INDIANA
STATE REPORT
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License Fee Increase

Indiana Division of Fish & Wildlife (DFW) was successful in moving forward a new license fee package which included a fee increase on hunting, fishing, and trapping licenses and most commercial licenses and permits. This was the first fee increase on personal licenses since 2006 and some commercial license and permit fees had not increased since the 1980s. The new price structure was implemented on permits and commercial licenses in October 2021 and January 2022 for personal licenses. DFW staff conducted a comprehensive analysis based on historic, geographic, and economic perspectives to develop the new fee schedule. The impacts of this new fee schedule on revenue will not be seen until 2022.

2021 proved to be another successful year for license sales and revenue, showing an increase in both over 2020 license sales. This was in addition to the 15-16% bump we saw in 2020. This was likely the result of continued participation in outdoor recreation as a result of COVID-19.

Land Acquisition

Division of Fish & Wildlife acquired a total of 554 acres which included an additional 552 acres to Sugar Ridge Fish & Wildlife Area and 32 acres to Little Pigeon Creek Wetland Conservation Area. Two new public access sites were constructed and opened, one on the Kankakee River and another on the Little Blue River in Rush County.

Improving Wildlife Passage

Low-head dam removal and modification projects in Indiana have picked up steam in recent years. In 2021, DFW staff provided technical and financial assistance for 5 dam removal or modification projects. Removing or modifying low head dams restores aquatic ecosystems, improves water safety and improves recreational opportunities. Much work remains to be done in this area and the potential for further dam removal work is high with the availability of funds through the federal infrastructure bill.

DFW environmental permitting team has made great strides in working with the State Department of Transportation to allow greater wildlife passage under bridges and culverts across the state. By working with project designers to incorporate measures such as benches on sloped

banks beneath bridges and improved stream substrate design in culverts, connectivity is restored, and roads are made safer. Work is currently underway to establish monitoring of a wildlife underpass installed on Interstate 69 in southern Indiana. Data concerning the frequency and use of this underpass will help inform project designers on underpass best practices.

Increasing landowner engagement

2021 saw an increase in the number of full-time positions in Indiana dedicated to conservation on private lands. Two new CRP biologist positions were filled and housed within the existing DFW private lands program. These positions are tasked with providing technical services to citizens enrolled in the CRP program by conducting establishment checks, maintenance checks, re-enrollment reviews, providing burn plans and assisting with new offer planning. These positions are supported by DFW and funded through a CRP agreement with Natural Resources Conservation Service (NRCS).

2021 also saw an increase in partner biologist positions through the Pheasants Forever/Quail Forever Farm Bill Biologist program. Three new positions were created and filled to provide technical assistance and outreach to landowners. These positions are supported by a wide range of partners including DFW, NRCS, Ceres Solutions, Land O'Lakes/Truterra, The National Fish and Wildlife Foundation, The Indiana Soybean Alliance, The Indiana Corn Marketing Council, and the NiSource Foundation. PF/QF biologists work closely with DFW biologists to deliver great conservation services to Indiana landowners.

Invasive Carp

Indiana continues to pursue options for allowing commercial harvest of silver and bighead carp on the White and Wabash rivers. In 2021 staff pursued securing contract fishers for work on the Wabash and White Rivers. However, after reviewing existing regulations, it was determined that fishers working under contract could not sell fish and would have to pay for disposal. This was prohibitive for fishers who correspondingly upped their bids for completing the work. Due to the costly nature of the contracts, this option was not pursued. On the Ohio River, Indiana worked with the Kentucky DNR to allow their contracted crews entry into Indiana tributaries and embayment's. The work done by these crews will provide a clearer picture of the best techniques for fishing these waters and how much fish production is available. Invasive carp work, including utilization of commercial fishing, is designed to make our waters safer, cleaner, and better places to recreate. Moving forward staff will continue investigating methods for carp control by working jointly with surrounding states and engaging with citizens.

