

Executive Summary

Strengthening Disease Identification, Prevention, and Mitigation in the NCR by providing Fish Farmers with Tools to Respond to Fish Health Problems

Improving farmed fish health in the NCR was identified as a priority need during the 2020 NCR Aquaculture Roundtable Sessions. We are proposing a series of workshops focused on providing theoretical and practical knowledge on fish disease detection, diagnosis, control, and biosecurity, including delivery of hands-on technical skills to fish producers, extension educators and fish health regulators, in Indiana, Illinois, Michigan, Missouri, Minnesota, Ohio, and Wisconsin. In addition, this project includes the evaluation of risk factors associated with morbidity and mortalities on tilapia (*Oreochromis niloticus* hybrids), yellow perch (*Perca flavescens*), and largemouth bass (*Micropterus salmoides*), and will consider other species if time and resources allow it. Later, we will evaluate the interest of fish producers for incorporating vaccination practices to improve fish production and productivity.

Currently, it has been found that only 11% of producers vaccinate, but producers have expressed strong interest in receiving assistance on vaccinating tilapia, largemouth bass, and other important NCR species.

Progress Report

Project Title: Strengthening Disease Identification, Prevention, and Mitigation in the NCR by Providing Fish Farmers with Tools to Respond to Fish Health Problems [Progress Report]

Total Funds Committed: \$41,954 (Year 1); \$55,302 (Year 2); \$63,404 (Year 3)

Initial Project Schedule: January 1, 2025-December 31, 2027

Current Project Year: September 1, 2024-August 31, 2025

Participants: Herbert Quintero, The Ohio State University; Myron Kibus, Michigan State University; Amy Shambach, Purdue University

Extension Liaison: Emma Hauser, University of Wisconsin-Stevens Point

Relevance: Fish diseases are one of the major limiting factors to the aquaculture industry in the North Central Region.

Response: We are training fish farmers in recognizing fish diseases; early response (managing water quality, feed management, record keeping and sending fish samples to diagnostic laboratories); and preventing and managing disease outbreaks (biosecurity measures).

Results: Five distinct objectives were pursued in this project:

1. Provide practical training to fish producers on fish diseases and diagnostic practices.
We will be doing the first fish health training of this proposal on October 8, 2025 at the Ohio Department of Agriculture in Reynoldsburg, Ohio. A total of 18 farmers, 7 students and 2 veterinarians are registered for the training.
2. Identify current fish health practices.

A semi-structured interview and alternative Qualtrics survey was designed for obtaining information related to current fish health practices. The initial protocol had only the semi-structured interview and was approved by the OSU IRB committee, but the addition of the Qualtrics survey started another process of approval from the IRB committee. Approval was received on 10/7/2025.

3. Introduce minimum standards for fish health record-keeping in the North Central Region. The fish health record-keeping practices will be reviewed during the training workshops and minimum standards will be proposed after having a more thorough understanding of the current fish health record-keeping practices in the region. A summer internship student was introduced to several Ohio farms in Ohio and started to review a set of data from one of those facilities.
4. Introduce a model for fish farmers to identify, prevent, and respond to fish health problems. We are going to test these three steps in our first workshop as follows:
Identification: fish health assessment, signs of disease, collecting and sending fish or tissue samples for laboratory analysis fish necropsy, basic microscope work, and capturing images for disease identification.
Prevention: training fish farmers on optimum water quality management and feed management to minimize risks of outbreak diseases and improve production, and introduce best standard operating procedures.
Response: train fish farmers on implementing best biosecurity measurements in fish farm.
5. Develop extension materials and information on fish disease identification, prevention, and response practices.
Information will start being collected during our first fish health training that will be used to develop best practices for fish farms in the North Central Region.

Outreach Overview

Results of the first training in Ohio will be presented in the 2026 Ohio Aquaculture Conference, 2026 Annual NCRAC meeting in Iowa, as well as in the Aquaculture America Conference in Las Vegas, NV.

Targeted Audience

- Fish farmers in Ohio and other states in the North Central Region are being actively recruited to participate in our workshops which will provide them with information, and skills to be prepared for a fish/shrimp disease outbreaks and improve fish health practices on fish farms. Ohio farmers will be targeted in 2025. Wisconsin, Indiana and Missouri farmers will be targeted for 2026 trainings. The Wisconsin Aquaculture Association has invited us to do a training prior to their 2026 conference. The Indiana Aquaculture Association has also reached out to request a training for their 2026 annual meeting.
- Veterinarians in the North Central region will be encouraged to participate in the workshops to advance their understanding of fish farmers' fish health needs, and improve their ability to provide aquaculture veterinary services.
- Undergraduate and graduate students in Veterinary, ANR, and other programs that

work with the aquaculture industry.

Outcomes/Impacts

Short outcomes that we are targeting include increased knowledge of fish farmers' in diseases, diagnosis and biosecurity practices. We envision as medium outcomes the adoption of improved health management practices by fish farmers, and the establishment of a support network for the aquaculture industry that includes veterinarians and government officials.