

Jones Lake

Crawford County, T28N, R02W, Sect. 30 and 31
Au Sable River Watershed, last surveyed in 2012

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Environment

Jones Lake is 42.5 acre natural lake located in north central Crawford County in Michigan's northern Lower Peninsula. The lake is approximately 14 miles northeast of the City of Grayling on County Road 612 (Figure 1). The entire lake is publicly owned and located within the Au Sable State Forest. Michigan Department of Natural Resources Forest Resources Division manages a 42 site State Forest Campground on the lake with pit toilets, well water and a concrete boat ramp. Two thirds of the riparian zone is wooded upland with the remainder being shrub scrub wetland.

The lake is contained in an extensive deposit of gravels and sands that originated as glacial and ice-contact outwash (Zorn and Sendek, 2001). The lake has a small drainage area, less than 5 square miles, with direct outlet into the East Branch Au Sable River. Two small ponds are connected to the south portion of the lake with no discernable inlets found. Primary source of water for the lake is ground water or spring seepage. Maximum depth of the lake is 37 feet with bottom type consisting of sand, organics and marl. Total alkalinity ranges 92 - 147 mg/l and the pH ranges from 7.5 to 8.2 indicating a general productivity potential in the medium to low range. The lake stratifies seasonally with little to no oxygen found below 20 feet during periods of stratification.

History

Fishery survey observations date back to 1924 at Jones Lake with the initial survey documenting a fish community composed of yellow perch, sunfish, rock bass, smallmouth bass and northern pike. Numerous forage minnows were also identified including blacknose shiner, common shiner, "shore minnow", bluntnose dace and golden shiner. Additional survey efforts in 1959, 1961 and 1964 added largemouth bass, bluegill, pumpkinseed sunfish and common white sucker to the fisheries community. Growth rates for the various game species were average with typical size distributions for northern fish assemblages. Angler complaints about the poor quality of fishing in the lake were common during this time period.

The first recorded fish stocking in Jones Lake was made in 1944 with the introduction of 600,000 walleye fry, 6,000 fingerling bluegill and 600 fingerling largemouth bass (Table 1). This was followed up with a plant of 2,000 fingerling bluegill in 1945 and 20,000 in 1957. The bluegill plant in 1957 resulted from angler reports that stated bluegill had disappeared from the lake.

In 1965 a new fisheries management strategy was introduced which was directed at converting Jones Lake to a trout fishery. This was accomplished by applying rotenone to the lake to remove competing fish species with a follow-up stocking of brook, brown and rainbow trout. From 1965 to 1972, 32,164 rainbow trout, 2,000 brown trout and 4,200 brook trout of various sizes were stocked to develop the trout fishery (Table 1). Follow-up surveys conducted in 1967, 68, 69 and 70 indicated limited survival of stocked trout with minimal carry-over to following years. Survey notes to the files also state that

the condition of the trout was "poor" with growth rates less than state average and an over-all "skinny" appearance. In addition, the original fish community (bluegill, yellow perch, pumpkinseed sunfish, northern pike, largemouth bass and smallmouth bass) quickly re-established in the lake either through survival from the rotenone application or through movement via the outlet from the East Branch Au Sable River. Trout management objectives were not met for Jones Lake, most likely due to lack of suitable cold water habitat (a lack of oxygenated water below the thermocline). Trout management was subsequently discontinued in 1972.

A single plant of 3,000 coho (silver) salmon was made in Jones Lake in 1974. No explanations of this plant could be located in the MDNR files, but it is speculated that this was an experimental plant to evaluate the behavior and movement of newly introduced salmon into Michigan. Similar plants were conducted in other waters around the state during that same period.

From the mid 1970's through 1980 no formal fisheries surveys were conducted and the status of the fish community was only inferred from angler reports. These reports indicated a variable fishery with more documented poor fishing years than good and consisting of largemouth bass, bluegill and northern pike as the primary game fish. Size distribution was considered poor at that time but it was reported that a few large fish were occasionally caught with largemouth bass up to 20", bluegill up to 10" and northern pike up to 40". Yellow perch were numerous but the population appeared to be stunted with few large fish caught.

