

Aquatic Animal Disease Emergencies *Lessons Learned*

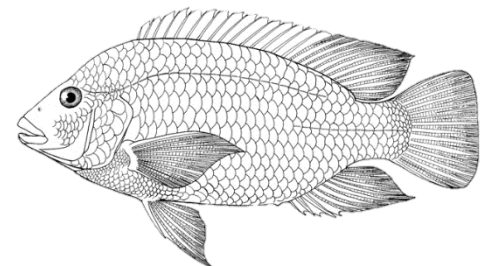
Kathleen H. Hartman, MS, DVM, PhD

Aquaculture Program Leader

*U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Veterinary Services*

Aquatic Animal Disease Emergencies

- **Aquatic Animal Health Authorities in the U.S.**
- **Scenario**
 - Pathogen
 - Actions
 - Lessons Learned
- **Emergency Preparedness Response Requirements**



Authorities for Aquatic Animal Health in the United States

Federal/National

- U.S. Department of Agriculture
 - Farm-raised aquatic animals
 - Veterinary biologics
 - Import and export of live animals and products
 - Accredited veterinarians
- U.S. Department of Interior - Fish and Wildlife
 - Wild freshwater aquatic animals
 - Import control of salmonid species
- U.S. Department of Commerce – NOAA
 - Wild marine aquatic animals
 - Export of seafood
- U.S. Department of Health and Human Services – Food & Drug Agency
 - Drug approval
 - Import of seafood
 - Feed

Authorities for Aquatic Animal Health in the United States

*State, Tribal &
Other*

- *State Agencies*
 - *Department of Agriculture*
 - *Department of Natural Resources*
 - *Department of Health*
- Tribal Entities
- Other
 - Environmental Protection Agency
 - Army Corps of Engineers

- Tilapia Lake Virus (TILV)*
- Infectious hypodermal and hematopoietic necrosis virus (IHHNV)
- Red Sea Bream Iridovirus (RSIV)*
- *Xenohalitus californiensis*
- Koi herpesvirus (KHV)
- Ostreid herpesvirus (OSHV)
- Infectious salmon anemia virus (ISA)
- White Spot Syndrome Virus (WSSV)*^
- Infectious hematopoietic Necrosis Virus (IHNV)
- Yellow Head Virus*
- *Enterocytozoon Hepatopenaei* (EHP)^

