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Effects of an Extended Winter Season on the Fishery of Selected Stream Trout Lakes in Northeastern Minnesota

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Effects of an Extended Winter Season on the Fishery of Selected Stream Trout Lakes in Northeastern Minnesota[1/]

by

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INTRODUCTION

A winter creel census was conducted on 13 lakes managed for stream trout in the Ely fish management area. The census was conducted to determine winter fishing pressure and catch on these intensively managed lakes and to evaluate the effects of a five week extension to the winter season. Until this winter, the season began on the Saturday closest to January 1 and lasted 23 days, ending between January 20 and January 26. The 1979 season began on December 30, 1978 but lasted for 61 days, ending on February 28, 1979.

Description of Study Area

The 13 lakes censused are loacted in northeastern Minnesota near Ely. Approximate distance to the study area is 225 air miles north-northeast of Minneapolis-St. Paul and 80 air miles north of Duluth. All of the lakes are located in the Superior National Forest. Four of the lakes are in the Boundary Waters Canoe Area (BWCA) as modified by legislation in 1978. All but two of the lakes, Tofte and Camp 20, are relatively inaccessible and all were inaccessible directly by road during the 1979 season. The area could best be described as rugged, lying along the southern edge of the Canadian shield. The area surrounding the lakes is 100% forested with

1/ Financed by Superior National Forest Accelerated Fisheries Program

mixed conifer and deciduous trees. No development is present on nine of the lakes. High Lake, Camp 20 Lake, and Louis Lake have light development while Tofte Lake has one small resort which does not operate during the winter.

The lakes are relatively small, ranging from 9 acres on Little Dry Lake to 277 acres on High Lake. Total alkalinity is generally low and with the exception of one lake, would be classified as either very soft of moderately soft. The exception is Skull Lake which would be classified as moderately hard. Each of the lakes is managed for stream trout. Past management includes reclamation of 11 of the lakes between 1954 and 1976. All of the lakes have been stocked with either brook or rainbow trout, generally with fall fingerlings at rates of 40 to 250 per surface acre.

METHODS AND MATERIALS

The creel census method used was modified from the earlier creel census work on stream trout lakes by Micklus and Johnson (1962). The 13 lakes censused were divided into two groups with all lakes in each group being censused on alternate days. Snowmobiles were the primary method of transportation used to reach the lakes. To save traveling time and wear and tear on the equipment, each group of lakes was organized into subgroups according to location. The starting point for each day rotated among lakes within each subgroup. The starting times for each day were selected randomly. This information is summarized in Appendix Table 1.

Based on angler interviews and track counts in the snow, there was negligible fishing between 9 A.M. and 4 P.M.

On each check the following information was recorded: 1) number of fishermen; 2) number of fish houses, and 3) time of check. If fishermen were observed, they were interviewed and asked: 1) time started; 2) number of fish caught; 3) fishing method; 4) place of residence; 5) travel method, and 6) time they planned on quitting. In addition, it was noted whether the trip was complete or incomplete.

If the fishermen were successful, the lengths of the fish they caught were measured. It was found that weight determinations would be inaccurate since the fish were dead, snow covered and often gilled or gutted. The average weight of the fish was determined from the table in the Fisheries Manager Handbook (Minnesota Department of Conservation, Special Pub. #82, 1970) which lists average weights of fish at various lengths.

Fishing pressure was determined by dividing the total number of fishermen observed for the season by the total number of checks made on each lake. The resulting figure was then multiplied by the total number of daylight hours in the season (61 days x 9.5 hours of daylight/day = 580 hours) to determine the pressure in manhours/season.

During this census, it could be determined by track observations in the snow if fishermen had been on the lake since the previous check, or the last snowfall. Thus, if it could be postively determined that no one had fished a lake on a day which was not actually censused, that day was treated as though it had been censused and a zero recorded for the number of fishermen observed.

Weather data was obtained from information compiled at the Vermilion Community College in Ely.

RESULTS

Fishing Pressure

The total fishing pressure on the 13 study lakes amounted to 2,176 manhours. The fishing pressure averaged 3.5 manhours/acre and ranged from 0.2 manhours/acre on Louis Lake to 11.3 manhours/acre on Skull Lake. This data is summarized in Table 1.

Micklus and Johnson (1962) found that the fishing pressure on 27 northeastern Minnesota stream trout lakes during the summer of 1961 averaged 28.3 manhours/acre. The fishing pressure ranged from 0 manhours/acre to 130 manhours/acre on individual lakes. Much higher fishing pressure was found on the four northeastern stream trout lakes censused by Micklus and Johnson (1965) during the summers of 1961, 1962 and 1963. Annual fishing pressure averaged 65.8 manhours/acre and ranged from 31.0 manhours/acre to 214.2 manhours/acre. These four lakes were readily accessible. It appears that the 1979 winter season on stream trout lakes in northeastern Minnesota generated approximately 5%-10% of the total anticipated annual fishing pressure.

