World Organisation for Animal Health

Training of National Focal Points for Aquatic Animal Health (Cycle IV)

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The Fleming Fund

World Organisation for Animal Health

ZONING AND COMPARTMENTALISATION

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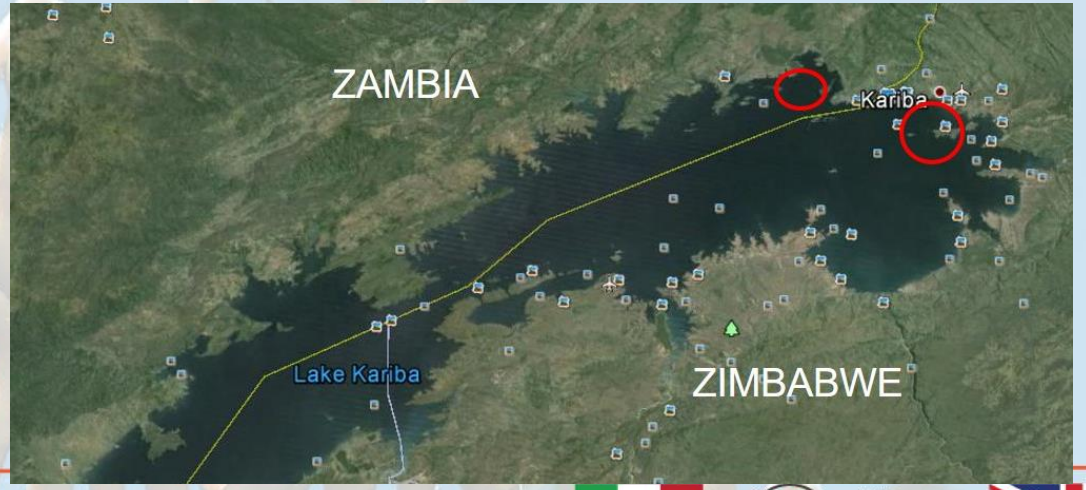
Zoning and compartmentalisation are an integral element in the practical implementation of international aquaculture biosecurity principles

Zoning and compartmentalisation

- Relate to managing subpopulations of aquatic animals within a country or territory with a distinct aquatic animal health status.
- Such populations may be separated by natural or artificial geographical barriers(zones) or, in certain situations, by the application of appropriate management practices for the purpose of disease control or international trade (compartments).
- Principles are applied in accordance with the measures recommended in the relevant disease chapter of the Aquatic Code.
- To facilitate international trade, trading partners need to recognise the disease status of such subpopulations.



Position of major tilapia farms (red circles) on either side of the border on Lake Kariba

Definition of biosecurity, zoning and compartments

Biosecurity

- a strategic and integrated approach that encompasses both policy and regulatory frameworks aimed at analysing and managing risks relevant to human, animal and plant life and health, as well as associated environmental risks.

Zones – are defined by geographical boundaries

- A zone is a portion of a contiguous water system with a distinct health status with respect to certain diseases.

Compartments – are defined by management and biosecurity practices

- On a smaller scale than zones, based on the concept that animals sharing the waters within the same geographical location, will share a common exposure risk to pathogens.

Criteria are established by the relevant aquatic animal health services of a country with the objective of facilitating trade in aquatic animals and their products and as a tool for disease management

Definition of infected zones and disease-free zones

Infected zones

- Contain farmed or wild aquatic animals in which a specific disease has been detected or is established as an endemic infection within the population.

Disease-free zones

- Contain populations of farmed or wild aquatic animals that have been shown, through targeted surveillance and protection from exposure, to be free of a specific infectious disease

Disease-free compartments

- Constitute farms or aquaculture establishments with independent, protected water supplies that meet specific regulated biosecurity and surveillance measures that demonstrate absence of a specific infectious disease and guard against introduction of the disease.

Clustering of 7 abalone farms sharing a common coastal water source in Hermanus, South Africa (image courtesy of Drs A Mouton, G Hatley. Amanzi Bioscecurity).

Water extraction point from a common water resource

Zoning and compartmentalisation

- Are an integral component of biosecurity planning and the practical implementation of biosecurity from National to farm level.
- Contribute to the safety of international trade.
- Assist disease control or eradication.
- Zoning may encourage a more efficient use of resources.
- Compartmentalisation may allow the functional separation of a subpopulation from other domestic or wild aquatic animals through biosecurity measures, which a zone (through geographical separation) would not achieve.
- Following an outbreak of disease, compartmentalisation may allow the resumption of trade from subpopulations subjected to appropriate disease surveillance and biosecurity measures, despite diverse geographical locations within infected zones or zone of unknown status.

