

AQUACULTURE

SOUTHERN REGIONAL AQUACULTURE CENTER IS FUNDING VITAL RESEARCH NEEDS IN THE REGION

Jimmy Avery

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Mississippi State University is host institution for the USDA-NIFA Southern Regional Aquaculture Center (SRAC) which is housed at the Delta Research and Extension Center. The mission of SRAC is to support aquaculture research, development, demonstration, and education to enhance viable and profitable U.S. aquaculture production to benefit consumers, producers, service industries, and the American economy. Projects that are developed and funded are based on industry needs and are designed to directly impact commercial aquaculture development in the southern region and the nation. For more information on these or other SRAC projects, go to <http://www.srac.msstate.edu/projectreports.html>

New Spawning Aid

Researchers at the USDA-ARS Warmwater Aquaculture Research Unit, Louisiana State University, and Kentucky State University have been awarded \$200,000 over the next two years to evaluate a potential spawning aid. There are a limited number of spawning aids available for use within commercial operations allowable on foodfish species. Researchers will determine the dosage efficacy and margins of animal safety in female channel catfish and evaluate the influence of implants on testes maturation within blue catfish males. Ovulation induction and spermi-

ation will also be evaluated in largemouth bass, an increasingly important aquaculture species in the U.S. Researchers will identify effective doses of GnRH IIa on spawning induction in the marine baitfish species pinfish and pigfish and the ornamental species red-tailed black sharks and a *Synodontis* catfish species. Development and approval of an Investigational New Animal Drug (INAD) exemption will be required for commercial use of GnRH IIa. The trials conducted in the proposed research will provide critical background information on performance and safety that will guide the formation of future FDA compliant trials.

Virulent *Aeromonas hydrophila*

Researchers at Auburn University, Mississippi State University, and the USDA Wildlife Services National Wildlife Research Center were awarded \$375,000 in June 2014 for a two year project on virulent *Aeromonas hydrophila*. This disease has the potential to severely impact the catfish industry in several southern states. This project will evaluate 1) specific vaccine candidates to prevent the disease, 2) evaluate the effect of specific disinfectants on the abundance of the bacteria on seining equipment and other farm-associated equipment, and 3) determine the correlation between in-pond environmental factors and epidemic *A. hydrophila* abundance in pond water, sediment,



A double-crested cormorant feeding in a catfish pond.

and/or fish. This project is expected to develop control measures effective at preventing or treating infections in catfish and improved biosecurity measures to prevent the spread of *A. hydrophila*.

Fish-eating Birds

Researchers at University of Arkansas at Pine Bluff, Mississippi State University, Virginia Tech University, and the USDA Wildlife Services National Wildlife Research Center have been awarded \$300,000 over the next two years to look at depredation of aquaculture fish by waterbirds. Lesser scaup have increased their use of baitfish ponds in recent years, especially as the number of ponds has decreased with declining catfish

production. Scaup are perceived to consume large quantities of baitfish and sportfish, especially golden shiner, fathead minnow, and goldfish on baitfish farms, and redear sunfish and other species on sportfish farms. Double-crested cormorants are known to depredate catfish and create serious economic concerns among producers. Current information is needed on cormorant roost locations, numbers of birds per roost, roost distance from active and inactive catfish ponds in Mississippi, and how cormorants may modify their use of roost sites as commercial aquaculture decreases. Ultimately, these two studies are needed to estimate economic losses of fish caused by these birds and to generate management recommendations for producers.



One of the split-pond designs that is being studied at the Thad Cochran Warmwater Aquaculture Center.

Split-Pond Systems

Researchers at the USDA-ARS Warmwater Aquaculture Research Unit, USDA-ARS Natural Products Utilization Research Unit, Mississippi State University, University of Arkansas at Pine Bluff, and Auburn University were awarded \$465,000 in February 2014 to research split-pond systems. Split-ponds have been rapidly adopted in commercial catfish farming, with more than 1,300 acres of ponds in use in Mississippi, Arkansas, and Alabama. However, basic design and system components vary greatly among current systems.

This project will evaluate split-pond designs for catfish aquaculture and evaluate the culture of warmwater species of commercial value other than catfish. The outcome of this project will be improved designs for catfish systems and a set of recommended engineering and management criteria for non-catfish species.

Channel-Blue Hybrid Catfish

Researchers at Auburn University and Stoneville's USDA-ARS Warmwater Aquaculture Research Unit were awarded \$300,000 in March 2015 for a two

year project to evaluate production performance of channel-blue hybrid catfish. The goal of this project is to 1) evaluate production methods that will provide year-round availability of hybrid catfish food fish, and determine the cost of production and 2) evaluate management techniques that will reduce the size variation of hybrid catfish food fish, determining impacts of these techniques on net production and production costs.

Probiotic and Prebiotic Supplements

Researchers at Texas A&M University, Auburn University, USDA-ARS Warmwater Aquaculture Research Unit, and University of Arkansas at Pine Bluff were awarded \$300,000 in May 2015 for a two year project to evaluate probiotics and prebiotics in commercial production. The goal of this project is to increase profitability of intensive aquaculture through the application of commercial prebiotic and probiotic compounds as functional diet supplements. This project will focus on testing of such products which may lead to improved health, production efficiency, and survival of prominent



species cultured in the southern U.S. under intensive pond and recirculating aquaculture system conditions.

Blue Catfish Germplasm

Researchers at the USDA-ARS Warmwater Aquaculture Research Unit and Louisiana State University were awarded \$45,000 in April 2014 for a three year project to look at cryopreserved sperm from blue catfish. The requirement to sacrifice the blue male to obtain sperm limits the genetic progress unless techniques for preserving that sperm are employed. This project will develop a repository of cryopreserved sperm from different blue catfish strains and individuals within strains to initiate estimation of genetic merit of blue catfish males for hybrid offspring production traits and develop a database to provide a framework for efficient storage and retrieval of cryopreserved blue catfish sperm samples and associated information. This database will provide information to potential user groups on a genetic merit for growth and carcass yield of hybrid catfish.