

# Indiana Inland Trout Strategic Plan 2019-2024



## *Authors*

Larry Koza  
Corey DeBoom

## *Editors*

Daniel P. Carnahan  
Jeremy D. Price  
Steven B. Donabauer

# CONTENTS

Management History.....	1
Population Status .....	2
Angler Status.....	6
Program Analysis.....	8
Strategic Plan .....	11
Population Goal .....	11
Human Dimensions Goal.....	13
Habitat Goal .....	15
Approval .....	16
Prioritized Strategies.....	17
Program Actions .....	19
Summary Reports.....	19
Appendices.....	20

*Cover photo: Division of Fish and Wildlife Naturalist Aides Devin Baier (left) and J.T. Ledet hold Brown Trout collected during a survey of Solomon Creek (Elkhart Co.) in July, 2007.*

*Acknowledgements: T. Bacula, M Horsley, M. Linn, N. Haunert, D. Kittaka, and S. Bogue provided constructive comments.*

## MANAGEMENT HISTORY

Brook Trout (*Salvelinus fontinalis*; Brookies), Brown Trout (*Salmo trutta*; Browns) and Rainbow Trout (*Oncorhynchus mykiss*; Rainbows) are members of the family Salmonidae. They are slender, often brilliantly colored fishes with very small scales and a fleshy adipose fin between the dorsal and caudal fins. None of the fins possess any spines, thus they are known as soft-rayed fish.

Brookies, Browns and Rainbows are cold-water fishes that require higher water quality for survival and growth than their warm-water counterparts (e.g., Bluegill and Largemouth Bass). Trout generally prefer water temperatures below 70°F and dissolved oxygen levels of at least 6 ppm. Browns and Brookies are most and least tolerant, respectively, of warm water temperatures.

Brookies are native to eastern North America and the Great Lakes as far west as Minnesota, while the native range for Browns stretches from Europe to Western Asia and south to Northern Africa. Rainbows are native to North American rivers and streams west of the Rocky Mountains where two forms exist. The resident form spends its entire life in freshwater, while the anadromous form, known as Steelhead, migrate to the sea as juveniles (smolts). After several years in the open ocean (or in the Great Lakes where they have been stocked) the adults return to their natal (imprinted) stream to spawn. Streams that are stocked with Steelhead in Indiana are all Lake Michigan tributaries: the St. Joseph River (St. Joseph Co.), Trail Creek (LaPorte Co.), Salt Creek (Porter Co.) and the Little Calumet River (Porter Co.).

Within their range, Brookies can grow to nearly 15 pounds, but they are the smallest of the three inland trout species in Indiana. The Indiana state record Brookie (Sonny Bashore; left) is 3 pound 15.5 ounces, caught at Lake Gage (Steuben Co.) in 1973. Browns can grow to 40 pounds but typically reach a maximum weight of 2 to 6 pounds in Indiana streams. Although Browns have been known to live up to 20 years, they generally will not exceed 13 years of age in Indiana streams and will reach maturity in as little as 2 to 3 years. The Indiana state record Brown (Glen Duesing; middle) is 29 pounds and was caught at Lake Michigan (Lake Co.) in 2006. Rainbows can reach nearly 50 pounds. They typically live to 4 to 6 years of age and have been known to reach age 11. Adults will generally weigh 1 to 6 pounds in streams and mature at 2 to 3 years of age. Lake dwelling Rainbows, however, can reach a much larger size as evidenced by the Indiana state record (Bill Bigger; right) caught at Clear Lake (Steuben Co.) in 1988 that weighed 18.5 pounds.

Although Brookies are native to the Great Lakes Region, there is no evidence any native populations existed in Indiana waters. Browns were first brought to the United States in 1883 as



eggs and the first stocking of fry occurred in Michigan in 1884, while Rainbows were introduced in the Great Lakes region in 1876. The first trout stockings occurred in Indiana in the 1880's by the Indiana State Fish Commission. Since no state hatchery system existed, trout were obtained from the U.S. Fish Commission as well as private hatcheries. Although stocking records were incomplete, indications are that Brookies, Browns and Rainbows were all stocked at various locations statewide as fry along with occasional fingerlings. The Indiana Department of Conservation first stocked legal size trout in 1943. In 1953, the Division of Fish and Game began construction of the Curtis Creek Trout Rearing Station (LaGrange Co.). Legal-sized trout have been reared at Curtis Creek and annually stocked in Indiana waters since 1956. Hatchery environments promote much faster growth than observed among wild trout. Rainbows raised by the Indiana Division of Fish and Wildlife (DFW) typically average 10.9 (10.6-11.1) inches (median, interquartile range; 2011-16) when they are stocked between February-May as 13-16 month old fish.

Fishing regulations for trout in Indiana have varied greatly over time. In the 1930's the daily bag limit for trout was 20 fish with a minimum size of 7 inches. The fishing season on streams ran from April 1 to August 31 each year, while there was no closed season on lakes. In the following years, the length of the stream season was modified twice, settling at the last Saturday in April to December 31 in 1980. In 1998, a starting time of 5:00 a.m. was established. Bag limits were reduced to five trout on lakes and ten in streams in 1961, then in 1970 the lake bag was raised to ten to match the stream bag. In 1999 the bag limit for both lakes and streams was reduced to five trout where it remains to date. Beginning in 2002, a bag limit of one Brown greater than or equal to 18 inches was allowed at the Oliver Lake Chain (LaGrange Co.). This rule was extended to the Brookville Reservoir Tailwater, also known as the East Fork of the Whitewater River (Franklin Co.) in 2004. In 2007, the bag limit of only one Brown was extended to all waters of the state. In addition, catch and release only fishing in sections of three Indiana streams was established with only the use of artificial lures allowed in these areas, a catch and release season for trout was established state wide from January 1 to April 14 each year, and the opening day start time was moved to 6:00 a.m. The DFW posted signs which closed several trout streams within the area of the Pigeon River in northeastern Indiana to fishing in the weeks leading up to the opener in order to protect trout that had just been stocked. In 1992, these closures began to be included in the fishing regulations booklet and in 2007 the date of closure was permanently set from April 15 to opening day (the last Saturday in April). A number of small lakes in Southern Indiana have been added to and deleted from this closure list over the years, along with additional stream sections.

## **POPULATION STATUS**

Trout can be found in 24 of Indiana's 92 counties, with the majority of these fisheries located in the northern part of the state, primarily in the glacial lakes region in Northeast Indiana. Very little natural reproduction of trout exists in Indiana, therefore their populations are maintained through stocking programs.

