Atlantic Salmon (*Salmo salar*)

Investigation in the Point Wolfe and Upper Salmon Rivers

Fundy National Park

Michael Dadswell

Canadian Wildlife Service
Department of Indian Affairs and
Northern Development
Ottawa, Ontario

March 1968.

Ken please return this paper. - R.H. Saunders

LIMNOLOGY SECTION

CANADIAN WILDLIFE SERVICE

MANUSCRIPT REPORTS

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INTRODUCTION

Due to the increasing numbers of salmon entering the Upper Salmon (Alma) River since the collapse of the dam in 1954 and in light of the possible sport fishery, an Atlantic salmon investigation in the river was initiated in the fall of 1965. Mr. J. Kerekes, Limnologist for the Eastern National Parks, carried out the first two preliminary surveys during the fall of 1965 and 1966.

The investigation had four objectives:

1. collect length, weight, sex and scale samples for aging, and make an evaluation of the Upper Salmon River salmon population.
2. collect creel census data for the Upper Salmon River.
3. carry out observations on spawning activities of the salmon and estimate the total population of adult fish utilizing the river during 1967.
4. survey the Upper Salmon and the Point Wolfe Rivers to determine carrying capacity and potential of the two rivers.

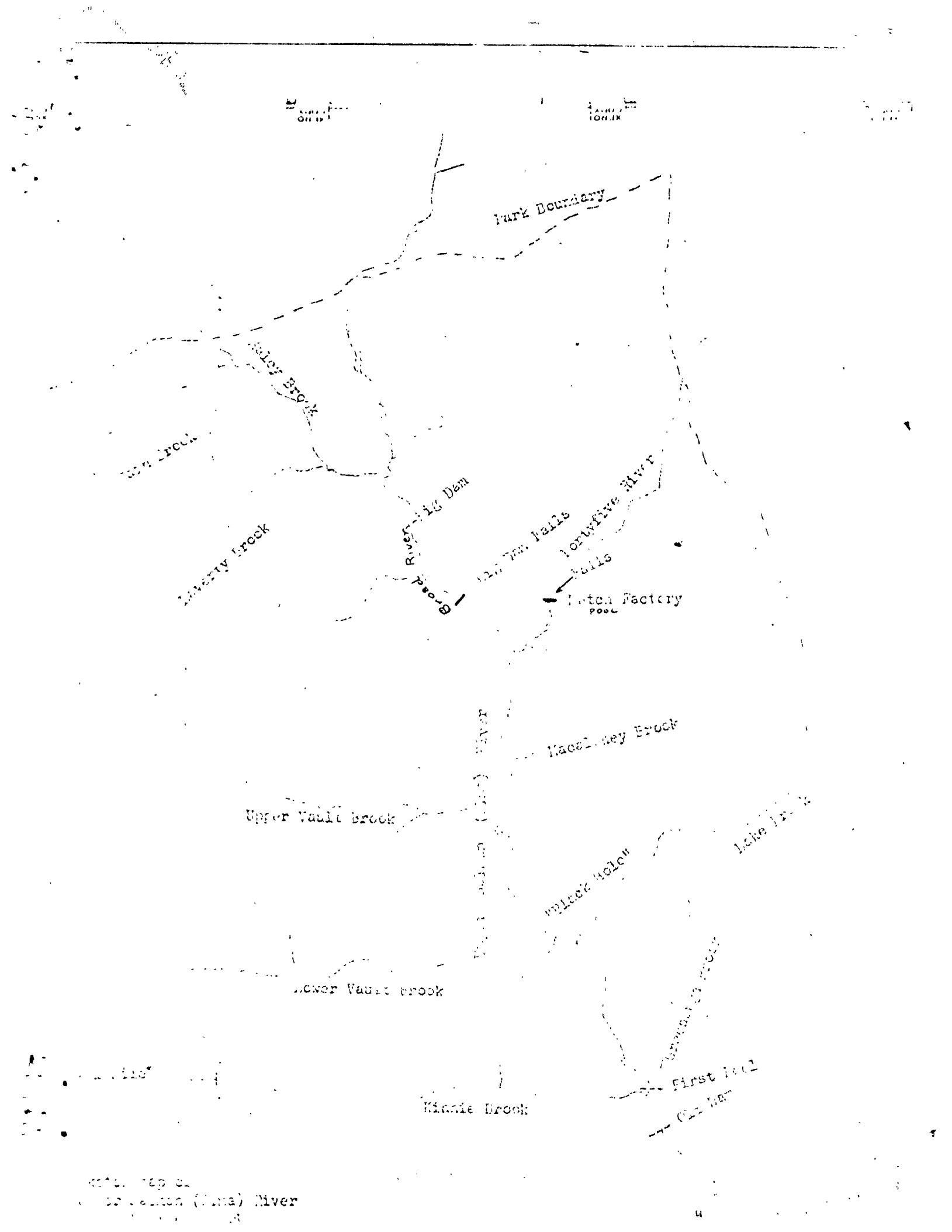
The first fifteen days of October were spent sampling the salmon caught by anglers and collecting creel census data for the Upper Salmon River. Nearly every salmon taken during this fifteen day period was examined and the creel census data is believed to be highly accurate. The remaining fifteen days of October were spent in examining the upper and lower sections of the Upper Salmon River for spawning

activities, in carrying out visual counts of the fish in the river, and in surveying the lower 3.5 miles of the Point Wolfe River with respect to salmon habitat and sport fishing possibilities.

History of Upper Salmon (Alma) River

In the early 1900's series of log dams were built on the Upper Salmon River. One of these dams was built at the high tide mark in the estuary of the river; the dam was provided with a fishway enabling the salmon to retain their use of the river. During the 1930's the lumbering operations were abandoned, and the fishway deteriorated such that no more salmon could pass. When Fundy National Park was established in 1948, Atlantic salmon were extinct in the river.

In 1954 the estuary dam collapsed opening up the river for the entrance of anadromus fish. During 1955 the first salmon were seen in the river. The run grew slowly at first and by 1963 consisted of only 100 fish. In 1965, an accurate count during low water conditions revealed 312 fish in the river. During the fall of 1966 a total of 600 fish were counted and the run was estimated at 1,000 fish. Angling was opened for the first time in the fall of 1966; with a limit of one fish per day per person a total of 40-50 salmon were taken. Angling pressure was extremely low and angling success extremely high during 1966, few persons failing to take a salmon whenever they went fishing.



...ation (Dana) River

The Upper Salmon River System

The Upper Salmon River is basically a mountain stream. In the short distance of 12 miles, the river drops 1,000 feet from its sources on the uplands behind the park. The river is almost completely spring fed and seems completely lacking in any kind of pollution.

Salmon occupy only the lower 6 miles of the river, a distance over which the river drops 500 feet. For this reason, the river's character is one of rapid and broken water with few large pools. The river area occupied by salmon can be divided into four distinct areas:

1. The section between Lake Brook and the estuary, a length of 1.4 miles. This is an area of almost continuous rapids, the current extremely swift over a steep but gradual gradient. The river runs between cliffs and large boulders, few pools and few good spawning beds are in evidence. Two distinct pools are present, the reservoir pool just above tide water and another pool just above this. There are numerous small rapid current pools and pockets but only a scattered occurrence of good gravel areas.
2. The section between Lake Brook and the Fortyfive River is 3.6 miles long. This is the best section of the river for gravel, current and resting pool conditions. In this section the river flows with a moderate current over a gradual gradient. The area is also characterized by long flat gravelly pools, the best on the river. Four good pools including the black hole are

situated at the lower end of this section and two exceptional pools at the upper end just below the Fortyfive River. There are four or five small pools in between these two series.

3. The section between the mouth of the Fortyfive River and the Big Dam Falls is what is known as Broad River. This section is one of moderate sized pools interspersed with rough water flowing through large boulders. The gradient is extremely steep. There are 9 good pools and a few smaller ones that all hold salmon, most of these pools have well gravelled bottoms but in the areas between pools gravel is almost non-existent.

The ascent of salmon in this section is blocked after 0.6 miles by the Big Dam Falls. This falls has a vertical drop of 40 feet over a lateral distance of 50 feet. The chute is 15 feet wide at the lip and the water strikes directly on two large boulders at the bottom of the falls, making it impassable.

4. The section of the Fortyfive River from the Upper Salmon River to the Match Factory Falls is 0.4 miles long. This is a section of gradual gradient flowing over good gravel. Three pools are situated at the upper end of this section, one of which is very large and well gravelled. The passage of salmon past the Match Factory Falls is impossible due to a 25 foot drop.

The Match Factory area is by far the most scenic part of the whole river system.

Above the Big Dam Falls the river is quite steep with many small falls, all of which are passable to salmon. One-half mile above the Big Dam Falls the gradient levels off over a gravel bottom of near perfect spawning conditions. The area above the Big Dam Falls consists of six miles of good spawning grounds on the Haley, Brook and Broad River systems. Opening this area by means of a fishway over the Big Dam Falls could double the production of the river.

