



Reflections on Shrimp Health Management

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Lessons Learned

- Early experience at Marine Culture Enterprises
- Collaboration with producers over the years
- Interactions with OIE, government regulatory bodies, and other professional organizations
- Recent case studies by Responsible Aquaculture Foundation and World Bank

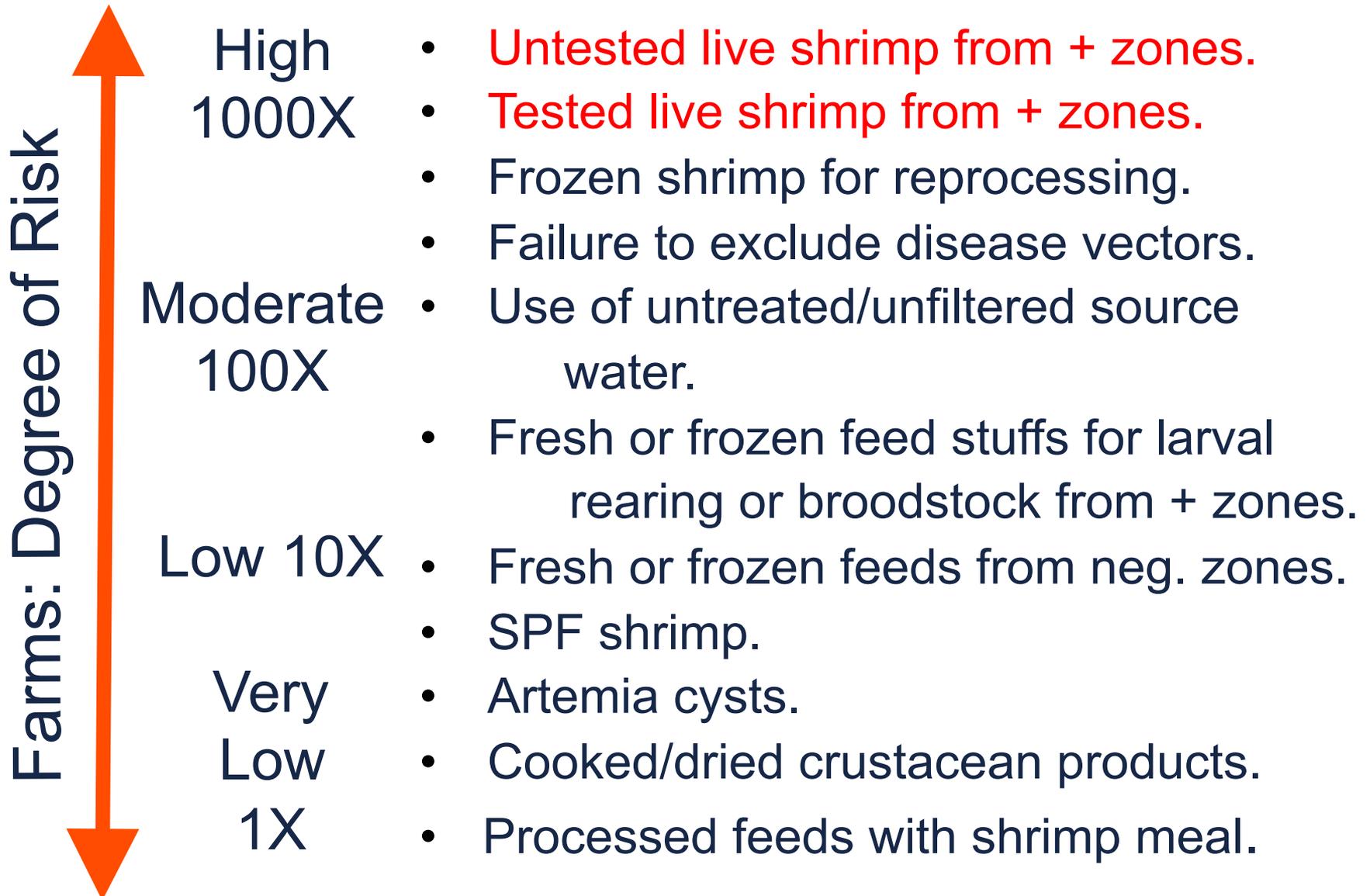
Primary Factors that Influence Disease

- Transfer of Animals
- Government Veterinary Services
- Aquaculture Management Practices
- Zonal Management
- Collaboration Among Sectors