In 1982 a new fisheries management direction was initiated to improve the size structure of the existing fish community. The plan was to reduce the number of small yellow perch, common white sucker and bullhead that was believed to be "stunting" the fish community and allow for more growth of the remaining fish. This action was accomplished by trapping and removing the non-desirable fish through the use of small mesh fyke nets. This manual fish removal was conducted during the spring of 1982 and 1983. The target species for removal included yellow perch (under 6 inches), common white suckers and bullheads. Totals removed for the two-year period included 142 lbs of yellow perch (3.3 lbs/ac), 323.8 lbs of sucker (7.6 lbs/ac) and 5.4 lbs of bullheads (0.1 lbs/ac) for a total of 471.2 lbs of rough fish (11.1 lbs/ac). The benefit of this management action was considered negligible as it was labor intensive and resulted in a relatively small catch.

During each manual removal, biological data was collected on all species captured. Small yellow perch and bluegill were most common during these surveys with northern pike and largemouth bass the most common predators. Growth rates for the panfish species (bluegill, pumpkinseed sunfish, rock bass, yellow perch and largemouth bass) were within one inch of the state average mean length at age. Northern pike had a poor growth rate, approximately three inches below state average mean length at age.

With the lack of success of the manual removals and the persistent problem with overabundant small bluegill and yellow perch, a fingerling walleye stocking program was initiated in 1991 (Table 1). The goal was to establish an effective predator (walleye) that would reduce the biomass of small bluegill and yellow perch and subsequent competition to allow better growth of the remaining bass, northern pike, bluegill, yellow perch and rock bass. Spring fingerling walleye were prescribed for stocking at a rate of 100 per acre with stocking to occur on a two to four year rotation. These introductions have

been successful in establishing a walleye population as noted in two shocking surveys (1992 and 2003) and two netting surveys (1993 and 2002).

In September of 1992 a fall walleye recruitment survey was conducted to evaluate walleye fingerling plants made in 1991 and 1992. The entire shoreline around the lake was electrofished and biological data was collected from all fish captured. A total of 137 fish were collected of which 15 were walleye ranging in size from 6 to 15 inches. Two anglers interviewed on the lake by the survey crew had caught one largemouth bass (16") and 15 bluegills (7.5" to 10.5"). In addition rusty crayfish were noted as abundant in the lake. Management recommendations were to continue fingerling walleye stocking and to consider special restrictive bass and bluegill regulations for quality fishing.

In May of 1993 a netting survey was conducted to evaluate the bluegill population for inclusion in a potential state wide bluegill study (table 2). This survey included seven fyke nets and one gill net for a total effort of 15 net nights yielding a catch of 189 fish from 11 different species. The catch consisted of 5 walleye (7" to 22"), 20 northern pike (7" to 33"), 3 largemouth bass (10" to 20"), 7 bluegill (4" to 9"), 6 yellow perch (3" to 8"), 3 pumpkinseed sunfish (3" to 8"), 125 rock bass (2" to 10"), 7 common white sucker (14" to 21"), 11 brown bullhead (7" to 11"), and one species not previously encountered in this lake, a 13" black crappie. Growth for most species appeared at or near mean length at age except northern pike which was 4.8" below the state average. Even though few bluegills were captured in the nets, angler reports indicated the fishing for bluegills was good. Management recommendations were to continue walleye stocking.

