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RESOURCE DEVELOPMENT BRANCH

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Wallace River Salmon Survey

by

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WALLACE RIVER SALMON SURVEY

By John Dalziel

ABSTRACT

Spawning grounds and nursery areas for Atlantic salmon are quite extensive on the upper reaches of the main river and West Branch, and up as far as the barrier falls on the East Branch.

Salmon angling is very limited because of the lateness of the salmon run, and because black salmon angling is prohibited in Nova Scotia.

Sea run speckled trout are abundant in the main river and in the West Branch.

GENERAL DESCRIPTION

The Wallace River arises in the Wentworth Mountains in South Eastern Cumberland County, Nove Scotia, and flows in a northerly direction through the Wentworth Valley, emptying into the Northumberland Strait via Wallace harbour. The stream was surveyed from Hart Lake Brook to the head of tide, including all the major branch streams.

The river drains approximately 250 square ~~yards~~ miles. The drainage area is composed of a mixture of ~~woodland, pasture~~ wood land, pastureland and farm land. The mean precipitation for the area is about 46 inches.

According to the geological map of the marit~~ime~~ provinces (1949), the Wallace basin is underlain mostly with Carboniferous sandstone, shale, conglomerate, coal and granitic rocks.

The main Wallace River measures approximately~~22~~ 22 miles in length from Hart Lake Brook to its mouth, and there is approximately 71 miles of tributary streams entering along its course. The main river is accessable to salmon as far as Hart Lake Brook. The total waters accessable to salmon is about 40 miles. The gradient varies from slight to moderate, falling only about 200 feet at a very uniform rate.

From ~~Hart~~ Hart Lake Brook down to Wentworth (P.O.) the stream varies in width from 20 feet to 60 feet, and is composed of about 50% pools to 50% riffles. Bottom is composed mostly of gravel with some silt, rubble, small rocks, sand and bedrock scattered here and there. Overhanging alders, under cut banks, rocks and small pools provides excellent shelter for small fish. This section serves as the principal spawning and nursery area for the main river. Salmon parr and salmon / fingerlings

fingerlings were very abundant in this area. The water is white and clear, and the temperature varied between 10°C (50°F) and 17°C (63°F).

From Wentworth (P.O.) ~~down~~ to the head of tide the stream flows ~~through a mixture of~~ through meadow land and pastureland with a little ~~wood~~ wood land scattered here and there. Bottom is composed of bedrock, rocks, rubble, silt, sand and some gravel. Beyond the Teed bridge, the river becomes quite wide with many long shoal stretches, especially in the area between Howards bridge and Carr's bridge. Several small holding pools are found in this section but ~~the~~ the water is too shoal on the bars between them to allow salmon through, except during high water periods. The water in this section is extremely muddy caused by the large amount of road construction going on in the area. No salmon parr or salmon fingerlings were observed here. It is the writers opinion that the muddy condition of the water has driven the young salmon from this area up into the clear water sections of the main river and the tributary brooks. The water temperature varied between 20°C (68°F) and 24°C (75°F), and the pH was 7.4.

Salmon parr (*Salmo salar*) and salmon fingerlings were very abundant from Hart Lake Brook down to Wentworth (P.O.). Speckled trout (*Salvalinus fontinalis*) were present in smaller numbers in the same area. Common suckers (*Catostomus commersonnii*) were observed in large numbers in all the holding pools. Minnows of undetermined species were found scattered throughout the system. Lamprey redds (*Peteryzom marinus*) were observed in some of the main salmon spawning areas.

TRIBUTARIES

The main branch streams provide excellent spawning and nursery area for Atlantic salmon. (~~XXXXXXXXXX~~)

The West Wallace River is a large branch ~~stream~~ about 15 miles long and empties into the main river on the true right bank near Wentworth Centre. ~~Width varies from 10 feet to 60 feet (during extreme low water).~~ The drainage area is composed mostly of woodland with some meadow land and farm land scattered here and there. Bottom is composed of gravel, sand, silt, boulders, bedrock, rocks and rubble. The stream varies in width from 10 feet to 60 feet, and is composed of about 50% pools to 50% riffles. Two possible holding pools were observed on the lower 4 miles of this branch. Good salmon spawning and nursery areas were found scattered all along this branch. Fish fauna consists mainly of salmon parr, salmon fingerlings, minnows, suckers, speckled trout, eels, and lampreys. Beaver have the stream dammed in several places in the Westchester (The Valley) area. No salmon fingerlings were observed in the stream above the first beaver dam, although numerous salmon parr were present. This would seem to indicate that the spawning run of salmon were not able to get over the first beaver dam during the fall of 1955. This section of stream is stocked with salmon from Cobequid hatchery. The water is very light brown and clear and the temperature varies between 14°C (57°F) and 19°C (66°F).

