



AQUACULTURE READINESS DATA PROJECT – BIOSECURITY AND AQUACULTURE INFORMATION SHEET 1

AQUACULTURE – BIOSECURITY PREPAREDNESS

This is the first in a series of three information sheets explaining what has been learned from the MPI's Aquaculture Readiness Data (ARD) project. Key findings from the project showed that there is a need for improving farm data (farm locations, stocking densities, and animal movements), better record-keeping and reporting in general, and modelling to support management decisions. These findings are explained in this and two other information sheets:

- » **INFORMATION SHEET 2** – Defining dispersion areas for aquatic pests and diseases
- » **INFORMATION SHEET 3** – The need for quality data

As the world's population increases, so too does the demand for protein, including seafood. It is unlikely that wild-caught seafood will be able to meet that demand sustainably, and aquaculture is on the rise.

By 2020, aquaculture is expected to make up 58 percent of worldwide seafood production (Food and Agriculture Organization of the United Nations, 2010). In New Zealand, aquaculture is already the fastest-growing sector of our seafood industry. Annual sales are estimated at NZ\$350 million, about 20 percent of all fisheries.



BIOSECURITY AND AQUACULTURE TODAY

The prevalence or occurrence of pests and diseases in New Zealand's aquaculture industry is low compared to other countries. Events like the oyster mortalities associated with an oyster herpes virus in 2010/2011, however, illustrate that aquaculture activities can be affected by pests and diseases.

Pests and diseases in the aquatic environment can be introduced in a number of ways into the aquatic environment. Some introductions may be through natural dispersal and others may be caused by human activities. Once introduced into our waterways, pests and diseases are difficult to contain or eradicate.

As part of sustainable aquaculture development the aquaculture industry needs to continue to develop and apply best practices for biosecurity management and planning to, when possible, limit the introduction of pests and diseases and to be able to respond quickly and effectively to biosecurity risks. This includes keeping detailed information on:

- » location of animals on farms;
- » any transfers or movements;
- » aquatic animal production;
- » enhancement programmes; and
- » processing facilities.

Quality information is vital to make timely and appropriate decisions during investigations and responses, to develop surveillance and animal health programmes, and assist with access to export markets.

ARD PROJECT – THE NEW ZEALAND CONTEXT

New Zealand's aquaculture industry has set a goal of \$1 billion of annual sales by 2025. Government has adopted an *Aquaculture Strategy and Five-year Action Plan* that will support industry in achieving its goals through sustainable growth. To sustain growth, good biosecurity is essential and this requires the development of good baseline data and data recording systems.

To determine the aquaculture industry's readiness for collecting and using this data, the Ministry carried out the ARD project in 2010/2011. This required the development of a preliminary New Zealand-specific spatial model of the likely spread of pests and diseases within and among aquaculture sites (such as, farms, processing facilities, and hatcheries).

Data on marine and freshwater farms, and hydrodynamics were collected by the National Institute of Water and Atmospheric Research (NIWA). The data were then used to develop “defined dispersion areas” where aquaculture organisms have a similar likelihood of exposure to a pest or disease.

Defined dispersion areas were developed in three stages:

- » **STAGE ONE** – examples of disease and pest preparedness were reviewed and guided the development of dispersion areas (see Information sheet 2).
- » **STAGE TWO** – GIS layers and information on the geographical distribution of aquaculture sites were used to determine each specific location’s potential to spread pests and diseases (see Information sheet 3).
- » **STAGE THREE** – researchers integrated hydrodynamic data to model how pests and diseases may disperse in our waterways (see Information sheet 3).

ARD PROJECT – LESSONS LEARNED

There was general agreement among stakeholders consulted through the ARD project that the defined dispersion areas approach to biosecurity readiness is useful and valuable.

A number of lessons were learned through the ARD project that will assist both the aquaculture industry and the Government in taking additional steps to be prepared for biosecurity issues. Overarching lessons include:

- » Researchers found that the collection, maintenance, and accessibility of data varied widely across New Zealand. This lack of consistent information demonstrated a number of associated biosecurity risks.

- » A considerable amount of information already exists about the hydrodynamics of New Zealand’s coastal waters. There are, however, limitations to hydrodynamic modelling in both marine and freshwater environments. For modelling to be useful robust information is required and adjustments must be made to models that take into account the specific characteristics of a defined area.
- » There is a need for government to work with the aquaculture industry and key stakeholders to ensure there is a clear understanding of the effects of pest and disease outbreaks and how the combination of maintaining good records and using defined dispersion areas can help minimise potential biosecurity risks.

NEXT STEPS

The Government’s *Aquaculture Strategy and Five-year Action Plan* sets out the Government’s intended actions and activities to support the growth of New Zealand’s aquaculture sector over the next five years. As part of this work, MPI will be working with the aquaculture sector to improve biosecurity preparedness. This will include looking at ways to improve the information required to be recorded and reported to better manage biosecurity preparedness and response. An aspect of this work will be centralising required data for marine and land-based aquaculture.

Additionally, MPI will be working with the aquaculture industry to establish biosecurity plans for key growing areas. This will involve effectively engaging with the aquaculture sector to improve and maintain New Zealand’s world-class biosecurity system.

FURTHER READING

[Aquatic Animal Pest and Disease Readiness Planning and Intelligence – Phase I](#)

[Aquatic Animal Pest and Disease Readiness Planning and Intelligence – Phase II](#)