Interactions Between Marine Aquaculture and Marine Ecosystems: Pathogens and Disease

Kevin H. Amos, Aquatic Animal Health Coordinator
NOAA Aquaculture Program
“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
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