Indiana's Integrated Deer Management Project

The Integrated Deer Management Research Project was initiated at Purdue University to better understand the relationship between people, deer, and the impact of deer on natural resources. While the project is on-going, researchers have made significant discoveries related to deer density estimation. Researchers have identified that using paired cameras (infrared and visible spectrum cameras) to record transect flights to count deer appears to be the most cost-effective technique for estimating deer population while also having the least amount of variance. This project has presented Indiana DNR with a technique that is not cost-prohibitive for estimating statewide and local deer densities. These techniques are currently under review for

publication. When published, they will also be beneficial to other states in the Midwest. On the human side, researchers looked at creating methods that will incorporate the public's emotions about deer and regional conflict analysis into decision-making to supplement more traditional methods of seeking input on deer management from opinion surveys. These methods will directly impact Indiana's ability to stay relevant with non-traditional customers who may not have traditional interactions (i.e., hunting and/or conflict) with deer by including a more nuanced view of deer and their relationship with people into decision-making.

Weasel and Shrew Detection with eDNA

There are two species of weasel in Indiana (long-tailed, least) and six species of shrews (northern short-tailed, pygmy, smoky, masked, southeastern, least) but little information exists for both taxa as they are small, cryptic, and difficult to study. Researchers at Mississippi State University worked with Indiana DNR staff to conduct a pilot project determining whether eDNA in soil had the ability to help detect weasels in shrews in combination with an attraction device. Cover boards were placed for shrews in the field at sites known to have shrews and a test of two bait devices was conducted with a least weasel in captivity at Western North Carolina Nature Center to see if the species could be effectively detected. From under 27 cover boards, shrews were detected at 82%. The weasel was able to be detected from soil samples collected up to 7 days after the weasel spent 10 minutes around the attraction device. The results are encouraging and indicate both taxa could be monitored using soil eDNA. Soil eDNA requires the animal to have direct contact with the location, but the use of devices with attractants increases detection probabilities. Naïve detection at cover objects was sufficiently high to use cover objects in an occupancy study to estimate shrew species distribution. This is a promising method to reveal habitat preferences and range limitations for these understudied species. Weasel applications will require a field study to further assess efficacy. With the success of the first phase, a second phase would be conducting statewide occupancy estimates of shrews and field-testing the ability to estimate occupancy for weasels.

50 Years of Wild Turkey Harvest in Indiana

We examined trends over fifty years of eastern wild turkey (*Meleagris gallopavo silvestris*) harvest in Indiana. Wild turkeys were extirpated from Indiana in the early 20th century and were successfully restored through translocations that occurred for 48 years (1956-2004). A conservative spring season structure was established in 1970 in two Indiana counties which grew into spring and fall seasons for all Indiana counties beginning in 2005. Over 50 years (1970-2019), the pattern of wild turkey harvest in counties was rapid growth for the first 16 years, followed by a period of more moderate growth, and stabilization after 40 years. Counties with the longest harvest history maintained a consistent level of harvest within 5% of the post-restoration peak. Annual harvest within counties varied depending on turkey age structure, landscape composition, and restoration effects. Specifically, there was higher annual harvest when there were more two-year-olds in the population. Counties with less developed area and more edge habitat had higher annual harvest rates. Initial restoration conditions including the number of wild turkeys released and the amount of time between restoration and the first harvest season also affected annual harvest rates. Sustaining current harvest levels will depend on successful production and maintaining suitable turkey habitat in the state.

Wildlife Health

Through 2021, Indiana utilized an updated version of an online Sick and Dead Wildlife Report tool, which allows the public to easily report cases of sick/dead wildlife observations. Multiple disease event updates are included in the 2021 report. In northern Indiana, mute swans were found dead throughout winter 2020 – '21 and major pathologic changes were associated with parasitism (*Sphaeridiotrema, primarily*). Canada geese experienced a large mortality event in the same area over the course of approximately 3 weeks (mid-February through early March), but a cause was not determined. Later in the year, hundreds of snow geese were found dead in southern Indiana, and this was attributed to avian cholera. As with many states, our nongame bird program was faced with a widespread songbird mortality event in the spring. Indiana recommended bird feeding restrictions statewide as the event unfolded which were eased as the event subsided. The Sick and Dead Wildlife Report tool was integral to making spatial decisions regarding bird feeding recommendations. Among mammal species, an outbreak of tularemia was confirmed in cottontail rabbits in northern Indiana but was localized and subsided quickly. Only two cases of epizootic hemorrhagic disease were confirmed in white-tailed deer and no positive cases of chronic wasting disease (CWD) were discovered. To bolster CWD surveillance efforts, Indiana implemented a taxidermist incentive program, which offers a limited number of taxidermists monetary compensation for retrieval of white-tailed deer tissue samples.

