

ANGLER SURVEY RESULTS FOR KICKAPOO LAKE
OF SHAKAMAK STATE PARK

Sullivan County

2009 Fish Management Report

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EXECUTIVE SUMMARY

- An angler creel survey was conducted at Kickapoo Lake of Shakamak State Park from April 4 through October 31, 2009. An estimated 4,106 anglers from 65 Indiana counties and eight additional states fished a total of 16,523 h (65.3 h/acre).
- Most anglers visiting Kickapoo Lake indicated they were fishing for bluegill. Largemouth bass was the second most sought after species, followed by “anything”, then crappie.
- A total of 13,662 fish representing 9 species was harvested that weighed an estimated 5,718 lb. Bluegill comprised 70% of the total harvest by number, followed by redear (13%), crappie (8%), largemouth bass (6%), and channel catfish (1%). Yellow perch accounted for 0.1% and the remaining 1% was comprised of “other” species. The overall harvest rate was 0.83 fish/h. The highest harvest rate occurred in September (1.76 fish/h), followed by April (0.88 fish/h), and then May (0.85 fish/h).
- Eleven percent of anglers said the fishery was improving, 42% said the fishery was staying the same, 16% said the fishery was declining, and 31% had no comment.
- Forty-three percent of anglers responded that they were in favor of the use of gas powered outboards with an idle speed limit restriction on Kickapoo Lake, 56% said they were not, and 1% had no comment.
- Sixty-six percent of anglers responded that they were in favor of a bluegill/redear bag limit of 25 in aggregate, 25% said they were not in favor, and 9% had no comment.
- Gizzard shad were collected for the first time from Kickapoo Lake during the 2009 general survey. A shad monitoring program will be implemented to determine the status of the shad population.
- Based on bass size structure and growth, little has changed since the previous survey. The three lakes continue to offer excellent fishing opportunities for panfish and largemouth bass.

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INTRODUCTION

Kickapoo Lake is a 253-acre impoundment located in Shakamak State Park near Jasonville, Indiana. It is one of three lakes in the park that offer fishing as a primary attraction. There is a concrete boat ramp on the lake, and anglers may also rent boats or fish from the shoreline. Electric motors are permitted while gas outboards motors are not. Camping and picnicking facilities are located nearby in the park.

Constructed in 1969, Kickapoo Lake is the newest of the three lakes in Shakamak State park. The two older lakes, Shakamak and Lenape, are actually sub-impoundments and drain directly into Kickapoo Lake. These two lakes help to protect the water quality of Kickapoo Lake by trapping nutrients and sediment before they can enter the lake. Consequently, Kickapoo is the least productive of the three lakes. Maximum depth of Kickapoo Lake is 44 ft with an average depth of 25 feet.

METHODS

An angler creel survey was conducted by a single clerk using a roving access design (Pollock 1994), from April 4 to October 31, 2009. The clerk worked 155 days. Ten days out of every 14-day period were sampled, including 3 out of 4 weekend days. The fishing day was divided into two 7.5 h periods; 7:30 am to 3:00 pm, and 3:00 pm to 10:30 pm. Angler counts were conducted at two hour intervals during each shift to estimate the total fishing pressure. Angler interviews were conducted at the main ramp and the adjacent shoreline areas.

The clerk attempted to interview all anglers at the conclusion of their fishing trip. Interview data included: length of trip, number in party, species sought, fish harvested, number and size of largemouth bass released, county of residence, angler's opinion about the state of the fishery, angler's opinion on a bluegill/redear bag limit of 25 in aggregate, and angler's opinion on the use of gas powered outboards, with a 10 mph speed limit restriction on Kickapoo Lake (Appendix). Fish weights from the 2009 general survey were used to generate total weights (Kittaka 2010). Standard weight equations were used to estimate weights when not available from the general survey data (Anderson and Neumann 1996).

