BABINE STEELHEAD - A FUTURE

BY

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CQXD c. 1 mm SMITHERS

Few knowledgeable steelheaders will dispute the fact that the Babine River is one of the finest steelhead streams in the Skeena system, if not the Province. In 1976 the Babine's "reputation" was further enhanced by yielding a 38 pound steelhead - the largest ever in British Columbia and breaking the old 36-pound record held by a Kispiox River fish.

Steelhead in the Babine River have long held the interest and concern of anglers and fishery workers alike. In 1977, this special race of the Skeena River summer steelhead run again came under the scrutiny of the B. C. Fish and Wildlife Branch. Work begun this time is under the Federal-Provincial "Salmonid Enhancement Program" which has as its ultimate aim to "double" the existing salmonid productions in British Columbia. The Branch's involvement on the Skeena has been primarily to ensure that salmon enhancement projects do not conflict with and harm sport fish populations and secondarily to enhance steelhead where necessary and feasible.

One of the major problems facing fishery managers on the Skeena River is the conflict during the commercial fishing season between sockeye and pink salmon and steelhead. Sockeye and pink stocks are netted heavily at the mouth of the Skeena during the months of July, August, and September. Unfortunately, this is the period when Skeena River summer steelhead stocks (including the Babine) are entering the estuary on their up-river migrations. Consequently, each year five to ten thousand steelhead are caught and killed in commercial gillnets.

Further enhancement of Skeena sockeye and pink salmon runs can only intensify the incidental catch leading to continued reduction of steelhead available to the angler.

The Babine is not the only Skeena tributary of concern to the Fish and Wildlife Branch. Through the Enhancement Program we have or are working on steelhead stocks in the Kalum, Kispiox, Morice and Copper (Zymoetz) as well as the Kitimat. The Babine project, however, is the only one primarily designed specifically to provide information on the dates of entry and degree of exploitation by the net fishery. In order to manage specific stocks of steelhead we must have this information for the Babine and later probably for other stocks.

THE FISH AND FISHERY

Babine-bound steelhead probably enter the Skeena estuary in late July and August for their 320 km. migration. They first become available to the Babine anglers early in September and until November 30 when fishing closes by regulation. Steelhead continue to trickle into the Babine until November and possibly, although this is unknown, well on into winter. Called “summer-run” because they enter the Skeena in summer, Babine steelhead over-winter in the Babine River and slowly mature sexually until spring breakup which usually occurs during May.

The fishery is largely a trophy fly fishery with a high percentage of steelhead being released by anglers. In 1976-77, 86% or 977 of an estimated 1,134 angler-caught steelhead were released. Angling pressure is concentrated from Nilkitkwa Lake downstream for approximately 20 km. Many Babine anglers are non-resident fly fishermen who are guests of the two steelhead camps. Babine steelhead are typically large with most fish having spent three summers in the ocean.

Spawning occurs in the short section of river immediately downstream of Nilkitkwa Lake, a widening of Babine River below its source at the North end of Babine Lake. The downstream boundary of spawning appears to be the salmon counting weir, operated by Federal Fisheries and Marine Service, about four km. below Nilkitkwa Lake. It is these large lakes, Babine and Nilkitkwa, that provide the stable, clear flows over the spawning gravels and enhance the productivity of the Babine River. Through the winter, steelhead lie in deep pools both above and below the weir. Water temperatures hover around the freezing mark. In late April and early May, the ice begins to "go out" on Nilkitkwa Lake and the fish begin to move as water temperatures rise. By mid May, water temperatures in the river are at or near the "magic" 6°C. mark and spawning is well under way.

THE PROJECT:

The Salmonid Enhancement Program was initiated in 1976 with that year being termed the "Pilot Year".

