

Long Pond Salmon Management

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ABSTRACT

Long Pond was creel-surveyed during the 1994 and 1995 ice fishing seasons to evaluate further the effect of a one salmon limit. During the 1994 season, an estimated 671±284 anglers caught an estimated 160±68 legal salmon of which about 93±40 were harvested. Salmon fishing was "good" as both catch rate(0.24 salmon/angler) and size(mean length of 18.3 in) exceeded the statewide averages. Age III salmon(from a reduced stocking of 400 SY's in 1992) averaged 17.4 in long and 1 lb, 12 oz in weight with a mean "K" of 0.87. Salmon planted in 1992 produced an estimated return to anglers of 15% as age III fish. Age IV and older salmon comprised 37% of the harvest which exceeded comparable figures from prior surveys.

Because of an extremely mild/open winter in 1995, no estimates of use and harvest were derived. Salmon fishing was "good" as both catch rate(0.24 salmon/angler) and size(mean length of 18.0 in) exceeded the statewide averages. Age III salmon averaged 17.7 in long and 1 lb, 13 oz in weight with a mean "K" of 0.91. Older(>age IV) salmon comprised 36% of the harvest. Prior to imposition of the one salmon limit, older salmon accounted for 8-15% of winter harvest; following imposition, comparable figures have increased to 20-37%.

Salmon age, growth, and condition was also monitored by trapnetting in 1994 and 1995. Thirty-five percent of the 1994 sample and 10% of the 1995 sample was comprised of older salmon. Salmon measuring ≥18-in comprised 61% of the 1994 catch and 44% of the 1995 catch.

Aerial counts of boats were conducted in 1995 to estimate open water use. An estimated 1,431± 390 anglers(1.6 angler days/acre) fished during the season.

The preponderance of data suggests that the one salmon limit is fostering increased escapement to ages IV-V. It is also likely contributing to a slight improvement in fishing quality for salmon measuring ≥18 in. However, the reduced stocking rate is also influencing this parameter by promoting improved salmon growth. Preliminary indications are that a stocking rate of 0.44 SY's/acre coupled with the one salmon limit is providing a better-than-average winter fishery where use approximates 0.75 angler-days/acre.

KEY WORDS: LLS, AGE FREQUENCY, SIZE AT AGE, WINTER ANGLER SURVEY, STOCKING RATE, TRAPNET

INTRODUCTION

Refer to Progress Report No. 1(1987).

MATERIALS AND METHODS

Creel survey technique was identical to that described in earlier reports. In 1994, a trap-net was fished from October 11-24. In 1995, the net fished from October 13-November 6.

The aerial boat survey was conducted twice/week(one weekday and one weekend day) according to a random stratified schedule. Most flights were conducted between 1000-1200 hours. Flights commenced on April 17 and ended on September 29.

RESULTS

1994 Ice Fishing Creel Survey

A total of 180 anglers was interviewed during the season. These anglers caught 43 legal salmon, yielding a catch rate of 0.24 salmon/angler, slightly above the statewide average of 0.22(DeSandre). Because anglers released 40% of the salmon caught, the harvest rate was 0.14 salmon/angler. About 21% of anglers were successful in catching a salmon which averaged 18.3 in long and 1 lb, 15 oz in weight. Mean size of angled salmon exceeds the statewide averages.

Of the 17 salmon in the sample, 10(59%) were age III, 5(29%) were age IV, one(6%) was age VI, and one(6%) was a wild, age V(Table 5). Age III salmon averaged 17.4 in long, 1 lb, 12 oz in weight, and had a mean "K" of 0.87. Sixty-five percent of the harvest was comprised of salmon ≥ 18 -in, and 6% consisted of salmon ≥ 20 -in(Table 6). The largest salmon observed weighed 2 lb, 12 oz.

Catch rate for pickerel was 0.08 fish/angler. Six percent of anglers were successful in catching a pickerel which averaged 18.4 in long and 1 lb, 8 oz in weight. The largest pickerel observed weighed 1 lb, 13 oz.