In 2018, the DFW stocked 49,530 age-1 Rainbow Trout averaging approximately 11 inches in length in 16 streams covering 12 counties, as well as 20 lakes, ponds and impoundments in 17 counties (Table 1). Brown Trout stockings in 2018 totaled 7,000 fish that averaged 8 inches in

length, and occurred in four streams and one lake chain (consisting of three lakes), using fish obtained by DFW hatchery personnel from the Wolf Creek National Fish Hatchery in Kentucky. Wolf Creek began supplying Browns to the Brookville Tailwater in 2007 as mitigation for construction of the Brookville Dam. The additional trout were surplus fish offered to Indiana, which in 2018 amounted to 3,000 fish. Altogether, 86 miles of stream and 1,167 acres of lakes, ponds and impoundments were stocked with trout in 2018. Stocking rates for Rainbow Trout in 2018 varied from 9 to 800 fish per acre and 89 to 1,200 per stream mile. Averages were 130 fish per acre and 425 per stream mile. For Brown Trout, stocking rates varied from 111 to 1,500 per stream mile, while the lone lake was stocked at 40 fish per acre. The Oliver Lake chain of lakes was the largest lake or lake system stocked (500 ac) while the Pigeon River, which flows through Steuben and LaGrange counties, had the most miles stocked (25.5). Stockings typically occur in lakes in early spring (March and April) while streams are stocked the week before the trout opener (i.e., the last Saturday in April). Additional stream stockings are made at select locations two weeks prior and the Friday before Memorial Day weekend. The purpose of these stockings is to extend the length of the stream fishing season. Finally, there are a few small impoundments and ponds that are stocked in mid to late October, when the water cools, to provide additional fishing opportunities. Rainbow Trout have become a popular fish for DFW recruitment, retention and reactivation events due to their size, fighting ability and eagerness to take a baited hook. Three of these events were held in 2018 requiring 500 trout, or 1% of the total stocking effort. Stockings for these events occur at different times of the year depending on when the event is scheduled. In addition, the DFW Go FishIN in the City program is utilizing Rainbow Trout at several locations statewide, including Delaware Lake at Fort Benjamin Harrison State Park in Indianapolis (spring stocking), Garvin Park Lake in Evansville (fall stocking) and Spy Run Creek in Fort Wayne (spring stocking).

Inland trout populations are hatchery driven in Indiana. The annual production objective for Rainbow Trout for Indiana State Fish Hatcheries is 55,000 ten-inch fish. Rainbow Trout eggs are purchased from Troutlodge, Inc. in the state of Washington as eyed, diploid, all-female eggs and shipped to the Bodine State Fish Hatchery in January. They are hatched in incubators and reared at Bodine until late May, when at a length of approximately three inches they are transferred to the Curtis Creek Trout Rearing Station near Howe. In early to mid-October, Curtis Creek inventories their trout and determines how many fish must be kept on station to meet stocking goals the following year based on the carrying capacity. Surplus fish are then shipped to Fawn River and East Fork State Fish Hatcheries where they are overwintered and stocked the following year.

Brown Trout were last raised at Curtis Creek in 1985. That last lot of fish was plagued with disease problems which resulted in reaching only 55% of the production goal. It was suspected that genetic inbreeding of the brood source at The London State Fish Hatchery in Ohio was affecting egg quality leading to higher susceptibility to disease. Historically, Curtis Creek received fingerling Browns from various sources outside the state. In 1975 the Mixsawbah State Fish Hatchery came on line and eggs began to be hatched there with the resulting fingerlings supplied to Curtis Creek. Even then, outside egg sources were inconsistent and resulted in varied degrees of success with fingerling production. A Brown Trout brood program was even attempted at Curtis Creek in the late 1970's, but low hatch of the eggs taken resulted in it being discontinued after 1979. All of these factors contributed to the termination of the in-state production of Brown Trout. At that point, all of the resources were directed toward Rainbow Trout production.

Various groups and organizations have stocked Brown Trout in Indiana over the years, a practice that continues to this day. One group, the Elkhart Conservation Club, purchases their own eggs and hatches them at a facility located on Cobus Creek (Elkhart Co.) where they are raised to fingerling size then stocked. Fish numbers, sizes and stocking locations have varied depending on funds available for purchase of the fish and/or eggs. Organizations that have stocked legal size trout over the years include the Northeast Indiana Tour Association, Trout Unlimited and the Izaak Walton League.

Table 1. Summary statistics of stocked inland trout waters in Indiana by species and county, 2018.

Water	County	Resource Type	Acre Or Stream Miles	N/Acre or N/Stream mile	N stocked	Initial Year	Regulation
L. Elkhart River	Elkhart	Stream	4.5	111/mi	500	1977	1 fish only, 18" minimum length*
Solomon Creek	Elkhart	Stream	2	250/mi	500	1977	
E Fork Whitewater River	Franklin	Stream	2	1,500/mi	3,000	1978	
Oliver Lake Chain	LaGrange	Glacial Lake	500	40/ac	2,000	1975	
Pigeon River	LaGrange	Stream	6.5	154/mi	1,000	1977	
<b>Brown Trout Total</b>	-	-	<b>500 ac/ 15 mi</b>	<b>40/ac 504/mi</b>	7,000	-	
Shoaff Park Pond	Allen	Excavated Lake	0.5	800/ac	300	1990	Standard
Spy Run	Allen	Stream	0.5	800/mi	400	1986	Standard
Oak Lake	Clark	Impoundment	3	135/ac	405	1979	Standard
Cobus Creek	Elkhart	Stream	2.1	119/mi	250	1976	Standard
Little Elkhart River	Elkhart	Stream	16.0	188/mi	3,000	1976	Standard
Solomon Creek	Elkhart	Stream	3.1	323/mi	1,000	1976	Standard
E Fork Whitewater River	Franklin	Stream	2.0	750/mi	1,500	1975	Standard
Mill Creek	Fulton	Stream	1.0	400/mi	400	1985	Standard
Airline Pit	Greene	Excavated Lake	24	42/ac	1,000	1976	Standard
Midland Lake	Greene	Excavated Lake	21	48/ac	1,000	2014	Standard
Big Blue River	Henry	Stream	1.2	938/mi	1,125	1996	Standard
Memorial Park Pond	Huntington	Excavated Lake	1.25	120/ac	150	2018	Standard
Johnson Lake	Jefferson	Impoundment	3	100/ac	300	2012	Standard
Wyland Lake	Kosciusko	Glacial Lake	6	67/ac	400	1976	Standard
Little Elkhart River	LaGrange	Stream	5.25	190/mi	1,000	1976	Standard
Oliver Lake Chain	LaGrange	Glacial Lake	500	20/ac	10,000	1976	Standard
Pigeon River	LaGrange	Stream	20.0	325/mi	6,500	1976	Standard
Rainbow Pit	LaGrange	Excavated Lake	1	350/ac	350	1978	Standard
Rowe-Eden Ditch	LaGrange	Stream	4.9	163/mi	800	1976	Standard
Turkey Creek	LaGrange	Stream	3.0	200/mi	600	1976	Standard
Fancher Lake	Lake	Glacial Lake	10	100/ac	1,000	1976	Standard
Little Kankakee River	LaPorte	Stream	9.5	89/mi	850	1976	Standard
Slocum Ditch	LaPorte	Stream	0.25	1200/mi	300	2017	Standard
Spring Mill Lake	Lawrence	Impoundment	21	36/ac	750	1979	Standard
Delaware	Marion	Impoundment	7	100/ac	700	2011	Standard
Sand Lake	Noble	Glacial Lake	47	9/ac	400	1976	Standard
Raccoon Creek	Parke	Stream	1	750/mi	750	1981	Standard
Crooked Creek	Porter	Stream	4.0	113/mi	450	1976	Standard
Mississinewa River	Randolph	Stream	1.0	400/mi	400	2005	Standard
Pinhook Lagoon	St. Joseph	Oxbow Lake	19	21/ac	400	2012	Standard
Potato Creek	St. Joseph	Stream	6.0	158/mi	950	1976	Standard
Lake Gage	Steuben	Glacial Lake	327	10/ac	3,200	1976	Standard
Pigeon River	Steuben	Stream	5.5	545/mi	3,000	1976	Standard
Fairfield Pit NE	Tippecanoe	Excavated Lake	18	56/ac	1,000	2000	Standard
Garvin Park Lake	Vanderburgh	Impoundment	3	183/ac	550	2012	Standard
Maple Av. Park Lake	Vigo	Excavated Lake	11	105/ac	1,150	2012	Standard
Cedar Lake	Whitley	Glacial Lake	143	21/ac	3,000	1976	Standard
Morches Park Pond	Whitley	Excavated Lake	0.7	286/ac	200	2014	Standard
<b>Rainbow Trout Total</b>		-	<b>1,166.5 ac/ 86.3 mi</b>	<b>130/ac 425/mi</b>	<b>49,530</b>	-	