A survey conducted in June of 2002 was directed at evaluating the fish community for potential designation as a Quality Fishing Lake, a classification which is designed to maximize the size of fish and the subsequent catch of large fish. The sampling effort consisted of 12 large mesh fyke net lifts and 4 small mesh fyke net lifts. A total of 71 fish were captured from 9 species including bluegill (15 fish; 2.2" to 6.6"), white sucker (14 fish; 5.7" to 21.9"), rock bass (14 fish; 2.7" to 8.8"), walleye (9 fish; 12.8" to 21.1"), northern pike (6 fish; 19.2" to 25.9"); brown bullhead (6 fish; 11.0" to 14.1"); black bullhead (3 fish; 9.0" to 9.6"), yellow perch (3 fish; 4.6" to 5.1") and largemouth bass (1 fish 6.9") during the early June survey. Growth rates were similar to previous surveys with mean growth index above the state average for walleye, near the state average for bluegill and rock bass and below the state average for northern pike. The small sample size of fish collected may indicate a depressed fish population due to low productivity and possible high exploitation.

A fall walleye recruitment shocking survey was conducted in September of 2003 to evaluate a June 2003 planting of 5,923 fingerling walleye. The entire shoreline was shocked (1.15 mile) with a 45 minute shocking time. Ninety-eight walleye were captured of which 97 were young of year (YOY) with a length range 4.7" to 8.1". The catch rate was 127 YOY per hour indicating strong survival and an average year class of walleye. One 19.1 inch (age 5) walleye was also captured which corresponded to a 1998 stocking year.

Quality Lake regulations went into effect on Jones Lake on April 1, 2006. These regulations included a restricted fishing season (June 1 - September 30), catch and release only fishing, and artificial lures only. These regulations were expected to reduce angler harvest, improve the size structure of the fish community and provide a quality fishing opportunity.

Department Forest Resources Division (FRD) staff reported that there was an initial drop in usage of the campground, which was attributed to the more restrictive regulations. Campers reported that they camped there because they could "worm dunk with their kids." Following that initial drop in usage, FRD staff indicate that camping use increased over the past few years to 2014 to a level similar to that prior to the regulation change, but have also noted that there is some violation of the fishing regulations by campers.

Current Status

A May 2012 survey effort of Jones Lake was a Status and Trends survey, following Fisheries Division protocol in which gear is standardized and effort is a function of lake size. Another goal of the survey was to evaluate the effects of the Quality Lakes regulations, which were implemented on Jones Lake in 2006. An earlier survey effort was done in late March of 2012 (at ice-out) to gather information on the pike and walleye populations of Jones Lake.

The May 2012 survey effort consisted of four large-mesh trap net lifts, 12 large-mesh fyke net lifts, four small-mesh fyke net lifts, four experimental gill net lifts, and two seine hauls. A total of 1,055 fish were captured representing 15 species (Table 2). The most abundant species was mimic shiner, followed by bluegill, yellow perch, largemouth bass, white suckers, and common shiners. Other species present in the catch, but at a lower abundance, included: creek chubs, golden shiners, horneyhead chubs, Iowa darters, Johnny darters, northern pike, pumpkinseed sunfish, rock bass, and walleye. Bluegill and largemouth bass both had good distributions across length classes (Table 3), with consistent recruitment. Bluegill up to age-3 were present, while largemouth bass up to age-9 were present, with only age-8 missing. Growth rates for game species with an adequate sample size were above statewide averages, including bluegill, largemouth bass, and rock bass.

The March 2012 survey effort consisted of seven large-mesh fyke net lifts and seven trap net lifts. A total of 580 fish were captured representing eight species (Table 4), with a species composition similar to the May survey without the smaller-bodied prey fish that the small-mesh gear captured in the later survey. The March survey added black crappie to the species list, and increased the sample size of northern pike and walleye. Walleye were growing at approximately the statewide average growth rate, but northern pike were growing well below the statewide average (growth index = -2.6). The pike were well distributed across length ranges (Table 5), and had consistent recruitment across age classes. Ten age classes of northern pike, up to age-12, were present in the March survey catch.

Analysis and Discussion

Fourteen netting/seining surveys and two shocking surveys have been conducted on Jones Lake since 1924. Size distributions of game fish have been acceptable to anglers in recent years with adequate numbers and large individuals noted in the population such as bluegill >10", Northern pike > 30", largemouth bass > 20" and walleye > 20". Periodically there have been high numbers of small yellow perch and bluegill.

