

Project 3

Development of a Statewide Stream and River Assessment Program for Aquatic Species of Conservation Concern

Final Report

State: Alabama

SWG Grant Number: T-3-4

Period: October 1, 2009 to September 30, 2011

Need:

This project will continue a statewide stream and river assessment program to gather new information on the distribution, abundance, species composition, and habitat requirements of aquatic species in Alabama. Species designated as Greatest Conservation Need (GCN) in the Alabama Comprehensive Wildlife Conservation Strategy will be targeted. In addition, this biomonitoring program will provide information evaluating stream and river health. Standardized stream sampling methods (i.e., Index of Biotic Integrity) developed by the Geological Survey of Alabama (GSA) will be employed. The GSA has developed and applied the fish Index of Biotic Integrity (IBI) to the Cahaba River and the Coastal River systems in Southeast Alabama. However, no statewide standardized stream and river assessment program for aquatic species exists in Alabama and Division of Wildlife and Freshwater Fisheries (DWFF) personnel have not been trained to perform such assessments.

Objective(s):

The objectives of this project are to initiate a bioassessment tool for the State of Alabama using the Index of Biotic Integrity (IBI) methodology, and to train DWFF biologists in stream and river assessments.

Expected Results:

These valuable tools will allow DWFF to assess Alabama waters resulting in more effective management of aquatic species, assist agencies in evaluating instream flow issues as related to aquatic species, understand aquatic resources and aquatic species more broadly and in greater depth, and better manage aquatic habitats.

Approach:

Although the IBI is routinely used for water-quality regulation in other states and has been successfully applied in selected drainages in Alabama, it is underutilized in Alabama as an assessment tool.

Several obstacles remain if a biomonitoring method is to be applied statewide for assessing streams and stream habitat.

- A standardized wadeable stream fish sampling protocol must be created and adopted for use statewide. Research is needed to explore reservoir and non-wadeable river sampling protocols.
- The IBI has not been calibrated statewide to Alabama's high fish biodiversity and variable ecological and physiographic regions. Ecoregional and/or drainage-specific scoring criteria still need to be determined for some of Alabama's waters.
- Application of the IBI requires accurate species identifications by well-trained individuals. The benefits of "green" sampling (i.e. non-destructive sampling), which means identifications are made on site and individuals are returned to the stream, are given a priority. A QA/QC system for fish identification within agencies is being established.
- Ecoregional and (or) drainage reference sites are established and sampled systematically over time.

Target Date for Achievement: September 30, 2011
Completion Date: September 30, 2011

Activities:

Geologic Survey of Alabama

- The GSA continues to calibrate the Index of Biotic Integrity (IBI) as a statewide biomonitoring tool in Alabama for wadeable and non-wadeable streams. GSA has recently finished calibration of the IBI for wadeable streams in the Tennessee Valley, Ridge & Valley/Piedmont, and Plateau Ichthyoregions and completed field sampling for wadeable streams in the Hills and Coastal Terraces Ichthyoregion with a final wadeable stream IBI summary report expected in early 2012. GSA has completed sampling non-wadeable river sites on the Black Warrior River for development of a non-wadeable/tailwater IBI, and has begun field sampling for a non-wadeable/tailwater IBI on the Alabama River.

Alabama Division of Wildlife and Freshwater Fisheries

- **ADWFF Watershed Management District I**

Twenty-four stream IBI sites were sampled in District I from 2009-2011. A total of 12,586 fishes representing 63 species were collected in 21 streams. All sites sampled were in the Tennessee River drainage, and methods and criteria developed for the Tennessee Valley Ichthyoregion were used for IBI calculations at these sites. District I had 4 Species of Conservation Concern (P1, P2) and 2 Watch List Species (P3) collected: *Erimystax dissimilis* (Streamline Chub), *Phenacobius uranops* (Stargazing Minnow), *Noturus sp. cf. flavus* (Highlands Stonecat), *Percina evides* (Gilt Darter), *Erimystax insignis*

(Blotched Chub), and *Etheostoma crossopterum* (Fringed Darter) (Table 1).

- **ADWFF Watershed Management District II**

Twenty-seven stream IBI sites were sampled in District II from 2009-2011. A total of 9,007 fishes representing 61 species were collected in 22 streams. Stream sites were sampled in the Coosa and Tallapoosa River drainages, and IBI scores were calculated using metrics and criteria developed for the Ridge & Valley/Piedmont Ichthyoregion. District II had 4 Species of Conservation Concern collected (P1, P2) and 3 Watch List Species (P3) collected: *Etheostoma brevirostrum* (Holiday Darter), *Cyprinella caerulea* (Blue Shiner), *Etheostoma chuckwachatte* (Lipstick Darter), *Percina brevicauda* (Coal Darter), *Fundulus bifax* (Stippled Studfish), *Cottus tallapoosae* (Tallapoosa Sculpin), and *Percina smithvanizi* (Muscadine Darter) (Table 1).