RESULTS

An estimated 4,106 anglers fished 16,523 h (65.3 h/acre) at Kickapoo Lake from April 4 to October 31, 2009 (Table 1). Fishing pressure was highest in May (14.5 h/acre), followed by June (11.8 h/acre), July (11.7 h/acre), September (10.0 h/acre), and April (8.1 h/acre). Most anglers (58%) indicated they were fishing for bluegill (Table 2). Twenty-seven percent of the anglers were fishing for largemouth bass, eight percent indicated they were fishing for “anything”, followed by crappie (5%), channel catfish (1%), and redear (0.2%).

A total of 13,662 fish representing 9 species was harvested that weighed an estimated 5,718 lb (Table 3). Bluegill comprised 70% of the total harvest by number, followed by redear (13%), crappie (8%), largemouth bass (6%), and channel catfish (1%). Yellow perch accounted for 0.1% and the remaining 1% was comprised of “other” species. The overall harvest rate was 0.83 fish/h (Table 4). The highest harvest rate occurred in September (1.76 fish/h), followed by April (0.88 fish/h), and then May (0.85 fish/h).

A total of 9,618 bluegill was harvested that weighed an estimated 3,225 lbs. They ranged in length from 4.5 to 10.0 in and averaged 7.7 in. The highest harvest rate for bluegill occurred in September (1.57 fish/h). Anglers targeting bluegill harvested 96% of the bluegill. Anglers fishing for “anything” harvested 3%. The remaining 1% was harvested by crappie and bass anglers.

A total of 1,794 redear was harvested that weighed an estimated 694 lbs. They ranged in length from 5.5 to 10.0 in and averaged 7.8 in. The highest harvest rate for redear occurred during May (0.26 fish/h). Anglers targeting bluegill harvested 98% of the redear.

A total of 1,056 crappie was harvested that weighed an estimated 607 lbs. They ranged in length from 6.0 to 14.5 in and averaged 9.6 in. The highest harvest rate for crappie occurred during the month of April (0.21 fish/h). Five percent of anglers visiting Kickapoo Lake were targeting crappie and they harvested 66% of the total crappie harvest. Thirty-two percent of the crappie harvest was taken by anglers targeting bluegill. The remaining 2% were harvested by anglers targeting “anything” and bass.

There were 869 bass harvested that weighed an estimated 564 lbs. An estimated 793 (3.1 fish/acre) of those bass were below the slot, ranging in length from 6.5 to 12.0 in and averaging 10.6 in. Sixty-nine bass (0.3 fish/acre) were harvested above the slot, ranging in length from 15.0 to 20.0 in and averaging 16.6 in. One percent of the bass harvested were documented as

illegal harvest within the slot. The overall harvest rate was 3.4 fish/acre with a catch rate for harvested bass of 0.05 fish/h. The catch was highest in July (0.12 fish/h), followed by April (0.07 fish/h), May and June (0.04 fish/h).

An additional 5,210 bass (0.36 fish/h) were reportedly caught and released at Kickapoo Lake. Anglers reported 4,933 (95%) of those bass as under 15 in with an estimated 4,168 of those bass below 12 in. The remaining 277 bass (5%) were over 15 in.

There were approximately 1,108 bass angling trips. Bass anglers harvested 75% of the bass harvested at Kickapoo Lake. Bass were also harvested by anglers targeting bluegill (18%), crappie (6%), and “anything” (3%).

A total of 164 channel catfish was harvested that weighed an estimated 620 lbs. They ranged in length from 10.5 to 30.0 in and averaged 20.6 in. One percent of anglers targeted channel catfish. Sixty-three percent of the channel catfish harvest was by anglers that specified bluegill as a preference. Catfish anglers harvested 16% of the catfish harvest. Anglers that specified “anything” harvested 13% of the harvested channel catfish. Eight percent of channel catfish were also harvested by anglers that specified bass as their preference.

A total of 18 yellow perch was harvested that weighed an estimated 8 lbs. They ranged in length from 8.0 to 10.5 and averaged 9.7 in.

