

General Session
**U.S. Fish & Wildlife Service Aquatic Nuisance
Species Small Grants Program**



Gulf States Marine Fisheries Commission
72nd Annual Spring Meeting
Wednesday, March 16, 2022
Sheraton Panama City Beach Golf & Spa Resort
Panama City Beach, Florida

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**Gulf States Marine Fisheries Commission
Technical Coordinating Committee**

**General Session
U.S. Fish & Wildlife Service ANS Small Grants Program**

**Wednesday, March 16, 2022
8:45 a.m. – 12:00 p.m.**

Agenda

- 8:45 Introduction – *Dave Donaldson*
- 8:50 Overview of Region 4 FWS ANS Small Grants Program – *Allan Brown/Cindy Williams*
- 9:10 USGS NAS Projects and NAS Database Tools – *Matthew Neilson*
- 9:40 Southeast Cooperative Fish Parasite & Disease Project – *Stephen (Ash) Bullard*
- 10:10 - BREAK -
- 10:30 Invasive Carp in the Lower Mississippi Watershed – *Michael Eggleton*
- 11:00 Status of Invasive Carps in the Tennessee and Cumberland River Basins – *Mark Rogers*
- 11:30 Impacts of a Novel Cyanotoxin on Fauna in the Southeast – *Susan Wilde*
- 12:00 ADJOURN

Summary

In 2014, the Region 4 U.S. Fish and Wildlife Service (FWS) started to explore ways to increase capacity to address the always increasing problem with Aquatic Nuisance Species (ANS) in the southeast region. They decided to enter into a partnership with the Gulf States Marine Fisheries Commission (GSMFC) to develop and administer an ANS Small Grants Program. This program also utilizes the expertise of the Gulf and South Atlantic Regional Panel on Aquatic Nuisance Species (GSARP) that is an advisory panel to the National Aquatic Nuisance Species Task Force. Members of the GSARP form the Review Committee that is charged with reviewing and ranking all proposals received through the program. Over the last eight years of this program, it has been able to fund 43 projects totaling over \$1,000,000. These projects have addressed a variety of invasive species and issues (giant salvinia, hydrilla, phragmites, didymo, invasive carp, rusty crayfish, speckled crayfish, red-rimmed melania, lionfish, apple snail, Asian clam, American eel swimbladder parasite, whirling disease, snakehead, invasive black bass, eDNA, bait regulations, novel cyanotoxin, etc.) impacting the region. In addition to addressing the invasive species in the southeast region, this program has resulted in increased collaboration and communication between the FWS, GSMFC, GSARP, and the academic community. The general session highlighted a few of the projects funded through the Small Grants Program and some of the ANS species/issues impacting the southeast region of the U.S.

Overview of Region 4 FWS ANS Small Grants Program

Allan Brown and Cindy Williams (U.S. Fish and Wildlife Service)

Allan provided a brief introduction to why and how the program was established before turning it over to Cindy, who provided a detailed overview of how the program is administered. She covered the process of how proposals are solicited by the program and how proposed projects are reviewed according to a standardized criteria-based review system. Cindy also outlined the scope of work that has been conducted by the various projects funded by this program, and she detailed how this program has been able to leverage funding from other sources to bolster its reach. A video of their full presentation is available on [YouTube](#).

USGS Nonindigenous Aquatic Species Database: Overview and Tools

Matthew Neilson (U.S. Geological Survey)

Matt provided a brief overview of the USGS NAS Database which has been the central repository for nonindigenous aquatic species data since 1990. The Database currently tracks 1,351 species, and has over 677,738 total records. He also outlined the various tools that USGS has developed to help resource managers in the region and nationally address the introduction, spread, and impacts of ANS. Some of these tools were funded through the Small Grants Program, including evaluation of aquatic plant range expansions, the Alert Risk Mapper, impact tables, eDNA data standards, and a horizon scan for Puerto Rico. Matt also briefly covered the database's Flood and Storm

Tracker and SEINED (Screen and Evaluate Invasive and Non-native Data) tools. A video of Matt's full presentation is available on [YouTube](#).

