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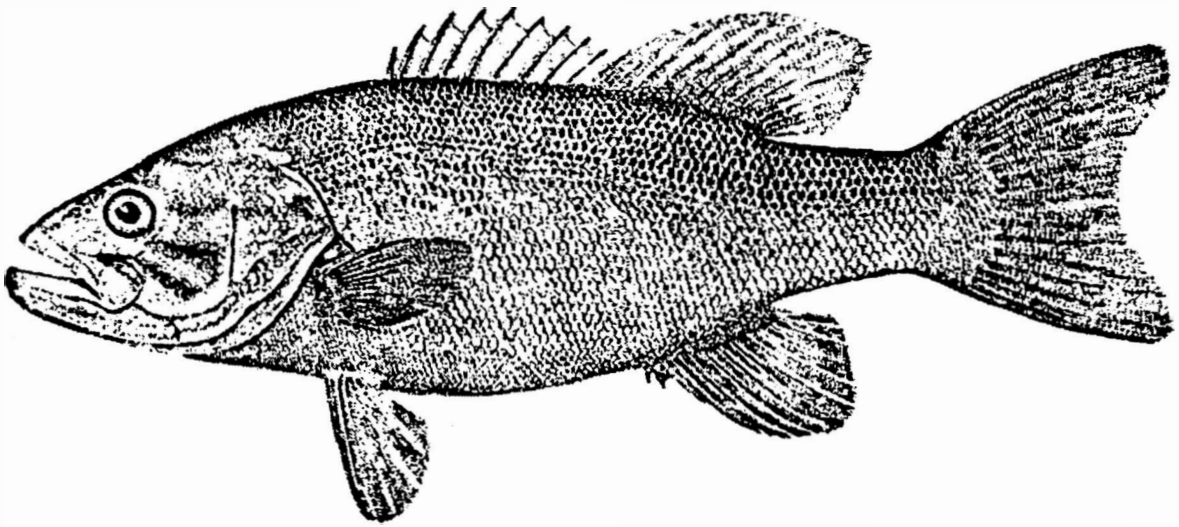
Barry R. Miller



STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
FISHERIES DIVISION

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Results of Voluntary Catch Surveys on Sylvania Lakes in 1989 and 1991

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Abstract.—Voluntary catch surveys were conducted by the United States Forest Service on lakes in the Sylvania Recreation area in 1989 and 1991. Two-hundred notebooks were given to anglers in 1989 and 250 in 1991 to record their catch and effort. Analysis of the data was done by the Michigan Department of Natural Resources. Data obtained included angler residence, angler effort by lake, catch per hour by fish species, and length-frequency of largemouth bass *Micropterus salmoides* and smallmouth bass *Micropterus dolomieu* caught. Most anglers resided in Wisconsin. Clark Lake was the most popular fishing lake in 1989; Crooked Lake was slightly more popular than Clark Lake in 1991. The best catch rate for smallmouth bass was in Liluis Lake in 1989 and in Marsh Lake in 1991. The best catch rate for largemouth bass was in Cub Lake in 1989 and in Fischer Lake in 1991. Length measurements were obtained from 698 smallmouth bass and 142 largemouth bass in 1989 and 622 smallmouth and 197 largemouth in 1991. Comparisons of catch surveys and netting surveys showed similar trends in fish abundance but size ranges were somewhat different. Anglers tended to catch more larger fish while the nets captured more smaller fish.

The Sylvania Wilderness Area is located in the Ottawa National Forest, Gogebic County, Michigan. The 21,000 acre tract contains 36 named lakes varying in physical and chemical nature. Most of the lakes are landlocked and have low biological productivity (Schneider and Juetten 1989).

The United States Forest Service (USFS) has managed Sylvania since 1966. Fishing in the tract has been restricted for many years by special regulations designed to protect the unique populations of old large fish (notably smallmouth bass) which exist in some of the lakes.

Despite the remoteness, visitor use, and consequently fishing pressure, has always been high in the tract. The USFS reports that in 1989 there were 30,357 day users, 8,002 interior campers, and 7,444 users of the campground on Clark Lake. In 1991, day users increased to 31,366, interior campers to 10,898, and Clark Lake campers to 10,565.