\*18 inch minimum length applies to only Oliver Lake Chain and the East Fork Whitewater River.

Despite the large number of legal size Rainbow Trout produced and stocked, few targeted trout population surveys have been conducted by DFW biologists. Instead, most investigations have centered on the use of creel surveys to determine harvest and fishing pressure during the opening day of stream season. A large number of these occurred in the 1970's and 80's. There have also been several creel surveys conducted on lakes with an emphasis on trout harvest. Another popular method of determining trout harvest has involved the use of numbered floy tags. A percentage of the stocked trout are marked with the tags, and tag return receptacles with informational signage are placed at public access sites, as well as any private launch sites such as marinas, requesting anglers to return any tags from fish they catch.

The lack of population surveys is due to the fact that the Rainbow Trout program in Indiana is designed to produce put-and-take fisheries. Very few Rainbows in streams survive past the first summer after they are stocked, due to lack of suitable coldwater and highly oxygenated streams in the state. Similarly, the lake fisheries for Rainbows have never been viewed as carry-over fisheries despite the fact that there are lakes that satisfy the temperature and oxygen requirements for Rainbows, and creel surveys have shown carry-over fish to be present. Rainbows have been collected in both stream and lake surveys, but they typically are not the targeted species and most often only a handful of fish are collected. There have been some lake surveys where larger numbers of Rainbows have been collected, but the sampling was conducted in June or July and the fish captured were primarily from stockings conducted earlier that year.

Brown Trout, on the other hand, have shown a propensity to tolerate higher water temperatures better than the Rainbows, allowing them to survive from year to year in streams that would be considered marginal for year-round Rainbow survival. The DFW has conducted a number of stream surveys targeting Browns, concentrating on four streams in the state that have demonstrated an ability to support year-round Brown Trout populations (Table 2). Three of these streams, Little Elkhart River (LaGrange Co. and Elkhart Co.), Little Kankakee River (LaPorte Co.) and Solomon Creek (Elkhart Co.), are located in the north part of the state. The fourth, Brookville Reservoir Tailwater (Franklin Co.), is located in the southeast. Sampling has consisted of electrofishing using a barge system and has been standardized to the number of Brown Trout caught per mile of stream sampled. A total of 17 surveys have been conducted on these waters since 2004, resulting in a median catch/mile of 180 Brown Trout (interquartile range 88-312). Catch per unit effort ranged from a low of 9 fish per mile at the Little Kankakee River in 2008<sup>1</sup> to a high of 625 fish per mile at the Brookville Reservoir Tailwater in 2013<sup>2</sup>. The median catch rate of quality size Browns (9-12 in TL) was 118 fish/mile, the highest of all size groups (70%). This was followed by preferred size fish (12-15 in TL) at 24 fish/mile. Median catch of stock (6-9 in TL) and memorable size fish (15-18 in TL) was similar at 15 and 12 fish/mile, respectively. Trophy size Browns (18+ in TL) were collected in 8 of the 17 surveys. All but one of these surveys was conducted on the Brookville

---

<sup>1</sup> Long, C. C. 2009. Little Kankakee River 2008 Trout Evaluation. Indiana Department of Natural Resources, Division of Fish and Wildlife. Indianapolis, IN. 19pp.

<sup>2</sup> Miller, B. D. 2015. Brookville Tailwater 2012 and 2013 Fish Management Report. Indiana Department of Natural Resources, Division of Fish and Wildlife. Indianapolis, IN. 20pp.

Reservoir Tailwater (2006, 2007 and 2008-13)<sup>3,4,5,6,7</sup>. The other survey that yielded trophy size Browns was in 2008 on the Little Kankakee River when the largest Brown (21.7 in) overall was collected. Interquartile ranges for the catch rates of stock, quality, preferred, memorable and trophy size Browns were 3-53, 36-182, 11-47, 4-19 and 0-3 fish/mile, respectively (Table 2). Only 14 Brown Trout smaller than stock size were collected in the 17 surveys, indicating limited natural reproduction.

Table 2. Targeted Brown Trout CPUE (N/mile) by size class based on a random sample of waters surveyed with electrofishing since 2004.

