

River & Streams Technical Committee
State of Indiana Report – 2015
North Central Division American Fisheries Society
Chair: Stephen J Jacquemin



The following accounts have been solicited from the Indiana American Fisheries Society membership and summarize some of the major lotic ecological research, restoration projects, management strategies, monitoring appointments, and conservation efforts ongoing across the state of Indiana.

Indiana Department of Natural Resources

In 2015, Dave Kittaka and Debra King (IDNR District 5 Fish Management) conducted a general stream survey on Indiana Creek. Indiana Creek flows through Monroe, Greene, Lawrence and Martin Counties. The recently completed section of I-69 to Bloomington, Indiana directly crossed Indiana Creek in three separate locations. The stream was last surveyed in 2004 during a targeted black bass survey. The data is being summarized and a report will be posted by next summer.

Over the past two years, Clinton Kowalik has run the Shoreline Fishing Trip Down the White River, promoting public access, demonstrating that river fishing can be simple, and showing off the health and beauty of the river and its fish that flows and swims in many people's backyard – using social media. For this project, Clinton Kowalik fished at 10 public sites in one day – every hour on the hour – fished for 30 mins – from shore with a spincast rod and a chartreuse rooster tail. At each spot, photos were taken and talks were given regarding habitat and species encountered. A DNR News Release was also created to talk about the event to a wider audience.

In 2015, the big rivers crew (Craig Jansen) conducted annual Shovelnose Sturgeon monitoring on the Wabash River and annual paddlefish monitoring on the Ohio River. Catfish were sampled on the White River, via hoop nets and electrofishing, and fin clips were collected for Eastern Illinois University for catfish genetic analysis. In addition, Kentucky DFWR was assisted with catfish sampling via trotlines on the Ohio River as well as USFWS with an Ohio River Asian carp telemetry project. Asian Carp were also collected, filleted, and served to the public at two events. A general fisheries survey on the Poison Creek embayment of the Ohio River was also conducted. Finally, Sauger were sampled at Newburgh Dam tailwaters this past December.

Bureau of Water Quality (Muncie, IN)

This year the Bureau of Water Quality conducted a creel survey along the White River Greenway in Muncie, IN. This 4.5 mile multipurpose trail opened in 1999 and was completed in 2005. The White River Greenway follows the meandering curves of White River through various parks, overlooks and green spaces. This roving creel consisted of hourly counts and interviews along three sections of the White River Greenway.

The creel survey matched a study done by the Bureau of Water Quality in 1983. Questions pertaining to fish species sought/caught, reason for visit and demographics were asked. Fishing pressure, harvest rate and angler fishing preferences were also calculated. The goals of this creel survey were to 1.) Determine the amount of fishing pressure put on the West Fork of White River, 2.) Look for trends in the locations of anglers and species of fish sought/caught by these anglers, and 3.) Determine what is next for the West Fork White River fishery.

When looking at the anglers who had a preference in a specific species the numbers were heavily lopsided. Smallmouth bass (68%) were the most sought after species. All other species were sought less than 10% each. The results of 1983 creel survey were much different. Smallmouth bass were only sought after by 12% of the 105 anglers who had a preference. The biggest difference came in the number of anglers fishing for common carp (1983= 34% and 2015= 4.8%).

Since this was a roving creel, interviewed anglers were actively fishing and had completed their fishing trips. For this reason a complete and incomplete trip CPUE were calculated. The incomplete CPUE was determined by the number of fish caught at the time of the interview. The incomplete CPUE was 1.81 and the completed trip CPUE was 1.77. Yearly creel surveys will continue to be done to help strengthen the results of this initial survey.

Indiana Department of Environmental Management Office of Water Quality / Watershed Assessment and Planning Branch

Introduction

Fish community sampling conducted by IDEM supports the Clean Water Act's Section 305(b)/303(d) Integrated Report on Indiana's Water Quality and Listing of Impaired Waters for the State and IDEM's Environmental Performance Partnership Agreement (EnPPA) with U.S. EPA Region 5. Fish community data collected at each site includes number of individuals per species, maximum and minimum length (millimeters), mass weight (grams) and anomalies (e.g., deformities, eroded fins, lesions, tumors, etc.). The data are used to calculate the fish community Index of Biotic Integrity (IBI). Additional data collected at the site includes a Qualitative Habitat Evaluation Index (QHEI), in-situ water chemistry, and a macroinvertebrate sample.

Reference Site Selection and IBI Modernization

The U.S. Environmental Protection Agency (U.S. EPA) evaluated IDEM's biological assessment program in January 2014. The review provided information on the strengths and limitations of the bioassessment program, resource allocation and prioritization for improving the bioassessment program, and integration of biological assessments to more precisely describe aquatic life uses and develop numeric biological criteria. Modernization of the fish and macroinvertebrate IBIs and reference site selection was the most obvious and urgently needed refinement to the bioassessment program as stated in the evaluation of 13 critical technical elements for state bioassessment programs.

In October 2014, IDEM started work to evaluate, revise, and update Indiana's existing regionalization and classification scheme for stream fish and macroinvertebrate IBI models. Additionally, IDEM will conduct site reconnaissance and sampling of reference sites, with the goal of at least 20 reference sites each year over the next 10 years, to refine biological indices, water quality criteria for aquatic life use, and possibly develop other assessment indicators and thresholds.

