Royer Lake
2019 Status and Trends Survey

Lake Information: 69 acres; 56 feet max depth
Located: Plato, IN; LaGrange County
Access: Boat ramp on Fish Lake off CR S 525 E
GPS Coordinates: N 41.61053; W -85.33841
Amenities: None
Outboard Motor Restriction: 10 mph limit
Fishing Regulations: Statewide
Recent Stocking: None

Best Fishing: Largemouth Bass, Channel Catfish, Walleye
DNR Contact Information:
Matt Horsley
District 2 Assistant Fisheries Biologist
(260) 829-6241;
Mhorsley@dnr.IN.gov
Report Approved By:
Jeremy Price, Regional Supervisor
Date Approved: May 12, 2019

Methods

Fish

- Dates: June 17 – 18, 2019
- Electrofishing: 0.5 hours pulsed DC with 2 dippers
- Trap nets: 2 overnight lifts
- Gill nets: 2 overnight lifts

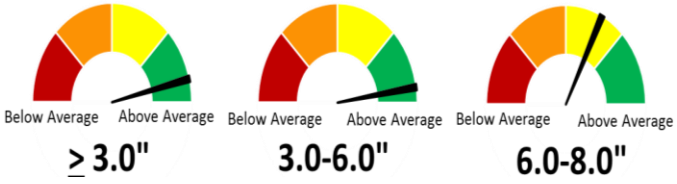
Habitat

- Chemistry: Water clarity and oxygen profiles
- Dates: June 17, 2019; August 21, 2019
- Vegetation: August 9, 2019
- Depth Map: Click for link to map

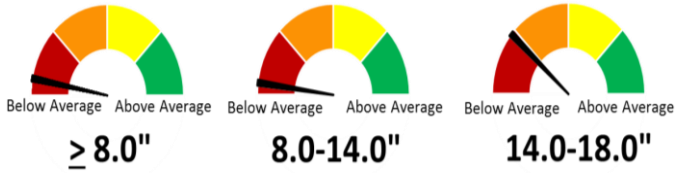
Summary

Sport Fish

Bluegill



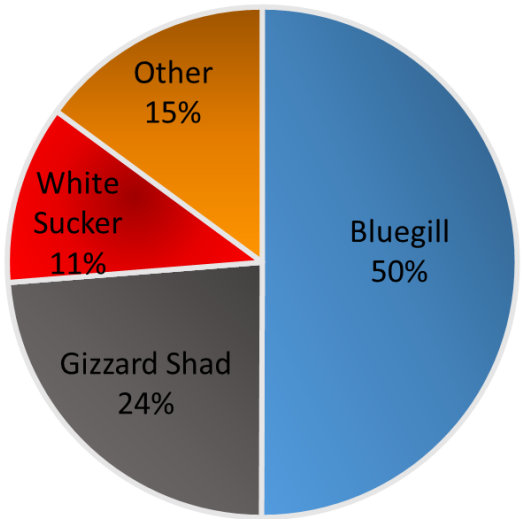
Largemouth Bass



Bluegill and Largemouth Bass catch rates for Royer Lake compared to regional averages among all glacial lakes in northern Indiana.

Fish Community

- Overall 798 fish were collected representing 16 species.
- Bluegill were the most abundant species with 401 individuals that measured up to 7.6 inches in length.
- Twenty percent of the Bluegill were greater than 6.0 inches and up to age 6.
- Sixteen Largemouth Bass were collected that measured up to 19.7 inches in length.
- Largemouth Bass ranged from age 1 to 10, where the average length of an age-4 fish was 12.8 inches.
- Thirteen Walleye were collected and ranged in length from 5.7 to 8.4 inches.
- Nineteen Channel Catfish were collected during the survey with 68% being 12 inches or larger.
- Gizzard Shad made up 24% of the total catch with 190 individuals collected.



Your purchase of fishing equipment and motor boat fuel supports boating access and Sport Fish Restoration.