Proactive efforts have also been underway to identify and prevent wildlife loss due to disease. The furbearer program continued its multiyear project in cooperation with Wildlife Ecology Institute and Luther College to survey gray foxes and their ectoparasites for a suite of pathogens that could be contributing to disease in gray fox. Additionally, the nongame mammal program has initiated a research project aimed at reducing the prevalence of racoon roundworm in Allegheny woodrat habitat by distributing anthelmintic baits into targeted areas of the environment. Finally, hatcheries around the state continued regular surveillance of multiple pathogens, and no significant fish health events were identified.

Fisheries and Angler Creel Surveys

A total of 63 fisheries surveys were completed in 2021. Survey types included 22 status and trends surveys, 8 community surveys, 9 spot check surveys, and 26 specific species surveys. The specific species surveys targeted walleye, hybrid walleye, largemouth bass, crappie, trout, cisco, channel catfish, and hybrid striped bass. Angler creel surveys were also conducted at Dogwood Lake, Cagle's Mill Lake, and Lake Michigan.

Alternative Creel Methods Development

Fisheries Research staff investigated alternative approaches to estimated fishing pressure by traditional creel surveys. DNR used trail cameras positioned in key locations to estimate property use and fishing pressure on several small bodies of water. Results showed significant differences between fishing pressure in 2020 and 2021, likely due to COVID-related behavioral change. DNR is now partnering with HuntPro to improve an artificial intelligence algorithm traditionally used to identify wildlife to classify human lake users by activity type and improve the efficiency in which these surveys can be completed.

JC Murphey Lake Rehabilitation

JC Murphey Lake (1,000 acres) at Willow Slough Fish & Wildlife area is in the process of a complete rehabilitation. A fish salvage has occurred and adult largemouth bass, bluegill, black crappie, redear sunfish, and channel catfish have been removed from the lake and are being stored for restocking the lake in fall 2023. The lake is being drained and once dry dredging will occur, an aeration system installed, and fish habitat structures will be constructed and placed on the lakebed. The plan is to restock the lake in 2023 and 2024 with a total of 2 million largemouth bass, 1 million bluegill, 500 thousand redear sunfish, 100 thousand black crappie, and 75 thousand channel catfish.

Mussel Population Augmentations

Nongame Aquatic unit staff collaborated with several partners to augment mussel populations in four Indiana streams. Biologists collected gravid Plain Pocketbook and Snuffbox mussels for propagation and reintroduction projects on the White River and Tippecanoe River, respectively. They also did similar work to reintroduce White Heelsplitter, Fatmucket, and Plain Pocketbook into the East Branch of the Little Calumet River. Several species translocated as well including Plain Pocketbook, Round Pigtoe, and Spike that also went to the Little Calumet River. Finally, Kidneyshell mussels produced at Kentucky's Center for Mollusk Conservation were placed into Wildcat Creek for reintroduction.

Green Salamander Range Expansion

Indiana DFW discovered two previously unknown colonies of state endangered green salamanders in southern Indiana during the 2021 field season. Indiana's green salamander populations occupy a very small portion of extreme southern Indiana and are approximately 100 miles from the main part of the species' geographic range. About 12 Indiana colonies have been identified since they were first discovered in the state during the early 1990's. The recent finds extend the species Indiana distribution slightly north and south of where they were previously known to occur in the state.

Paddlecraft Wildlife Index

In 2021, Indiana DNR staff conducted the second year of the Paddlecraft Wildlife Index, a new volunteer monitoring effort to engage with paddlers while collecting data about 12 species of wildlife likely to be found along Indiana's waterways. The long-term goal is to develop trend indices for key wildlife. The index is targeting beaver, mink, muskrat, river otter, Bald Eagle, Osprey, Kingfisher, Great Blue Herons, Great Egrets, red-eared sliders, Blanding's turtles, and painted turtles. Over 1600 volunteers signed up, with over 600 paddling trips being reported in 2021. Volunteers were provided an identification key, instructions in a welcome letter, and postage paid postcards to report data. A volunteer evaluation was distributed at the end of the 2021 season to solicit feedback and understand volunteers. Results showed 96% of volunteers thought the volunteer experience was fun, 96% were likely to volunteer again, and 90% would recommend to a friend. Several survey comments said getting to participate added more meaning to their paddles. Based on feedback from the evaluation, Indiana DNR staff are looking to add an

online data entry option for 2022. The initial phase of the Paddlecraft Wildlife Index will continue for 8 years, then be evaluated.