



Biosecurity at Florida Aquaculture Facilities

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Biosecurity management, or the prevention of introduction and transfer of disease-causing organisms (pathogens), is integral to the success of all types of commercial aquaculture facilities regardless of the species produced. A successful biosecurity management plan includes good animal husbandry practices to minimize stressors, pathogen mitigation and appropriate sanitation protocols. The Florida Department of Agriculture and Consumer Services (FDACS) encourages aquaculturists to develop a written biosecurity plan as part of an on-farm health management program. Sources of information, including health management classes are available through the University of Florida Tropical Aquaculture Laboratory and are distributed by the Florida Tropical Fish Farms Association, among others. See the [Helpful Resources](#) list on [page 2](#) for more information.

ANIMAL HUSBANDRY

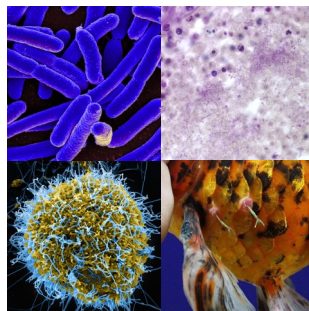
Understanding the husbandry requirements of the specific species produced is essential to successful health management and disease prevention. Many pathogens are opportunistic, meaning that they primarily affect weakened or stressed organisms. Ensuring a healthy, stress-free animal population is an important component of a health management plan. Institute a daily program of observing animal appearance, behavior and feeding activity, and educate personnel on the normal appearance and behavioral patterns of the cultured species. Abnormal animal behavior is generally an early indicator of stress or disease.

Routinely monitor water quality parameters such as temperature, dissolved oxygen, pH, ammonia and nitrite. Know the physiological limits of your species, and establish control and response actions. In production systems where daily observations aren't possible (e.g., shellfish aquaculture), consider regularly-scheduled health evaluations of the organisms.

BASIC HUSBANDRY RECOMMENDATIONS

- ⇒ *Avoid overcrowding.*
- ⇒ *Maintain optimal nutritional programs.*
- ⇒ *Promptly remove uneaten or undigested feed.*
- ⇒ *Promptly remove dead animals.*
- ⇒ *Minimize stressors such as inappropriate or unnecessary handling and temperature extremes.*

Bacteria Fungi



Virus Parasite

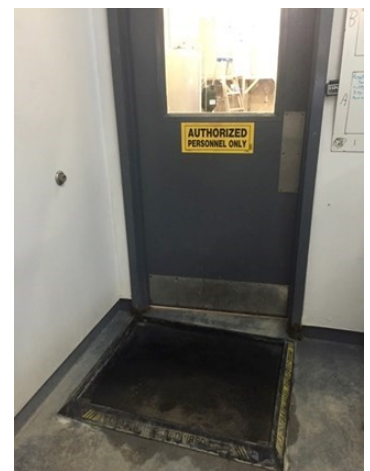
PATHOGEN MITIGATION

Each aquaculture species has different diseases of concern, generally caused by four main pathogen categories: bacteria, fungi, viruses and parasites. Each of these pathogens require different diagnostic and treatment protocols, emphasizing the need to know the specific pathogens of

concern for the species at your facility and for which the biosecurity plan is targeted to avoid. Regardless of pathogen type, controlling exposure requires identifying the critical control points of the individual facility, as no two are alike.

CRITICAL CONTROL POINTS

- ⇒ **Animals** - Maintain quarantine procedures, separate animals at different life stages or health status and observe appearance and behavior regularly.
- ⇒ **Water** - Protect source and test for contaminants.
- ⇒ **Feed** - Store per manufacturer's recommendations, use before expiration date and dispose of spoiled or outdated feed.
- ⇒ **Vectors** - Mitigate access to wildlife and people because of their potential to spread pathogens.
- ⇒ **Fomites** - Clean and disinfect to minimize the spread of pathogens via equipment, vehicles, boats, etc.



A footbath is a first step towards biosecurity. Keep pathogens from moving onto, around, on or off of your facility.



HEALTH RECORDS AND DISEASE TREATMENT

Documentation for aquatic organisms imported from outside of Florida must be retained for at least two years by certified aquaculturists. These records shall include:

1. Aquaculture Certificate of Registration Number;
2. Name and address of consignor;
3. Name and address of consignee;
4. Date of shipment;
5. Date of entry/receipt;
6. Species;
7. Total number of aquatic animals by species; and
8. Any pertinent recent diagnostic test results performed for the group of aquatic organisms.