1994 Trap-netting

Growth, condition, and age class composition of salmon captured in 1994 are presented in Tables 3 and 4. Data in these tables are from hatchery-reared salmon only; 10% of our sample was comprised of wild fish. Exclusive of Age I+'s, 36%(a new high) of the catch was comprised of older(i.e.IV+ or older) salmon. Mean length(20.3 in) and weight(2.9lb) of age III+ salmon also established new highs. Proportions of salmon ≥ 18 -in(61%) and ≥ 20 -in(22%) attained new highs(Table 6).

1995 Ice Fishing Creel Survey

Despite lengthy periods of open water in January, a total of 127 anglers was interviewed during the season. Salmon catch rate was 0.24 salmon/angler. Because anglers released a high(43%) proportion of the salmon caught, harvest rate was 0.13 salmon/angler. About 17% of anglers were successful in catching a salmon which averaged 18.0 in long and 2 lb in weight.

Of the 12 salmon in the sample, 6(50%) were age III, 3(25%) were age IV, one(8%) was age V, one(8%) was age II, and the age of one(8%) was undetermined. Age III fish averaged 17.7 in long, 1 lb, 13 oz in weight, and had a mean "K" of 0.91. Forty-two percent of the harvest was comprised of salmon>18-in, and 25% consisted of salmon>20-in. However, the validity of these percentages is questionable due to the small sample size. The largest salmon observed weighed 2 lb, 15 oz.

Anglers caught pickerel at a rate of 0.16 fish/angler. About 9% of anglers were successful in catching a pickerel which averaged 15.8 in long and 1 lb in weight. The largest pickerel observed weighed 2 lb, 2 oz.

1995 Aerial Count of Boats

For the first time in this study, a survey of open water use was conducted. Warden Pilot Roger Wolverton flew over the pond twice weekly(one weekday and one weekend day/week) counting the number of fishing boats. Non-fishing boats were also tallied. Most flights occurred between 1000-1200. The aerial counts commenced on April 17 and concluded on September 29. The maximum number of boats counted on a weekday was 7; for a weekend day, it was 8. Mean number of anglers per weekday was 6.4, and for a weekend day, 11.3. An estimated 1431 ± 390 anglers fished during the season. Summer tourists who rented a canoe for 1/2 a day and went "fishing" accounted for a portion of the use. Although such effort clearly doesn't represent "serious" fishing, it's part of the use estimate. Accordingly, an estimate of "serious" fishing effort would be less than the 1,400 angler-days reported.

1995 Trap-netting

Growth, condition, and age class composition of salmon trap-netted in 1995 are presented in Tables 3 and 4. Exclusive of age I+'s, only 11%(a new low) of the sample was comprised of older salmon. Mean length(18.0 in) and weight(2.0 lb) of age III+ salmon, although satisfactory, declined substantially from the 1994 level. Similarly, the percentage of larger salmon in the catch declined from the prior year(Table 6).

DISCUSSION

Winter anglers continue to release a high proportion of their salmon in response to the one salmon limit. Anglers released 42% of legal salmon caught in 1992, 40% in 1994, and 43% in 1995. Numerous anglers release legal salmon even when they have not yet kept one. Although most salmon which are released are age II fish measuring approximately 14-15 in, some 16-17 in salmon are released by certain anglers with strong catch and release ethics. Angler compliance with the one salmon limit continues to be very good.

Unfortunately, the same can not be said for certain open water anglers. Due to an oversight by the regional fishery biologist, the one salmon limit regulation did not appear in the 1994-95 open water lawbook. Consequently, anglers could legally keep the general law bag limit of 2 salmon in both years, and a number of anglers took advantage of the situation. The 1994 spring fishery was especially good, featuring robust 18 to 20-in salmon. During this productive 2-3 week period, reliable reports indicate that some anglers kept 2 salmon/day. This untimely oversight has been corrected, and the new 1996-97 open water lawbook will contain the one salmon limit regulation.