Although early regulations were very restrictive, results of test netting indicated that, by the early 1970s, some of the lakes were experiencing declines in bass populations (Clady et al. 1975; Latta 1975). In 1975, bass populations in trophy lakes were given total protection under a "no-kill" regulation. Since that time, test netting has continued on a periodic basis and limited catch survey information has been gathered by the USFS[1] to follow trends in the fish populations.

[1]Edde, J. Undated reports entitled: *Preliminary summary, Sylvania creel census and results of 1980 creel census.* United States Forest Service, Ironwood, Michigan.

This report summarizes the results of recent catch surveys undertaken in cooperation with the USFS in 1989 and 1991. It was undertaken as an extension of the monitoring of the fish populations by test netting. Although the census was a voluntary one, it appeared useful for determining which of the lakes were the most heavily fished, gave an indication of the residency of anglers, and estimated catch rates and size ranges of the species caught.

Methods

During the summer of 1989, a total of 200 notebooks were given to Sylvania visitors who indicated that they would compile information regarding their fishing while in the tract. Those volunteers were asked to provide their names and addresses and record which lakes they fished. They were also instructed to note what species of fish they caught, how many of each species were either kept or released, what sizes of fish they caught, and how much effort they expended (Figure 1). A list of common and scientific names of fishes caught in Sylvania lakes is given in Table 1.

Upon the completion of their visit, the catch survey notebooks were to be returned to the USFS. Those notebooks were then forwarded to the Michigan Department of Natural Resources in Baraga for analysis. In 1991, the census was conducted in a similar fashion but 250 notebooks were distributed.

Results and Discussion

Of the notebooks distributed, one third to one half were returned with usable data. Some of the information was unusable because the respondents failed to complete the forms correctly. For example, addresses were missing from several forms. Other common errors included missing information on the number of anglers fishing, the hours fished, and the total number of fish caught of each species. Also, several anglers reported numbers of fish as "about" and "approximately". The following analyses were derived from the usable portions of the notebooks.

Wisconsin residents predominated in both 1989 and 1991 (Table 2). Michigan residents ranked second, and the remaining respondents came from 10 other states.

Tables 3 and 4 present the lakes fished, number of anglers fishing each lake, and the catch per hour (CPH) for the various species of fish caught in 1989 and 1991, respectively. The most popular lakes were Clark Lake in 1989 and Crooked Lake in 1991. In 1989, the best smallmouth bass fishing in terms of CPH was Liluis Lake with 2.00/hour. However, that information was based on reports by only four fishing parties. In 1991, Marsh Lake had the highest CPH for smallmouth bass at 5.33/hour, but that was based on only one report.

The best largemouth bass fishing occurred in Cub Lake in 1989 at 2.28/hour and Fischer Lake in 1991 at 3.43/hour, but again few parties reported fishing either lake. Catch statistics for some of the more heavily fished lakes may be more reliable. Clark, Loon, Crooked, and Deer Island lakes all had at least 15 respondents involved in the catch statistics (Tables 3 and 4).

A length frequency of smallmouth bass and largemouth bass caught in each lake was also completed (Tables 5 and 6, respectively). In total, 698 smallmouth bass from 11 different lakes were measured by anglers in 1989, and 622 smallmouth bass were measured from 12 lakes in 1991. In addition, 142 largemouth bass were measured from 9 different lakes in 1989, and 197 from 10 lakes were measured in 1991.

To compare angler catch to netting data, the number by size of smallmouth bass for five of the lakes were combined into 2-inch groups, beginning at 8 inches, and compared to recent fisheries netting survey data presented by Schneider and Juetten (1989). Percent by size appeared quite similar between angler catch and netting data, except that anglers caught more larger fish than nets (Table 7). This is to be expected due to the size selectivity biases of the gears.

Despite some problems in data recording by individual anglers, this volunteer census did enable us to obtain measurements on many more fish than is normally the case with test netting. We know that angler catches are

variable due to skill level, time of day fished, and so on, but in lakes where many parties reported fishing, the larger sample sizes should reduce any biases.