Indiana Fishing Regulation Guide:
http://www.in.gov/dnr/fishwild/2347.htm

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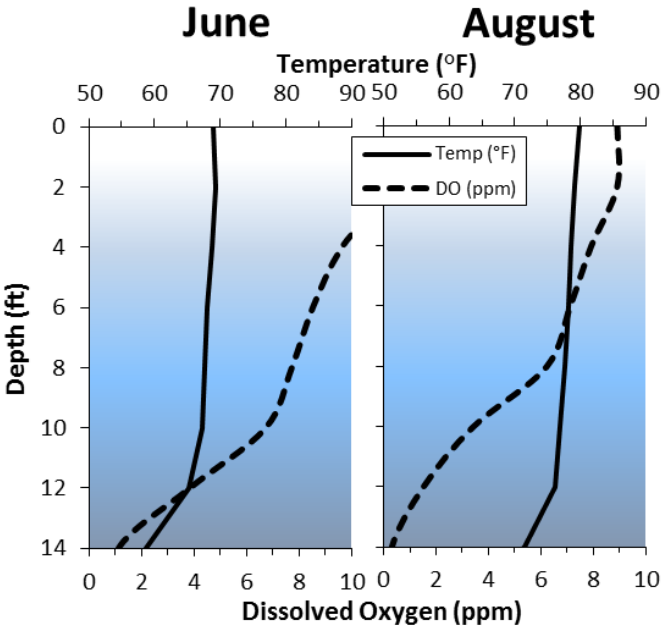
Species	Num.	Percent Composition by Num.	Length Range (in)
Bluegill	401	50.3	1.3 - 7.6
Gizzard Shad	190	23.8	6.5 - 10.0
White Sucker	91	11.4	6.4 - 18.8
Pumpkinseed	22	2.8	3.6 - 6.5
Channel Catfish	19	2.4	10.6 - 20.6
Largemouth Bass	16	2.0	4.9 - 19.7
Walleye	13	1.6	5.7 - 8.4
Redear Sunfish	11	1.4	3.1 - 7.9
Spotted Gar	11	1.4	23.9 - 32.6
Black Crappie	7	0.9	8.6 - 9.6
Hybrid Sunfish	6	0.8	4.9 - 7.5
Green Sunfish	3	0.4	3.0 - 5.0
Bowfin	3	0.4	22.4 - 25.5
Yellow Bullhead	2	0.3	8.8 - 12.2
Yellow Perch	2	0.3	4.1 - 6.6
Chestnut Lamprey	1	0.1	9.0
Total	798		

Habitat

- Oxygen (3 ppm) was available for fish down to 13 feet in June and 11 feet in August (average for Northern Indiana lakes).
- Water clarity was 2 feet in June and 2.5 feet in August (below average).
- Aquatic plants were collected to 3 feet and comprised of only 1 species.
- Plant coverage in the littoral zone was 9% with Coontail being the only species collected.
- Although not collected in the survey, Eurasian Water milfoil was observed.
- Emergent vegetation consisted of White water lilies, spatterdock, Cattail, and Arrow head.



Notes

- Royer Lake continues to be overrun with the invasive Gizzard Shad, which has decreased water quality and negatively impacted the Bluegill population.
- Catch rates of Largemouth Bass 18 inches or larger was above average when compared to other natural lakes.
- Given low vegetation abundance, aquatic weed control should be discouraged except where severe impairments exist.

Indiana Fishing Regulation Guide:
http://www.in.gov/dnr/fishwild/2347.htm

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Appendix

Pertinent data sheets to Royer Lake Status and Trends sampling 2019

GLACIAL LAKE SURVEY - STATUS AND TRENDS

LAKE NAME	COUNTY	CITY
Royer	LaGrange	Plato
QUAD	SAMPLE ID	DATE(S) OF SURVEY
		6/17-6/18/2019
CLUSTER	BIOLOGIST(S) AND CREW	
	Horsley, Halderman	

ACCESSIBILITY

STATE OWNED PUBLIC	PRIVATELY OWNED PUBLIC	OTHER
S 525 E on Fish Lake		

EFFORT

ELECTROFISHING STATION 1		TRAP NET 1		
START	END	N 41.60872	W -85.34007	
N 41.61476	N 41.61130	SET TIME	LIFT TIME	TOTAL HRS
W -85.33359	W -85.33578			24
ELECTROFISHING STATION 2		TRAP NET 2		
START	END	N 41.61716	W -85.33506	
N 41.60969	N 41.61346	SET TIME	LIFT TIME	TOTAL HRS
W -85.33359	W -85.33754			24
COMMENTS		COMMENTS		

GILL NET 1			GILL NET 2		
START	END		START	END	
N 41.60810	N 41.60764		N 41.61251	N 41.61180	
W -85.33999	W -85.34042		W -85.33595	W -85.33598	
SET TIME	LIFT TIME	TOTAL HRS	SET TIME	LIFT TIME	TOTAL HRS
		24			24
DEPTH RANGE	COMMENTS		DEPTH RANGE	COMMENTS	
11-12			8-10		