Winter angler use has remained stable, fluctuating within a narrow range from 625-700 angler-days for the survey years. The lower salmon harvest in 1994 is attributable to the reduced stocking rate initiated in 1992. Salmon planted in May of that year produced an estimated return to winter anglers of 15% as age III fish which is considered satisfactory. This rate of return is somewhat below that(19-21%) documented in previous surveys. Although catch rate(0.24 salmon/angler) was the lowest recorded to date, fish size improved. Mean length(18.3in) and weight(1 lb, 15 oz) of angled salmon established new highs. Further, the proportion of salmon $\geq$ 18-in(65%) in the harvest set a new record high.

Unusually mild weather in January, 1995 caused treacherous ice conditions. The lake was actually ice-free for several weeks in late January! Because numerous scheduled creel surveys were cancelled, no estimates of pressure and harvest were derived. Catch rate was the same as 1994. Although the sample size was small, most salmon checked were "larger" fish; their mean weight(2 lb) set a new high.

The initial two stockings of 400 salmon(0.44 SY's/acre) each produced better-than-average winter fisheries as measured by catch rate and fish size. Preliminary data suggest that a stocking rate of about 0.5 salmon/acre coupled with a one salmon limit can produce a good winter fishery under moderate-use conditions of $\pm$ 0.75 angler-days/acre. This preliminary finding may have management implications for other Maine lakes which

receive similar levels of winter use. Additional study is planned to determine if current angling quality will persist.

The preponderance of data indicate that the one salmon limit is fostering increased escapement to older(age IV and older) ages. Prior to imposition of this restriction, older salmon usually comprised from 8-15% of winter harvests. For the 1992, 1994, and 1995 winter seasons, older salmon accounted for 20%, 37%, and 36%, respectively, of the harvest. It must be noted that the 1995 sample(n=11)was small. Nonetheless, this trend towards an increased proportion of older-age salmon is corroborated by most of the trap-netting data. The proportion of age IV+-V+ salmon in trap net catches has generally increased from 15% in 1990 to 28% in 1992 to 35% in 1994 before falling back to only 10% in 1995. Exclusive of age I+ fish, in 1990, the initial year of the one salmon limit, 7(16%) of 43 trap-netted salmon were > age III+; for 1992, 1994, and 1995, a cumulative 22(28%) of 79 fish were > age III+. Several more years of data will be collected to determine if this trend persists.

Even though most of the data shows an increased proportion of older salmon, another important question needs to be discussed.....is this translating into an improved fishery for larger salmon? The objective of the one salmon limit is to improve the fishery for larger(i.e.> 18-in) salmon by encouraging the release of more 14 to 17-in fish. Recent data suggest that the one salmon limit is probably contributing to a slight improvement in the fishery for > 18-in salmon. Winter harvest rates of > 18-in salmon/angler for the 5 survey years are as follows:

1987	.055	
1989	.017	PRE-ONE SALMON LIMIT

1992	.031	POST-ONE SALMON LIMIT
1994	.061	
1995	.039	

Mean for the two "pre" restriction years is .031 while that for the 3 "post" restriction years is .043. Thus, recent catch rates are only marginally better than the late 1980's. It should be noted that the current stocking rate of 400 is also influencing the above figures(for the years 1994-95) by promoting improved salmon growth. More salmon from the 400 fish cohorts seem to be attaining the > 18-in size by age III compared to that observed when stocking rates ranged from 500-750. It's not possible to ascertain the relative role each factor(i.e. the one salmon limit vs. the reduced stocking rate) is playing. Future levels of the > 18-in salmon/angler harvest rate will help assess to what extent the objective is being met.

RECOMMENDATIONS

1. Maintain the current stocking rate of 400 SY's.
2. Conduct winter sport fishery creel surveys in 1996 and 1997.
3. Continue to conduct annual trap-netting operations to monitor salmon growth, condition, and age class composition.
4. Conduct another aerial survey of angler use during the 1996 open water season.

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Prepared by: Ron Brokaw
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Prepared by Ronald Brokaw, March, 1988.