Water	County	Resource Type	Year	CPUE	N (Standardized to 1 Mile of Electrofishing)						
					<Stock (<6)	Stock (6-9)	Quality (9-12)	Preferred (12-15)	Memorable (15-18)	Trophy (18+)	
E Fork Whitewater River	Franklin	Stream	2004	79.4	0	53	6	18	3	0	
E Fork Whitewater River	Franklin	Stream	2005	130.8	0	0	123	4	4	0	
E Fork Whitewater River	Franklin	Stream	2006	194.1	0	0	118	56	18	3	
E Fork Whitewater River	Franklin	Stream	2007	555.0	0	6	490	24	27	9	
Little Elkhart River	Elkhart	Stream	2007	77.2	0	30	36	11	0	0	
Solomon Creek	Elkhart	Stream	2007	351.6	6	207	82	25	31	0	
E Fork Whitewater River	Franklin	Stream	2008	285.3	0	15	182	65	24	0	
Little Elkhart River	Elkhart	Stream	2008	88.2	0	63	17	6	3	0	
Little Kankakee River	LaPorte	Stream	2008	8.8	0	3	0	1	0	4	
Solomon Creek	Elkhart	Stream	2008	169.5	0	63	38	50	19	0	
E Fork Whitewater River	Franklin	Stream	2009	311.8	0	9	244	41	15	3	
E Fork Whitewater River	Franklin	Stream	2010	355.9	0	41	253	47	12	3	
E Fork Whitewater River	Franklin	Stream	2011	173.5	0	6	141	15	6	6	
E Fork Whitewater River	Franklin	Stream	2012	179.9	0	3	137	27	6	6	
E Fork Whitewater River	Franklin	Stream	2013	625.0	0	26	488	102	6	3	
Little Elkhart River	Elkhart	Stream	2014	198.5	8	80	66	22	22	0	
Solomon Creek	Elkhart	Stream	2014	18.8	0	0	0	0	19	0	
				1 <sup>st</sup> Quartile	88.2	0	3	36	11	4	0
				Median	179.9	0	15	118	24	12	0
				3 <sup>rd</sup> Quartile	311.8	0	53	182	47	19	3

## ANGLER STATUS

Inland trout have never ranked highly in DFW surveys of Indiana anglers, ranging from the 9<sup>th</sup> to 16<sup>th</sup> most sought after fish. In the most recent angler survey conducted in 2017<sup>8</sup>, “*any trout*” was the 19<sup>th</sup> ranked response (4.1%) when anglers were asked “*Which three fish species did you*

<sup>3</sup> Long, C. C. 2006. Brookville Tailwater 2004 and 2005 Fish Management Report. Indiana Department of Natural Resources, Division of Fish and Wildlife. Indianapolis, IN. 11pp.

<sup>4</sup> Long, C. C. 2007. Brookville Tailwater 2006 Fish Management Report. Indiana Department of Natural Resources, Division of Fish and Wildlife. Indianapolis, IN. 8pp.

<sup>5</sup> Smyth, J. L. 2008. Brookville Tailwater 2007 Fish Management Report. Indiana Department of Natural Resources, Division of Fish and Wildlife. Indianapolis, IN. 9pp.

<sup>6</sup> Smyth, J. L. 2009. Brookville Tailwater Angler and Fisheries Survey 2008 Fish Management Report. Indiana Department of Natural Resources, Division of Fish and Wildlife. Indianapolis, IN. 31pp.

<sup>7</sup> Wisener, J. R. 2012. Brookville Tailwater 2009, 2010 and 2011 Fish Management Report. Indiana Department of Natural Resources, Division of Fish and Wildlife. Indianapolis, IN. 16pp.

<sup>8</sup> Responsive Management. 2017. Indiana Anglers’ Fishing Participation and Their Opinions on Fishing Management Issues. Responsive Management National Office. 228pp.



*actually fish for most often in Indiana?”*. This was followed by, *“Trout, rainbow or steelhead”*, at 24<sup>th</sup> (2.9%), *“Trout, but unsure of type”* at 35<sup>th</sup> (0.6%) and *“Brown Trout”* at 37<sup>th</sup> (0.5%).

According to the 2016 Indiana Trout and Salmon Survey<sup>9</sup>, 11,725 anglers fished an estimated 113,733 days for inland trout in 2016, resulting in an economic value of \$3,650,813 (Appendix A). Statewide, inland trout anglers expressed a higher preference for Rainbow Trout (65%) and this was also true for the majority of the districts: D1 (100%), D2 (75%), D3 (63%), D5 (54%), D6 (71%). The lone exception was District 4 where 52% of the inland trout anglers preferred Brown Trout. The preference for Rainbows over Browns was also reflected in the percentage of time spent specifically fishing for these two species in each district, as anglers spent substantially more time targeting the former: D1 (100%), D2(65%), D3 (100%), D4(90.0%), D5 (100%). District 6 anglers targeted both Rainbows (50%) and Browns (50%) evenly.

From 1983 through 1987, a total of 15 angler creel surveys were conducted in inland trout waters throughout the state<sup>10</sup>. Of these, eight were tag return creels, four were direct contact creels and the remaining three were a combination of the two. Harvest of spring released rainbow trout from northern and southern lakes averaged 39% and 77% respectively. During opening weekend on northern streams, harvest ranged from 13% to 87% and averaged 34%. Contact creels at three natural lakes; Pretty Lake (LaGrange County)<sup>11</sup>, Worster Lake (St. Joseph County)<sup>12</sup> and Ball Lake (Steuben County)<sup>13</sup>, showed that 17%, 0.5% and 0.0% of the anglers respectively were fishing for trout. In addition, a contact creel survey at Little George Pit (Clay County)<sup>14</sup>, a strip pit stocked with Trout and Channel Catfish, revealed over 40% of anglers were fishing for trout. At Pretty Lake, where 17% of anglers were fishing for trout, both the contact portion of the creel and tag returns showed 33% trout harvest. Angler creel surveys at two of the more popular trout lakes, Clear Lake in Steuben County, one in 2001<sup>15</sup> and one in 2012<sup>16</sup>, and Oliver Lake in LaGrange County in 1991<sup>17</sup>, give some more recent indication of the popularity of trout in the lake fisheries. At Oliver Lake, 27% of anglers indicated they were fishing for trout, which ranked second behind bass. A smaller number of anglers preferred to fish specifically for trout at Clear Lake, 4.3% in 2001 and 2.5% in 2012, ranking trout as the 3<sup>rd</sup> and 6<sup>th</sup> most popular species in those creels respectively.

---

<sup>9</sup> Burlingame, M. 2017. 2016 Indiana Trout & Salmon Survey. Indiana Department of Natural Resources, Division of Fish and Wildlife. Indianapolis, IN. 96pp.

<sup>10</sup> Ledet, N. D. 1988. Trout Strategic Plan Summary. Indiana Department of Natural Resources, Division of Fish and Wildlife. Indianapolis, IN. 26pp.

<sup>11</sup> Ledet, N. D. 1984. A Fish Population Survey and Survey of Fish Harvest at Pretty Lake. Indiana Department of Natural Resources, Division of Fish and Wildlife. Indianapolis, IN. 33pp.

<sup>12</sup> Robertson, R. N. 1983. Fish Harvest at Worster Lake, May 1 to October 1, 1983. Indiana Department of Natural Resources, Division of Fish and Wildlife. Indianapolis, IN. 16pp.