An estimated 143 “other” fish were harvested. Species noted included warmouth, longear sunfish and bullhead species.

Anglers from 65 Indiana counties and seven additional states were interviewed during the survey (Figure 1). The highest percentage of anglers was from Marion County (9.1%), followed by Greene (7.4%), Howard (6.9%), Vigo (5.4%), Hendricks (4.5%), Allen (4.4%), and Lake (3.7%). Thirteen percent of anglers were from the counties adjacent to Shakamak State Park; Clay (1.7%), Greene (7.4%), and Sullivan (3.4%). An additional five percent of the anglers interviewed were from Ohio, Illinois, Michigan, Georgia, Kentucky, Tennessee, and Idaho.

In addition, the clerk asked each party three questions. The responses to each question are as follows:

1. Do you think the Kickapoo fishery is 1. Improving, 2. Staying the same, 3. Declining, or 4. No Comment ?

Eleven percent of anglers said the fishery was improving, 42% said the fishery was staying the same, 16% said the fishery was declining, and 31% had no comment (Table 5).

2. Would you be in favor of the use of gas powered outboards with an idle speed limit restriction on Kickapoo Lake?

Forty-three percent of anglers responded that they were in favor, 56% said they were not in favor, and 1% had no comment (Table 6).

3. Would you be in favor of a bluegill/redear bag limit of 25 in aggregate?

Sixty-six percent of anglers responded that they were in favor, 25% said they were not in favor, and 9% had no comment (Table 7).

DISCUSSION

Shakamak State Park is a multi-use facility that offers many family friendly activities. The three lakes continue to offer excellent fishing opportunities for panfish and largemouth bass. In 2003, Kickapoo Lake's best fish attributes were its quality panfishing opportunities (Stiras 2003). The same holds true in 2009.

Typically the majority of anglers that fish a particular lake reside in the surrounding counties. However, in 2009, the heaviest patronage was from counties associated with larger urban areas like Indianapolis, Kokomo, and Fort Wayne. This is a reflection of this park's popularity.

The Division of State Parks and Reservoirs was seeking a rule change to open Kickapoo Lake to gas powered motors. Results from the creel survey question and comments from public meetings were mixed with support for both sides. There was a slight majority of opinion to keep the lakes closed to gas powered motors. It was interesting to note that 61% of the bass anglers were in favor of the rule change where as 65% of the bluegill anglers were not in favor. At this time a rule change will not be pursued.

Generally, anglers felt the fishery was "staying the same", which is consistent with the results of the general fish community data in terms of the fish community, species frequency and species size structure.

The protected slot size limit for largemouth bass was evaluated in 2009 through a spring bass survey in addition to the angler creel survey (Kittaka 2010). Anglers took advantage of the

liberal harvest size limit for bass, harvesting 3.4 fish/acre compared to nearby Sullivan Lake, where in 2003 anglers harvested 1.6 bass/acre and Bass Lake, where in 2008 anglers harvested 2 bass/acre (Schoenung 2004) (King 2009). However, based on bass size structure and growth, little has changed since the previous survey.

Gizzard shad were collected for the first time at Kickapoo Lake in 2009. The negative impact shad have on bluegill size structure and largemouth bass recruitment is well documented at lakes like West Boggs Creek and many others in the state (King 2008). The Shakamak State Park Lakes will be monitored to determine if the shad collected during the 2009 survey are reaching nuisance levels. If shad become established at one or more of the Shakamak Lakes, the slot size limit will most likely be removed and replaced with the statewide 14-in minimum size limit to maintain a high predator base as long as possible.

The National Fishing, Hunting and Wildlife-Associated Recreation Survey, 2006 determined that the average angler spent \$62.60/day for each fishing trip in Indiana (U.S. Dept. of Interior 2006). This value is based on fishing related expenditures; including not only fishing equipment and licenses but travel, food and lodging. During the 2009 angler creel survey of Kickapoo Lake, there were 4,106 fishing trips representing an economic value of \$257,036. There are two other lakes, Shakamak and Lenape, in the park that have similar fish communities.