Southeastern Cooperative Fish Parasite & Disease Laboratory

Stephen (Ash) Bullard (Auburn University)

Ash provided a thorough overview of the Southeastern Cooperative Fish Parasite & Disease Laboratory (Cooperative) including their geographic scope and their diverse areas of expertise. He then presented the results of their project on Salmonid Whirling Disease (*Myxobolus cerebralis*) in the southeast that was funded by the Small Grants Program. This study found that the pathogen is present in the southeast, but is not in all waterways where salmonids are present. It also determined that the dispersal strategy of the causative oligochaete parasite is distinct in the southeast U.S. Ash also briefly covered some of the other parasites and pathogens that his lab is investigating in the southeast, and some examples were member states of the Cooperative that utilized his lab to examine the causes of fish kills and diseased fish. A video of Ash's full presentation is available on [YouTube](#).

Overview of Invasive Carp Research in the Lower Mississippi River Basin Conducted at the University of Arkansas at Pine Bluff

Michael Eggleton (University of Arkansas at Pine Bluff)

Mike presented an overview of results of bigheaded carp projects conducted at the University of Arkansas at Pine Bluff (UAPB) since 2016. Much of the previous research on silver carp *Hypophthalmichthys molitrix* has been focused in the upper Mississippi River and its larger tributaries, with comparatively little research having been done anywhere in the lower basin. Beginning in 2016, researchers at the UAPB began developing various silver carp projects aimed at assessing possible effects on native fishes, determining river of origin using otolith microchemistry, and general population assessment. These projects were funded in part by the Small Grants Program. During 2017, research in White River oxbow lakes assessed structural changes in fish assemblages in response to the wide establishment of bigheaded carps that had occurred in that system since 2002. These data were compared to a comprehensive historical dataset compiled in 2002 that pre-dated the wide establishment of bigheaded carps. During 2019, lapilli otoliths were extracted from 334 bigheaded carps collected from the lower Mississippi River (LMR) proper and six representative tributaries. From these otoliths, Sr and Ba microchemical signatures were assessed to determine the probable river of origin for carps. During 2019-2020, basic population assessments were conducted for silver carp collected in the LMR proper and four representative tributaries. Overall, 587 silver carp were collected with size, condition, age structure, growth, mortality, and recruitment assessed for all five populations. Beginning in 2021, research commenced in LMR secondary channels to assess possible effects of silver carp establishment on native fish assemblages. Datasets are currently being assembled from at least six locations spanning from the Missouri-Kentucky border downstream to the Louisiana-Mississippi border. Assemblage structure will be compared to historical datasets compiled from these

locations during the 1990s prior to carp establishment. This most recent research is scheduled to continue through 2023. A video of Mike's full presentation is available on [YouTube](#).

Status of Invasive Carps in the Tennessee River and Cumberland River Basins

Mark Rogers (U.S Geological Survey Tennessee Cooperative Fishery Research Unit)

Mark outlined the current known distribution of silver and bighead carp in the Tennessee and Cumberland Rivers. He also summarized the carp control goals in these waters, which include stopping the expansion of the carp invasion and reducing the abundance of carp in invaded sections of the rivers. The USGS' strategies to accomplish these goals include prohibiting the movement of carp by people, strategically removing carp through targeting collection efforts, installing barriers at various locks and dams along the rivers to stop/reduce carp movement, and monitoring abundance and movement of carp with acoustic tags. Mark also provided an overview of his research project (Implications of Silver Carp Invasion on the Food Web of a Freshwater Mussel Biodiversity Hotspot in Tennessee) that was funded by the Small Grants Program. A video of Mark's full presentation is available on [YouTube](#).

Impacts of a Novel Cyanotoxin on Fauna in the Southeast

Susan Wilde (Warnell School of Forestry & Natural Resources, University of Georgia)

Susan provided a presentation on her research on Avian Vacuolar Myelinopathy (AVM) that is caused by a novel cyanotoxin and causes mortality in eagles and numerous other species. Several parts of this research were funded through the Small Grants Program over multiple years. The cyanotoxin is produced by a cyanobacteria (*Aetokthonos hydrillicola*) that grows on the aquatic invasive plant Hydrilla. Through this research, Susan has been able to determine that this cyanotoxin can also cause the disease in fish, salamanders, frogs, turtles, and snake species. She was also able to confirm the trophic transfer through consumption in lab experiments, and that it can bioaccumulate in wild game and fish that may have impacts on human health. Susan provided a few management solutions to reduce the impacts of this disease which include effectively controlling submerged aquatic plants and limiting bromide levels in affected water bodies. A video of Susan's full presentation is available on [YouTube](#).



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