<sup>13</sup> Ledet, N. D. 1984. A Fish Population Survey and Survey of Fish Harvest at Ball Lake. Indiana Department of Natural Resources, Division of Fish and Wildlife. Indianapolis, IN. 27pp.

<sup>14</sup> Andrews, S. J. 1986. Creel Survey Results and Revised Management Plan for the Chinook State Fishing Area. Indiana Department of Natural Resources, Division of Fish and Wildlife. Indianapolis, IN. 20pp.

<sup>15</sup> Koza, L. A. 2001. A Survey of Fish Harvest at Clear Lake. Indiana Department of Natural Resources, Division of Fish and Wildlife. Indianapolis, IN. 31pp.

<sup>16</sup> Koza, L. A. 2014. A Survey of the Clear Lake Fish Community and Fish Harvest. Indiana Department of Natural Resources, Division of Fish and Wildlife. Indianapolis, IN. 52pp.

<sup>17</sup> Ledet, N. D. and L. Koza. 1991. A Survey of Fish Harvest at the Oliver Lake Chain. Indiana Department of Natural Resources, Division of Fish and Wildlife. Indianapolis, IN. 28pp.

Since 1963 there have been 12 inland Rainbow Trout entries for Fish of the Year (8 since 2013) as well as 5 entries for Record Fish. Most Rainbows were caught in glacial lakes (n=9), including the current state record fish. Prior to 2014 there was never more than one fish entered in a given year for Fish of the Year, but since that time entries have averaged two per year. The three largest fish entered were all preferred size (20-26 inches) with the largest measuring 24.6 inches. The majority of entrants were quality size, 16-20 inches (n=7) while two were stock size (10-16 inches).

Only two Brown Trout from inland streams have been submitted for Fish of the Year, both in the 1960's. Brown Trout entries are now dominated by fish taken from Lake Michigan. Four Brook Trout entries have been made, three from the 1960's and one from 1973. The DFW last stocked Brook Trout in 1978. There was one private stocking of Brookies done at Oliver Lake in 2013 consisting of 472 fish. This was done in conjunction with a private Brown Trout stocking to add some variety to the fishery. Due to the domination of Lake Michigan caught Browns, consideration should be given for the creation of separate anadromous and inland categories.

## **PROGRAM ANALYSIS**

Although hatchery dependent, the inland trout program is widespread in Indiana. Currently, 16 streams, along with 20 lakes, ponds and impoundments in 12 and 17 counties respectively, receive annual stockings. Approximately 11,725 licensed anglers participate in inland trout fishing in Indiana, creating revenues of \$172,000. Expenses, due primarily to rearing costs, approach \$353,000, creating a supply:demand ratio of 2.05:1. The DFW target established for cold-water fisheries to supply diverse sport fishing opportunities is 5:1, which indicates the Inland Trout program is meeting the demand of Indiana's anglers.

Two factors work to maximize angler interest in the inland trout program: (1) they are stocked at harvestable size; and (2) there is an opening day for the stream trout fishery. Each April, trout anglers flock to the streams, in particular in the north, to celebrate the opening day of the stream trout season. Families camp overnight and people jockey for position at their favorite spot for the beginning of the season at 6:00 am local time on the last Saturday of the month. While in most cases the stream season is short lived, the amount of interest it generates for this period of time carries the trout program. Additional stockings in mid-May and immediately prior to Memorial Day Weekend on select streams are carried out with the intent of extending interest in the stream trout fishery. The adoption of regulations to establish year-round catch and release and artificial lures only sections on designated streams has also helped in this regard.

Increasing angler participation in the inland trout fishery should be a priority. As with most stocked species, hatchery production costs make it difficult to achieve a fishery that in simple terms "pays for itself". The marketing of the inland trout program could be improved and efforts should be made to promote current trout fisheries. As an example, Rainbow Trout are currently being utilized at a number of DFW recruitment, retention and reactivation events to draw more attention to the event while supplying larger fish than those that are typically found at a number of the locations, such as small panfish. Many of these events are designed to recruit new anglers, and the prospect of catching a trout certainly adds to the excitement of the day and may increase the odds a participant or their parent(s) might purchase a license. Similarly, trout are stocked for the DFW

Go FishIN in the City program at several locations around the state. While both R3 events and the Go FishIN in the City program are justifiable uses of our inland trout resources, the opportunity to use these to promote our overall inland trout program should be fully utilized. Adding a link to the Trout Stocking Plan on the Go FishIN in the City web page and advertising the inland trout program at Go FishIN in the City stocking locations and the R3 events are just a couple of the things that could be done to promote the entire inland trout program.

Another means of attracting and retaining anglers involves offering opportunities to catch other species of trout besides Rainbow Trout, which currently is the only inland species being raised in DFW hatcheries. Brown Trout stockings could be very beneficial in addressing this area. Browns are typically viewed as being more difficult to catch than Rainbows, thus providing a greater challenge to trout anglers. They also grow to a larger size in many streams and lakes which adds to their attractiveness. Brown Trout have a higher water temperature tolerance than Rainbows, thus they can be stocked in streams that have marginal water temperatures and provide prolonged fishing opportunities compared to Rainbows, even to the extent of surviving year-round. While not enjoying as big of a following in Indiana as Rainbows, Browns are still desirable to many anglers. Increasing opportunities to catch Browns could result in an increase in Brown Trout interest, as they currently account for only 13% of inland trout stocked annually.

Brown Trout production in the DFW hatchery system ceased following the 1985 stockings. From that point, the inland Brown Trout fishery was solely dependent on stockings from private organizations until the federal stocking of Browns at the Brookville Tailwater started in 2007. Subsequently, utilization by DFW of surplus Browns from the federal hatchery began in 2015. While this has enabled DFW to again stock Brown Trout, these stockings rely on the federal hatchery having surplus fish, thus they cannot be programmed into DFW's annual production. That problem could be addressed by incorporating Brown Trout production back into the DFW hatchery system. This would most likely involve a tradeoff in production of Rainbows.

Consideration should be given to exploring different sources for Rainbow Trout eggs. At the same time, information should be gathered as to the performance characteristics of the stocked fish, along with angler satisfaction. This can be obtained by consulting with other state agencies that currently stock Rainbows. Since 2008, DFW has purchased eggs from the Troutlodge Hatchery in the state of Washington as a sole source for Rainbow Trout production. While initial returns from anglers were positive for these fish, many lake anglers have grown increasingly dissatisfied with their performance and have requested DFW to switch to a different strain of Rainbows.

A stocking rate policy should be developed for inland trout to provide a more consistent approach. As a put-and-take program, the objective for inland Rainbow Trout harvest has always been for 50% of the stocked fish to be taken by anglers. This is due primarily to the fact that many of the waters stocked with trout are not capable of supporting them year round. In these cases, the desire is to put the trout where they are most accessible by the public to maximize harvest. As a result, there have been no set stocking rates for inland trout like there have been for other hatchery produced fish.