Previous Surveys Completed

PHYSICAL AND CHEMICAL CHARACTERISTICS

ACRES	MAX DEPTH	MEAN DEPTH	ACRE FEET	WATER LEVEL	SECCHI
69	56	23.7	1,632	936.5 MSL	2
AIR TEMP	WATER COLOR	LAKE BOTTOM			
70	Brown	BOULDER	GRAVEL	SAND	MUCK CLAY MARL

CONDUCTIVITY	ALKALINITY	pH	TDS	BAROMETER	WATER CHEMISTRY AND ZOOPLANKTON
S 404	S 68.64	S 9.7			N 41.61053 TIME
B	B 68.64	B 8.5		R S F	W -85.33841

LAKE TEMPERATURE AND DISSOLVED OXYGEN (DO) PROFILES

DEPTH	TEMP(℉)	DO (ppm)	DEPTH	TEMP(℉)	DO (ppm)	DEPTH	TEMP(℉)	DO (ppm)	DEPTH	TEMP(℉)	DO (ppm)
0	69.0	11.2	34	44.7	0.9						
2	69.3	11.4	36	44.5	0.9						
4	68.7	9.6	38	44.2	0.9						
6	68.1	8.5	40	44.0	0.9						
8	67.7	7.7	42	43.8	0.9						
10	67.2	6.7	44	43.7	0.8						
12	65.2	3.8	46	43.6	0.8						
14	58.8	1.1	48	43.6	0.8						
16	53.5	1.1	50	43.6	0.8						
18	50.5	1.1	52	43.5	0.8						
20	49.2	1.1	54	43.5	0.8						
22	48.2	1.0	56	43.4	0.7						
24	47.4	1.0									
26	46.8	1.0									
28	46.2	1.0									
30	45.6	1.0									
32	45.0	1.0									

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GLACIAL LAKE SURVEY - STATUS AND TRENDS

LAKE NAME	COUNTY	CITY
Royer	LaGrange	Plato
QUAD	SAMPLE ID	DATE(S) OF SURVEY
		8/21/2019
CLUSTER	BIOLOGIST(S) AND CREW	
	Horsley, Koza	

ACCESSIBILITY

STATE OWNED PUBLIC	PRIVATELY OWNED PUBLIC	OTHER
S 525 E on Fish Lake		

EFFORT

ELECTROFISHING STATION 1		TRAP NET 1		
START	END	N W		
N W	N W	SET TIME	LIFT TIME	TOTAL HRS 0:00
ELECTROFISHING STATION 2		**TRAP NET 2**		
START	END	N W		
N W	N W	SET TIME	LIFT TIME	TOTAL HRS 0:00
COMMENTS		COMMENTS		

GILL NET 1			GILL NET 2		
START	END		START	END	
N W	N W		N W	N W	
SET TIME	LIFT TIME	TOTAL HRS 0:00	SET TIME	LIFT TIME	TOTAL HRS 0:00
DEPTH RANGE	COMMENTS		DEPTH RANGE	COMMENTS	

Previous Surveys Completed

PHYSICAL AND CHEMICAL CHARACTERISTICS

ACRES	MAX DEPTH	MEAN DEPTH	ACRE FEET	WATER LEVEL	SECCHI
69	56	23.7	1,632	936.5 MSL	2.5

AIR TEMP	WATER COLOR	LAKE BOTTOM					
	Brown	BOULDER	GRAVEL	SAND	MUCK	CLAY	MARL

CONDUCTIVITY	ALKALINITY	pH	TDS	BAROMETER	WATER CHEMISTRY AND ZOOPLANKTON
S B	S B	S B		R S F	N 41.61053 W -85.33841 TIME

LAKE TEMPERATURE AND DISSOLVED OXYGEN (DO) PROFILES

DEPTH	TEMP(°F)	DO (ppm)	DEPTH	TEMP(°F)	DO (ppm)	DEPTH	TEMP(°F)	DO (ppm)	DEPTH	TEMP(°F)	DO (ppm)
0	79.9	8.9	34	44.1	0.0						
2	79.2	8.9	36	43.8	0.0						
4	78.6	7.9	38	43.6	0.0						
6	78.2	7.1	40	43.2	0.0						
8	77.7	6.2	42	43.0	0.0						
10	76.9	3.4	44	42.8	0.0						
12	76.1	1.5	46	42.6	0.0						
14	71.6	0.3	48	42.5	0.0						
16	62.3	0.1	50	42.5	0.0						
18	57.1	0.1	52	42.4	0.0						
20	51.0	0.0	54	42.4	0.0						
22	48.2	0.0	56	42.4	0.0						
24	47.2	0.0									
26	46.2	0.0									
28	45.5	0.0									
30	44.9	0.0									
32	44.5	0.0									