If this voluntary catch survey is continued in the future, lakes with at least 15 parties reporting may not need evaluation netting as often as is done presently. However, gear selectivity biases must be considered when comparing angler catch to net catch. Lakes with less than 15 respondents should still be sampled with nets to determine the status of the fish populations.

Perhaps, if the catch survey was conducted each year for a number of years, it would become well accepted by visitors to Sylvania lakes, and the quality and quantity of the data might improve.

Instructions:

Fishing Record
Sylvania Wilderness Lakes

Your name:_____

Your address:_____

Instructions:

1. Use a page per fishing session. Record lake, date, number of anglers and hours actually fished.

2. Please record ALL FISH.

3. Record species (see drawings), length, and if the fish were kept or released.

4. Please record any comments you have on the back of the following pages.

5. Please return RECORD to A-frame at Sylvania entrance, or mail to:

Ottawa National Forest
P.O. Box 276
Watersmeet, MI 49911

This voluntary catch survey has been prepared in cooperation with
the Michigan Department of Natural Resources

Form:

Lake_____Date_____

Number of anglers_____Hours_____

Species	Kept?	Length

(Pictures of fish species on the back of the next several pages)

Figure 1.—Instructions and form used by anglers to record their fishing information.

Table 1.—List of common and scientific names of fishes caught in Sylvania lakes.

Common name	Scientific name
Smallmouth bass	*Micropterus dolomieu*
Largemouth bass	*Micropterus salmoides*
Bluegill	*Lepomis macrochirus*
Pumpkinseed	*Lepomis gibbosus*
Rock bass	*Ambloplites rupestris*
Black crappie	*Pomoxis nigromaculatus*
Northern pike	*Esox lucius*
Walleye	*Stizostedion vitreum*
Yellow perch	*Perca flavescens*
Lake trout	*Salvelinus namaycush*

Table 2.—Number of angler parties by state of residence.

Residence	Number of angler parties	
	1989	1991
California	0	1
Connecticut	1	0
Florida	1	0
Iowa	1	1
Illinois	4	8
Indiana	0	2
Michigan	15	22
Minnesota	2	3
Ohio	0	2
Pennsylvania	1	0
Texas	0	1
Wisconsin	41	41
No response	32	8
Total	98	89

Table 3.—Number of parties fishing Sylvania lakes in 1989 and catch per hour by species and lake.

Lake	Number of parties	Smallmouth bass	Largemouth bass	Northern pike	Walleye	Yellow perch	Rock bass
Clark	32	0.70	0.16		0.13	0.20	0.42
Loon	29	0.51	0.08		1.00		0.37
Crooked	25	0.22	0.23	0.43		0.31	0.31
Deer Island	19	0.71	0.33				
Mountain	15	0.47	0.43			0.22	0.54
Whitefish	12	0.61		0.12	0.10	0.74	0.16
East Bear	10	0.50	0.72				
Fischer	10	0.63	1.41				
High	10	0.71					
Big Bateau	9	1.88	0.76				
Cub	7	1.29	2.28				
Hay	6		1.25				
Florence	5					0.27	
Liluis	4	2.00					
Glimmerglass	3		0.40			0.33	0.29
West Bear	3		1.48			0.25	
Golden Silence	2		1.45				0.67
Kerr	2					1.00	
Corey	1						
Helen	1						
Long	1						
Snap Jack	1		0.50				1.00

Table 4.—Number of parties fishing Sylvania lakes in 1991 and catch per hour by species and lake.

Lake	Number of parties	Small-mouth bass	Large-mouth bass	Northern pike	Walleye	Yellow perch	Rock bass	Blue-gill	Black crappie	Pumpkin-seed	Lake trout
Crooked	23	0.25	0.30	0.30		0.06	0.30	0.71	0.69	0.39	
Clark	22	0.68	0.17		0.30	0.23	0.62				0.18
Loon	20	0.69	0.00				0.31	0.10	0.13		
Deer Island	16	0.65	0.05						0.10	0.30	
High	12	0.98	1.00								
Mountain	12	0.36	0.65			0.33	0.17				
Whitefish	7	1.00				0.50	0.67				
East Bear	4		1.44			0.25		3.89			
Fischer	4		3.43								
Katherine	4	3.09									
Cub	3	0.50	2.71				0.50				
Helen	3	0.76	1.62								
West Bear	3		0.79				0.67				
Hay	2	0.50	2.00					0.57			
Snap Jack	2		0.78				0.20	4.22			
Big Bateau	1	1.88	0.13								
Glimmerglass	1										
Florence	1					18.00		2.00			
Kerr	1					0.50					
Liluis	1						0.50				
Marsh	1	5.33									

Table 5.—Number by size (inches) of smallmouth bass caught in Sylvania lakes.