CREEL SURVEY DESCRIPTION

Table: 1

Season: Ice Fishing

Water: Long Pond Acres: 897 Miles:

Water type: Oligotrophic Town: Mt. Desert, SW Harbor County: Hancock

Principal fisheries: Salmon, pickerel

Year	Date	No. days surveyed	No. days in season	Clerk	Vol.	Other
1995	Jan. 6-Mar. 18	17	90	X		
1994	Jan. 2-Mar. 19	21	90	X		
19						
19						
19						
19						

Year	Stocking History	Marks	Regulation History
1995	Salmon 400 SY	BV	Daily limit on salmon: 1 fish
1994	Salmon 400 SY	LV	Daily limit on salmon: 1 fish
1993	Salmon 400 SY	AD	Daily limit on salmon: 1 fish
1992	Salmon 400 SY	RV	Daily limit on salmon: 1 fish
1991	Salmon 500 SY	BV	Daily limit on salmon: 1 fish
1990	Salmon 500 SY	LV	New regulation adopted: Daily limit on salmon: 1 fish

Remarks:

CREEL SURVEY SUMMARY

Table: 2 Season: Winter
 Water: Long Pond Acres: 897 Miles:
 Town: Mt. Desert County: Hancock Region: C
 Principal fisheries: Salmon, pickerel
 Survey method: Stratified random, clerk, w/postcards

CENSUS YEAR

Statistics	Species	1987	1989	1992	1994	1995
No. anglers surveyed		181	298	254	180	127
No. angler hours		1,031	1,574	1,327	882	680
No. anglers (and %) successful in catching a legal fish	Salmon	49 (27)	79 (27)	53 (21)	37 (21)	22 (17)
	Pickerel	7 (4)	20 (7)	26 (10)	10 (6)	12 (9)
No. legal fish kept	Salmon	48	83	45	26	17
	Pickerel	11	48	46	12	19
No. legal fish released	Salmon	15	39	33	17	13
	Pickerel	0	0	0	3	1
No. (and %) short fish released	Salmon	13 (17)	44 (27)	10 (11)	14 (25)	2 (6)
	Pickerel	-	-	-	-	-
No. legal fish per angler (only those kept)	Salmon	0.35 (0.27)	0.41 (0.28)	0.30 (0.18)	0.24 (0.14)	0.24 (0.13)
	Pickerel	0.06	0.16	0.18	0.08 (0.07)	0.16 (0.15)

Statistics	Species	1987	1989	1992	1994	1995
Hours to catch a legal fish (all legal fish caught)	Salmon	16.4	12.9	17.0	20.5	22.7
	Pickereel	93.7	32.8	28.8	58.8	34.0
Mean length in mm $\pm$ SE	Salmon	436 $\pm$ 6 (42)	418 $\pm$ 5 (65)	440 $\pm$ 7 (29)	465 $\pm$ 10 (17)	456 $\pm$ 14 (11)
(and no.) fish sampled or reported	Pickereel	453 $\pm$ 21 (11)	439 $\pm$ 23 (18)	435 $\pm$ 17 (21)	467 $\pm$ 13 (7)	402 $\pm$ 16 (13)
Mean weight	Salmon	715 $\pm$ 31 (41)	628 $\pm$ 27 (63)	734 $\pm$ 43 (25)	878 $\pm$ 58 (17)	907 68 (9)
in g. $\pm$ SE (and no.)	Pickereel	595 $\pm$ 83 (11)	560 $\pm$ 70 (18)	589 $\pm$ 64 (18)	688 $\pm$ 67 (6)	451 $\pm$ 61 (13)
sampled or reported						
No. (and %)	Salmon	46 (93)	65 (100)	29 (100)	16 (94)	12 (100)
hatchery fish	Pickereel	0	0	0	0	0
sampled or reported						
Estimated total fish harvested $\pm$ CI (@ 95%) during survey period	Salmon	169 $\pm$ 68	179 $\pm$ 82	122 $\pm$ 36	93 $\pm$ 40	-
	Pickereel	44 $\pm$ 19	103 $\pm$ 46	125 $\pm$ 37	45 $\pm$ 19	-
Estimated total angler days $\pm$ CI (@ 95%) during survey period		627 $\pm$ 255	642 $\pm$ 292	689 $\pm$ 202	671 $\pm$ 284	-

Remarks: too much open water/treacherous ice in 1995 to obtain estimates

Table 3. Age composition no. and (%) of stocked salmon captured at Long Pond by trap-netting.