Catch and Catch Rates

It is estimated that 233 brook trout and 153 rainbow trout were creeled during the 1979 winter season on the 13 study lakes. This is a total catch of 386 stream trout. The overall catch rate was 0.17 stream trout/manhour and ranged from 0 stream trout/acre on Louis Lake, Alruss

Lake, Reganbogan Lake, Chant Lake and Hanson Lake to 0.57 stream trout/acre on Skull Lake. This data is summarized in Table 2.

Micklus and Johnson (1965) found that the catch rate on four northeastern Minnesota lakes during the summers of 1961, 1962 and 1963 averaged 0.20 fish/manhour and ranged from 0.08 fish/manhour to 0.40 fish/manhours. Kucera and Torp (1976) found catch rates of 0.15 fish/manhour on Tofte Lake and 0.16 fish/manhour on Topper Lake during the winter of 1975. Unpublished data from the Ely Area Fisheries Office files indicate much the same catch rates during previous winter seasons. It appears that the overall catch rate during the present study compares favorably with catch rates from other studies.

Harvest and Harvest Rates

It is estimated that 255 pounds of brook trout and 165 pounds of rainbow trout were harvested during the 1979 winter season. This is a total harvest of 420 pounds of fish. The harvest averaged 0.87 pounds/acre on the 13 study lakes and ranged from 0 pounds/acre on Louis Lake, Alruss Lake, Reganbogan Lake, Chant Lake and Hanson Lake to 8.07 pounds/acre on Skull Lake.

Information obtained by Micklus and Johnson (1965) on four accessible stream trout lakes in northeast Minnesota during the summers of 1961, 1962 and 1963 shows much higher harvests. The overall harvest amounted to 7.9 pounds/acre and ranged from 2.8 pounds/acre to 20.8 pounds/acre. It appears the overall harvest during the 1979 winter season was approximately 10% - 15% of the total anticipated annual harvest.

Table 1. Creel census statistics for 13 stream trout lakes censused in the winter of 1978-79

Lake	Acres	No. Samples[a]	Fisher-men Per Sample	Est. Manhrs. Fished	Man-hour/ Acre	Fish/ Manhr.	Total Fish Caught	Avg. Wt/fish	Lbs. Fish Harvest	Lbs. Fish Harvest Acre
Tofte	155	30	1.200	696	4.5	.07	49	1.0	49	0.32
Camp 20	43	46	0	12[c]	0.3	.25	3[c]	1.0	3	0.07
Glacier Pond	18	41	.049	28	1.6	.15	4	0.75	3	0.17
Skull	28	42	.548	318	11.3	.57	181	1.25	226	8.07
Found	58	39	.385	223	3.8	.22	49	1.25	61	1.06
High	277	37	.946	549	1.8	.10	55	1.0	55	0.20
Dry	82	46	.065	38	0.5	.25	10	0.5	5	0.06
Little Dry	13	41	.244	141	10.8	.25	35	0.5	18	1.38
Louis	24	60	0	6[b]	0.2	0	0[b]	0	0	0
Alruss	29	60	0	12[b]	0.4	0	0[b]	0	0	0
Reganbogan	10	40	.075	44	4.4	0	0	0	0	0
Chant	16	37	.054	31	1.9	0	0	0	0	0
Hanson	22	37	.135	78	3.5	0	0	0	0	0
Totals	775	556		2,176	3.5	.17	386		420	0.87

a/ Includes days when track observations indicate no use.

b/ These figures were estimated from track records in snow. No blood observed in snow so catch assumed 0.

c/ These figures were reported by a group that fished the lake.

Table 2. Catch and catch rate data

Lake	# Hrs. Censused	# Fish Caught	Catch/ Manhour
Dry	4	1	0.25
L. Dry	32	8	0.25
High	89	9	0.10
Alruss	0	0	0
Reganbogan	3	0	0
Hanson	8	0	0
Chant	17	0	0
Tofte	96	7	0.07
Glacial Pond #2	34	5	0.15
Camp 20	4	1	0.25
Skull	63	36	0.57
Found	46	10	0.22
Louis	0	0	0

Size of Fish

The average size of the trout caught was 1.09 pounds. No average size difference was found between brook trout and rainbow trout. This is much larger than the average size of 0.59 pounds/trout observed by Micklus and Johnson (1965) during the summers of 1961, 1962 and 1963.

The largest rainbow trout observed was 6 pounds 4 ounces from Found Lake. The largest brook trout observed was 2 pounds 13 ounces from Skull Lake. Both of these weights are actual weights and were not estimated.

Effects of 5 Week Extension on Fishing Season

There were 672 manhours of fishing during the "old" season, that is from December 30, 1978 to January 21, 1979. This is 31% of the total fishing pressure of 2,176 manhours. The remaining 1,504 manhours, or 69% of the fishing pressure occurred during the extended parts of the season from January 22, 1979 to February 28, 1979 (Table 3).

Table 3. Effects of a 5 week extension on fishing pressure

	Dec. 30, 1978 - Jan. 21, 1979	Jan. 22, 1979 - Feb. 28, 1979
Manhours	672	1,504
Manhours/day	29	40
% Pressure	31%	69%

No difference in catch rates, harvest or size of fish between the two periods could be found. It is felt that they generally remained constant throughout the entire season.