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NUMBER, PERCENTAGE, WEIGHT, AND AGE OF BLUEGILL													
TOTAL LENGTH (inches)	NUMBER COLLECTED TN	GN	EF	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED TN	GN	EF	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0			2	0.5	0.00		17.5						
1.5							18.0						
2.0							18.5						
2.5			2	0.5	0.01	1	19.0						
3.0			3	0.7	0.03	1	19.5						
3.5		1	5	1.5	0.04	2	20.0						
4.0	1		24	6.2	0.05	2,3	20.5						
4.5	7		49	14.0	0.08	3,4	21.0						
5.0	32	1	88	30.2	0.10	3,4	21.5						
5.5	26		79	26.2	0.13	4,5	22.0						
6.0	24		25	12.2	0.17	4,5	22.5						
6.5	8		12	5.0	0.22	5,6	23.0						
7.0	1		6	1.7	0.28	5,6	23.5						
7.5	2		3	1.2	0.32	6	24.0						
8.0							24.5						
8.5							25.0						
9.0							25.5						
9.5							26.0						
10.0													
10.5													
11.0													
11.5													
12.0													
12.5													
13.0													
13.5													
14.0													
14.5													
15.0													
15.5													
16.0													
16.5													
17.0							TOTAL	401				48.8	

ELECTROFISHING CATCH (/HR)	596	GILL NET CATCH (/LIFT)	1	TRAP NET CATCH (/LIFT)	50.5

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AGE-LENGTH KEY FOR BLUEGILL														Age Distriubtion (Expanded)										
														*Due to rounding total may be different than number collected										
LENGTH GROUP (inches)	NUMBER COLLECTED	NUMBER AGED	AGE																					
			0	1	2	3	4	5	6	7	8	9	10	0	1	2	3	4	5	6	7	8	9	10
1.0	2	0																						
1.5	0	0																						
2.0	0	0																						
2.5	2	1		1											2									
3.0	3	2		2											3									
3.5	6	4		1	3										2	5								
4.0	25	5			3	2										15	10							
4.5	56	5				3	2										34	22						
5.0	121	5				1	4										24	97						
5.5	105	4					3	1										79	26					
6.0	49	5					1	3	1									10	29	10				
6.5	20	5						3	2										12	8				
7.0	7	3						1	2										2	5				
7.5	5	3							3											5				
8.0	0	0																						
8.5	0	0																						
9.0	0	0																						
9.5	0	0																						
10.0	0	0																						
10.5	0	0																						
11.0	0	0																						
11.5	0	0																						
Total	401	42	0	4	6	6	10	8	8	0	0	0	0	0	7	20	68	208	70	27	0	0	0	0
Mean TL				3.2	4.1	4.9	5.4	6.2	6.8						3.2	4.1	4.9	5.4	6.2	6.8				
SE				0.16	0.05	0.04	0.03	0.05	0.11						0.16	0.05	0.04	0.03	0.05	0.11				

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NUMBER, PERCENTAGE, WEIGHT, AND AGE OF LARGEMOUTH BASS													
TOTAL LENGTH (inches)	NUMBER COLLECTED TN	GN	EF	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED TN	GN	EF	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0							17.5			1		2.87	7
1.5							18.0	1		1	12.5	2.97	9
2.0							18.5						
2.5							19.0			1	6.3	3.74	9
3.0							19.5			1	6.3	3.93	10
3.5							20.0						
4.0							20.5						
4.5			1	6.3	0.05	1	21.0						
5.0							21.5						
5.5							22.0						
6.0							22.5						
6.5			1	6.3	0.16	1	23.0						
7.0							23.5						
7.5							24.0						
8.0							24.5						
8.5			1	6.3	0.30	2	25.0						
9.0			1	6.3	0.36	2	25.5						
9.5							26.0						
10.0													
10.5													
11.0													
11.5													
12.0			2	12.5	0.85	3,4							
12.5			3	18.8	0.97	4							
13.0			1	6.3	1.09	4							
13.5													
14.0													
14.5													
15.0			1	6.3	1.70	6							
15.5													
16.0													
16.5													
17.0							TOTAL	16				24.8	