The Salmon Population in the Upper Salmon River

As stated previously since 1963 the salmon population has been growing rapidly. In that year, only 100 salmon were counted in the river. During the month of October 1967, rain fall was quite heavy, maintaining the water level of the Upper Salmon River ~~quite~~ high and dirty. For this reason, it was never possible to get a completely accurate count of the salmon population. By October 24th the water had dropped sufficiently to make a counting attempt. October 24th was spent on the upper section of the river and the count was completed on the lower section of the river on October 25th. Light conditions were not good and coupled with the movement of fish from the resting pools to spawning areas, not all fish were seen. A large portion of the population was included in the completely accurate count of 697 fish. The remaining fish which were in deep dark pools or open stretches of the river and which were not counted, were estimated in reference to areas that could give an accurate

count. This estimate added to the actual count and the number of fish taken by angling gave a population estimate of 1,250 salmon in the fall of 1967. Large salmon made up for 40 per cent of the run. The salmon run began in early August of 1967, the earliest recorded. On August 8th, 5 fish were seen in the river; by August 15th, there were 15 salmon in the river, most of these in the large pool below the Fortyfive River. Two salmon were taken by anglers on August 26th. By September 10th, 150 salmon were observed in the river up to the mouth of the Fortyfive River. With development of a large freshet in mid-September, the major run of fish entered the river and on September 23rd, a count revealed 700 salmon in the river.

Spurts of new-run fish entered the river with each freshet until October 24th, as a grilse caught on this date, 2 miles from the estuary, had numerous sea lice still on it. The grilse, therefore, could not have been in freshwater more than 48 hours. No fresh sea-run salmon were seen after October 2nd; the bright fish that were seen on October 12th, October 24th, and other days during this period were grilse. These results seem to indicate a trend, the first run is made up of large salmon and some grilse, most of which are males, which takes place in mid-September. Female salmon enter the river soon after the males and then the major run of grilse, mostly females, enter the river in mid-September.

It is interesting to note that bright fish were entering the river at the same time other salmon were spawning. On October 24th, the day a bright grilse with sea lice was taken, a spent female salmon was taken at the Black Hole. A spent male grilse was taken on October 28th, at the Match Factory Pool. These two kelts indicate that spawning has started as early as the second last week in October September. The water temperature at this time was 48°F.

Although only one fish of five taken on October 28th was spent, the others were all in the running ripe condition. This fact, coupled with the presence of quite a few salmon occupying gravel beds in shallow water on this date, seems to indicate that the first week of November is the major peak of spawning. Mr. J. Kerekes carried out some netting of salmon on November 30, 1965. He collected 30 salmon in the reservoir pool; of these 29 were spent or partly spent fish indicating that nearly all spawning had been over for some time and the fish had dropped down the river on their way to the sea.

During the month of October, 111 salmon were examined by the contractor for complete details of length, weight, age and sex condition (see Table 1). Most of these fish examined were taken by anglers before October 15th; an additional 17 salmon were taken by the contractor in the upper section of the river after October 15th, an area virtually untouched by anglers.

The salmon population of the Upper Salmon River is very complex due to the unusual behavior of the salmon returning every year to spawn, after their initial spawning run. This is contrary to most salmon rivers in which mended kelts return only after an absence of two summers at sea. From communications with the Fisheries Research Board staff at St. Andrews, New Brunswick, it appears that salmon from the Big Salmon River, 50 miles south of Fundy National Park, also return each year after the initial spawning run. This behavior is perhaps peculiar to the Fundy Bay Region.

The 111 salmon examined during October consisted of 71 grilse and 40 salmon (Appendix 1). From this large sample, it was possible to distinguish six classes of salmon according to previous sea life, river life and spawning history (Table 1). There are two classes of virgin fish: the grilse which have been at sea two-summers and the salmon which have been at sea three summers.

The grilse is a small salmon having spent only two summers at sea and weighing from 2-4 lbs. This is their first return to the river to spawn. The grilse in the Upper Salmon River are two classes, two-year-river and three-year-river fish. The method of age representation is 2.1+, the 2 is the river life or parr stage of the grilse; the "period" represents a change from river to sea; the 1+ is the sea life made up of one complete year and 1/2 to 3/4 of another year before the fish returns to the river.

Table 1

LENGTH, WEIGHT, AGE RELATIONSHIPS OF SALMON
UPPER SALMON RIVER
October 1967

TOTAL FISH EXAMINED	GRILSE	SALMON
111	71	40

GRILSE (2 summers at sea) = males 25; females 46.

Age classes	2.1+	3.1+
Number of salmon	66	5
Average length (in.)	22.3	22.3
Length range (in.)	19-24	20-24
Average weight (lbs.)	3.3	3.8
Weight range (lbs.)	2-4.5	3-4

SALMON (3 or more summers at sea) = males 16; females 24 = 38

Age classes	2.2+	2.1.sm.+	2.1.sm.sm.+	2.2.sm.+	2.2.sm.sm.+
Summers at sea	3	3	4	4	5
Number of salmon	7	17	3	8	5
Average length (in.)	29	25.7	27	28.2	31.3
Length range (in.)	26.5-32	23-28	26-28	27-31	29.5-34
Average weight (lbs.)	8.5	5.6	7.3	7.6	11.2
Weight range (lbs.)	6-12	4-6.5	5.5-9	6.5-9	9.5-13

Note: one salmon aged 3.2+ included with those 2.2+

There is little differences between the two- and three-year-river salmon. The average length is the same, 22.3 inches, but the three-year-river fish is a little heavier - 3.8 against 3.3 lbs; this could be due to the small sample of three-year-river fish. The grilse showed almost a 2:1 sex ratio females to males; this could be due to the earlier run of males moving up the river and out of the heavily fished area before sampling began.

The salmon, on the other hand, consisted of five different classes according to summers spent at sea and previous spawning. The only virgin salmon are the 2.2+ class; these fish are returning to the river for the first time and are in prime condition. Their average weight is 8.5 lbs., much above the 5.6 average weight of the other class of 3 sea summer salmon, the mended kelts. The mended kelts or 2.1.sm.+ fish have spawned previously as grilse and are now back in the river as salmon on their second run. They have not doubled in weight from the average grilse weight.

The 2.2.sm.+ fish entered the river the first time as a salmon it survived, returned to sea and is now on its second spawning run.

These fish average 7.6 lbs. considerably under the 8.5 lb. average weight of virgin 2.2+ fish. Their stay in freshwater which caused them a weight loss has not been completely overcome.

The 2.1.sm.sm.+ fish has spawned twice before, after entering the river the first time as a grilse. It has spent four summers at sea. The average weight is 7.3 lbs., not a large gain over the 5.6 lb. average of the mended kelts.

The sex ratio of the salmon was almost 1:1.

The fact that this habit of spawning each year causes a slow rate of growth can be easily seen from the table. On the other hand, respawning each year builds the salmon population up very rapidly and increases the availability of large salmon for the anglers each year. Salmon in this river do reach large size, as seen by a fish taken by Mr. Kerekes in 1965. This specimen weighed 20 lbs. and was aged at 2.2.sm.sm.sm.+. When caught, it had entered the river on its forth spawning run and had lived six summers at sea. Fish of this size were seen in 1967 but none were landed.

Two salmon parr were taken in the river by the contractor to study their condition. Both were males, $4\frac{1}{2}$" and $5\frac{1}{2}$" in length at an age of 1+. These small fish were sexually mature and running ripe when taken. The parr were both heavy bodied and appeared in prime condition.

Angling 1967

Angling success during September and October 1967 was extremely high for a salmon river. During the last fifteen days of the season, 113 Atlantic salmon were taken on 118 angler-days (one angler/one day). For the entire 1967 salmon season, 165 fish were known to have been taken and since close surveillance of the run didn't start till September 27th, two weeks after the major run of fish, probably 200 fish in all were taken from the river. This number represents a 300 per cent increase over 1966 when from 40-50 fish were taken. Two hundred salmon represent 15 per cent of the total estimated 1967 population of adult spawning fish. During the period from September 27th to October 15th when accurate records were kept, 89 grilse and 54 salmon were killed.

The ratio between grilse and salmon caught on the Upper Salmon River is 2:1. This compares favourably to the Miramichi River where the ratio is 15 grilse to 1 salmon. This high proportion of salmon linked with the low cost of fishing should attract many fishermen to the river. The tremendously high value of nearly 1 salmon per day of fishing should also attract many fishermen.

Since the contractor was at the fishing pools for all of the fifteen days in October, he was able to observe some difference in angler success (Tables 2 and 3). The over-all success value was 0.98 fish per man/day and 0.20 fish/man/hour. When this was

Table 2
ANGLER SUCCESS FOR SALMON ON UPPER SALMON RIVER

DATE (OCT. 1967)	TOTAL HRS FISHED	TOTAL FISHERMEN PER DAY (LOCAL)	TOTAL FISH TAKEN	TOTAL HRS FISHED	TOTAL PER DAY FISHERMEN NON-RESIDENT	TOTAL FISH TAKEN
1	19	5	9			
2	21	6	6			
3	20	5	7	15	3	4
4	35	6	3	15	3	0
5	5	2	4	1	1	0
6	48	9	13			
7	31	6	1	5	1	1
8	53	13	13			
9	22	5	4			
10	6	2	2			
11	9	3	2			
12	40	9	8			
13	13	2	1			
14	90	16	18			
15	93	18	17	6	3	0
	505	107	108	42	11	5

TOTALS	HOURS	FISHERMEN	SALMON
	547	118	113

Fish/hr./man. = 0.20

Fish/man/day = 0.98

Fish/man non-resident/day = 0.45

broken down to components some interesting facts developed, for instance, the success for a non-resident (a person living farther than 50 miles from the river) was only 0.45 fish/man/day and 0.12 fish/man/hour.

More interesting, also, is the selecting of a representative number of what are considered experienced salmon anglers from the Alma region and from Moncton. The Alma area fishermen had an average of 1.5 fish/man/day as did the Moncton area anglers (Table 3). The number of fish/man/hour was 0.31 and 0.27 respectively.