More effort should be made to design strategies for hold over trout where they exist in the form of put-grow and take fisheries. The creation of catch and release only areas and the minimal bag limit

on Brown Trout acknowledge that in some places carry over of stocked trout is present. As inland trout waters are reviewed, management practices should evolve that foster these carry over populations.

Efforts to increase public access on streams should be pursued. Many of the streams where trout are stocked are bordered by private property, thus public access has always been dependent on the generosity of the landowner. Creation of more public access allows for expansion of fishing opportunities. Likewise, loss of access diminishes opportunities, and if undetected by DFW results in fish being stocked that cannot be utilized by the general public. Therefore, public access monitoring should also be a key part of stocking strategies.

Guidelines for determining successful trout stockings should be examined and updated. Recent evaluations of trout harvest have been lacking and results in an inability to determine if trout resources are being properly allocated. With the goal of 50% harvest set as a standard, some tag return studies have been implemented but actions to change stocking numbers or locations based on results have not been consistent.

Efforts to reduce nutrient introduction through control of soil and streambank erosion should be targeted. Nutrient loading from both watersheds and in-lake sources continues to be a major threat to cold-water habitat in lakes. Many of these concerns have been identified in the Cisco Strategic Plan as well, since Cisco are heavily reliant on high quality cold-water habitat. Nutrient loading is also a problem in streams, as excessive levels of streambed sediment can suppress macroinvertebrate communities trout rely on as a food source. While little natural reproduction of trout in Indiana is thought to occur, an overabundance of sediment in the gravel areas favored by trout for spawning can easily suffocate eggs and decrease chances of successful spawning. The addition of organic material to the water may also negatively impact dissolved oxygen levels as decaying material draws oxygen from the water.

## STRATEGIC PLAN

### **Population Goal: Provide quality inland trout fishing opportunities statewide**

**Objective:** Annually rear 55,000 ten inch long Rainbow Trout for stocking public inland waters.

- **Problem:** Hatchery labor, utility, and feed requirements for Rainbow Trout production are expensive.
- **Strategies:**
  1. Evaluate production process to improve efficiency and security.
  2. Seek additional funding sources and partner with inland trout anglers and trout organizations to supplement costs.
- **Problem:** Potential shortfalls in numbers may occur during the production process up to and including the time of stocking.
- **Strategies:**
  3. Develop a priority process for allocating Rainbow Trout based on available numbers.
  4. Use updated stocking guidelines to minimize waste/overstocking in put-and-take waters.

**Objective:** Annually stock 2,600 eight inch Brown Trout from the Federal hatchery system into the Brookville Tailwater.

- **Problem:** Trout for this stocking are currently obtained from only one Federal Hatchery, creating the possibility that production problems at this facility could result in this stocking goal not being met.
- **Strategies:**
  5. Investigate options for acquiring Brown Trout from other Federal Hatcheries or other states.

**Objective:** Annually rear, purchase or otherwise acquire 3,000 to 5,000 eight inch Brown Trout for stocking Oliver Lake, Pigeon River, Little Elkhart River, Solomon Creek and other suitable public waters of the state.

- **Problem:** A reliable source for obtaining enough Brown Trout to meet these stocking objectives is not currently available.
- **Strategies:**
  6. Re-instate Brown Trout production in the DFW hatchery system. Determine what adjustments would need to be made to Rainbow Trout production to accommodate the Browns.
  7. Investigate options for acquiring Brown Trout from other Federal Hatcheries or other states.

**Objective:** Annually stock Rainbow Trout at R3 events and GoFishIN in the City locations as needed.

- **Problem:** Rainbow Trout stockings at R3 events and GoFishIN in the City locations offer an opportunity to enhance the quality of the fishing experience which in turn can

attract more anglers, but are not programmed into annual stockings to ensure availability of fish.

- **Strategies:**
  8. Allocate up to 10% of the Rainbow Trout production for stockings at R3 events and GoFishIN in the City locations.

**Objective:** Coordinate privately funded Brown Trout stockings by various conservation groups.

- **Problem:** Privately funded Brown Trout stockings by various conservation groups are not communicated to the Biologists far enough in advance to ensure the most efficient placement of fish.
- **Strategies:**
  9. Contact trout organizations early in the year to determine their plans as far as Brown Trout stockings for the upcoming year. Compile responses and develop a comprehensive stocking strategy.

**Objective:** Update the status of Indiana's Trout lakes, inland streams and their trout populations, while determining which ones are capable of supporting trout year round.

- **Problem:** Lack of information regarding the current status and availability of trout waters inhibits the optimum use of our trout resources.
- **Strategies:**
  10. Utilize and/or assist in IDEM efforts to map and assess cool and coldwater streams in Indiana.
  11. Conduct trout community surveys on currently stocked waters to determine status of the trout fishery as well as habitat suitability, with an emphasis on water quality.

**Objective:** Establish stocking guidelines, stocking evaluation guidelines and success criteria for the Inland trout program.

- **Problem:** Lack of stocking and stocking evaluation guidelines inhibits consistent allocation of the inland trout resource and hinders the ability to properly evaluate if the fish are being sufficiently utilized by anglers.
- **Strategies:**
  12. Develop sound stocking strategies based on public use, available access and equitable distribution of fish.
  13. Develop consistent stocking evaluation guidelines that provide clear measures of success or failure in order to provide biologists with the tools to optimize management of their trout waters.
- **Problem:** Current stocking strategies and management practices are designed for put and take fisheries which ignores waters capable of supporting put-take and grow fisheries.
- **Strategies:**
  14. Develop guidelines for the stocking and management of put-grow-and-take trout fisheries.
- **Problem:** A limited amount of dedicated fisheries management staff/staff time, combined with the niche nature of trout fisheries in the state, reduces the likelihood that trout management will be a management priority. As a result it is rare that management

staff will have or dedicate sufficient time to focus on achieving trout management goals.

- **Strategies:**
  15. Assess current management priorities in districts where trout management is of relatively greater importance and evaluate the need to reallocate staff time from current commitments to trout management.