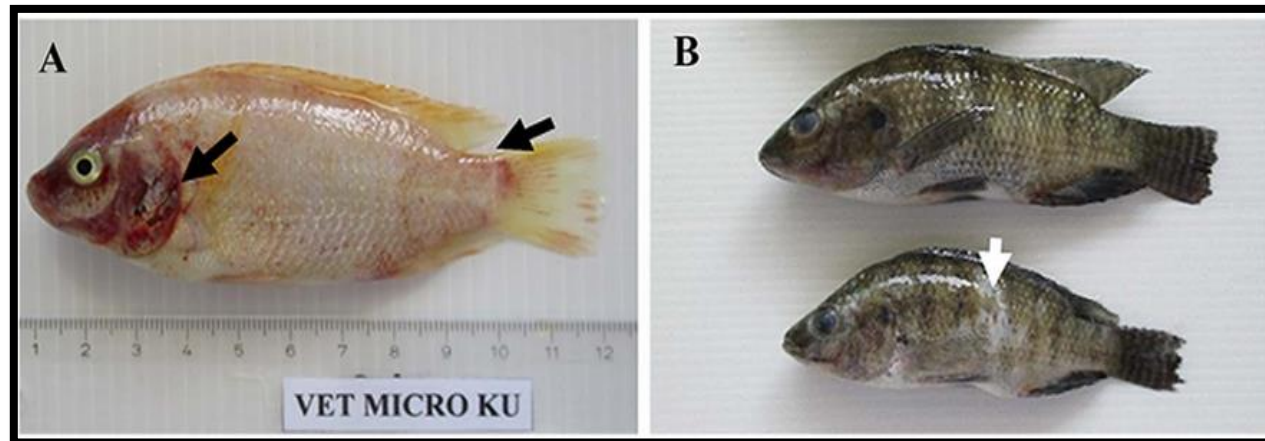


Reported Aquatic Animal Pathogens in FY2019-2020

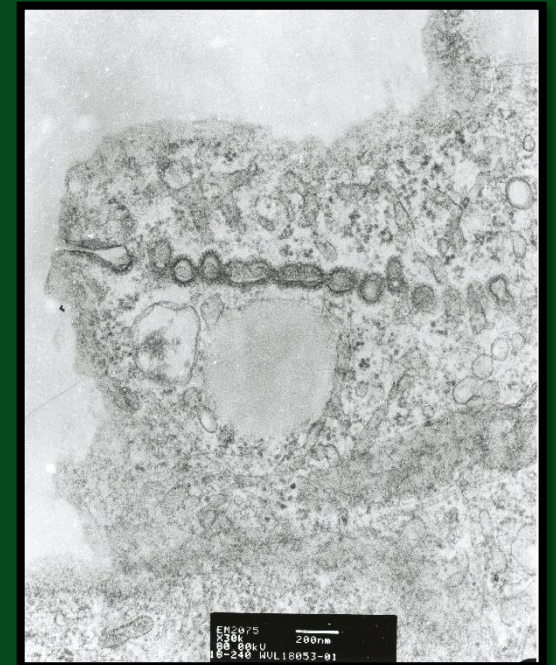
- **Tilapia**
 - Importance globally
 - Domestic industry
- **Tilapia Lake Virus (TiLV)**
 - Orthomyxo-like virus – *Tilapia tilapenivirus*
 - Nile tilapia (*O. niloticus*) and their hybrids
 - Variable mortality rates (6 – 90%)
 - Unspecific clinical signs



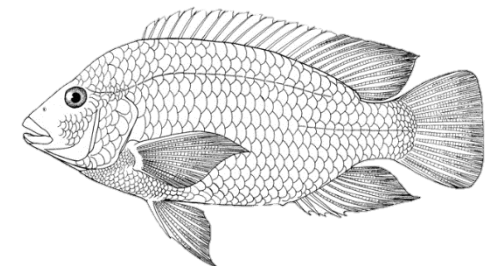
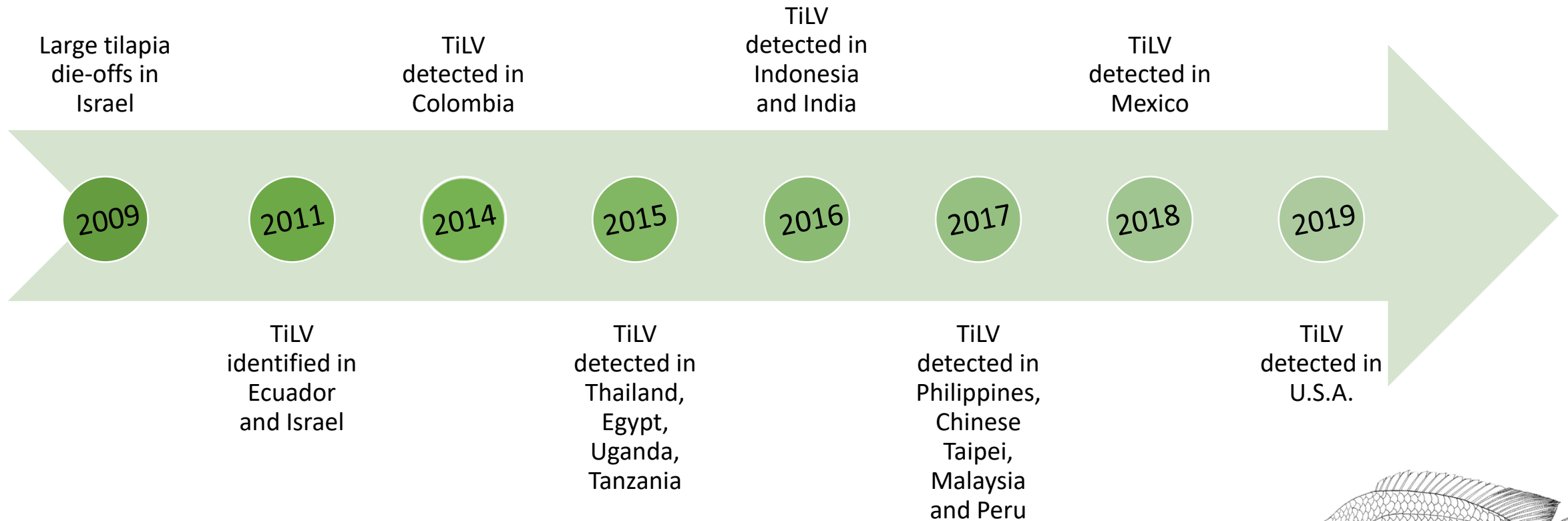
Tilapia Lake Virus (TiLV)