The group of anglers from Alma which consisted of five people caught 42 fish[1] in 15 days; this represented 39 per cent of all fish taken in this time. The group from Moncton took 46 fish in 15 days or 42 per cent of the total catch. Therefore, only 17 persons with a total of 302 fishing-hours, which represents only 55 per cent of the total hours fished by all anglers, took 81 per cent of all the fish taken on the river during these 15 days.

A fact that is more striking is that only 4 per cent of the fish were taken by non-residents who totalled 8 persons in all and only 15 per cent were taken by non-experienced Alma anglers who totalled 40 per cent of all fishing-hours on the river.

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[1] According to the Regulations governing fishing in the National Parks, the possession limit is two salmon per licensed angler.

Table 3

ANGLER SUCCESS FOR SELECTED LOCAL ANGLERS
AND
ANGLERS FROM MONCTON
UPPER SALMON RIVER

DATE (OCT.)	Alma Anglers			Moncton Anglers		
	TOTAL HRS. FISHED	TOTAL FISHERMEN PER DAY ALMA AREA	TOTAL FISH	TOTAL HRS. FISHED	TOTAL FISHERMEN PER DAY MONCTON	TOTAL FISH
1	9	2	4	10	2	4
2	12	2	4			
3	15	3	6			
4	13	2	3			
5	1	1	3			
8	9	2	3	24	4	6
9	11	2	3			
10				6	2	2
11				9	3	2
12	12	2	2	12	2	4
13						
14	16	3	3	45	7	11
15	16	4	4	41	7	9
	135	27#	42	167	31*	46

Fish/man/day (Alma) = 1.5 Fish/man/day (Moncton) = 1.5

Fish/hour/man (Alma) = 0.31 Fish/man/hour (Moncton) = 0.27

#The 27 total fish day/man was obtained from 5 selected fishermen from Alma.

*The 31 total fish/day/man from Moncton was obtained from 12 selected anglers.

This trend will probably continue in the future with the anglers from Alma and Moncton gaining the advantages of the Salmon River. If the limit was raised, the salmon population and the success of tourist anglers will suffer. The salmon is probably the greatest fighting fish in North America and perhaps the most tasty but for some reason everyone seems bent on killing off the species. In three years of salmon fishing I have yet to see a salmon hooked, landed, then returned to the river alive. They have all been killed.

Appraisal of Fishing Potential

As stated earlier the Upper Salmon River is essentially a mountain stream of fast water with relatively few pools. Due to the inaccessibility of most of the pools, at the present time, the anglers tend to congregate at the few relatively accessible pools. The following will consist of a discussion of selected pools, their potential and how to reach them.

The Upper Salmon River can be divided into two fishing sections, the lower end from the sea to just above the Black Hole (Map 3), and the upper river from the Big Dam Falls to the mouth of the Fortyfive River (Map 4).

Lower Section

This section contains four good pools and five pockets which may hold fish. It is the most accessible section of the river either by a trail on the left bank of the river from the estuary to the Black Hole, or by way of the Black Hole trail (Map 3). These involve walks of 40 minutes and 1½ hours respectively. The Black Hole trail is suggested for the trip upstream and the river trail for the return trip.

The Reservoir Pool (Fig. 2) is the first pool on the river as it is situated about 1,000 yards from the high tide mark. It is the biggest pool on the river, the easiest to reach (one can drive to it) and is probably the best place to start a novice at salmon fishing. The fishing is easy. There are no obstacles to fly casting. The angler should fish from the park side of the pool as there is a beach onto which one can land the salmon. The salmon lie close to the shore on the opposite side of the pool in the current (see Fig. 1). A cast of 60 feet is required to bring a fly into good position. This pool holds a large number of salmon during September especially if the water is low; 100 salmon have been seen here at one time. During 1967, 18 salmon are known to have been taken from this pool.

A mile above the reservoir pool are located the next good pools. These form a chain of four from Lake Brook to slightly above the Black Hole (Map 3). The occasional fish can be taken between the reservoir pool and Lake Brook in the small pockets of quiet water, but this is rare.

Pool 18 (Map 3) is a shallow run good only during low water and late in the season. On October 14th and 15th, 14 fish were taken from this run; while previously, none had been taken here. The pool is situated just above Lake Brook and is fully within the park. It can be fished easily from its left bank. The fish lie in lines between the strong ripples 30-40 feet from the shore.

Jiggers Rock Pool is the next above this and although it is not long it is quite deep (Fig. 1). This pool holds many large salmon, some of which are in the twenty-pound class. Up to 100 salmon have been seen in this pool at one time. The pool is not easy to fish from the left bank or trail side due to a steep rock bank; nevertheless quite a few salmon are caught here. The pool is easy to fish from the right bank as there is a beach; waders are needed to reach this side of the river. Eighteen salmon were taken from this pool between October 1st-15th. The pool has a good gravel bottom and no doubt is used for spawning.

The Black Hole (Fig. 1) is only a few feet above Jiggers Rock. This is a long, gentle, moderately deep pool which contains up to 100 fish. This is the most popular pool on the river as it is open, easy to fish and has a good beach on the left side for landing fish on. This large gravel left bank enables 5-6 anglers to utilize the pool at one time. The fish lay in a line with the current along the left bank and the centre of the stream. The best cast is one that floats in close to the left shore 40-50 feet downstream from the angler. During the period October 1st-15th, 29 fish were taken in this pool. The pool is extremely well gravelled, has an even current and is used extensively for spawning.

Just above the Black Hole is a deep rapid current area flowing over a gravel bottom (Fig. 1, Map 3, Pool 15). This pool is exceptionally good during high water when the deeper pools will not produce. There is a beach on the left bank from which to fish. The fish lie in two lines on the right and one on the left side of the pool. The gravel bottom is very good for spawning and much activity was observed here on October 25th. During the period October 1st-15th, 18 salmon were taken here, most of these at the peak of high water periods.

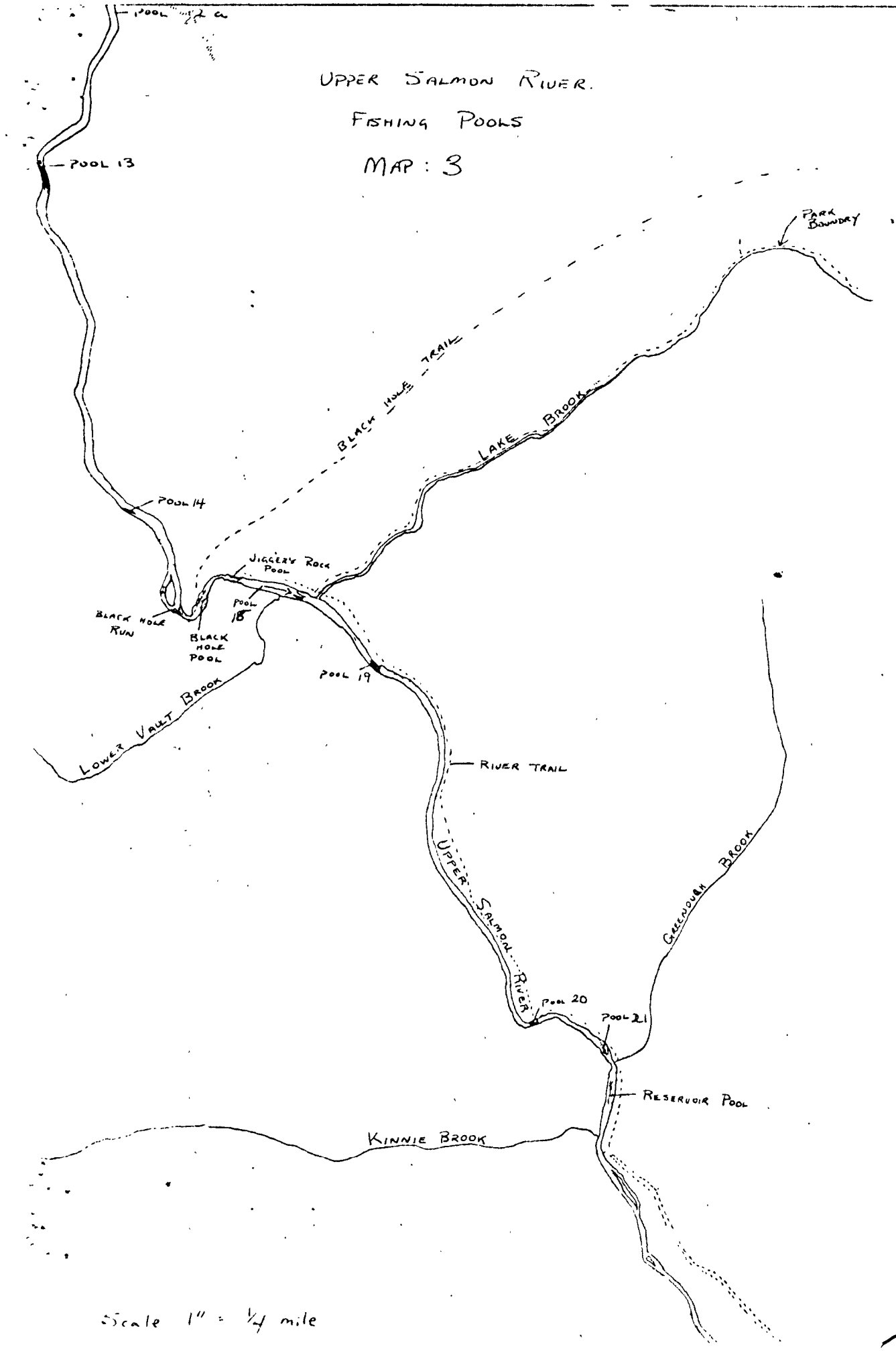
Upper Section (Map 4)