Past management actions have included attempts to produce a trout fishery through chemical reclamation with rotenone and stocking brook, brown and rainbow trout. These efforts were not successful due to the absence of critical habitat (dissolved oxygen in the cold water zone below the thermocline). Other attempts to manage the fish community included two manual removals to reduce

the number of fish such as suckers, bullhead and small panfish (bluegill and yellow perch) to improve over-all growth rates of game fish. The manual removals were considered time consuming and with no detectable benefits to the fish community. Another management action involved stocking walleye fingerlings to establish an effective top predator to reduce the numbers of small panfish and to establish a fishable walleye population. This action was successful with the presence of multiple year classes of walleye and angler reports of walleye being caught. Walleye were also growing at about the statewide average.

The most recent management action for Jones Lake was the implementation of "Quality Lake" regulations in 2006, regulations which are designed to maximize the size of fish and the subsequent catch of large fish. One purpose of the 2012 survey was to evaluate the effect of the quality regulations on the fish community. Among the methods used to evaluate the effectiveness of these restrictive regulations are proportional stock density (PSD) and relative stock density (RSD), calculations that look at the size structure of the fish population. These evaluation methods are prescribed in MDNR (2012) (Table 6). PSD and several RSD values were calculated for Jones Lake based on the 2012 survey (Table 7), and show that the fish populations are meeting target size compositions as follows:

- The bluegill population was meeting the RSD-preferred and RSD-memorable goals;
- The northern pike population was meeting the RSD-preferred and RSD-memorable goals;
- The walleye population was meeting RSD-preferred goal.

Management Direction

Jones Lake has challenged fisheries managers for years to maximize the fishery potential. Even though there has been a persistent problem in the past with small panfish, the lake has recently produced large northern pike, largemouth bass and bluegill with growth rates at or near state average. It is speculated that even a modest harvest of game fish suppresses the over-all fish population. Quality fishing regulations were put in place on Jones Lake to increase the abundance of large bluegill, northern pike, largemouth bass, and walleye. Based on the PSD and RSD calculations, the regulations appear to working well in combination with the walleye stocking.

1. The current quality lake fishing regulations for Jones Lake should be maintained (open season June 1-September 30, catch and release fishing only, artificial lures only). These regulations have met the goals of the quality non-trout fishing lakes regulations, and the fish community is expected to continue to maintain its quality status.
2. Fingerling walleye stocking should continue on a three to four year rotation with a stocking rate of 100 fingerlings per acre (4,200) to provide an adequate predator base and sport fishery.
3. Monitor the use of campground and lake to further quantify effects of quality designation and satisfaction.

References

Michigan Department of Natural Resources (MDNR). 2012. Fisheries Order FO-244. Guidelines for selection of quality non-trout fishing lakes. Michigan Department of Natural Resources, Fisheries Division, Ann Arbor, Michigan.

Zorn, T.G., and S.P. Sendek. 2001. Au Sable River Assessment. Michigan Department of Natural Resources, Fisheries Division, Special Report 26, Ann Arbor, Michigan.