**Human Dimensions Goal: Satisfy current inland trout anglers and recruit new participants.**

**Objective:** Increase the number of inland trout anglers from 11,725 to 14,964 by 2024 (5%/yr).

- **Problem:** Lack of shoreline public access to our stocked trout streams restricts fishing opportunities.
- **Strategies:**
  16. Evaluate existing public access to our stocked trout streams as well as potential new access areas.
  17. Work with property owners to increase public access near trout stocking locations.
  18. Change stocking locations to areas that have good public access.
- **Problem:** Lack of knowledge of the availability of Indiana inland trout fishing opportunities hampers recruitment, retention and reactivation of Inland trout anglers.
- **Strategies:**
  19. Increase awareness of Indiana inland trout fishing opportunities through the DFW website, news releases and social media.
  20. Promote statewide inland trout fishing opportunities at R3 events and locations where trout are stocked for the urban Go FishIN in the City trout program.
  21. Develop and implement a long-term adaptive marketing strategy that effectively promotes Indiana inland trout fishing opportunities.
- **Problem:** Current put and take trout stockings in most locations are conducted through a single episodic stocking that provides only a very short lived angling opportunity in the spring. The short time window may limit participation rates and angler satisfaction with the program.
- **Strategies:**
  22. Explore ways of extending the duration of fishing opportunities on put-and-take waters. Solicit input from trout anglers and groups for most supported methods of accomplishing this goal.

**Objective:** Ensure a minimum 50% harvest rate for Rainbow Trout stocked at put and take streams, lakes, ponds, pits and small impoundments.

- **Problem:** Insufficient harvest of inland trout does not properly utilize available trout resources.
- **Strategies:**
  23. Develop sound stocking strategies based on public use, available access and equitable distribution of fish.
- **Problem:** Inadequate information on inland trout angler effort, catch, species preference and satisfaction limits the ability to measure program effectiveness.

- **Strategies:**
  24. Develop standards for creel surveys of inland trout anglers.
  25. Develop a creel schedule requiring a minimum number of creel efforts for inland trout each year.

**Objective:** Ensure an angling preference for inland trout of X% at all stocked waters.

- **Problem:** Insufficient interest in Inland trout does not properly utilize available trout resources.
- **Strategies:**
  26. Develop sound stocking strategies based on public use, available access and equitable distribution of fish.
- **Problem:** Inadequate information on inland trout angler effort, catch, species preference and satisfaction limits the ability to measure program effectiveness.
- **Strategies:**
  27. Develop standards for creel surveys of inland trout anglers.
  28. Develop a creel schedule requiring a minimum number of creel efforts for inland trout each year.

**Objective:** Enhance inland trout angler satisfaction to 70% at all stocked waters.

- **Problem:** Information regarding satisfaction levels of Inland trout anglers is lacking.
- **Strategies:**
  29. Develop a creel schedule requiring a minimum number of creel efforts for inland trout each year.
  30. Increase the frequency at which targeted licensed angler surveys are conducted to align with strategic planning objectives.
  31. Modify licensed angler survey questions pertaining to angler satisfaction to more accurately quantify angler satisfaction.

**Objective:** Maintain a catch rate of 1 trout per 10 hours of fishing at all stocked waters.

- **Problem:** Insufficient catch of inland trout does not properly utilize available trout resources.
- **Strategies:**
  32. Develop sound stocking strategies based on public use, available access and equitable distribution of fish.
- **Problem:** Inadequate information on inland trout angler effort, catch, species preference and satisfaction limits the ability to measure program effectiveness.
- **Strategies:**
  33. Develop standards for creel surveys of inland trout anglers.
  34. Develop a creel schedule requiring a minimum number of creel efforts for inland trout each year.

**Objective:** Increase public participation in the development of inland trout management strategies while fostering partnership opportunities.



- **Problem:** Lack of public input in the decision making process limits satisfaction among inland trout anglers and could present an obstacle to fostering partnership opportunities.
- **Strategies:**
  35. Schedule annual meetings with inland trout organizations to keep them informed of DFW goals, objectives and strategies concerning the trout program and allow them opportunity for input.

**Habitat Goal: Sustain quality inland trout habitat where present and improve inland trout habitat where possible.**

**Objective:** Develop a classification system for trout waters which identifies poor, marginal, good and excellent waters.

- **Problem:** The lack of a classification system for trout waters impedes optimal use of inland trout resources.
- **Strategies:**
  36. Develop a definition of “trout water” and establish criteria to be used to define trout waters as poor, marginal, good or excellent waters.
  37. Monitor temperature and dissolved oxygen levels in trout waters, especially during the critical late-summer period.

**Objective:** Maintain and/or improve water quality to better support trout populations.

- **Problem:** Adequate water quality is imperative for the health and survival of trout populations.
- **Strategies:**
  38. Identify threats to maintaining/improving water quality in trout waters.
  39. Determine practices and programs that could best address water quality threats.

**Objective:** Protect instream structural habitat and improve it where possible in existing trout waters where water quality has been found to be adequate.

- **Problem:** The fisheries management section currently lacks a stream habitat enhancement program targeted at improving structural habitat for stream dwelling sportfish such as trout.
- **Strategies:**
  40. Determine practices and programs that could best address water quality threats.


**Authors**


Larry Koza  
Fish Management District 2 Biologist

Corey DeBoom  
Fish Management District 4 Biologist

Submitted: 8/2/19

**Editors**

 12/5/19  
\_\_\_\_\_  
Jeremy Price Date  
North Region Fisheries Supervisor

 12/5/19  
\_\_\_\_\_  
Dan Carnahan Date  
South Region Fisheries Supervisor

 12/5/19  
\_\_\_\_\_  
Steve Donabauer Date  
Indiana Division of Fish & Wildlife

## PRIORITIZED STRATEGIES

DFW staff were provided the opportunity to prioritize strategies using a voting system. Each staff member was provided a total of five (5) votes which could be distributed amongst multiple strategies or as few as one (1) strategy. The table below ranks strategies from highest priority to lowest priority based on the cumulative number of votes received by DFW staff. The percentage of votes each strategy received of all available votes is provided for reference. Some strategies were included more than once under more than one objective. In these cases, the first time the strategy was listed in the plan is the number used in the table, with subsequent numbers included in parenthesis.

Priority Rank	Strategy #	Strategy	Percent (%)
1	12	Develop sound stocking strategies based on public use, available access and equitable distribution of fish.	15%
2	13	Develop consistent stocking evaluation guidelines that provide clear measures of success or failure in order to provide biologists with the tools to optimize management of their trout waters.	12%
3	3	Develop a priority process for allocating Rainbow Trout based on available numbers.	8%
4	6	Re-instate Brown Trout production in the DFW hatchery system. Determine what adjustments would need to be made to Rainbow Trout production to accommodate the Browns.	7%
5	10	Utilize and/or assist in IDEM efforts to map and assess cool and coldwater streams in Indiana.	6%
6	16	Evaluate existing public access to our stocked trout streams as well as potential new access areas.	5%
6	18	Change stocking locations to areas that have good public access.	5%
8	4	Use updated stocking guidelines to minimize waste/overstocking in put-and-take waters.	4%
8	11	Conduct trout community surveys on currently stocked waters to determine status of the trout fishery as well as habitat suitability, with an emphasis on water quality.	4%
8	35	Schedule annual meetings with inland trout organizations to keep them informed of DFW goals, objectives and strategies concerning the trout program and allow them opportunity for input.	4%
11	1	Evaluate production process to improve efficiency and security.	3%
11	8	Allocate up to 10% of the Rainbow Trout production for stockings at R3 events and GoFishIN in the City locations.	3%
11	21	Develop and implement a long-term adaptive marketing strategy that effectively promotes Indiana inland trout fishing opportunities.	3%