Inch group	Big Bateau '89	Big Bateau '91	Clark '89	Clark '91	Crooked '89	Crooked '91	Cub '89	Cub '91	Deer Island '89	Deer Island '91	Helen '91	High '91
1	—	—	—	—	—	—	—	—	—	1	—	—
2	—	—	1	1	—	—	—	—	—	—	—	—
3	1	—	2	—	—	—	—	—	—	—	1	—
4	1	—	8	2	—	—	—	—	—	1	2	—
5	3	—	9	8	—	1	—	—	1	—	—	2
6	2	—	10	8	1	1	—	—	3	—	—	4
7	2	—	8	9	2	—	—	—	3	—	—	7
8	9	—	12	11	3	1	2	—	7	3	—	5
9	1	—	6	13	—	1	1	—	1	—	—	5
10	8	3	18	14	—	3	2	—	15	—	—	14
11	4	1	5	7	—	3	—	—	1	3	—	8
12	12	7	20	6	—	2	2	1	12	6	1	15
13	6	—	4	2	1	4	1	—	24	10	—	8
14	5	3	15	7	1	—	1	—	19	14	1	12
15	3	1	18	3	1	2	—	—	24	11	—	7
16	1	—	14	7	3	—	—	—	13	21	—	9
17	—	—	21	9	4	—	—	—	15	10	—	3
18	1	—	23	10	2	—	—	—	3	7	—	4
19	—	—	11	9	1	—	—	—	5	3	—	1
20	—	—	5	5	—	—	—	—	3	3	—	1
21	—	—	1	—	—	—	—	—	2	1	—	—
22	—	—	—	—	—	—	—	—	1	1	—	—
23	—	—	—	—	—	—	—	—	—	—	—	—
Number of fish	61	15	211	131	19	18	9	1	152	95	4	105
Average length	11.3	12.1	13.2	11.8	13.3	10.9	11.2	12.0	14.2	14.9	9.3	12.0

Table 5.—Continued:

Inch group	Katherine '91	Liluis '89	Long '89	Loon '89	Loon '91	Marsh '91	Mountain '89	Mountain '91	Whitefish '89	Whitefish '91
1	—	—	—	—	—	—	—	—	1	—
2	—	—	—	—	1	—	—	—	—	—
3	—	—	—	2	1	—	—	—	2	—
4	—	—	—	—	2	—	1	—	6	2
5	—	—	—	3	—	—	2	2	6	—
6	1	—	—	2	3	—	3	5	3	1
7	—	—	—	3	1	—	4	2	4	1
8	3	—	—	2	7	2	4	3	1	5
9	4	—	—	1	3	5	5	5	2	1
10	2	—	1	8	11	6	8	4	1	2
11	5	1	—	2	2	3	6	—	9	—
12	9	—	2	15	10	5	11	6	8	4
13	17	1	—	4	3	6	10	3	18	2
14	6	—	—	5	15	5	2	—	17	—
15	5	—	2	4	9	—	3	3	15	6
16	1	—	1	6	7	—	—	1	4	6
17	1	—	—	9	10	—	4	—	2	2
18	1	—	—	4	8	—	1	1	1	—
19	—	—	—	—	3	—	1	—	—	—
20	—	—	—	1	4	—	—	—	—	—
21	—	—	—	1	1	—	—	—	—	—
22	—	—	—	—	—	—	—	—	—	—
23	—	—	—	—	—	—	—	—	—	—
Number of fish	55	2	6	72	101	30	65	35	100	32
Average Length	12.4	12.0	13.3	13.1	13.3	12.1	11.6	9.9	12.9	12.0

Table 6.—Number by size (inches) of largemouth bass caught in Sylvania lakes.