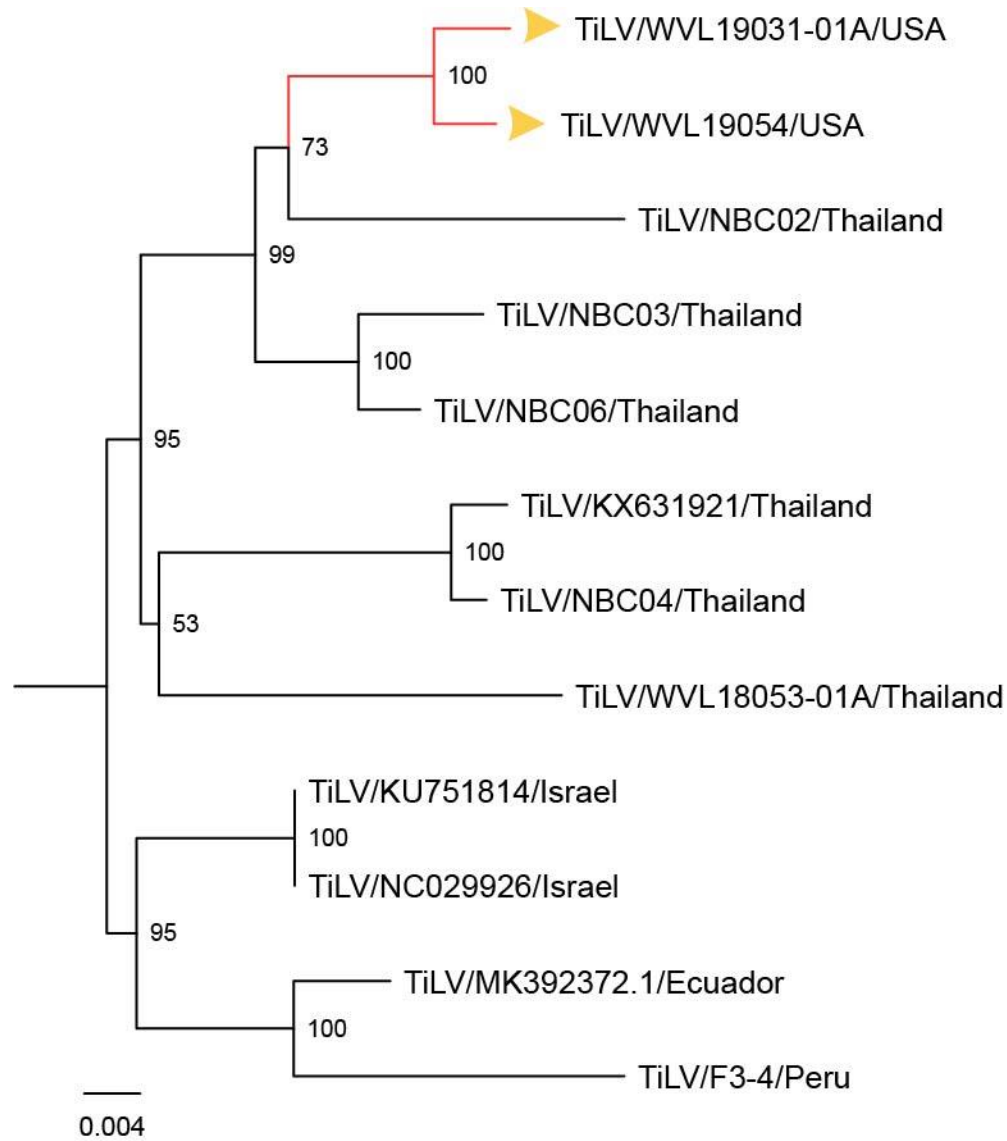


Tattiyapong et. al., 2017

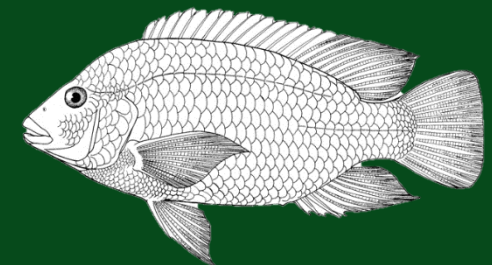


TiLV Timeline





TiLV in the USA



TiLV Response

- Pathogen detection confirmation



- Epidemiological investigation



Index premises
Idaho

Colorado

- Test +

Wyoming

- Test +

Florida

- Test -

TiLV Lessons Learned

Preparation

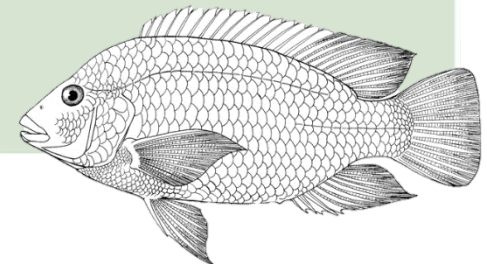
- Awareness
- Case definitions
- Laboratory capability

Real Time

- Authority for aquaculture
- Communication and transparency
- Plans
 - Premises plan
 - Controlled marketing plan

Protection

- Import controls
- Commercial Aquaculture Health Program Standards (CAHPS)
 - Surveillance
 - Biosecurity
 - Reporting



Emergency Preparedness Response Requirements

1. Early detection
 - Laboratory capability and through-put
 - Diagnostic assay Se/Sp
 - Surveillance (sampling & testing) power and robustness
 - Interpretation
2. Authority to respond
 - Local
 - Premises quarantine, hold orders, depopulation, C&D, recovery
 - National
 - Biosecurity (import controls), surveillance (zones, compartments), recovery
3. Resources to respond
 - Funds
 - Subject matter experts and trained personnel
4. Communication
 - Internal and external
5. Cooperation
 - Industry-state-federal partnership

Thank you

Kathleen H. Hartman, MS, DVM, PhD

USDA, APHIS Veterinary Services

Kathleen.H.Hartman@usda.gov