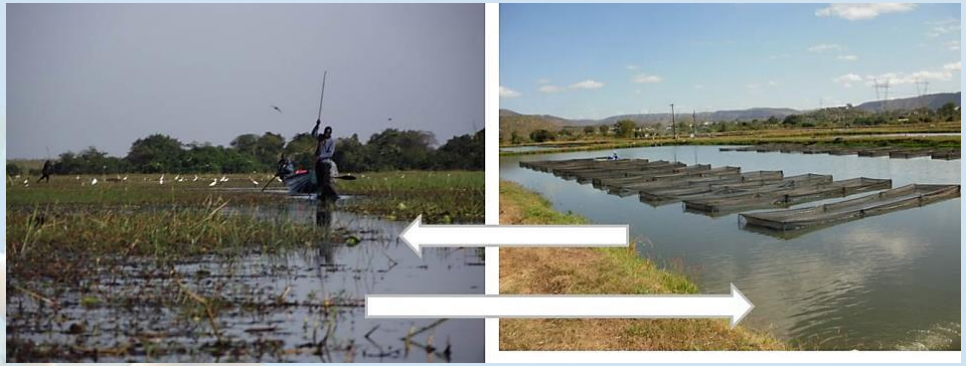
Measures used to establish and maintain the distinct aquatic animal health status of a zone or compartment

- Should be appropriate to the particular circumstances
- Will depend on:
  - the epidemiology of the disease,
  - environmental factors,
  - the aquatic animal health status in adjacent areas,
  - applicable biosecurity measures (including movement controls, use of natural and artificial boundaries, the spatial separation of aquatic animals, and commercial management and husbandry practices), and
  - surveillance.

Elements of zoning and compartmentalisation

Physical and spatial factors

- Ecological, hydrological and climatological barriers to pathogen transfer
- Disease status of adjacent areas and distance between epidemiological units
- Wild-to-farmed and farmed-to-wild fish pathogen transfers
- Protected water supplies
- Role of fomites in circumventing natural barriers
- Activities requiring live animal movements
- Slaughter house and processing plants



Infrastructural factors

- To create disease specific separation of subpopulations take into account all epidemiological factors that affect disease transmission
- Location of all components of a compartment must be defined, including related functional units

The Competent Authority of the exporting country

When establishing a zone or compartment for international trade purposes:

- Clearly define the subpopulation in accordance with the recommendations in the relevant chapters in the Aquatic Code,
- Including surveillance, and identification and traceability of aquatic animals.
- Explain to the Competent Authority of an importing country the basis for its claim of a distinct aquatic animal health status for the zone or compartment in such terms, i.e., provide guarantees of freedom from specified diseases.
- Procedures used to establish and maintain the distinct aquatic animal health status of a zone or compartment should be appropriate to the particular circumstances and depend on:
    - Epidemiology of the disease,
    - Environmental factors,
    - Risk of introduction and establishment of disease, and
    - Applicable biosecurity measures.

Exporting country

- Should be able to demonstrate, through detailed documentation supplied to the importing country, and published through official channels, that it has implemented the recommendations in the Aquatic Code for establishing and maintaining a relevant zone or compartment.
- Should conduct an assessment of the resources needed and available to establish and maintain a zone or compartment for international trade purposes including:
    - Human and financial resources, and
    - Technical capability of the Aquatic Animal Health Service (and of the relevant industry, in the case of a compartment) including disease surveillance and diagnosis.

Competent Authority of the importing country

- Should conduct an import risk analysis for the commodity under consideration.
- Should recognise the existence of a relevant zone or compartment when the appropriate measures recommended in the Aquatic Code have been applied, and the Competent Authority of the exporting country certifies that this is the case.
- An importing country may adopt a higher level of protection where it is scientifically justified and the obligations referred to in Article 5.3.1. (WOAH procedures relevant to the Agreement on the Application of Sanitary and Phytosanitary Measures of the World Trade Organization) are met.
- Where countries share a zone or compartment, the Competent Authority of each country should collaborate to define and fulfil their respective responsibilities.

"Absence of evidence is not evidence of absence"
Providing disease-status guarantees

- For many diseases the reservoirs of infection are clinically infected fish and covert carriers among cultured, feral or wild fish.
- Transmission is mostly horizontal, but for some diseases also vertical.
- Disease patterns may be influenced by water temperature, age and condition of the fish, population density and stress factors

For purposes of trade in/movement of live fish consider:

- ➢ Protection provided by quarantine and inspection.

versus

- ➢ Targeted surveillance of source/ parent populations held in epidemiological units under strict biosecurity.