Transfer of Animals

- The science of disease management often lags years behind disease movements
 - Too often, the disease is widely spread before science identifies the agent and understands its management.
 - This was true for IHHNV, TSV, IMNV, WSSV, and EMS.
- Policies are needed to control and track movement of animals.
 - Movement documents and health records should be required for all imported animals

Ranking of Disease Risks



Importance of Clean, Disease-Resistant Shrimp Stocks

- The industry has progressed from early reliance on often-infected wild broodstock and wild seed to captive breeding programs.
- Specific Pathogen Free (SPF) is a domesticated line subject to **routine surveillance** under the supervision of an approved diagnostic lab and free of OIE-listed pathogens for at least 2 years.
- Specific Pathogen Resistant (SPR) is a line bred for resistance to one or more diseases from the OIE list
- SPF lines can also be SPR for selected pathogens

Critical Role of SPF and SPR Stocks to Sustainability

- **If the shrimp breeding groups in Hawaii and Latin America had not developed TSV-resistant stocks, *Penaeus vannamei* production may not have been successful in Asia!**
- WSSV-resistant SPR stocks of *P. vannamei* are being developed in Panama and Ecuador, but the pace is slower than for TSV resistance.

Government Veterinary Services are crucial, but often lagging.

- Often the pace of aquaculture growth surpasses corresponding development of national or regional veterinary services.
 - Legal framework and policies
 - Diagnostic facilities with proper training of staff
 - Research on emerging diseases
 - Routine surveillance of farmed and wild stocks

Surveillance enables management

Systematic testing over time to detect the occurrence of disease for control purposes

- Passive or general surveillance
 - Ongoing oversight of a population to detect unexpected or unpredicted changes in disease status.
- Active or targeted surveillance
 - Collects information about a defined disease to measure its level in a population or demonstrate its absence.

Aquaculture Management Practices

- Biosecurity
 - *The practice of exclusion of specific pathogens from cultured stocks at broodstock facilities, hatcheries and farms, or from entire regions or countries to prevent the occurrence of economically important diseases.*
- Sanitation
 - Treatment of intake and discharge waters.
 - Control of vehicles, equipment, people, birds, etc.
- Management
 - Reduce stress by managing crowding, water quality, etc.
 - In the event of an outbreak, plans in place for containment, eradication, and disinfection.

Zonal Management

- No matter how careful individual producers may be, they are ultimately influenced by the biosecurity practices of their neighbors.
- Regulatory policies are needed to control all producers within a zone.
 - Movement of animals, proper separation and treatment of farm intakes and discharges, stocking densities, and carrying capacity of receiving water bodies.
 - Where possible, stocking, harvesting, and fallow periods should be coordinated.
- Establish a mechanism to allocate research funds before the crisis stage is reached.

Collaboration Among Sectors

- Producers, regulators, lenders, and other stakeholders should link more closely to share knowledge and reduce free ridership.
- It is in the interest of producers and lenders that government veterinary services and enforcement be effective:
 - Legal framework and regulatory policies
 - Diagnostic facilities with proper training of staff
 - Research on emerging diseases
 - Routine surveillance of farmed and wild stocks
- Market incentives may be a tool to help implement zonal management.

Collaboration Among Sectors

“We are not helpless individuals caught in an inexorable process of destroying our own resources.”

Elinor Ostrom

Nobel Laureate 2009 in Economic Sciences

“Collaborating constructively to ensure sustainable and safe aquaculture is the beginning of the solution.”

Albert Zeufack

GOAL Conference, Kuala Lumpur, 2010



Thank You!