The upper section of the river offers the best fishing but is almost inaccessible. First, one has to come in on the Laverty or Big Dam trails which require a forty-minute walk, then move down the river

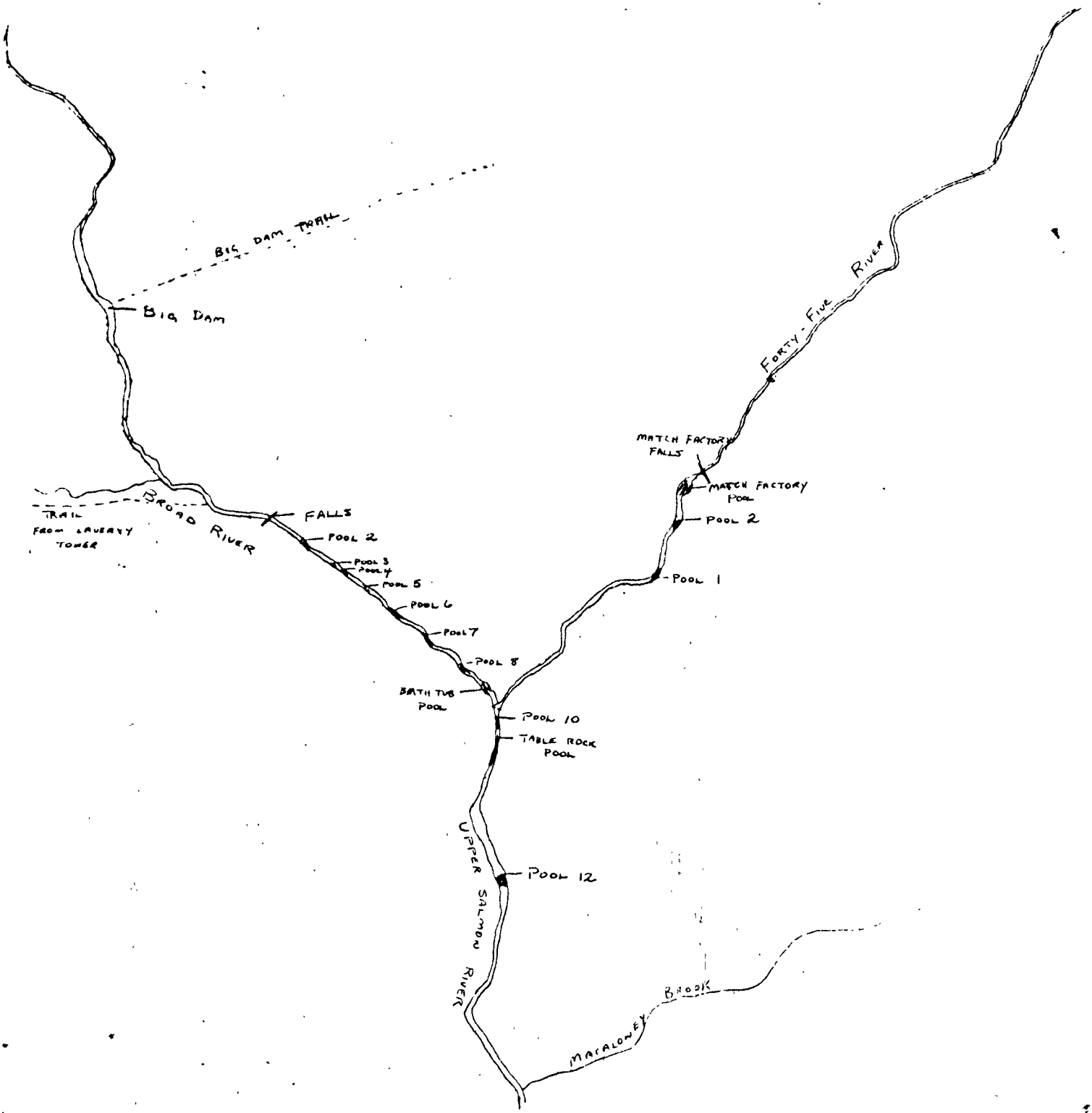
to the pools over almost impossible terrain of cliffs and rock piles. The going is extremely difficult even for a person in top physical shape, but the reward of fabulous fishing is present for all those who make the trip. There are fourteen good pools within a mile of river; one of these is the best on the river; a few will be discussed below. Due to strange nomenclature, this section of the river is known as Broad River; the Upper Salmon River is the result of the junction of the Broad and Fortyfive Rivers (Map 2).

Pool 2. The Big Dam Falls block farther ascent of salmon up the Broad River (Map 4); just below the falls is this large, deep pool (Fig. 3). This pool holds 50 or more salmon during most of the spawning run. The sides of the pool are extremely steep and rocky, consequently fishing is difficult. There is one spot marked with an X on Fig. 3 from which casts can be made, but a gaff, net or tailing method is needed since there is no place to land the fish. Any cast into the end of the pool will usually give results. Three fish were landed from this spot by the author. The pool has fair gravel in the bottom but not enough to support all the salmon present, some must have to drop back down the river in order to spawn.

Pool 3. This pool is a few hundred yards below Pool 2. It is deep, wide and well gravelled. The pool contains only about 20 fish at any one time. The pool is easy to fish from a rock running into it but fishing is rarely good. Two fish were landed here by


UPPER SALMON RIVER.
FISHING POOLS
MAP : 3
POOL 13
POOL 14
PARK BOUNDRY
BLACK HOLE TRAIL
LAKE BROOK
JIGGER'S ROCK POOL
POOL 18
BLACK HOLE RUN
BLACK HOLE POOL
POOL 19
LOWER VAULT BROOK
RIVER TRAIL
UPPER SALMON RIVER
GREENHOUSE BROOK
POOL 20
POOL 21
RESERVOIR POOL
KINNIE BROOK
Scale 1" = 1/4 mile
ALMA

BROAD RIVER AND FORTY-FIVE RIVER
UPPER SALMON RIVER SYSTEM.
FISHING POOLS.
MAP: 4



Scale 1" = ¼ mi.

the author. A cast into the quiet water on the left side of the pool will sometimes give results. The gravel is good here; this area is definitely used for spawning.

Pool 6. This is a long, open, deep pool (Fig. 4) with steep rocky cliffs on each side. The top end of the pool is open and it can be fished easily from this point. The pool is well gravelled with good shelter and looks good for spawning. For some reason only a few fish use the pool; only fourteen were counted here at one time.

Pool 8. (Fig. 4) This pool is shallow, rocky and has a fast current. There are only a few fish here at any one time and these are mainly grilse; on the other hand, they come readily to a fly in this pool. The salmon lie in the end of the pool on the right side, short cast from the left bank of the river will usually result in a fish. This pool is poor for spawning.

Bathtub Pool. This is a small but deep pool just above the junction of the Broad and Fortyfive Rivers. The pool is broad and round with a very slow current (Fig. 4). It is very deep and is well gravelled This pool holds many large fish which rise well to artificial flys only during the early part of the season; very few fish were taken from here in 1967. The pool is open and one can cast easily from a raised rock ledge at the head of the pool.

Pool 10. This is the first pool below the junction of the Broad and Fortyfive Rivers (Map 4). It is deep, fast and well gravelled. Excellent spawning areas are situated just above the pool. The fish here lie close to the left hand shore and care must be taken not to scare them as one can fish well, only from the left shore. The salmon lie just behind a large rock at the base of the ledge from which one casts (Fig. 2).

Table Rock Pool. This pool is all respects is the best on the river. It is deep, wide, long and has a moderate current. Gravel is excellent and much spawning takes place here. The only drawback is the difficulty of casting here. One should bring waders to fish this pool.

On a sunny day the view in this pool is exceptional, the salmon are lined up like cord wood down the centre of the pool; 105 fish were counted here on one occassion. On three separate days, fishing only 5 minutes each time, the author caught 6 salmon, the largest weighed 9 pounds and put up a 20-minute battle in this large pool.

Fortyfive River

The 0.4 miles of this river, occupied by salmon, is for the most part swift current shallows offering only limited spawning. Only one pool in this section provides good fishing.

Pool 1 and 2. These pools are just below the Match Factory Pool (Fig. 5, Map 4). They hold a good number of fish, but a salmon has never been caught in these pools. Pool 1 is shallow but gravel bottomed and offers poor spawning. Pool 2 is deep and narrow with a strong current. The pool is carved out of bed rock and has no gravel on the bottom. It seems impossible to think the 40 fish that occupied it on October 24th were trying to spawn there. At most it is only a resting pool.

Match Factory Pool

For scenic value this is the most beautiful pool on the river. Just above the pool is a 30-foot fall which blocks farther upstream movements of salmon. This pool is a huge bowl shape with steep rocky sides, opening at the downstream end. It can only be fished from the downstream end by casting upstream, or by a treacherous climb over the rock wall to the head of the pool. Fishing from the downstream end, the author landed two salmon and lost three. One salmon landed weighed 11 pounds. The pool bottom is well gravelled and perfect for spawning. It was never possible to count all fish present, but it appeared there were more than 75 salmon in the pool.