2) Roaring River (Westchester Branch) is a small brook about 6 miles long that flows into the West Wallace River at Greenville Station. The stream varies in width from 8 feet in the runs to 40 feet in the gently flowing areas, and is composed of about 65% riffles to 35% pools and slow flowing areas. The water is white and clear with a temperature ranging between 12°C (53.3°F) and 14°C (57.25°F). ~~Bottom is composed mostly of coarse gravel with some rocks, bedrock, and fine gravel~~

/Bottom

Bottom is composed of about 75% gravel, 20% rocks, and 5% bedrock. The drainage area is composed of a mixture of woodland and farm land. Bottom fauna seems ^sscarce, while fish fauna consists mainly of salmon parr and salmon and trout fingerlings. The brook provides fair salmon and nursery area from the confluence up to the saw mill above Westchester Station.

The East Wallace River is a small branch, about 5 miles long, which flows into the main river on the true right bank at Wentworth. The stream flows through a mixture of farm land and wood land, is about 14 feet wide and is composed of about 50% pools to 50% riffles. The water is white and clear and the temperature varies between 15°C (~~59~~⁵⁹°F) and 17°C (63°F). Bottom is composed of 75% gravel, 20% rocks, and 5% bedrock. The rocks, small pools and undercut banks provide excellent shelter for small fish. Salmon parr and salmon fingerlings were found in quite large numbers up as far as the barrier falls. Other fish observed in the area include speckled trout, minnows and sea lampreys. A barrier falls about 75 feet high was found about 3½ miles from the mouth of the stream. The stream above this falls is very small making it impractical to try to get fish over this barrier.

SPAWNING AREAS

The most important spawning areas were found in the upper reaches of the main river and in the East and West Branches.

From ~~the outlet of Hart Lake~~ Hart Lake Brook down to about one mile below the confluence of the East Branch, a distance of about 5 miles, the stream serves as a good spawning area for Atlantic salmon. The river here is about 29 feet wide, 4 inches deep in the runs and up to 6 feet deep in the pools. Bottom is composed ~~of~~ mostly of gravel ~~with some sand and rocks~~ and sand with some rocks, silt, rubble and bedrock scattered here and there. The stream is composed of about 40% pools to 60% riffles. Small salmon pools are present, and there is a large number /of young

of young salmon all along this section of stream. ~~XXXXX~~ This area is shown on the map as S-1.

That section of the West Branch from the railroad bridge at Atkinson up to Westchester road bridge, a distance of about 3 miles, serves as a spawning area for Atlantic salmon. The stream is about 17 feet wide, and is composed of about 50% pools to 50% riffles. Bottom is composed of gravel, rocks, boulders, silt and bedrock. Numerous salmon pools up to 5 feet deep are found along this area. Salmon parr and fingerlings ~~xx~~ are very abundant. This area is shown on the map as S-2.

That section of Roaring River (Westchester Branch) from the confluence with the West Branch up to the saw mill ~~XXXXXXXXXX~~ above Westchester Station, a distance of about $2\frac{1}{2}$ miles, serves as a spawning area for Atlantic salmon. The stream is about 20 feet wide and is composed of about 75% riffles to 25% pools. Bottom is composed of gravel, rocks, and boulders. Salmon pools are present and ~~XXXXXXXXXX~~ a few salmon fingerlings were observed all along this area. It is suggested that the hatchery stock this stream at the road bridge near Westchester Station. This area is shown on the map as S-3.

On the West Branch, about $1\frac{1}{4}$ miles from the confluence with the main river, there is about 200 yards of possible spawning area. The stream here is about 60 feet wide, and there is a ~~good~~ small holding pool immediately below this area. Bottom is composed of gravel, rocks and boulders. A few salmon fingerlings were observed in this area. This area is shown on the map as S-4.

That section of the East Branch from the confluence with the main river up to the barrier falls, a distance of about $3\frac{1}{2}$ miles, serves as a spawning area for Atlantic salmon. The stream flows through a mixture of woodland and farmland and is about 14 feet wide. Bottom is composed of gravel, rocks and bedrock. Small salmon pools are scattered /all along

Summary of spawning areas

Location	Area No.	Miles of spawning area.	Approx No. of sq yds of spawning area.	Condition of area.
Main river	S-1	5	84,480	Good
West Branch	S-2	3	29,568	Good
Roaring R.	S-3	2 $\frac{1}{2}$	42,240	Fair
West Branch	S-4		4,000	Poor
East Branch	S-5	3 $\frac{1}{2}$	27,720	Good
TOTAL -----		14	188,008	

(N.B.) Look under this paper for beginning of "M usary areas"

all along this section, and one small holding pool is found in the main river at the confluence of the East Branch. Large numbers of salmon parr and fingerlings were observed on this branch. This area is shown on the map as S-5.