Priority Rank	Strategy #	Strategy	Percent (%)
14	22	Explore ways of extending the duration of fishing opportunities on put-and-take waters. Solicit input from trout anglers and groups for most supported methods of accomplishing this goal.	3%
15	5	Investigate options for acquiring Brown Trout from other Federal Hatcheries or other states.	2%
15	15	Assess current management priorities in districts where trout management is of relatively greater importance and evaluate the need to reallocate staff time from current commitments to trout management.	2%
15	24	Develop standards for creel surveys of inland trout anglers.	2%
15	36	Develop a definition of "trout water" and establish criteria to be used to define trout waters as poor, marginal, good or excellent waters.	2%
15	37	Monitor temperature and dissolved oxygen levels in trout waters, especially during the critical late-summer period.	2%
20	2	Seek additional funding sources and partner with inland trout anglers and trout organizations to supplement costs.	1%
20	14	Develop guidelines for the stocking and management of put-grow-and-take trout fisheries.	1%
20	17	Work with property owners to increase public access near trout stocking locations.	1%
20	19	Increase awareness of Indiana inland trout fishing opportunities through the DFW website, news releases and social media.	1%
20	20	Promote statewide inland trout fishing opportunities at R3 events and locations where trout are stocked for the urban Go FishIN in the City trout program.	1%
20	25	Develop a creel schedule requiring a minimum number of creel efforts for inland trout each year.	1%
20	30	Increase the frequency at which targeted licensed angler surveys are conducted to align with strategic planning objectives.	1%
20	39	Determine practices and programs that could best address water quality threats.	1%
28	9	Contact trout organizations early in the year to determine their plans as far as Brown Trout stockings for the upcoming year. Compile responses and develop a comprehensive stocking strategy.	0%
28	31	Modify licensed angler survey questions pertaining to angler satisfaction to more accurately quantify angler satisfaction.	0%
28	38	Identify threats to maintaining/improving water quality in trout waters.	0%

## **PROGRAM ACTIONS**

### **2019**

- Rainbow trout stockings in 2019 by DFW totaled 44,651 fish. Of these, Curtis Creek TRS stocked 24,670 while Fawn River SFH stocked 14,465 and East Fork SFH stocked 5,516. Altogether, DFW Rainbow Trout were stocked in 19 streams and 23 lakes, ponds or pits in 25 counties in 2019
- Brown Trout were once again obtained by DFW from the Wolf Creek NFH in Kentucky. For 2019, 2,600 were stocked in the East Fork of the Whitewater River below the Brookville Dam (Brookville Tailwaters) in Franklin County, 2,000 were stocked in the Oliver Lake Chain of Lakes in LaGrange County, and 1,000 went into the Pigeon River at the Steuben/LaGrange County line. In addition, 500 were stocked in the Little Elkhart River in Elkhart County and 417 were stocked in Solomon Creek in Elkhart County for a total Brown Trout stocking of 6,517 fish.
- News releases were written and distributed to media outlets for Rainbow Trout stockings in March, April and May as well as the May Brown Trout stockings. Corresponding Facebook posts were also made along with a Wild Bulletin item. An Outdoor Indiana Fishing Hole feature was written and submitted on trout fishing on the Little Elkhart River in Elkhart County. This will appear in the January/February 2020 issue of the magazine.
- Participated in interviews regarding the inland trout program conducted by WNDU-TV in South Bend and the Indiana Outdoor Radio Network.

## **SUMMARY REPORTS (2017-present)**

Kittaka, D. 2017. Spring Mill 2017 Angler Creel Survey. 1 pg.

Ledet, N. D. and L. A. Koza 2019. A Brown Trout Population Estimate of Little Elkhart River and Solomon Creek. Indiana Department of Natural Resources, Division of Fish and Wildlife. Indianapolis, IN. 8pp.

## **APPENDIX A**

### **Inland Trout Angler Calculation**

The overall percent of Inland Trout Anglers was calculated by using the percent of Trout and Salmon anglers that indicated they were inland trout anglers (ITA) in the 2016 Indiana Trout & Salmon Survey (T/S Survey).

$$\% \text{ ITA} = \text{number of ITA} / \text{total number of anglers} * 100$$

$$\text{Number of ITA} = \text{number of T/S Stamp purchasers} * \% \text{ ITA from T/S Survey}$$

$$\text{Number of ITA} = 25,106 * 0.467 = 11,725$$

$$\% \text{ ITA} = 11,725 / 477,680 * 100 = 2.46\%$$

### **From 2011 National Survey of Fishing, Hunting, and Wildlife Recreation- Indiana:**

Anglers (inland) - 745,290

Days of fishing (inland) - 20,719,290

Total expenditures (all waters) - \$671,840,000

Total expenditures (inland): \$665,138,060 ((427,310,000 + 244,530,000) - 6,701,940)

Trip related (All waters) - \$427,310,000

Equipment and other (All waters) - \$244,530,000

Lake Michigan Expenditures: \$6,701,940

Average total expenditures per angler day- \$32.10 (\$665,138,060 / 20,719,000 angler days).

This figure includes all inland expenditures. (\$ used for our creels)

### **Economic value:**

Average total expenditures per angler day - \$32.10

Species trip expenditures = Number of ITA \* Average number of days fished per ITA \* \$32.10

Inland Trout trip expenditures = 11,725 \* 9.7 \* \$32.10 = \$3,650,813

## **APPENDIX B**

### **Inland Trout Angler Calculation**

See Appendix A.

**From 2016 National Survey of Fishing, Hunting, and Wildlife Recreation- Indiana:**  
Anglers – 477,680

#### **Revenue:**

Inland Trout licenses = Trout/Salmon Stamps \* % Inland Trout Anglers (ITA)

Inland Trout licenses = 25,106 \* 0.467 = 11,725

Inland Trout License revenue = (ITA license \* 25.67) + (ITA Trout/Salmon Stamps \* 11.00)

Inland Trout License revenue = \$300,981 + \$128,975 = \$429,956

Because Division of Law Enforcement receives roughly 60% of license revenue:

Net Inland Trout license revenue = Indiana Inland Trout license revenue \* 0.4

Net Inland Rainbow Trout license revenue = \$429,956 \* 0.4 = \$171,982

#### **Supply:Demand:**

Supply:Demand = Cost:Revenue

Supply:Demand = \$352,891:\$171,982

Supply:Demand = 2.05:1