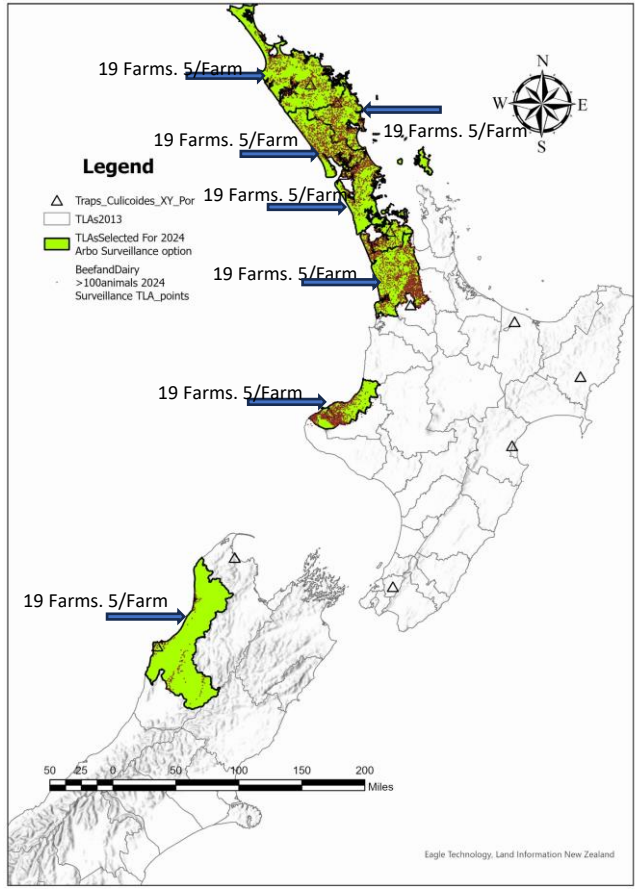
- N/A for New Zealand as free of diseases

Challenge and possible solutions

- A brief description of challenges in implementation of VBD surveillance activities and control programmes and your actions/ideas to overcome these challenges
- Matching sampling effort to areas most at risk of introduction and establishment and for mosquitos the best surveillance (vertebrate) target species.
  - Changes in proposed establishment areas and introduction risk due to climate change
- Increasing sensitivity of detection
- Solutions:
  - Risk assessment of introduction & establishment of Culicoides vector (including climate scenarios)
  - Modelling wind spread introduction of Culicoides
  - Re-designing surveillance programme following the above analyses
  - Research on areas most at risk of JE introduction/establishment
  - Research on typical blood meals taken by NZ mosquitoes in identified risk areas

Proposed arbovirus serosurveillance following analysis

- Smaller sampling areas
- Increased sensitivity of detection
- More targeted to risk
- Same number of farms and samples/tests



Collaboration with other sectors under One Health approach

- Brief description of collaboration experience with other sectors to prevent or control Vector Borne Disease (If any)

- Under NZ legislation (The Biosecurity Act 1993) all New Zealanders have the obligation to report notifiable organisms and any organism not normally seen in New Zealand
- A Biosecurity response protocol with a specific Mosquito agreement
- Sharing of surveillance information between agencies with a current workstream on a data sharing agreement to improve this
- There is a shared protocol for border activities involving disinsection of aircraft and other craft
- Vector-borne disease discussion group which meets monthly. Participants from Ministry for Primary Industries; New Zealand Health; Universities. Covering animal health, climate change and human health.
- Ministry Arbovirus working group including field personnel, surveillance personnel, laboratory scientists (entomology and disease). Meet regularly to discuss the surveillance programme, methodologies etc.
- Shared responsibilities between Ministries for Primary Industries and Community and Public Health ministries for mosquito surveillance
- Collaboration with universities on risk assessments on migratory birds; arthropod vectors
- Recent joint publication on Epidemiology and risk-based surveillance for Japanese encephalitis for New Zealand

Challenge and possible solutions to strengthen the collaboration

- A brief description of challenges to strengthen the collaboration with other sectors and your actions/ideas to overcome these challenges

- Challenge is the system for pre-border, border, surveillance; response has many parts, and different organisations are responsible for individual parts

- Apart from steps to try and strengthen the one health collaborations, data sharing and knowledge on the previous slide:
  - A recent initiative is to complete an end-to-end review of mosquitos between Ministry for Primary Industry and Ministry Of Health

Thank you

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Expectations for the VBDs workshop (Not Included in the Presentation)

- Please share your expectations for the VBDs workshop
  - Share and learn from other delegates experiences around surveillance and response for VBD's
- What specific information about VBDs you expect to obtain from experts
  - What surveillance methods are the most sensitive for early detection and delimitation and early warning to human health
  - Most cost-effective methods
- What disease experience you expect to gain from member countries/territories
  - Particularly interested in any member countries who have recent introductions and their experiences, issues and methods.