NURSERY AREAS

The main Atlantic salmon nursery areas are found in the upper reaches of the main river and in the East and West Branches.

The water was very red in the main river from the Teed bridge down to the head of tide from the large amount of silt and mud that is continually ~~being washed~~ being washed in by the feeder brooks ~~from~~ from the road and bridge construction that is going on in the area. Whether this section would serve as a good nursery area under normal conditions is not known.

That section of stream from the confluence of Hart Lake Brook down to about one mile below the confluence of the East Wallace River, a distance of about 5 miles, serves as one of the main salmon nursery areas for the system. The stream here is about 29 feet wide and composed of 40% pools to 60% riffles. ~~XXXXXXXXXXXXXXXXXXXX~~ Bottom is composed of gravel, sand, rocks, silt, rubble and bedrock. Good shelter for young fish is provided by the overhanging alders, undercut banks, pools and rocks. Bottom fauna seems quite plentiful. Salmon fingerlings are very very abundant ~~all along this section~~ while salmon parr, although present, are not very numerous. This area is shown on the map as N-1.

Area N-2 extends from area N-1 down to just below the Teed bridge, a distance of about $3\frac{1}{2}$ miles. The stream ~~here~~ varies here from 30 feet to 60 feet wide, and is composed of a series of pools, steadies and riffles. Bottom is composed of gravel, silt, sand, rocks and rubble. The long shoal steady areas that ~~seem to~~ are so common here apparently provide a poor habitat for salmon, as only a few fingerlings and parr /were observed

were observed scattered throughout the whole area.

That section of the West Branch from the confluence with the main river up to the mouth of Roaring River, a distance of about 7 miles, serves as a nursery area for a limited number of salmon. The stream here is very wide and shoal and composed mostly of riffles and rapids with a few pools scattered here and there. Bottom is composed of rocks, gravel, bedrock, boulders and sand. Bottom fauna seems scarce. Both salmon parr and salmon fingerlings are scarce. This area is shown on the map as N-3.

The most important nursery area on the West Branch extends from the mouth of Roaring River up to Westchester road bridge, a distance of $7\frac{1}{2}$ miles. The stream is ~~is~~ about 21 feet wide, and composed of ~~x x~~ 70% pools and steadies to 30% riffles. Bottom is composed of gravel, silt, sand, rocks, bedrock and boulders. Good shelter for small fish is provided by the rocks, pools, overhanging alders and undercut banks. A very large number of salmon parr and salmon fingerlings were observed in this area. This area is shown on the map as N-4.

That section of Roaring River from the confluence with the main river up to the saw mill above Westchester Station, a distance of about $2\frac{1}{2}$ miles, serves as a nursery area for salmon. The stream is about 25 feet wide and is composed of about 75% riffles to 25% pools. Bottom is composed of gravel, rocks and boulders. Bottom fauna seems scarce. The gradient of this section is quite steep, and much of the area is open and exposed. A few salmon fingerlings were observed all along this section. This area is shown on the map as N-5.

The East Branch from the confluence with the main river up to the barrier falls, a distance of about $3\frac{1}{2}$ miles, serves as a good nursery area for salmon. The stream is about 14 feet wide and composed of about 50% pools to 50% riffles. Bottom is composed of gravel, rocks /and bedrock.

Summary of nursery areas

Location	Area No.	Miles of spanning xxxxxxx nursery area.	Approx No. of sq yds of Nursery area.	Condition of area.
Main river	N-1	5	84,480	Good
Main river	N-2	3 $\frac{1}{2}$	92,400	Fair
West Branch	N-3	7	197,120	Poor
Roaring R.	N-4	2 $\frac{1}{2}$	42,240	Fair
East Branch	N-5	3 $\frac{1}{2}$	27,720	Good
TOTAL -----		21 $\frac{1}{2}$	443,960 "	

(NB) Look under this flag for ~~Barriers~~ "Barriers".

and bedrock. Good shelter is provided for the young fish by rocks, pools, undercut banks and coarse gravel. Large numbers of salmon parr and fingerlings were observed all along this section. This area is shown in the map as N-6.

~~BARRIERS~~ BARRIERS

There is a barrier falls on the ~~main river~~ East Branch about $3\frac{1}{2}$ miles from the confluence with the main river. This falls is about 75 feet high and 35 feet wide at the top. At present the flow of water over the top of the falls is about 6 feet wide. The stream above the falls is too small to warrant any expenditure in getting fish over this barrier.

PREDATION

Mergansers were observed in very large numbers in the area near the head of tide. Other predators, such as kingfishers and great blue heron were observed in lesser numbers scattered throughout the whole system.