Both the upper and lower sections may be more accessible in future years due to trail development. A trail on the right side of the river from the reservoir to the mouth of the Fortyfive River has been

FIGURES OF FISHING POOLS

UPPER SALMON RIVER

Legend:

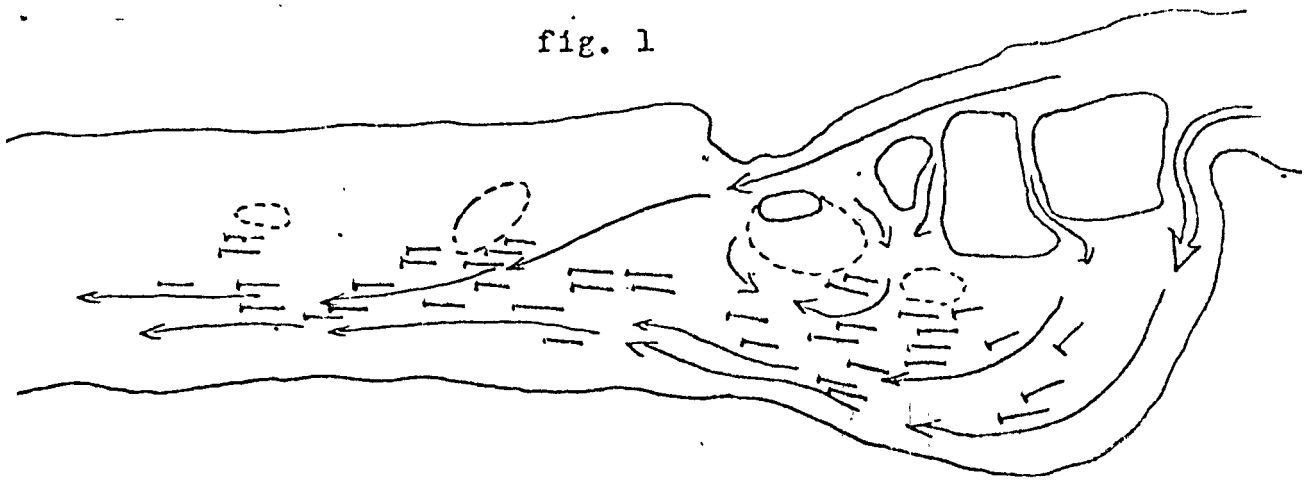
Main current flow = 

Position of salmon = 

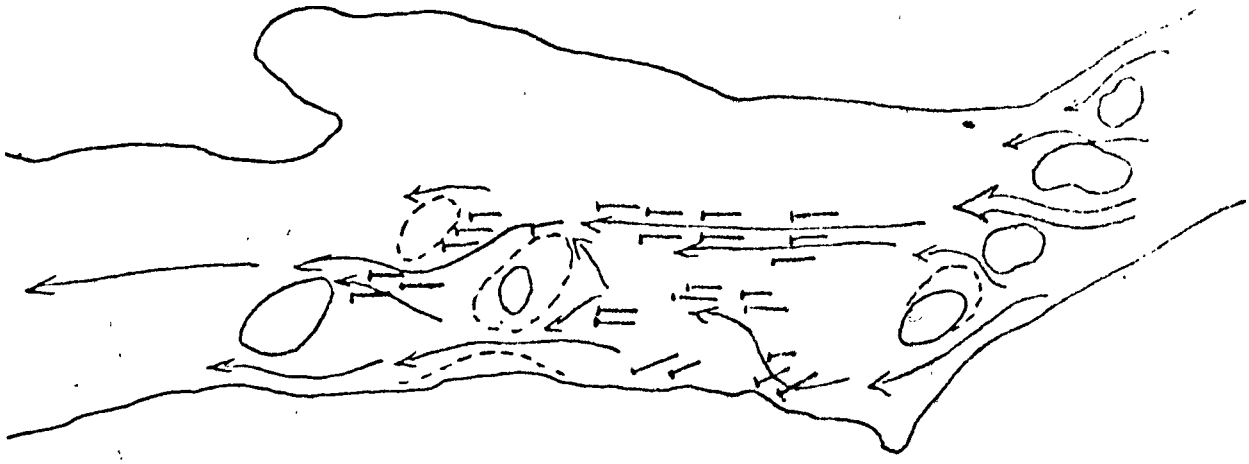
MAJOR FISHING POOLS

UPPER SALMON RIVER

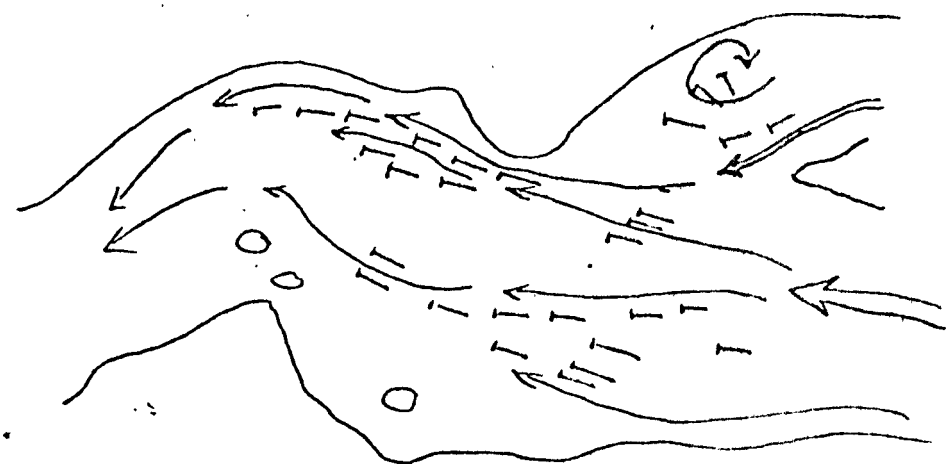
fig. 1



BLACK HOLE POOL



JIGGERS ROCK POOL



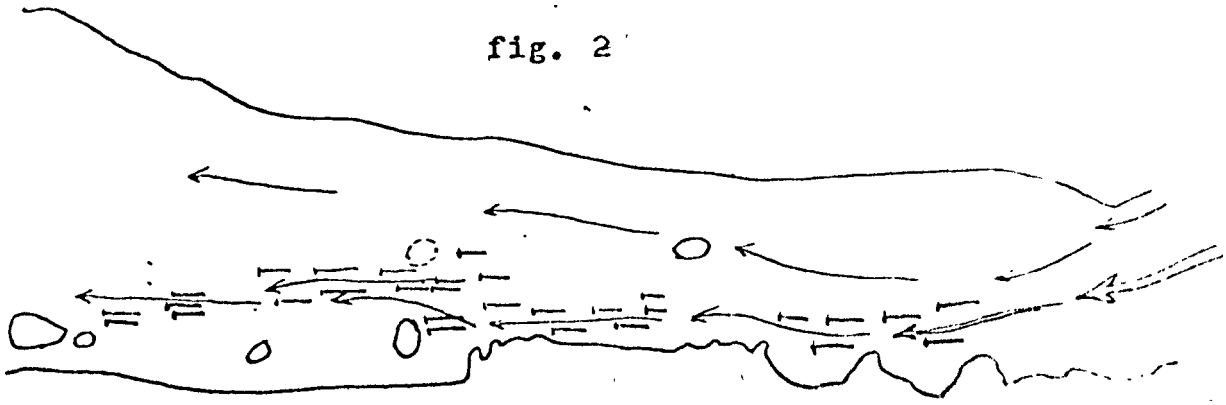
BLACK HOLE RUN

Scale 1"= 50 ft.

MAJOR FISHING POOLS

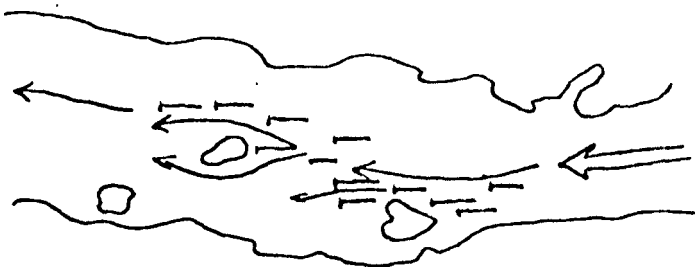
UPPER SALMON RIVER

fig. 2



Scale 1" = 80 ft.