Risk analysis and biosecurity require information on disease occurrence

Country/region

- Historically not observed/no reports of disease occurrence → Status unknown = infected
- Passive surveillance → Status known?
- Targeted surveillance → Status known

Compartment = farm/epidemiological unit

- Passive surveillance
- plus
- Targeted surveillance

→ Known status

Importing country

- Needs to be satisfied that its aquatic animal health status will be appropriately protected.
- Import regulations developed will rely in part on judgements made about the effectiveness of sanitary procedures undertaken by the exporting country, both at its borders and within its territory.
- Zoning or compartmentalisation may not be applicable to all diseases, but separate requirements will be developed for each disease for which the application of zoning and compartmentalisation is considered appropriate.
- Where countries share a zone or compartment, the Competent Authority of each country should collaborate to define and fulfil their respective responsibilities.

Principles defining a zone or compartment are applied by Aquatic Animal Health Services of a country and made public through official channels.

- The extent of a zone should be established the on the basis of the definition of zone.
- A protection zone may be established to preserve the health status of aquatic animals in a free country or free zone, from adjacent countries or zones of different aquatic animal health status.
- The factors defining a compartment should be established on the basis of management and husbandry practices related to biosecurity.
- Aquatic animals belonging to such subpopulations need to be recognisable as such through a clear epidemiological separation from other aquatic animals and all things presenting a disease risk.
- Subpopulations need to be clearly identified through registration of all the aquaculture establishments located in such a zone or compartment and the establishment and maintenance of its aquatic animal health status through a biosecurity plan.

Principles defining a zone or compartment are applied by Aquatic Animal Health Services of a country and made public through official channels

For a compartment the biosecurity plan should describe:

- The partnership between the relevant enterprise/industry and the Aquatic Animal Health Service.
- Respective responsibilities and procedures for oversight of the operation of the compartment by the Aquatic Animal Health Service.
- Routine operating procedures providing clear evidence that the surveillance conducted and the management practices are adequate to meet the definition of the compartment.
- Description of how measures will be audited to ensure that risks are regularly re-assessed and the measures adjusted accordingly.

Biosecurity plan

- Should include:
  - Information on aquatic animal movements,
  - Production and stock records,
  - Feed sources,
  - Traceability,
  - Surveillance results,
  - Visitor logbook,
  - Morbidity and mortality history,
  - Medications and vaccinations,
  - Water supply and effluent treatments,
  - Documentation of training, and
  - Any other criteria necessary for evaluation of risk mitigation.

Depends on aquatic animal species and disease(s) under consideration,

Biosecurity planning

Disease outbreaks:

- Limit growth and sustainability of aquaculture.
- May cause complete collapse of aquaculture fisheries.
- Have serious socioeconomic impact.
- Affect marketability of aquaculture products.
- Require timeous intervention.

Within an ecosystem approach, implementation of biosecurity and zoning strategies forms the foundation of sustainable aquaculture development and trade.

Biosecurity planning is an integral part of regional and national aquatic organism health strategies.

Aguilar-Manjarrez, J., Soto, D. & Brummett, R. 2017. Aquaculture zoning, site selection and area management under the ecosystem approach to aquaculture. A handbook. Report ACS18071. Rome, FAO, and World Bank Group, Washington, DC. 62 pp. 395 pp.

Summary
Purpose of zoning

- Make distinctions between populations of aquatic animals depending on respective disease prevalence.
- Used to manage and control the spread of contagious aquatic animal diseases between distinct populations.
- Allow implementation of control measures, establishment of disease prevalence and intensity of required surveillance.
- Enhance the safe trade in aquatic animals and their products.

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Zones should not be proposed as administrative regions based on production related needs or convenience.

Summary
Purpose of compartmentalisation

- Provide functional separations of sub-populations of aquatic animals based on disease status through implementation and documentation of disease management and biosecurity measures.
- Biosecurity management is the responsibility of those in control of the compartment.
- The smallest compartment may be an individual farm and its water source.

Where a compartment with a disease-free status occurs within an infected zone or a zone of unknown disease status, guarantees of disease freedom applicable to the subpopulation (compartment) within the zone may allow access to markets that would otherwise not be possible.

See also:

Article 5.3.7. of the Aquatic Code: *Sequence of steps to be taken in establishing a zone or compartment and having it recognised for international trade purposes*

THANK YOU FOR YOUR ATTENTION

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