POLLUTION

No pollution was observed in the system.

STOCKING RECORD

~~XXXX~~ Listed below is the salmon stocking record for the river from 1950 to 1956 inclusive:

Year	No of Fry	No. of Fingerlings	No. Yearlings	Total
1950	20,000	80,500		100,500
1951		26,000		26,000
1952		30,000		30,000
1953		78,000		78,000
1954	45,000	67,500		112,500
1955		76,000		76,000
1956		30,000	5,000	35,000
TOTAL	65,000	388,000	5,000	458,000

ANGLING REPORT

Listed below is the number of salmon caught per month on the Wallace River since 1950:

1950		
Month	No. of Fish	Weight
April	192	1,920
May	87	870
June	--	--
July	--	--
August	--	--
Sept	1	8
Oct	2	28
TOTAL---	282	2,286

1951		
Month	No. of WALL Fish	Weight
April	168	1,680
May	26	312
June	--	--
July	--	--
August	--	--
Sept	--	--
Oct	3	35
TOTAL---	197	2,735

1952		
Month	NO. of Fish	Weight
April	230	2,300
May	44	396
June	3	29
July	--	--
August	--	--
September	--	--
October	1	10
TOTAL ---	278	2,735

1953		
Month	WALL No. of Fish	Weight
April	51	612
May	8	88
June	--	--
July	--	--
August	--	--
September	--	--
October	--	--
TOTAL ---	59	700

1954		
Month	No. of Fish	Weight
April	--	--
May	**	--
June	--	--
July	--	--
August	--	--
September	--	--
October	1	12
TOTAL	1	12

1955		
Month	No. of Fish	Weight
April	--	--
May	--	--
June	--	--
July	--	--
August	--	--
September	--	--
October	1	9
TOTAL	1	9

1956		
Month	No. of Fish	Weight
April	--	--
May	--	--
June	--	--
July	--	--
August	--	--
September	--	--
October	--	--
TOTAL	Nil	Nil

The Wallace^e River supports runs of b^oth Atlantic salmon and speckled trout. Speckled trout are angled throughout the main river and in the West Branch. Atlantic salmon enter the river in October and November and thus provides little or no legal bright salmon angling. Black salmon angling is illegal in Nova Scotia.

/ Since

Since 1950 the Cobequid hatchery has stocked an average of approximately 65,000 salmon fry and fingerlings yearly in this river. In 1956, 5,000 yearling salmon were stocked. Besides this hatchery stock, the stream supports the progeny from natural spawning.

It would appear to the writer that you could compare this river with a farmers field in which a crop is planted each year and never harvested, as the river supplies an annual crop of fish which is of no benefit to either angler or commercial fishermen.

From the angling records, it would appear that black salmon angling was tolerated on this river from 1950 to 1953. During that period, 807 Atlantic salmon were caught during April and May while the total catch for these years is only 816 fish. ~~SIXTEEN FISH WERE CAUGHT DURING APRIL AND MAY WHILE THE TOTAL CATCH FOR THESE YEARS IS ONLY 816 FISH.~~ The records show that, since 1953, only 2 salmon have been caught by anglers, both taken in October.

In an effort to improve this situation, it is suggested that the salmon angling season be extended until November 15th in that section of the main river from the mouth up as far as, and including, the pool at the mouth of the West Branch, and as far as the Hunter bridge on the West Branch. The remainder of the river should remain closed to angling after the end of the regular angling season as the majority of spawning grounds are found beyond these points.

If it is not considered feasible to extend the angling season, then, as an alternate method, it is suggested that the river be opened to black salmon angling.

If either of these suggestions are followed the salmon crop would be put to some use instead of being waisted as is happening at the present time.

CONCLUSIONS

Spawning grounds and nursery areas are quite extensive on the upper reaches of the main river and on the East and West Branches. Salmon parr and salmon fingerlings are abundant in all of these areas.

Sea run speckled trout are abundant in the main river and in the West Branch.

Salmon angling is very limited because of the lateness of the salmon run, and because black salmon angling is prohibited in Nova Scotia.

RECOMMENDATIONS

It is recommended that the salmon angling season be extended until November 15th in that section of the main river up to, and including the pool at the mouth of the West Branch, and as far as Hunter bridge on the West branch.

If it is not considered feasible to extend the angling season then, as an alternate method, it is suggested that the river be opened to black salmon angling.

WALLACE RIVER



Carr's bridge at head of tide.



At Howards bridge.



At Teed bridge.



Near Wentworth (P.O.).



Near Wentworth Station.



Near mouth of East Branch.

WALLACE RIVER



Near 2nd road bridge on East Branch.



Near 3rd road bridge on East Branch.



At Hunter bridge on West Branch.



Near Greenville Station on West Branch.