Monitoring Activities

The Office of Water Quality (OWQ), Watershed Assessment and Planning Branch conducts various programs/projects aimed at monitoring the biological integrity of a streams.

2015 Results Summary

Collections for the year 2015 focused on the Upper/Lower Wabash River Basin as well as other targeted watersheds (South Fork Blue River, Whitewater River, and Little Calumet River) and sub-watersheds (Silver Creek, Long Run-Indian Creek, and Flowers Creek-Eel River) throughout the state. A total of 99 fish community samples were collected from 88 sites resulting in the capture of 26,161 individuals representing 101 different species. Of the species collected this year, one State Endangered (SE) species was re-captured at a known location and one Special Concern (SC) species was collected at new site location but in a known distribution range. Macroinvertebrate samples are currently being processed in the lab.

Probabilistic Monitoring

The Probabilistic Monitoring Program provides a comprehensive, unbiased assessment of all Indiana streams for their ability to support aquatic life use and recreational use by sampling at least 38 randomly generated sites each year in major Indiana river basins. Data collected from the sites include water chemistry and algal samples (seston and periphyton), bacteriological contamination in the form of *E.coli*, macroinvertebrate and fish communities, as well as habitat evaluations. Between June and October 2015, IDEM collected 42 fish community samples at 38 sites on waterbodies in the Upper Wabash River basin. A total of 88 species were collected

including the state endangered Gilt Darter (*Percina evides*) and special concern Tippecanoe Darter (*Etheostoma tippecanoe*).

Targeted Monitoring

Watershed Characterization and Performance Monitoring are two water quality monitoring programs that target smaller watersheds, and occasionally, special projects are conducted as needed. Between June and September, IDEM biologists collected 24 fish community samples at 21 sites in the South Fork Blue River Basin as part of a Watershed Characterization study and Total Maximum Daily Loads project. There were 6,354 individuals representing 38 species collected. This program provides data which characterizes the current condition of the selected watershed, identifies impairments, and designates critical areas for watershed improvement plans. Data collected includes water chemistry, bacteriological sampling (*E.coli*), macroinvertebrate and fish communities, habitat assessments, and flow at a subset of the sites.

Performance Monitoring studies are conducted after watershed remediation has occurred. Generally, 2 to 5 sites in select sub-watersheds are sampled to determine if a previously impaired stream segment has improved. Two 2015 sites were sampled once for fish and macroinvertebrate communities: Wilson Rhodes Ditch in Miami County (29 individuals among 9 species) and Indian Creek in Switzerland County (876 individuals among 23 species). There were a total of 32 species and 905 fish individuals captured.

- Additionally, Flowers Creek in Miami was also sampled for nutrients and DO impairments; and there was one site on Silver Creek in Wabash County that was sampled for *E. coli*. Assessments will be done later this year and results will be reported in the IAFS April or December 2016 newsletters.

Reference Site Sampling

In 2015, IDEM sampled 12 reference locations in the west-central region of the state (Eel, Wabash, and Sugar sub-basins) and 13 reference locations in the east-central region of the state (Whitewater and Middle Ohio-Laughery sub-basins). “Reference site” designation was determined by surrounding land-use type and in-stream chemical and physical data from previous sampling events. There were 14 west-central fish community samples with 3,805 individuals representing 49 species. There were 15 east-central fish community samples with 3,909 individuals representing 46 species. State Endangered Redside Dace (*Clintostomus elonatus*) was re-captured in a newly identified stream in the Whitewater Basin. During the 2014 sampling of the Whitewater Basin, IDEM discovered an extension of the Redside Dace (*Clintostomus elonatus*) distribution into two new streams.

2015 316(a) Thermal Studies

Two sites were sampled for fish community to assess any changes that could be caused by thermal changes due to industry in the East Branch Little Calumet River Basin. These sampling events are used to help biologists properly review 316(a) study proposals received by our Permit

Branch. There were 18 species collected at a site on Burns Ditch in Porter County and 19 species collected at a site on the East Branch Little Calumet River, totaling of 249 individuals. These two sites indicated that no harm is being caused by the industry on the basin as it pertains to the thermal conditions permitted by IDEM's permit office.

Fish Tissue Sampling

This year the Fish Tissue Contaminants Monitoring Program successfully sampled 28 sites in the Great Lakes Basin and Ohio River Basin. Shipment preparations are currently underway for 2015 analysis sets. In 2016 IDEM will be sampling within the Patoka and West Fork White River watersheds.

Wright State University - Lake Campus

Wright State University – Lake Campus is currently involved with several ecomorphological, evolutionary, and macroecology projects in the Wabash River Basin. The primary project involves *Describing potential sources of morphological variation in aquatic taxa*. Morphological variation has been identified in fish and macro invertebrate taxa as a result of developmental history, environmental plasticity (biotic and abiotic), and genetic influences. However, relatively few studies have incorporated all of these potential influences in the same predictive framework to parse out the order and magnitude that these sources contribute. Beginning this spring a series of streams in the upper Wabash River basin will be sampled for fishes and macroinvertebrates, water quality, and habitat. Morphology of each will be measured and compared to each predictive layer to address this issue. The project will involve several undergraduate research theses and serve as a starting point for long term morphological monitoring in the region.

Technical Report Contributors

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