RECOMMENDATIONS

- The Division of Fish and Wildlife will monitor the shad in the Shakamak State Park Lakes to determine if the population is reaching nuisance levels.

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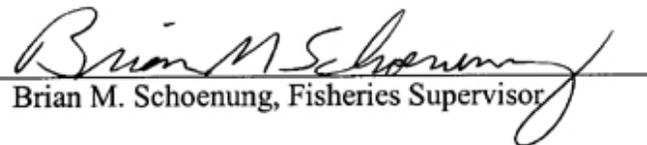
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Table 1. Estimated fishing pressure and hours per acre by month at Kickapoo Lake, April 4 to October 31, 2009.

	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>TOTAL</u>
Fishing pressure (h)	2,039	3,668	2,979	2,958	1,572	2,537	771	16,523
Hours per acre	8.1	14.5	11.8	11.7	6.2	10.0	3.0	65.3

Table 2. Percent angler preference and harvest by species at Kickapoo Lake, April 4 to October 31, 2009.

<u>Angler preference</u>	<u>%</u>	<u>Harvest (%)</u>				
		largemouth bass	bluegill	redeer sunfish	crappie	channel catfish
Largemouth bass	27.5	73.6	0.8	*	1.4	7.9
Bluegill	58.1	17.8	95.9	98.2	31.7	63.2
Crappie	5.0	5.8	0.4	0.8	65.8	*
Channel catfish	1.3	*	*	*	*	15.8
Anything	7.9	2.9	2.8	1.0	1.1	13.2
Redeer sunfish	0.2	*	*	*	*	*

* Less than 0.1

Table 3. Estimated number, percent, weight, average length, fish per acre, and length range of fish harvested at Kickapoo Lake, April 4 to October 31, 2009.

<u>Species</u>	<u>Number</u>	<u>Percent</u>	<u>Fish/acre</u>	<u>Weight (lb)</u>	<u>Average Length (in)</u>	<u>Length Range (in)</u>
Bluegill	9,618	70.4	38.0	3,225	7.7	4.5 - 10.0
Redeer sunfish	1,794	13.1	7.1	694	7.8	5.5 - 10.0
Crappie	1,056	7.7	4.2	607	9.6	6.0 - 14.5
Largemouth bass	869	6.4	3.4	564	11.1	6.5 - 20.0
Channel catfish	164	1.2	0.6	620	20.6	10.5 - 30.0
Yellow perch	18	<0.0	0.1	8	9.7	9.0 - 10.5
Other	143	1.0	0.6	*	*	*
Total	13,662		54.0	5,718		

* not expanded

Table 4. Estimated fish harvest and harvest rate by month at Kickapoo Lake, April 4 to October 31, 2009.

	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>TOTAL</u>
Fish harvest	1,787.2	3,129.1	1,908.3	1,361.8	684.8	4,463.8	326.6	13,662
Harvest rate (fish/h)	0.88	0.85	0.64	0.46	0.44	1.76	0.42	0.83

Table 5. Response to survey question #1: "Do you think the Kickapoo Lake fishery is improving, staying the same, declining, or no comment?"