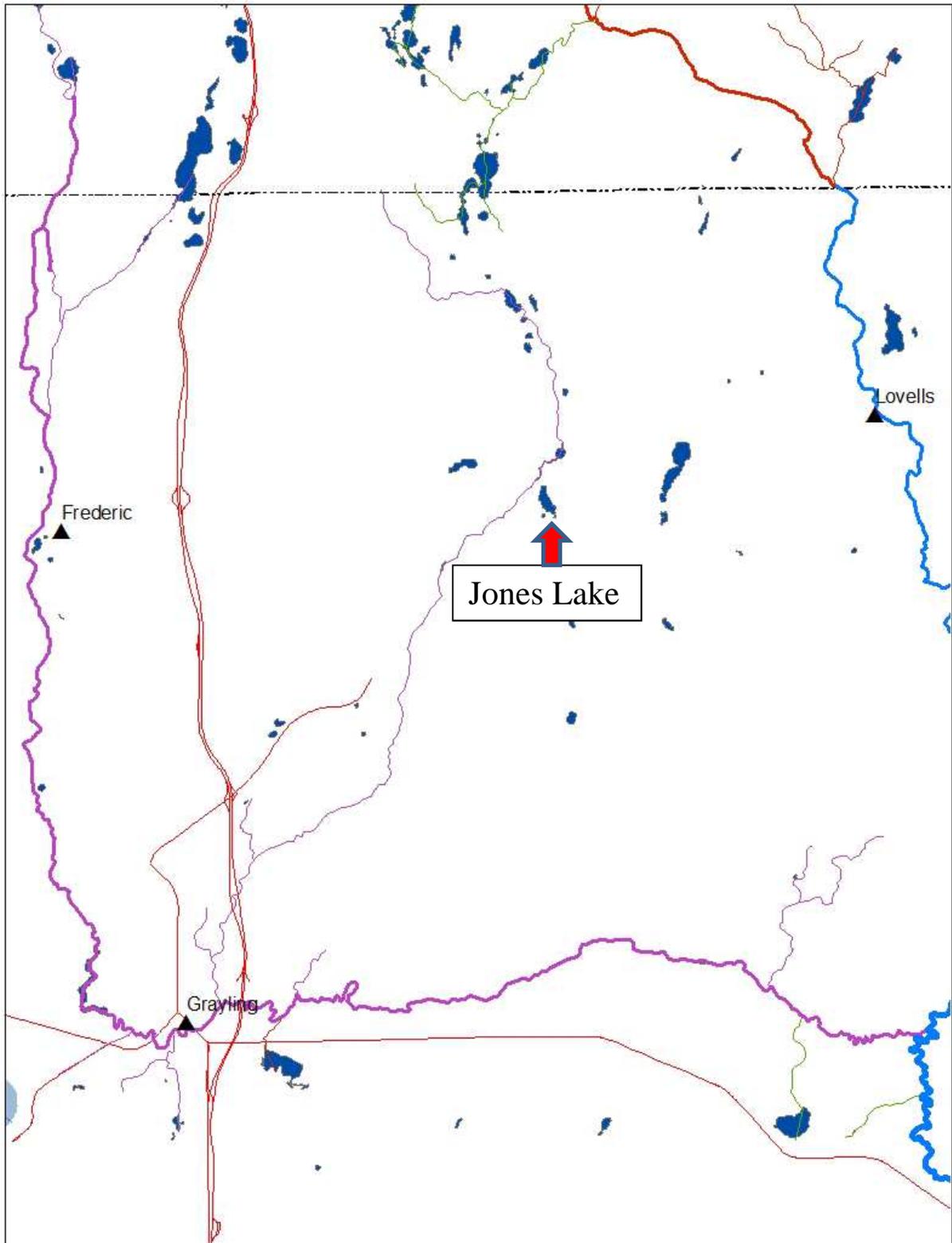


Figure 1. Locator map for Jones Lake (Crawford County).

Table 1. Stocking history for Jones Lake, Crawford County. Strain is included in parentheses where known.

Year	Species (strain)	Number	Size/Age
2012	Walleye (TI)	4,200	1.72 in
2003	Walleye (TI)	5,923	1.3 in
2001	Walleye (MU)	16,361	1.8 in
1998	Walleye (TI)	4,850	1.8 in
1995	Walleye (MU)	4,270	2.2 in
1992	Walleye (MU)	3,087	4.5 in
1991	Walleye (MU)	2,000	1.7 in
1974	Coho	3,000	Fingerling
1972	Rainbow trout	2,100	Fall fingerling
1970	Rainbow trout	625	Adults
1970	Hybrid sunfish	42,000	Fall fingerling
1969	Brown trout	500	Adults
1969	Rainbow trout	39	Yearlings
1968	Brown trout	1,500	Adults
1966	Rainbow trout	21,000	Fingerling
1965	Brook trout	4,200	Yearling
1965	Rainbow trout	8,400	Yearling
1957	Bluegill	20,000	Fingerling
1945	Bluegill	2,000	Fingerling
1944	Bluegill	6,000	Fingerling
1944	Largemouth	600	Fingerling
1944	Walleye	600,000	Fry

Table 2. Number, percent by number, length range (in.), and growth index for fish species encountered during the May 14-17, 2012, survey of Jones Lake, Crawford County. The growth index is a comparison of mean lengths at age of fish caught in this survey to the statewide average lengths at age for that species.