Inch group	Big Bateau '89	Big Bateau '91	Clark '89	Clark '91	Corey '89	Crooked '89	Crooked '91	Cub '89	East Bear '91
1	—	—	—	—	—	—	—	—	—
2	—	—	—	—	—	—	—	—	—
3	1	—	—	—	—	—	—	—	—
4	1	—	1	—	—	—	—	—	—
5	3	—	—	—	—	—	—	—	—
6	2	—	—	—	—	—	1	—	—
7	2	—	—	1	—	—	1	—	1
8	9	—	—	1	—	2	4	1	4
9	1	—	—	1	2	1	—	4	1
10	8	—	—	—	3	2	6	4	5
11	4	—	1	—	—	2	2	1	1
12	12	—	1	1	3	3	10	1	1
13	6	—	—	1	—	2	2	2	—
14	5	1	—	—	1	1	1	1	—
15	3	—	1	1	1	7	—	—	—
16	1	—	2	—	—	1	—	—	—
17	—	—	1	1	—	1	1	—	—
18	1	—	—	—	—	—	—	—	—
19	—	—	—	—	—	—	—	—	—
20	—	—	1	—	—	—	—	—	—
21	—	—	—	—	—	—	—	—	—
22	—	—	—	—	—	—	—	—	—
23	—	—	—	—	—	—	—	—	—
Number of fish	14	1	8	7	10	22	28	14	13
Average length	10.8	14.0	14.4	11.6	11.3	12.8	10.9	10.5	9.3

Table 6.—Continued:

Inch group	Fischer '91	Hay '91	Helen '89	Helen '91	Mountain '89	Mountain '91	West Bear '89	West Bear '91
1	—	—	—	—	—	—	—	—
2	—	—	—	—	—	—	—	—
3	—	—	—	—	—	—	—	—
4	—	—	—	—	—	1	—	—
5	—	—	—	—	2	—	—	—
6	2	—	—	—	—	—	—	—
7	—	—	—	—	2	2	—	—
8	12	—	—	2	—	—	—	1
9	10	—	—	4	7	3	—	1
10	10	—	—	7	4	8	—	1
11	—	5	1	3	9	4	2	1
12	—	2	—	11	—	9	1	6
13	—	—	—	3	15	10	1	3
14	—	—	—	3	—	11	10	3
15	—	—	—	—	3	3	17	4
16	—	—	—	—	4	1	5	—
17	—	—	—	—	1	—	1	1
18	—	—	—	—	—	1	—	—
19	—	—	—	—	1	—	—	—
20	—	—	—	—	—	—	—	—
21	—	—	—	—	—	—	—	—
22	—	—	—	—	—	—	—	—
23	—	—	—	—	—	—	—	—
Number of fish	34	7	1	33	48	53	37	21
Average length	8.8	11.3	11.0	11.2	11.8	9.5	14.6	13.2

Table 7.—Percent by size (2-inch groups) for smallmouth bass 8 inches and larger from recent (1987-1989) fyke-net surveys compared to the 1989 and 1991 catch survey.

Lake	Percent (%) by 2-inch size groups						
	8-9	10-11	12-13	14-15	16-17	18-19	20+
Big Bateau							
Fike-net catch	69	21	5	4	1	0	0
1989 angler catch	20	25	37	16	2	2	0
1991 angler catch	0	27	47	27	0	0	0
Clark							
Fike-net catch	52	0	4	9	13	22	0
1989 angler catch	10	13	14	19	20	25	3
1991 angler catch	25	17	8	10	16	20	5
Deer Island							
Fike-net catch	3	9	28	40	9	10	0
1989 angler catch	6	11	25	30	19	6	4
1991 angler catch	3	3	17	27	33	11	5
Loon							
Fike-net catch	16	15	19	12	21	15	1
1989 angler catch	5	16	31	15	26	6	3
1991 angler catch	10	14	14	25	18	14	5
Whitefish							
Fike-net catch	13	8	33	38	8	0	0
1989 angler catch	7	4	21	43	23	4	0
1991 angler catch	21	7	21	21	29	0	0

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