

**Project Title: Intensification of First Year Largemouth Bass (*Micropterus Salmoides*)
Using Alternative Pond-Based Production Systems [Progress Report]**

Total Funds Committed: \$328,367

Initial Project Schedule: September 1, 2021-August 30, 2022 [Extended to August 31, 2024]

Current Project Year: September 1, 2022-August 31, 2023

Participants: James Garvey (Southern Illinois University-Carbondale); Robert Rode
(Purdue University); Paul Brown (Purdue University)

Extension Liaison: Paul Hitchens (Southern Illinois University-Carbondale)

Industry Liaison: Stacey Sisk, Big House Fish Farm

Project Objectives

Objective #1- To evaluate two alternative pond-based production systems (split ponds and pond-side tank culture) in the Midwest on largemouth bass, *Micropterus salmoides*, quantified production parameters.

Objective #2- To investigate and compare changes in water quality and the aquatic food web in the pond-based production systems.

Objective #3- To investigate the effect of the two-alternative pond-based production methods (split ponds and pond-side tank culture) on LMB response to stress.

Objective #4- To conduct an on-farm extension demonstration of the pond-side tank culture system.

Objective #5- To immediately disseminate results to industry via final termination report, NCRAC Extension fact sheet, on-farm and university-based workshops, videos, and other information technology transfer strategies.

Project Summary

Largemouth bass (*Micropterus salmoides*; LMB) are one of the most popular sportfish in the United States. They are also one of the most popular table fares, especially in live Asian markets. The majority of LMB food fish producers in the Midwest purchase fingerlings from southern states, typically 10 – 13 cm total length (4 – 5 in), in early spring of their second year. These fish are then stocked into grow-out ponds until they reach market size 0.68 kg (1.50 lb). Sometimes it is necessary to purchase smaller feed-habituated LMB in year one, and they are held in nursery ponds and later split to lower densities for grow-out. Whether cultured to a fingerling size for stock enhancement or cultured to the food market size, cannibalism in low-density production ponds is a major problem for producers; especially during the early growth stage. The PIs propose investigating intensified alternative production systems for LMB, which could allow for reduced cannibalism, lowered feed conversion ratios, improved opportunity for sheltering from piscivorous birds, and increased yields. Replicated systems will be evaluated for their applicability for largemouth bass producers in the Midwest. Information will be relayed to producers through field days, printed materials, presentations, among other avenues.

Anticipated Benefits

This project will provide us with data that we can use to compare production practices between traditional culture ponds, pond-side tank culture systems, and split-ponds for largemouth bass in research ponds at Purdue University and SIU-Carbondale. Largemouth bass farmers in the Midwest will have the opportunity to visit the research sites and the on-farm demonstration to learn about whether or not these production systems may be worth adopting on their farms. These systems could provide an opportunity for largemouth bass farmers to purchase smaller fingerlings from hatcheries. Additionally, farmers of other species can have the opportunity to learn about other potential production practices.

Project Progress

Objective 1 has been completed at both SIU-Carbondale and Purdue University, with experiments ending in early Fall 2023. Age-0 largemouth bass have been collected and data are currently being analyzed.

Objective 2 has been completed, although equipment failure during the experiment at SIU in 2023 prevented some water quality assessment. A second experiment in 2024 will be conducted to further test the water quality responses.

Objective 3 data have been collected from age-0 largemouth bass and are currently being processed in the laboratory.

The farm demonstration of Objective 4 will be conducted during Spring 2024 through Summer 2024.

Outreach Overview

Outreach work was conducted in early October 2023 where SIU-Carbondale presented preliminary results of split-pond and pond-side tank experiments to members of the aquaculture industry at Purdue University. Industry members toured the pond-side and full pond age-0 largemouth bass culture experiment at Purdue.

Target Audiences

Farmers are the intended audience as we seek to learn more about the production feasibility of pond side tank culture and split-ponds using smaller feed habituated largemouth bass.

Outputs/Impacts

Workshop at Purdue University was held in October 2023.

Impact Summary

Relevance. — Benefit to the industry is to raise age-0 largemouth bass fry to fingerling size at maximum production.

Response. — Pond-side tanks and split ponds showed that age-0 largemouth bass raised in intensive culture produce more biomass than in whole ponds.

Results. — The research demonstrates that investment in pond-side tanks and/or split ponds may substantially increase production of age-0 fingerlings at a cost savings to producers.

Recap. — Preliminary results from a pilot pond-side and split-pond system at two universities demonstrate benefits to intensive culture of age-0 largemouth bass fingerlings.

Publications, Manuscripts, Workshops, and Conferences

See the Appendix for a cumulative output for all NCRAC-Funded Other activities.