

*Science, Service, Stewardship*



# Interactions Between Marine Aquaculture and Marine Ecosystems: Pathogens and Disease

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## “Disease” happens when:

- 1) Susceptible host (finfish, shellfish)
- 2) Infectious pathogen (virus, bacteria, parasite)
- 3) Immune suppression of host (stress, senility)
- 4) Environmental conditions that favor the pathogen but disfavors host (temperature, salinity, anoxia)

VHS Virus

R. salmoninarum (BKD)

Gyrodactylus



## Disease occurs in both:

- Wild Populations
- Farmed Populations



# Sea lice on Striped marlin



## Bacterial Kidney Disease

Chinook salmon juvenile from state-operated hatchery



## Questions???

What is the significance of disease outbreaks in wild populations? When and where do they occur?

Are there consequences of disease outbreaks in marine-farmed animals? If yes, when, where, and how?

Why do we care about these interactions?



## Interactions???

Negative interactions between wild and farmed populations?

“Exotic” pathogens in wild reservoirs?

Ways to protect farmed animals from wild reservoirs?



# Possible Answers???

## Surveillance

### Passive:

Notification by fishermen, boaters

### Active:

Sampling: Standardized methodology

Testing: OIE guidelines

Reporting: Uniform and timely



# Possible Answers???

## Measuring interactions:

- Develop communication with farmers, fishery managers
- Population dynamics of wild animals
- Inventory of disease status at farms.
- Measure environmental conditions
- Document interactions in farming regions



**More questions than answers!!!!**



# Solutions?

Working Group on the Environmental  
Interactions of Marine Aquaculture -  
WGEIMA



Tell us more about  
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