Since 1957, Illinois Natural History Survey biologists have been building a world-renowned fisheries monitoring program.

Monitoring the Illinois River Fisheries

Thanks to 50-plus years of sampling, it's possible to detect changes in the Illinois River fishery and respond quickly with management decisions.

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The foundations of ecosystem science and management are grounded in studies of theory, comparisons, experiments and long-term studies. Often, the missing piece in this foundation for managing natural resources stems from a lack of long-term data that allows adequate assessments and comparisons of past and current conditions.

Fortunately for the state of Illinois, Illinois Natural History Survey biologist William Starrett was well ahead of his time in creating a program more than 50 years ago to ensure that this information would never be missing for managing the Illinois River fishery.

Starrett initiated the Illinois River Fish Population Monitoring Program (commonly referred to as LTEF for Long Term Electrofishing) in 1957. Since then, 27 fixed sites on six reaches of the Illinois River have been sampled annually under the exact same protocol.

This protocol includes one hour of main channel border AC electrofishing in the Dresden (2 sites), Marseilles (3), Starved Rock (2), Peoria (8), La Grange (6) and Alton (6) reaches The purpose of the LTEF is to monitor fish relative abundances, species diversity and indicators of fish health (e.g. external lesions, visual abnormalities). Length and weight also are collected from all captured specimens to allow further assessments of the status and health of the Illinois River fishery.

From 1957-1988, the LTEF was funded by the Department of Natural Resources, INHS and the U.S. Army Corps of Engineers and conducted by INHS fisheries biologists. Since 1989 LTEF has been funded by the Federal Aid in Sportfish Restoration program and conducted by employees of the Illinois Natural History Survey's Illinois River Biological Station in cooperation with the Department of Natural Resources.

The Federal Aid in Sportfish and Wildlife Restoration program maintained by the U.S. Fish and Wildlife Service is one of the best programs in this country for championing natural resource management and research.

Unbeknownst to many anglers and hunters, funding allocated to this program stems from a small tax charged when fishing and hunting related items, such as reels, rods, guns and ammunition, are purchased. This minimal fee is then summed and allocated to each state annually for natural resource management and research based on land area and the number of paid licenses.

In essence, anglers and hunters are subsidizing research to ensure the sustainability of the natural resources that

they are so passionate about. Further, the money collected from this tax can be used only for natural resources research and management approved by the USFWS. The benefits of this program have been invaluable for natural resource management in this country and programs such as the LTEF have been pivotal for guiding management of the Illinois River fishery.

As the LTEP program completes its 52nd sampling year, many positive changes have been observed in the Illinois River waterway fishery.

In the early years, the Illinois River was still suffering from the effects of sewage discharge into the river from the Chicago metropolitan area. The discharge of this effluent caused many negative effects in the Illinois River, with the most pronounced being high biological oxygen demand leading to a dead zone for fishes in most portions of the upper Illinois River.

As may be expected, in the earlier years, catches from the upper Illinois River, as far down as LaSalle, were dominated by pollution- and low dissolved oxygen-tolerant exotic species, such as common carp and goldfish. With the passage of the Clean Water Act in the early 1970s, marked changes in the Illinois River fishery were observed. For example, common carp and goldfish are no longer dominant species in the Illinois River and the sportfish community of the upper Illinois River is robust and has recovered substantially.

Despite some influx of new exotic species from the Mississippi River and the Great Lakes, native fish species richness and diversity within the Illinois River also has increased over time. Although not a goal for the LTEF, this program has served in an early detection monitoring capacity for collections of exotic species spreading downstream from Lake Michigan and upstream from the Mississippi River.

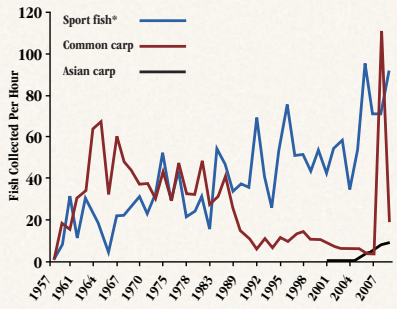
Notable recent collections have monitored the downstream advancement of round goby and the upstream expansion of Asian carps in the Illinois River. Monitoring suggests low relative abundances of round goby in the Illinois River; however, further advancements downstream have been consistent over time. In contrast, Asian carps now dominate the biomass of fishes in many reaches of the Illinois River.

Thanks to the foresight of William Starrett, the LTEF has been able to detect changes in the Illinois River fishery, upon which management recommendations and strategies can be employed to continually improve this fishery and deal with emerging challenges.

The LTEF sits in a unique position within the U.S. and world in its consistency and duration of fisheries monitoring. Few, if any, fisheries programs rival the quantity, quality and duration of fisheries information available to manage the state's large river fisheries. As such, DNR and INHS expanded the program in the summer of 2009 by conducting 15-minute pulsed DC electrofishing collections throughout the Illinois River and at Chain of Rocks and Pool 19 of the Mississippi River. Little information exists on main channel fisheries within the Illinois and Mississippi rivers. Specific collections using multiple gears will target this habitat to enhance our understanding of this unknown fishery beginning in 2009.

In conjunction with ongoing DNR Illinois and Mississippi river sampling programs, the expanded LTEF will provide the state of Illinois with one of the most comprehensive large river fisheries monitoring programs in the world.

Fish trends, 1957-2008



*** bluegill, black crappie, green sunfish, pumpkinseed, channel catfish, flathead catfish, largemouth bass, smallmouth bass, white bass.**

Electrofishing

Pulsed DC electrofishing uses direct current and is now considered the more favorable technique. Three-phase AC electrofishing uses alternate current and is used in the LTEF sampling because that was the technique used when the program was started in 1957.

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In addition to collecting information on the relative abundance of various fish species, biologists record lengths, weights and the presence of any lesions that signal potential health issues.