<u>Year</u>	<u>n</u>	<u>Age I+</u>	<u>Age II+</u>	<u>Age III+</u>	<u>Age IV+</u>	<u>AgeV+</u>
1990	47	4(9)	20(43)	16(34)	6(13)	1(2)
1992	25	-	10(40)	8(32)	5(20)	2(8)
1994	37	1(3)	15(41)	8(22)	11(30)	2(5)
1995	20	2(10)	12(60)	4(20)	1(5)	1(5)

Table 4. Lengths, weights, and condition of salmon captured at Long Pond by trap-netting.

<u>Year</u>	<u>Age II+</u>			<u>Age III+</u>			<u>Age IV+</u>		
	<u>L(in)</u>	<u>W(lb)</u>	<u>K</u>	<u>L(in)</u>	<u>W(lb)</u>	<u>K</u>	<u>L(in)</u>	<u>W(lb)</u>	<u>K</u>
1990	16.3	1.5	.93	17.8	2.0	.95	17.8	1.9	.92
1992	16.0	1.3	.87	18.5	2.1	.91	18.9	2.3	.94
1994	16.7	1.7	.98	20.3	2.9	.94	19.6	2.6	.94
1995	17.0	1.6	.91	18.0	2.0	.90	-		

Table 5. Age composition, number, and % of salmon harvest at Long Pond during the ice fishing season.

<u>Year</u>	<u>n</u>	<u>Age II</u>	<u>Age III</u>	<u>Age IV</u>	<u>Age V-VI</u>
1987	39	4(10)	32(82)	2(5)	1(3)
1989	65	1(2)	54(83)	10(15)	0
1992	29	0	23(79)	5(17)	1(3)
1994	16	0	10(63)	5(31)	1(6)
1995	11	1(9)	6(55)	3(27)	1(9)

Table 6. Percent occurrence of larger salmon observed in winter creel surveys and fall trap-netting at Long Pond.

Year	<u>Winter Creel Surveys</u>		<u>Fall Trap-netting</u>	
	% salmon>18-in in harvest	% salmon>20-in in harvest	% salmon>18-in in catch	% salmon>20in in catch
1987	21	5		
1989	8	2		
1990			23	2
1992	28	0	44	12
1994	65	6	61	22
1995	42	25	44	11

COOPERATIVE STATE FEDERAL PROJECT

This report has been funded in part by the Federal Aid in Sport Fish Restoration Program. This is a cooperative effort involving federal and state government agencies. The program is designed to increase sport fishing and boating opportunities through the wise investment of anglers' and boaters' tax dollars in state sport fishery projects. This program which was funded in 1950 was named the Dingell-Johnson Act in recognition of the congressmen who spearheaded this effort. In 1984 this act was amended through the Wallop-Breaux Amendment (also named for the congressional sponsors) and provided a threefold increase in Federal monies for sportfish restoration, aquatic education and motorboat access.

The Program is an outstanding example of a "user pays-user benefits", or "user fee" program. In this case, anglers and boaters are the users. Briefly, anglers and boaters are responsible for payment of fishing tackle excise taxes, motorboat fuel taxes, and import duties on tackle and boats. These monies are collected by the sport fishing industry, deposited in the Department of Treasury, and are allocated the year following collection to state fishery agencies for sport fisheries and boating access projects. Generally, each project must be evaluated and approved by the U.S. Fish and Wildlife Service (USFWS). The benefits provided by these projects to users complete the cycle between "user pays — user benefits".



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