- **ADWFF Watershed Management District III**

Twenty-six stream IBI sites and 8 seasonal mainstem river sites were sampled in District III from 2009-2011. A total of 10,141 fishes representing 62 species were collected in 16 streams. Sites sampled were in the Black Warrior, Cahaba, and Tombigbee River drainages. IBI scores were calculated using metrics and criteria for the Plateau & Ridge & Valley/Piedmont Ichthyoregion. District III had 2 Species of Conservation Concern (P1, P2) and 3 Watch List Species (P3) collected: *Notropis cahabae* (Cahaba Shiner), *Percina brevicauda* (Coal Darter), *Alosa chrysochloris* (Skipjack Herring), *Etheostoma bellator* (Warrior Darter), *Etheostoma douglasi* (Tuskaloosa Darter) (Table 1).

- **ADWFF Watershed Management District IV**

Twenty-six stream IBI sites were sampled in District IV from 2009-2011. A total of 9,198 fishes representing 48 species were collected in 19 streams. Stream IBI sites were sampled in the Chattahoochee, Choctawhatchee, Chipola, Conecuh, Pea, and Yellow River drainages. IBI scores were calculated using metrics and criteria developed for the Southern Plains Ichthyoregion. District IV had 2 Species of Conservation Concern (P1, P2) and 4 Watch List Species (P3) collected: *Pteronotopis euryzonus* (Broadstripe Shiner), *Micropterus cataractae* (Shoal Bass), *Campostoma pauciradii* (Bluefin Stoneroller), *Notropis hypselipis* (Highscale Shiner), *Pteronotopis grandipinnis* (Apalachee Shiner), *Percina austroperca* (Southern Logperch) (Table 1).

- **ADWFF Watershed Management District V**

Twenty stream IBI sites were sampled in District V from 2009-2011. A total of 2,651 fishes representing 50 species were collected in 18 streams. All streams sampled drained into the Tombigbee River, Escatawpa River, Mobile Bay, or directly into the Gulf of Mexico. IBI scores were calculated using metrics and criteria for the Southern Plains Ichthyoregion. District V had 1 Species of Conservation Concern collected, *Etheostoma lynceum* (Brighteye Darter), but no Watch List species.

Table 1. Species of Greatest Conservation Need (P1, P2) and Watch List Species (P3) collected during wadeable and non-wadeable stream sampling in 2009-2011.

	District I	Tennessee	
Status	Scientific name	Common name	Total Collected
P2	<i>Erimystax dissimilis</i>	Streamline Chub	41
P3	<i>Erimystax insignis</i>	Blotched Chub	36
P2	<i>Phenacobius uranops</i>	Stargazing Minnow	3
P2	<i>Noturus sp. cf. flavus</i>	Highlands Stonecat	29
P3	<i>Etheostoma crossopterus</i>	Fringed Darter	60
P2	<i>Percina evides</i>	Gilt Darter	25

	District II	Coosa, Tallapoosa	
Status	Scientific name	Common name	Total Collected
P2	<i>Cyprinella caerulea</i>	Blue Shiner	21
P3	<i>Fundulus bifax</i>	Stippled Studfish	15
P3	<i>Cottus tallapoosae</i>	Tallapoosa Sculpin	26
P1	<i>Etheostoma brevirostrum</i>	Holiday Darter	3
P2	<i>Etheostoma chuckwachatte</i>	Lipstick Darter	65
P2	<i>Percina brevicauda</i>	Coal Darter	2
P3	<i>Percina smithvanizi</i>	Muscadine Darter	77

	District III	Black Warrior	
Status	Scientific name	Common name	Total Collected
P3	<i>Alosa chrysochloris</i>	Skipjack Herring	1
P1	<i>Notropis cahabae</i>	Cahaba Shiner	400
P3	<i>Etheostoma bellator</i>	Warrior Darter	5
P3	<i>Etheostoma douglasi</i>	Tuskaloosa Darter	258
P2	<i>Percina brevicauda</i>	Coal Darter	105

	District IV	Chipola, Chattahoochee, Choctawhatchee	
Status	Scientific name	Common name	Total Collected
P3	<i>Campostoma pauciradii</i>	Bluefin Stoneroller	7
P3	<i>Notropis hysilepis</i>	Highscale Shiner	1
P2	<i>Pteronotropis euryzonus</i>	Broadstripe Shiner	6
P3	<i>Pteronotropis grandipinnis</i>	Apalachee Shiner	64
P2	<i>Micropterus cataractae</i>	Shoal Bass	1
P3	<i>Percina austroperca</i>	Southern Logperch	2

	District V	Escatawpa	
Status	Scientific name	Common name	Total Collected
P1	<i>Etheostoma lynceum</i>	Brighteye Darter	9

Significant Problems Encountered: None.

Significant Deviations: None.

Costs: See Grant Agreement, annual cost reflected on SF 269.