Species	Number	Percent by number	Length range (in.)	Growth Index*
Bluegill	257	24.4	1-10	+0.8
Creek chub	4	0.4	3-4	--
Common shiner	31	2.9	3-4	--
White sucker	42	4.0	17-24	--
Golden shiner	1	0.1	4-4	--
Horneyhead chub	2	0.2	3-3	--
Iowa darter	3	0.3	2-2	--
Johnny darter	4	0.4	2-2	--
Largemouth bass	51	4.8	2-17	+1.6
Mimic shiner	569	53.9	2-3	--
Northern pike	8	0.8	16-27	--
Pumpkinseed	3	0.3	8-9	--

sunfish				
Rock bass	19	1.8	2-10	+0.9
Walleye	2	0.2	19-21	--
Yellow perch	59	5.6	2-6	--

Table 3. Length frequency of game fish captured during the May 14-17, 2012, survey of Jones Lake, Crawford County.

Inch group	Bluegill	Largemouth bass	Northern pike	Pumpkinseed sunfish	Rock bass	Walleye	Yellow perch
1	163						
2	5	3			1		55
3	1	7					3
4	12						
5	2						
6					2		1
7	1	1			5		
8	10	1		2	9		
9	52			1	1		
10	11	4			1		
11		4					
12		4					
13		4					
14		12					
15		6					
16		3	1				
17		2	1				
18			3				
19						1	
20							
21						1	
22							
23			1				
24							
25							
26							
27			2				

Table 4. Number, percent by number, length range (in.), and growth index for fish species encountered during the March 21-28, 2012, survey of Jones Lake, Crawford County. The growth index is a comparison of mean lengths at age of fish caught in this survey to the statewide average lengths at age for that species.

Species	Number	Percent by number	Length range (in.)	Growth Index*
Black crappie	4	0.7	15-16	--
Bluegill	172	29.7	6-11	+2.0
White sucker	83	14.3		--
Largemouth bass	58	10.0	12-18	+1.3
Northern pike	131	22.6	15-38	-2.6
Pumpkinseed sunfish	10	1.7	5-9	--
Rock bass	73	12.6	6-7	--
Walleye	59	8.4	19-29	+0.2

Table 5. Length frequency of northern pike and walleye captured during the March 21-28, 2012, survey of Jones Lake, Crawford County.

Inch group	Northern pike	Walleye
15	1	
16		
17	16	
18	26	
19	26	2
20	23	6
21	5	13
22	4	14
23	5	15
24	2	1
25	4	
26	4	
27	5	
28	4	
29		1
30	4	
31		
32		
33	1	
34	2	
35	2	
36	2	
37		
38	5	

Table 6. Minimum lengths (inches) of five size categories for bluegill, largemouth bass, northern pike, and walleye (FO-244).

	Bluegill	Largemouth bass	Northern pike	Walleye
Minimum stock size	3	8	14	10
Quality stock size	6	12	21	15
Preferred stock size	8	15	28	20
Memorable stock size	10	20	34	25
Trophy stock size	12	25	44	30

Table 7. PSD and RSD values for four fish species captured during the 2012 surveys of Jones Lake, Crawford County. RSD-P refers to RSD-preferred, RSD-M refers to RSD-memorable, and RSD-T refers to RSD-Trophy. For details on how these values are calculated, see Fisheries Order 244.

	Bluegill	Largemouth bass	Northern pike	Walleye
PSD	83	78	35	100
RSD-P	82	28	14	96
RSD-M	12	0	8	2
RSD-T	0	0	0	0