Aquatic animals affected by an abnormal occurrence of disease or an undetermined pathogen should be sent to a diagnostic laboratory for diagnostics and treatment recommendations. Work with an aquatic veterinarian to develop your health management and biosecurity plans. Contact your veterinarian/health professional or the Division of Aquaculture in the event of any unusual or abnormal occurrences of disease or pests affecting your aquatic species.

A limited number of drugs and therapeutics are approved by the Food and Drug Administration (FDA) for use with aquatic animals sold for human consumption, as listed at www.FWS.gov/node/267114. All drugs, therapeutics and antibiotics must be used, applied, stored and disposed of as directed by an approved FDA product label. A log of drug usage must be maintained at the facility.

World Organisation for Animal Health (WOAH) Listed Diseases

The confirmed diagnosis by a licensed veterinarian of a WOAH (founded as OIE), listed disease, a US reportable disease or a disease identified as a concern in Florida, must be reported to the State Veterinarian by email at: RAD@FDACS.gov, call (850) 410-0900, or after hours at (800) 342-5869.



Production equipment coming into direct contact with rearing water and animals is a common pathogen vector and should be disinfected and rinsed after each use. Sanitation records (left), hand washing stations (top) and equipment disinfection stations (right) should be part of your biosecurity plan.



For more information visit: <https://www.aphis.usda.gov/livestock-poultry-disease/aquaculture> and www.WOAH.org/en/what-we-do/animal-health-and-welfare/animal-diseases/?level=1.

Official Certificate of Veterinary Inspection (OCVI)

Written authorization, import permit or an OCVI may be required from the State Veterinarian **prior** to interstate import of aquatic species into Florida. For international import and export, please contact the United States Department of Agriculture (USDA), United States Fish and Wildlife Service (USFWS) and Florida Fish and Wildlife Conservation Commission (FWC) for more information regarding any health requirements.

USDA: (301) 851-3300
USFWS: (800) 344-9453
FWC: (850) 488-4676

Penaeid Shrimp - Prior to shipment of live penaeid shrimp to any Florida aquaculture facility, FDACS must be provided an OCVI documenting that stock show no evidence of a WOAH notifiable pathogen.

Sturgeon - All international imports of live sturgeon must be accompanied by an OCVI.

Shellfish - Prior to the interstate import of shellfish or shellfish gametes, FDACS must be sent an OCVI and diagnostic results documenting that stock show no evidence of the following pathogens: Quahog Parasite Unknown in clams (QPX), *Haplosporidium nelson* (MSX), *Perkinsus marinus* (Dermo) and *Bonamia exitosa* in oysters.

No oysters may be transferred from Florida Atlantic waters to Florida Gulf waters due to MSX.

SEE INDIVIDUAL SPECIES SECTIONS FOR SPECIFIC HEALTH BMPS OR CONTACT THE DIVISION.

CONSIDER WORKING REGULARLY WITH A VETERINARIAN WHO HAS EXPERIENCE OR AN ACTIVE INTEREST IN THE CULTURE SPECIES.

HELPFUL RESOURCES

Fish Health Fact Sheets:

- https://edis.ifas.ufl.edu/topics/fish-health-management#FISH_HEALTH%20MANAGEMENT
- SRAC.tamu.edu/categories/view/26

Find an extension agent to assist you:
SFYL.ifas.ufl.edu/find-your-local-office/

Aquatic health expertise and diagnostic services:

TAL.ifas.ufl.edu/extension-and-outreach/disease-diagnostic-laboratory/services-available/

FDACS Bronson Animal Disease Diagnostic Laboratory (BADDL):
BADDL offers in-state diagnostic testing for a variety of aquaculture species.

For information on how to submit a sample, see: <https://www.fdacs.gov/Agriculture-Industry/Livestock/Bronson-Animal-Disease-Diagnostic-Laboratory-BADDL/How-to-Submit-a-Sample>

For a full list of tests available, see: www.FDACS.gov/Agriculture-Industry/Livestock/Bronson-Animal-Disease-Diagnostic-Laboratory-BADDL/Lab-Tests-and-Fees