ELECTROFISHING CATCH (/HR)	30	GILL NET CATCH (/LIFT)	0	TRAP NET CATCH (/LIFT)	0.5

Royer Lake

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AGE-LENGTH KEY FOR LARGEMOUTH BASS														Age Distriubtion (Expanded)										
														*Due to rounding total may be different than number collected										
LENGTH GROUP (inches)	NUMBER COLLECTED	NUMBER AGED	AGE																					
			0	1	2	3	4	5	6	7	8	9	10	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1.0	0	0																						
1.5	0	0																						
2.0	0	0																						
2.5	0	0																						
3.0	0	0																						
3.5	0	0																						
4.0	0	0																						
4.5	1	1		1											1									
5.0	0	0																						
5.5	0	0																						
6.0	0	0																						
6.5	1	1		1											1									
7.0	0	0																						
7.5	0	0																						
8.0	0	0																						
8.5	1	1			1											1								
9.0	1	1			1											1								
9.5	0	0																						
10.0	0	0																						
10.5	0	0																						
11.0	0	0																						
11.5	0	0																						
12.0	2	2				1	1										1	1						
12.5	3	3					3											3						
13.0	1	1					1											1						
13.5	0	0																						
14.0	0	0																						
14.5	0	0																						
15.0	1	1							1											1				
15.5	0	0																						
16.0	0	0																						
16.5	0	0																						
17.0	0	0																						
17.5	1	1								1											1			
18.0	2	1										1											2	
18.5	0	0																						
19.0	1	1										1											1	
19.5	1	1											1											1
20.0	0	0																						
20.5	0	0																						
Total	16	15	0	2	2	1	5	0	1	1	0	2	1	0	2	2	1	5	0	1	1	0	3	1
Mean TL				5.8	9.0	12.3	12.8		15.3	17.8		18.6	19.8		5.8	9.0	12.3	12.8		15.3	17.8		18.6	19.8
SE				1.00	0.25	-	0.16		-	-		0.33	-		1.00	0.25	-	0.16		-	-		0.33	-

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Sampling effort, species composition, and relative abundance of fish collected during 2002,2014, and 2019 fisheries surveys of Royer Lake

	6/10/2002		6/9/2014		6/17/2019	
Brook Silverside	present		present			
Species	No.	(%)	No.	(%)	No.	(%)
Bluegill	213	54.3	286	47.6	401	50.3
Largemouth Bass	78	19.9	47	7.8	16	2.0
Pumpkinseed	20	5.1	4	0.7	22	2.8
Hybrid Sunfish	19	4.8	24	4.0	6	0.8
Warmouth	17	4.3	3	0.5		
Spotted Gar	12	3.1	1	0.2	11	1.4
White Sucker	11	2.8	12	2.0	91	11.4
Bowfin	5	1.3	3	0.5	3	0.4
Yellow Perch	5	1.3	3	0.5	2	0.3
Yellow Bullhead	4	1.0			2	0.3
Redear Sunfish	2	0.5	8	1.3	11	1.4
Black Crappie	1	0.3			7	0.9
Channel Catfish	1	0.3	10	1.7	19	2.4
Walleye	1	0.3	2	0.3	13	1.6
Common Carp	1	0.3	1	0.2		
Golden Redhorse	1	0.3	1	0.2		
Rock Bass	1	0.3	1	0.2		
Chestnut Lamprey		0.0			1	0.1
Green Sunfish		0.0	1	0.2	3	0.4
Gizzard Shad		0.0	194	32.3	190	23.8
Total	392		601		798	

Sampling effort			
Electrofishing hrs.	.5 (DC)	.5 (DC)	.5 (DC)
Gill net lifts	4	2	2
Trap net lifts	2	2	2

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Occurrence and Abundance of Submersed Aquatic Plants - Overall

Lake:	Royer	Secchi (ft):	2.5	Mean species/site:	0.03
County:	Lagrange	Sites with plants:	1	SE Mean species/site:	0.03
Date:	8/9/2019	Sites with native plants:	1	Mean native species/site:	0.03
Littoral Depth (ft):	3.0	Number of species:	1	SE Mean natives/site:	0.03
Littoral Sites:	11	Number of native species:	1	Species diversity:	0.00
Total Sites:	40	Maximum species/site:	1	Native species diversity:	0.00