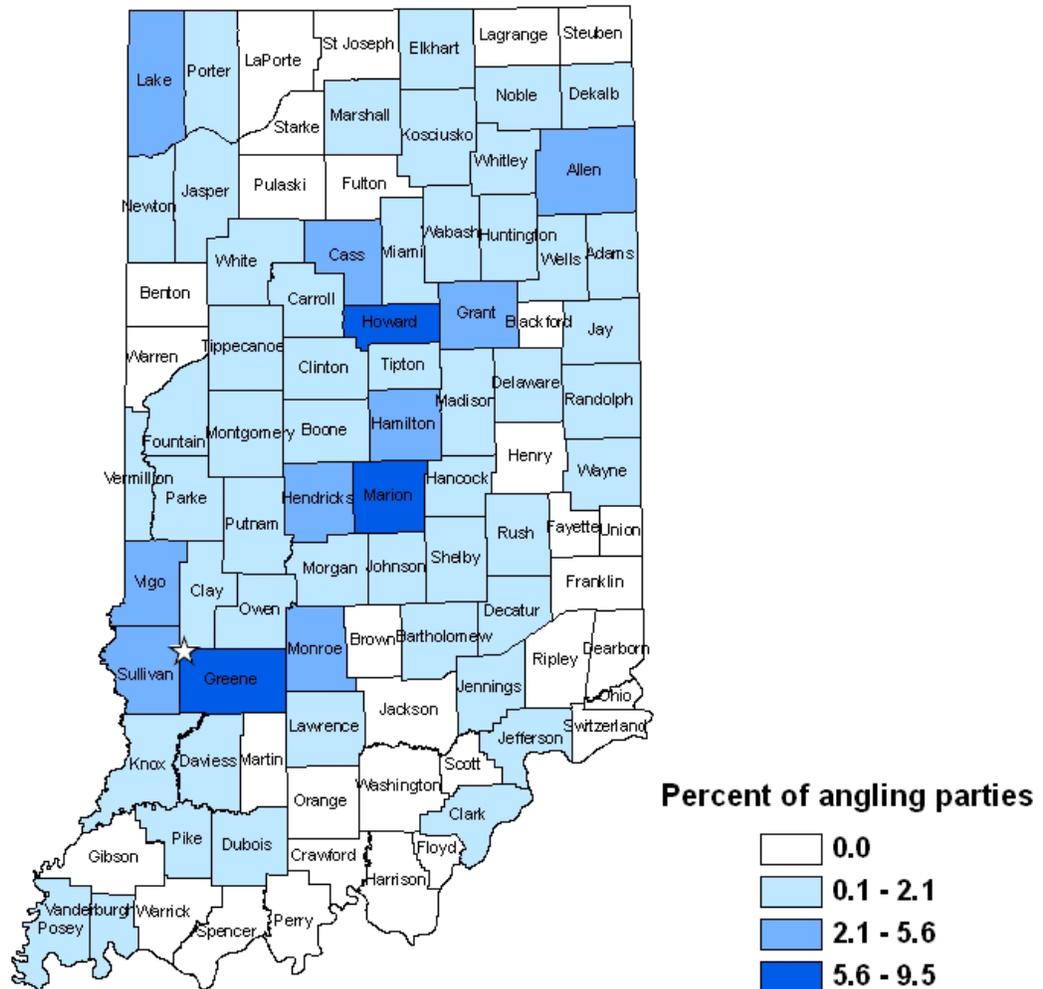
	<u>Response</u>	<u>%</u>
IMPROVING	66	11.1
STAYING THE SAME	250	41.9
DECLINING	97	16.2
NO COMMENT	184	30.8
Total:	597	

Table 6. Response to survey question #2: "Would you be in favor of the use of gas powered outboards with an idle speed restriction on Kickapoo Lake?"

	<u>Response</u>	<u>%</u>
YES	254	42.5
NO	335	56.1
NO COMMENT	8	1.3
Total:	597	

Table 7. Response to survey question #3: "Would you be in favor of a bluegill/redear bag limit of 25 in aggregate?"

	<u>Response</u>	<u>%</u>
YES	254	66.0
NO	96	24.9
NO COMMENT	35	9.1
Total:	385	



Percent of out-of-state angling parties	
Ohio	1.4
Illinois	1.2
Michigan	0.9
Georgia	0.7
Kentucky	0.5
Tennessee	0.4
Idaho	0.2

Figure 1. Percent distribution of angling parties visiting Kickapoo Lake, April 1 to October 31, 2009.

APPENDIX.

Angler creel survey interview form, Kickapoo Lake, 2009.