Other Results

Of the 173 fishermen interviewed, 158 or 92% were from within a 25 mile radius of Ely. The other fishermen were from Grand Rapids (2%), Virginia (2%), Tower (1%), Cook (1%), Embarrass (1%) and Cloquet (1%). The furthest distance traveled was 115 miles from Grand Rapids.

The most common method of travel to the lakes was by snowmobile. 106 fishermen (61) used a snowmobile to reach the lakes. This figure includes the fishermen who snowmobiled to the portages on the BWCA lakes and then traveled in on foot. Fifty-three fishermen (31%) walked to the lakes from their cars, 11 (6%) fishermen either skiied or snowshoed and 3 (2%) fishermen used a plane.

Most fishermen fished on the open ice. Of the 173 people interviewed, 145 or 84% fished without a shelter. If Tofte Lake is excluded (8 permanent ice houses were located here) 98% of the fishermen fished on the open ice.

Ninety-six percent of all fishing was done by jigging with artificial lures which were usually tipped with dead minnows, wax worms or corn. Still fishing with a dead minnow accounted for the remaining 4%.

DISCUSSION

The extended fishing season provided considerably more fishing opportunity for area fishermen with 69% of the winters fishing pressure occurring during the extended part of the season. The average number of hours fished/day was 29 during the "old" season and 40 during the extended season. This increase in daily effort probably reflects more moderate

weather during the extension. It cannot be determined with certainty whether the extended season actually created an additional 1,504 manhours of fishing as it is possible that the fishermen would have fished harder during the early part of the season if it had not been extended.

Fishing pressure averaged 3.5 manhours/acre and harvest averaged 0.87 pounds/acre on the 13 study lakes. These figures are considered to be quite low and were influenced by two factors.

First of all, the winter of 1979 was extremely cold. The average temperature of -4.6° F for January was 12.1° F below the 30 year average for the general area. The average temperature of 3.6° F for February was 7.3° F below the 30 year average. Daytime temperatures reached 32° F or above on only four days during the season. Night temperatures dropped below 0° F on 43 of the 61 days during the season. At these temperatures, even the slightest wind created bitter cold conditions.

Secondly, the majority of winter anglers in this area seem to prefer fishing for lake trout. From car counts observed at the Moose Lake landing during the 1979 winter season, it was estimated that there were 1,580 fishermen-trips which left the landing. All of these fishermen had to pass by Skull Lake and Found Lake in order to fish lake trout in the BWCA, yet only 121 fishermen (7.6%) stopped to fish on these two stream trout lakes. Skull Lake and Found Lake were among the best of the study lakes.

Considering the information obtained by Micklus and Johnson (1965) during the summers of 1961, 1962 and 1963, it appears that the 1979 winter season generated approximately 5%-10% of the total annual fishing pressure and approximately 10%-15% of the total annual harvest on these lakes.

Since the portion of fishing pressure and harvest occurring during the winter season is quite low, the continuance of the five week extension is recommended.

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Appendix Table I. Lakes, Groups, Sub-Groups, Dates and Starting Times of Creel Census

Group #1
Subgroup: (1) Dry, High, L. Dry
(2) Louis, Alruss
(3) Chant, Hanson
(4) Reganbogan

Date	Group	Start w/ Subgroup	Starting Time
12-30	1	1	9
12-31	2	3	10
1-1	1	4	10
1-2	2	1	12
1-3	1	3	11
1-4	2	2	9
1-5	1	2	1
1-6	2	3	11
1-7	1	1	12
1-8	2	1	3
1-9	1	4	9
1-10	2	2	1
1-11	1	3	10
1-12	2	3	2
1-13	1	2	11
1-14	2	1	10
1-15	1	1	1
1-16	2	2	12
1-17	1	4	12
1-18	2	3	9
1-19	1	3	9
1-20	2	1	11
1-21	1	2	10
1-22	2	2	3
1-23	1	1	11
1-24	2	3	1
1-25	1	4	1
1-26	2	1	2
1-27	1	3	12
1-28	2	2	10
1-29	1	2	9

Group #2
Subgroup: (1) Tofte, Glacier Pond #2
(2) Camp 20
(3) Skull, Found

Date	Group	Start w/ Subgroup	Starting Time
1-30	2	3	12
1-31	1	1	10
2-1	2	1	9
2-2	1	4	11
2-3	2	2	11
2-4	1	3	1
2-5	2	3	3
2-6	1	2	12
2-7	2	1	1
2-8	1	1	9
2-9	2	2	2
2-10	1	4	10
2-11	2	3	10
2-12	1	3	11
2-13	2	1	12
2-14	1	2	1
2-15	2	2	9
2-16	1	1	12
2-17	2	3	11
2-18	1	4	9
2-19	2	1	3
2-20	1	3	10
2-21	2	2	1
2-22	1	2	11
2-23	2	3	2
2-24	1	1	1
2-25	2	1	10
2-26	1	4	12
2-27	2	2	12
2-28	1	3	9