RESERVOIR POOL



POOL 10

(just below 45 river)

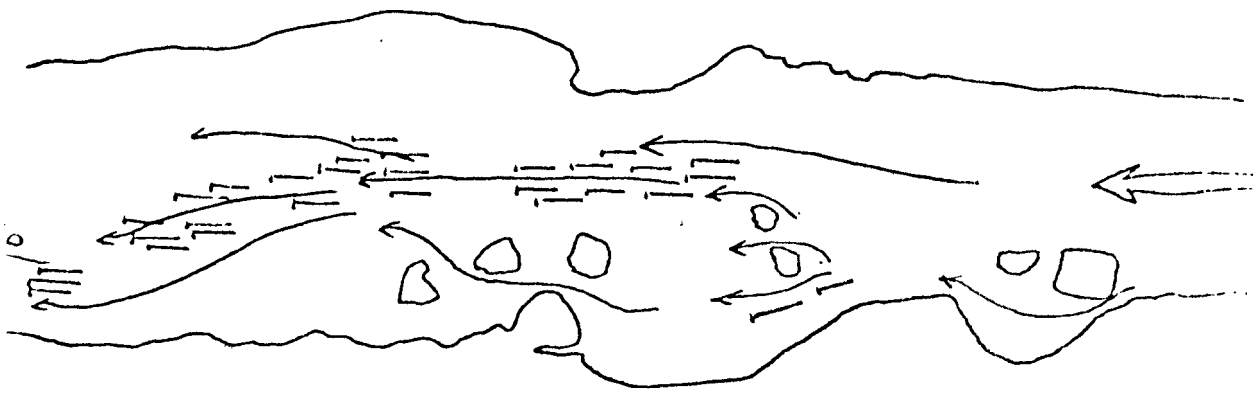
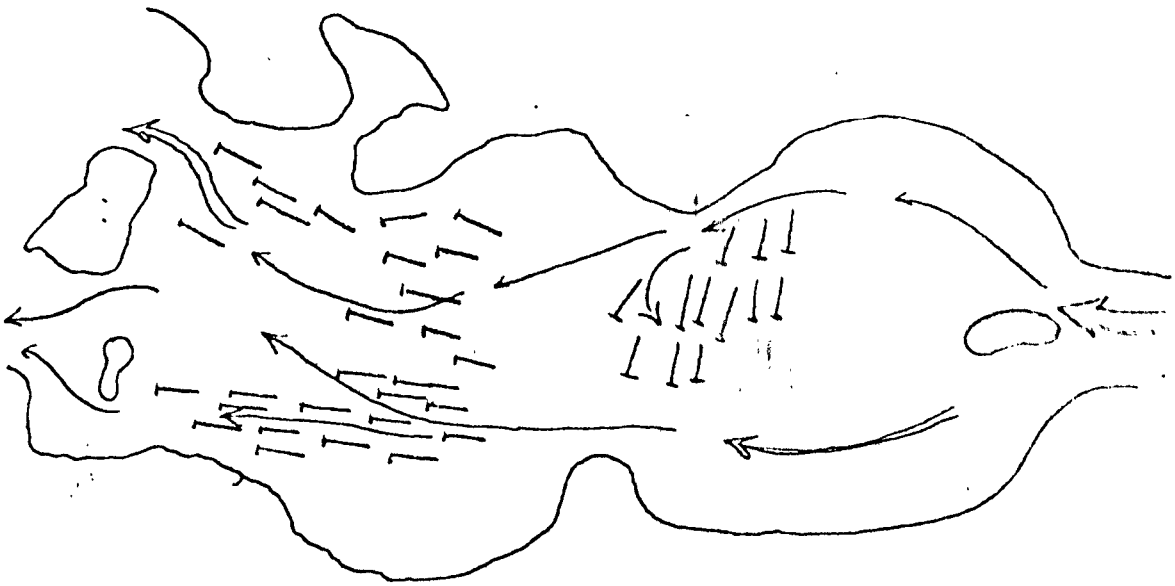


TABLE ROCK POOL

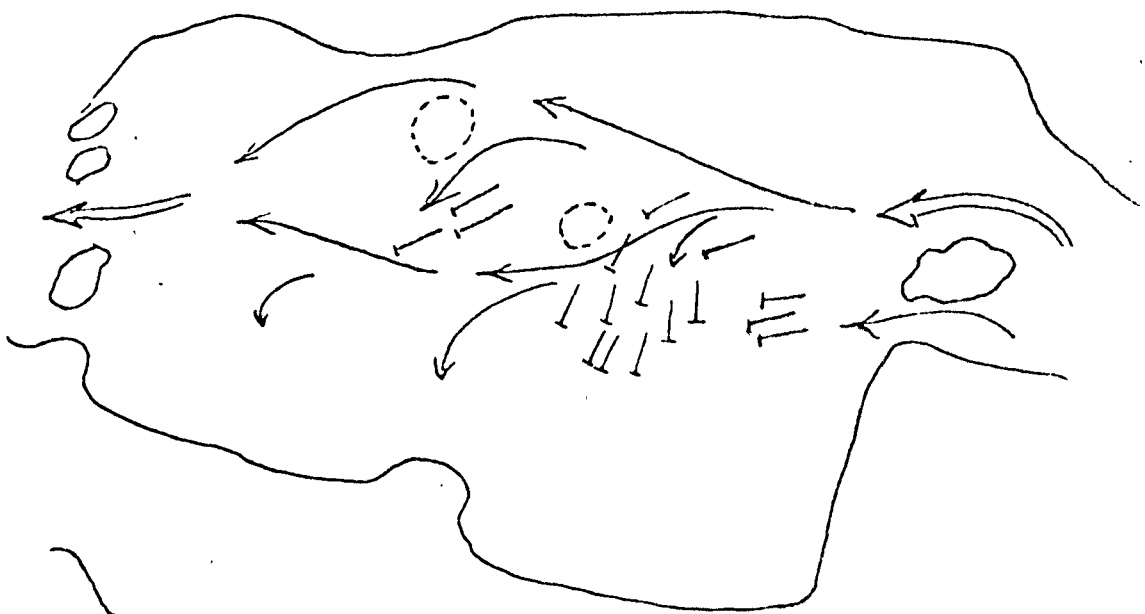
Scale 1" = [illegible] ft.

" MAJOR FISHING POOLS

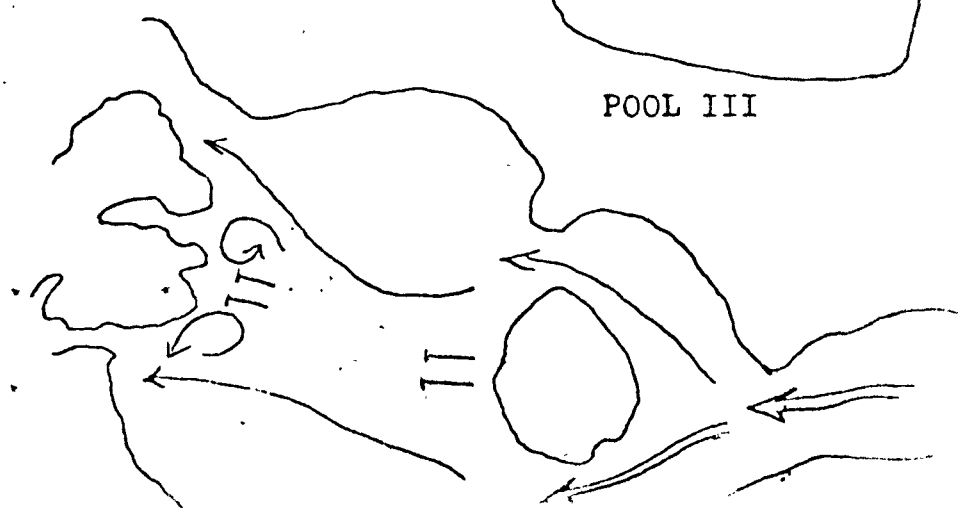
BROAD RIVER
fig.3



POOL II



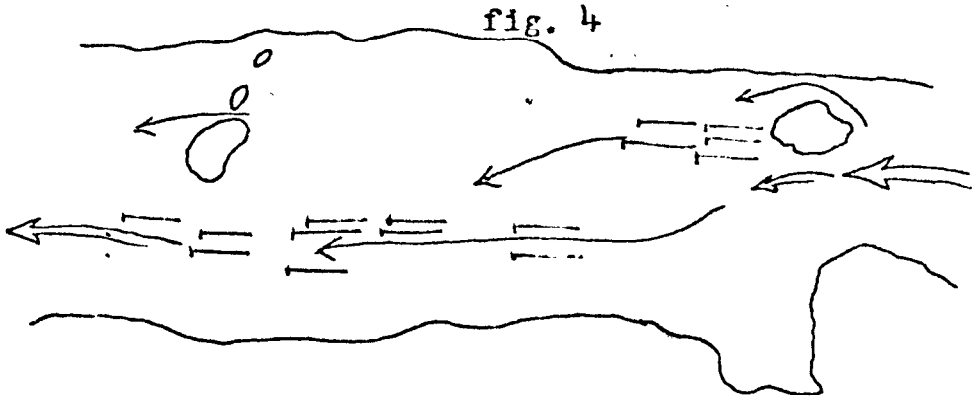
POOL III



MAJOR FISHING POOLS

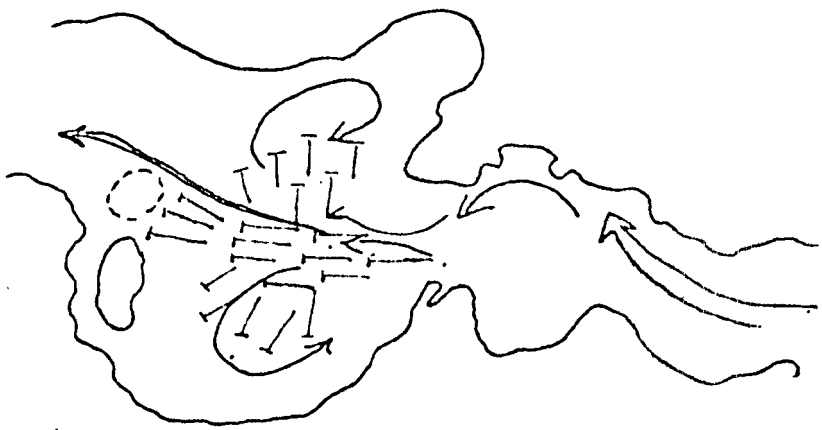
BROAD RIVER

fig. 4



POOL VI

POOL VIII



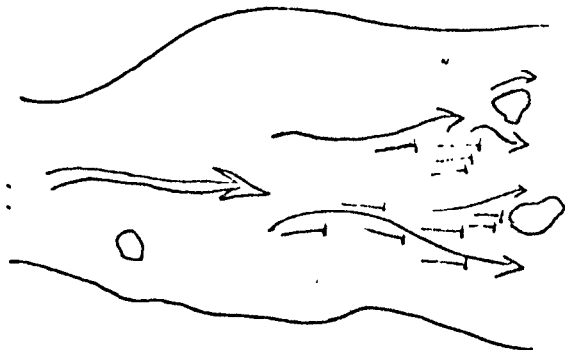
BATHTUB POOL

Scale 1"=40 ft.