All Depths	Frequency of Occurrence	Rake score frequency per species				Plant Dominance
Species		0	1	3	5	
Coontail	2.5	97.5	2.5	0.0	0.0	0.5
Filamentous Algae						

Other species observed: Cattail, White water lily, Arrow head, Button bush, Willow, Spatterdock, Swamp loosestrife, Purple loosestrife, Eurasian water milfoil

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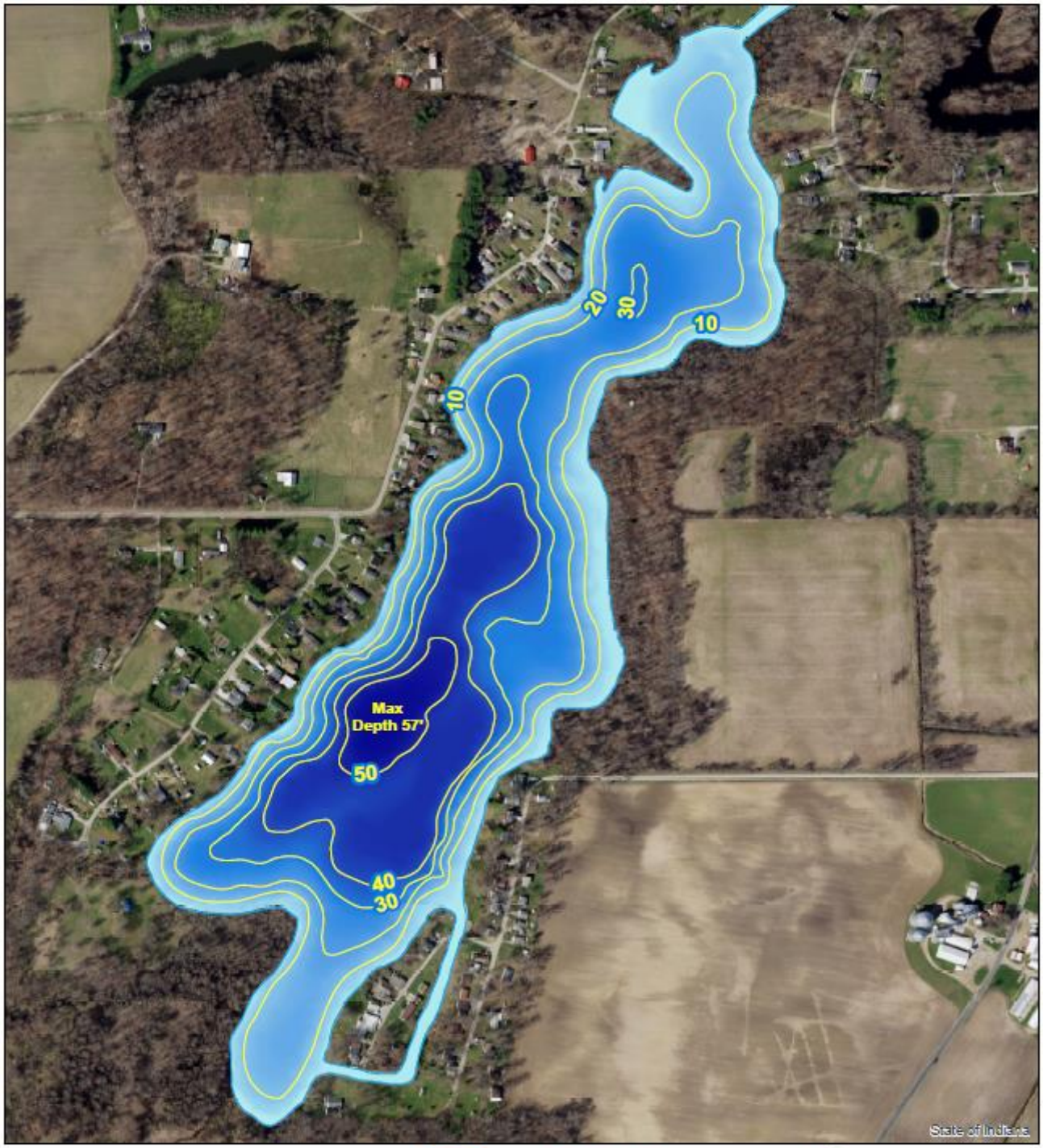

Royer Lake
LaGrange County
69 acres
7/23/2019
10 ft contours

0.1 0.2 0.3 0.4 Miles

N