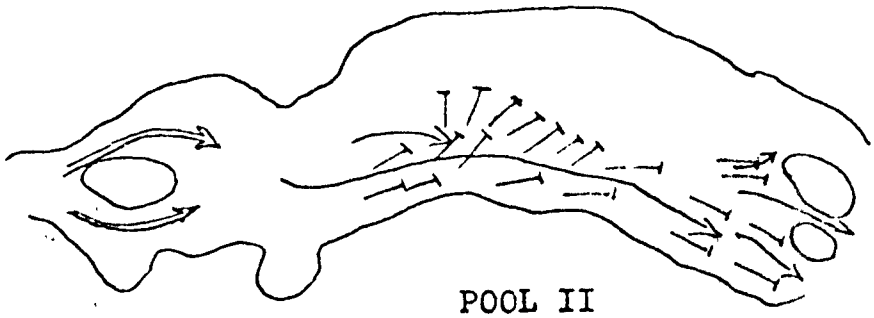
MAJOR FISHING POOLS

FORTYFIVE RIVER

fig. 5

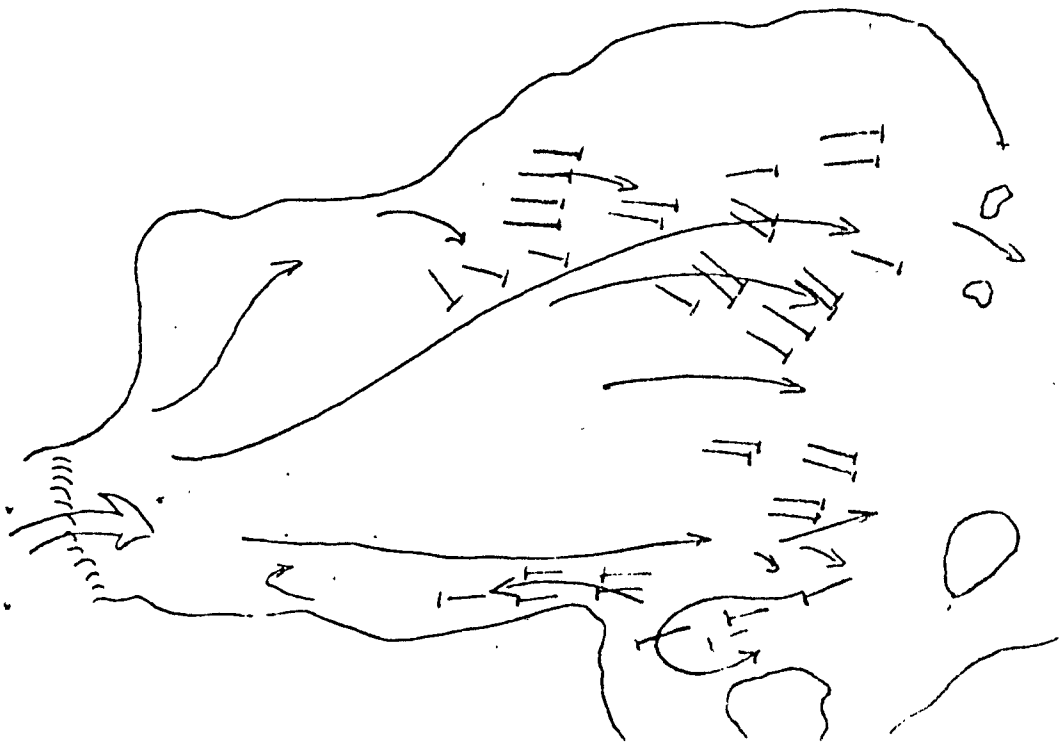


POOL I



POOL II

Scale 1"= 20 ft.



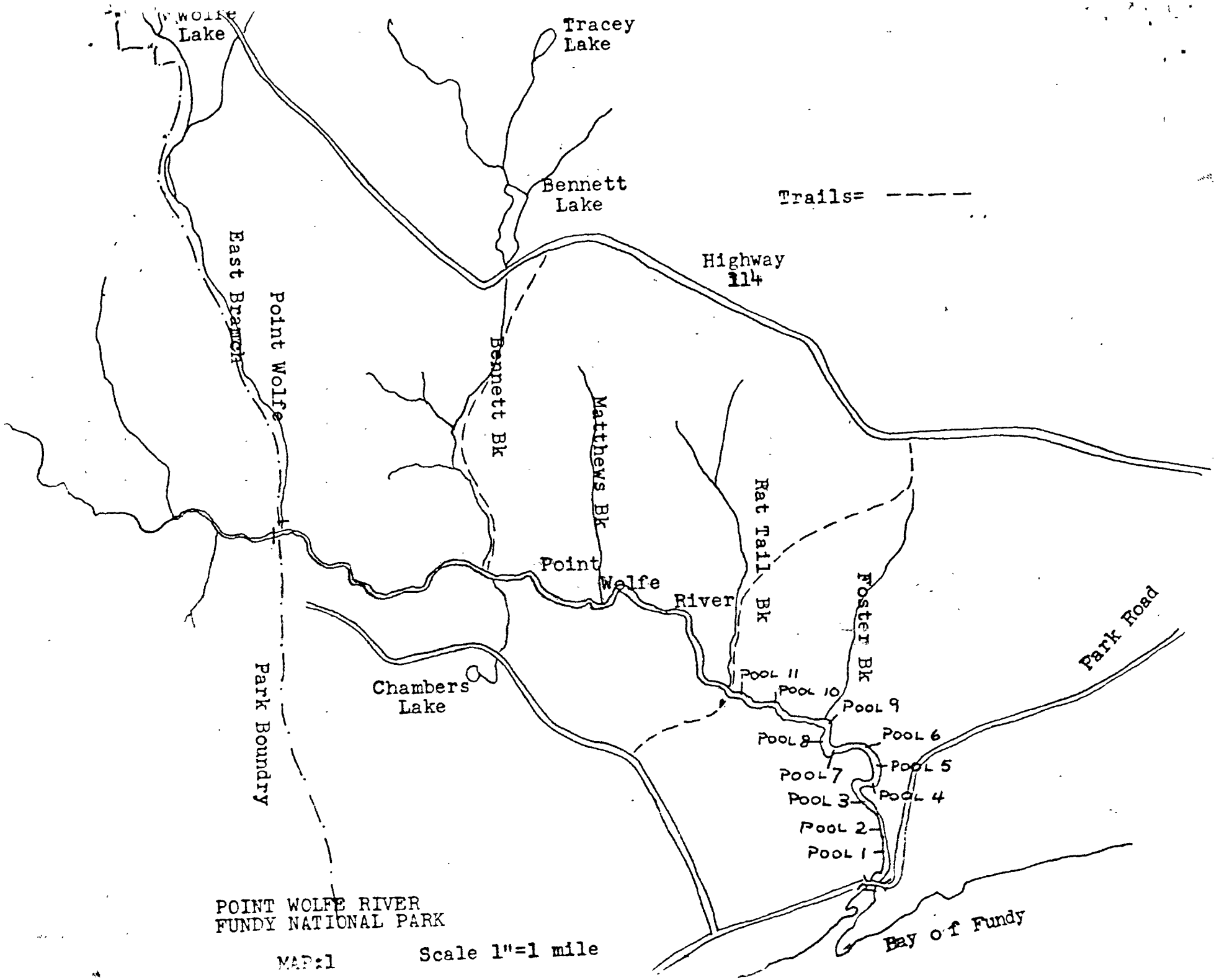
proposed. A trail from the Black Hole to the mouth of the Fortyfive River, which is perhaps the easiest part of the river to walk, would open up the best pools for fishing.

History of Point Wolfe River

The beautiful salmon stream has been cut off from the sea by a 30-foot dam since the early 1900's. Due to its scenic value and now its necessity for water supply to adjacent campgrounds, the dam has been maintained and it continues to block the passage of salmon to the river.

In 1950, following a decision to eliminate the dam, a small hole was blown in the dam by dynamite; the stream was immediately utilized by salmon but after a short period the hole was plugged. In 1965 some hatches were removed from the dam lowering the water to tide level, and the river was again quickly utilized by the salmon. This practice was ceased due to the detrimental effects on the dam, the removal of the hatches caused undermining by the tide. This caused leakage the following summer with the result that the water supply to the campgrounds was limited.

One hundred salmon were seen in the Point Wolfe estuary during October 1966. During October 1967 only one salmon was seen below the dam. Salmon are capable to a limited extent to spawn in estuaries. This is perhaps the case in the Point Wolfe River, and it seems to be maintaining a small stock ready to ascent the river once access is made available.



POINT WOLFE RIVER
FUNDY NATIONAL PARK

MAP:1 Scale 1"=1 mile

This fall, the Point Wolfe River was stocked with 9,000 fingerlings in the hope that a fishway will be established over the dam before they are due to return to the river as adults.

The Point Wolfe River is an almost exact replica of that famous salmon river the Northwest Miramichi River. The lower 3.5 miles of the river was surveyed from the ground by the contractor. The upper five miles of present day accessible water was seen from the air. There is a fall 8.5 river miles from the sea which prevents further access by salmon; this is the only obstacle on the river once past this there is an additional 4-6 miles of good spawning beds. The eight and a half mile stretch of the river below the falls is exceptional salmon water; approximately 95 per cent of the area consists of ripples and smooth flowing water over a gravel bed. The rest of the section is occupied by large, deep, well-shaded pools. Due to this low gradient and gravel bed, the river is extremely easy to walk. By wearing waders, which enable crossing back and forth across the river, one has no trouble walking the river.

In our opinion the Point Wolfe River has tremendous potential. It has 11 pools within 3.5 miles of the sea, a fine gravel bed, and above all is easily accessible. Walking this river is very easy and at no place is it more than a mile from a road. Due to this accessibility, this river, when a run is established, will probably be a favourite

of older fishermen. It should, also, relieve the fishing pressure from the Upper Salmon River that is sure to get heavier in years to come.

There are very few trout now present in the river to act as competition for, or prey upon the salmon, and as the riffle niche in the community has not been occupied since salmon ceased to run in the river it abounds with food. Up to 40 large caddis fly nymphs were counted on some one square foot rock surfaces in the riffle zone.

The Big Salmon River is situated about 40 miles south of the Point Wolfe River; this slightly smaller stream now has a population of 4,500 salmon. It is almost identical to the Point Wolfe in character. All that is needed for the Point Wolfe is one small fishway over the small dam, or the demolition of the dam to allow free movements of the salmon during the spawning run.

Conclusions

1. The salmon population in the Upper Salmon River 1967 spawning run was approximately 1,200 fish.

2. One hundred and sixty-five salmon were known to have been taken from the river during the 1967 fishing season. Probably 200 fish were taken in all.

3. The Upper Salmon River is only a moderately good salmon stream with only a moderate number of good pools and spawning beds.

4. Fishing success was extremely good on the Upper Salmon River, approximately 1 fish/man/day.

5. The population has a high portion of large salmon due to the return of fish every year to spawn after their initial spawning run.

6. The main portion of salmon run in the last week of September; the major portion of the grilse run during the second week of October.

7. Local residents are the most successful anglers; non-residents are the least successful.

8. The best time to fish is the last week of September and the first week of October.

9. The Point Wolfe River has exceptional potential for salmon. All haste should be made to open the river.

Recommendations

1. Complete the fishway on the Point Wolfe River, or remove the dam as quickly as possible.

2. Continue stocking of the Point Wolfe River to build the salmon stock as quickly as possible.

3. Retain the 2-salmon limit per day on the Upper Salmon River in order to maintain the population against increased fishing pressure.

4. Improve the spawning conditions on the Upper Salmon River in order to increase the natural salmon population of the river.

5. Employ two full-time fish wardens to patrol the river from August 31st until November 31st.

6. Make the Upper Salmon River a scheduled river, that is fly fishing only, from July 31st to May 15th.

7. Improve trails into the better lower section pools and build a trail up the river to the Fortyfive River.

Acknowledgements

I wish to thank Mr. C. Hanscomb, Chief Warden of Fundy National Park, and his warden staff for all their assistance. I would like to thank Mr. J. Kerekes for the use of his equipment and truck, also, for the use of his previous work done on the river.

APPENDIX 1

LENGTH, WEIGHT, AGE AND SEX CHARACTERISTICS
OF ATLANTIC SALMON (*Salmo salar*)
UPPER SALMON RIVER, NEW BRUNSWICK
FUNDY NATIONAL PARK

1967

DATE OF CAPTURE	NUMBER	LENGTH IN INCHES	WEIGHT IN LBS.	SEX	AGE
Sept. 27	1	21	3	F	2.1+
	2	21	3	M	2.1+
Sept. 28	3	24	4	F	2.1+
	4	23	4	F	3.1+
	5	24	4	F	2.1.sm.+
	6	19	2½	F	2.1+
Sept. 29	7	21	3	M	2.1+
	8	22	3	F	3.1+
	9	24	4	M	3.1+
	10	30	10	F	2.2+
	11	27	7	F	2.2+
	12	25	5½	F	2.1.sm.+
	13	30	12	M	2.2.sm.sm.+
	14	20	3½	F	2.1+
Sept. 30					
Oct. 1	S.1	26	7	F	2.2.sm.+
	S.2	24	4	M	2.1+
	S.3	27	8½	M	2.2.sm.+
	S.4	23½	4½	F	2.1.sm.+

DATE OF CAPTURE	NUMBER	LENGTH IN INCHES	WEIGHT IN LBS.	SEX	AGE
Oct. 1	S.5	27	6¼	M	2.1.sm.+
	S.6	24	4¼	F	2.1+
	S.7	21.5	3	M	2.1+
	S.8	23	4	M	2.1+
	S.9	22	3½	F	2.1+
Oct. 2	S.10	26½	6	F	2.2+
	S.11	25½	5	M	2.1.sm.+
Oct. 3	S.12	23½	3½	M	2.1+
	S.13	23½	3½	M	2.1+
	S.14	29½	10½	F	2.2.sm.sm.+
	S.15	22½	3	M	2.1+
	S.16	23½	4	F	2.1+
	S.17	24	4	M	2.1+
	S.18	22½	3	M	2.1+
	S.19	21	3	F	2.1+
	S.20	21	3	F	2.1+
	S.21	22½	3½	F	2.1+
	S.22	23	4	M	2.1+
Oct. 4	S.23	21½	3	F	2.1+
	S.24	22½	3½	M	2.1+
	S.25	27½	6½	M	2.2.sm.+
Oct. 5	S.26	23½	4	F	2.1+
	S.27	23	3	F	2.1+
	S.28	23	3½	M	2.1+

DATE OF CAPTURE	NUMBER	LENGTH IN INCHES	WEIGHT IN LBS.	SEX	AGE
Oct. 6	S.29	22	3½	M	2.1+
	S.30	24	4	M	2.1+
	S.31	26	5½	M	2.1.sm.+
	S.32	21	3	F	2.1+
	S.33	26	6	F	2.1.sm.+
	S.34	27	7½	M	2.2.sm.+
	S.35	23	4	M	2.1+
	S.36	22	3	F	2.1+
	S.37	21	2½	F	2.1+
	S.38	26	6	F	2.1.sm.+
	S.39	27	6½	F	2.1.sm.+
Oct. 7	S.40	27	6½	M	2.2.sm.+
	S.41	22	3	F	2.1+
Oct. 8	S.42	21½	2-3/4	F	2.1+
	S.43	23	4	F	2.1+
	S.44	23	4	M	2.1+
	S.45	32	12	F	3.2+
	S.46	21½	3½	F	2.1+
	S.47	27	7	F	2.1.sm.sm.+
Oct. 9	S.48	22	3¼	F	3.2.sm.sm.+
	S.49	32	9½	M	2.1+
	S.50	22	3½	F	2.1+
Oct. 10	S.51	34	13	M	2.2.sm.sm.+
	S.52	20	3	F	3.1+

DATE OF CAPTURE	NUMBER	LENGTH IN INCHES	WEIGHT IN LBS.	SEX	AGE
Oct. 11					
Oct. 12	S.53	31	8½	F	2.2.sm.+
	S.54	23	3½	F	2.1+
	S.55	22½	3	F	2.1+
	S.56	31	10	F	2.2+
	S.57	26	5½	F	3.1.sm.sm.+
	S.58	19½	2	M	2.1+
Oct. 13	S.59	19½	2½	F	2.1+
	S.60	5½		M	2.
Oct. 14	S.61	22½	3½	F	3.1+
	S.62	25½	6	F	2.1.sm.+
	S.63	30	8½	M	2.2.sm.+
	S.64	28	9	M	2.2.sm.+
	S.65	22	4	F	2.1+
	S.66	21½	3	F	2.1+
	S.67	21½	3	F	2.1+
Oct. 15	S.68	24	4	F	2.1+
	S.69	23	3	F	2.1+
	S.70	27	7	F	2.2+
	S.71	24½	4½	M	2.1+
	S.72	23½	3½	F	2.1+
	S.73	25½	6	M	2.1.sm.+
	S.74	23	4	M	2.1.sm.+
	S.75	22	3½	F	2.1+

DATE OF CAPTURE	NUMBER	LENGTH IN INCHES	WEIGHT IN LBS.	SEX	AGE
Oct. 15	S.76	22	2½	F	2.1+
	S.77	23	3	F	2.1+
	S.78	22½	3½	F	2.1+
	S.79	23	4	M	2.1+
	S.80	25½	6	M	2.1.sm.+
	S.81	23	3½	F	2.1+
Oct. 19	S.82	23	3½	F	2.1+
	S.83	24	4½	M	2.1+
	S.84	22	3¼	M	2.1+
Oct. 20	S.85	23	3½	F	2.1+
	S.86	20	2	M	2.1+
	S.87	26½	5½	F	2.1.sm.+
	S.88	23	3½	F	2.1+
Oct. 24	S.89	31	11	F	2.2.sm.sm.+
	S.90	29	8½	M	2.2+
	S.91	28	5¼	F	2.1.sm.+
	S.92	22½	3½	F	2.1+
	S.93	23	3-3/4	F	2.1+
Oct. 25	S.94	20	2	F	2.1+
	S.95	26	5½	M	2.1.sm.+
Oct. 28	S.96	25	6	F	2.1.sm.+
	S.97	22½	3	M	2.1+
	S.98	28	9	F	2.1.sm.sm.+