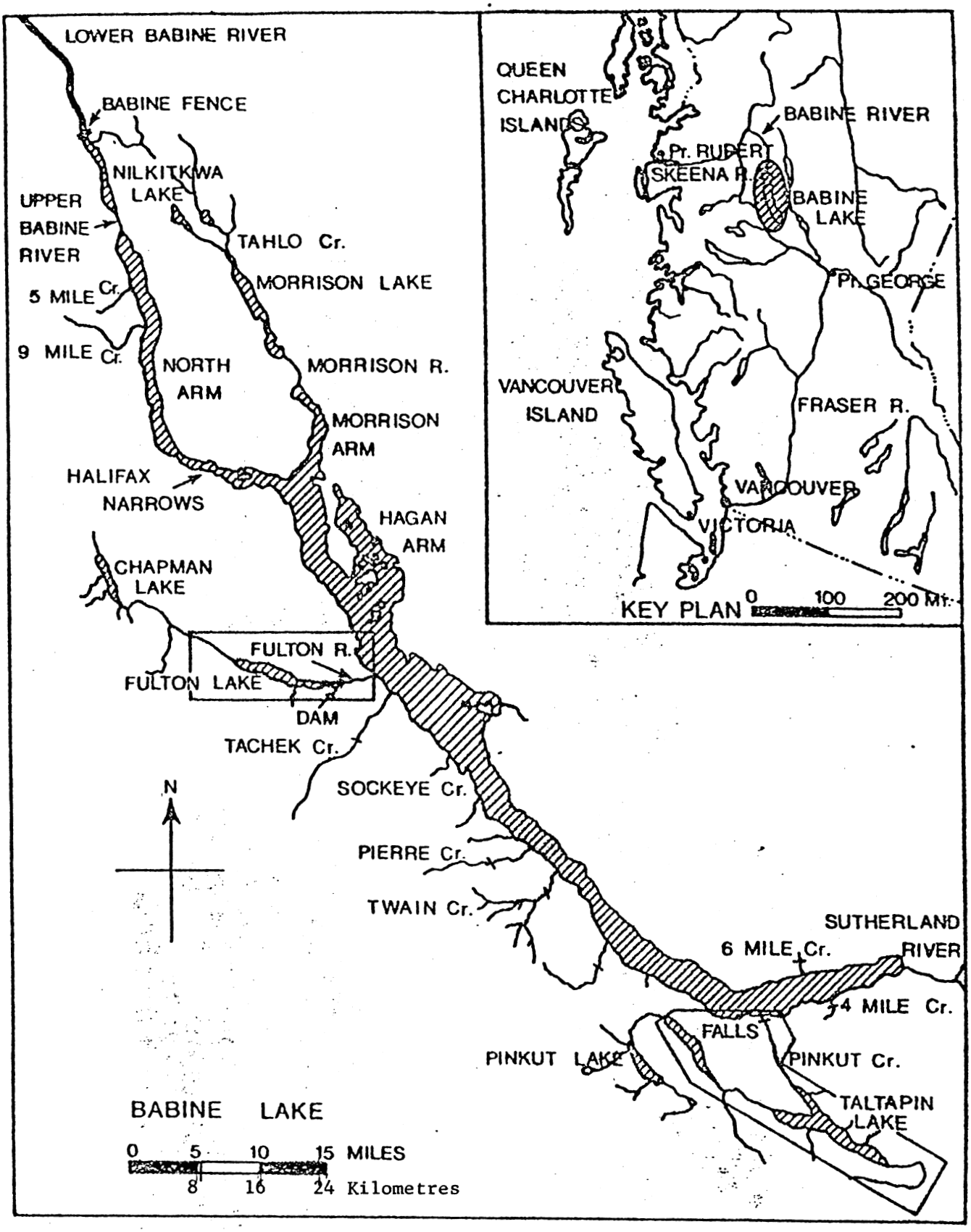

Figure 1: Map showing location of Babine River (fence), where steelhead eggs were collected and airlifted to Fulton River for incubation, 1977 and 1978.

One of the combined Federal-Provincial projects begun during the Pilot Year was a coast-wide coho, chinook and steelhead smolt tagging operation. The project was designed to capture wild juveniles of these species during or before their seaward migration, and mark them by inserting a tiny, coded wire tag in their snout (a harmless operation), and removing the adipose fin. The marked fish would then be released to go about their particular life cycle patterns. At the completion of their ocean residency, many of these fish would be captured in the commercial fisheries at the mouths of their natal streams as they begin their spawning migration. Fishermen, alerted by the absence of the adipose fin on tagged fish, would return the heads to fisheries offices with information as to date and location of catch. The tags would be removed and the date and location of tagging would be retrieved. In this manner, explicit data on route and timing of migration and degree of exploitation of each individual river stock would be generated - crucial information for intense management purposes.

Since the trapping and tagging of sufficient numbers of wild steelhead juveniles proved to be particularly difficult in the Skeena River, we decided in the fall of 1976 to hatch, rear and tag steelhead smolts at an off-site facility. This would involve capturing adult steelhead spawners, stripping them of eggs and sperm, and transporting the sexual products to a hatchery for fertilization, incubation, hatching and rearing. The site selected for this project was the Babine, where all the necessary facilities were either in existence or could be easily constructed.

The goal set was 1,000 returning adult steelhead which at a minimum survival rate of 2.5% required 40,000 smolts. This would be done over a period of two years (half the required eggs one year, half the next).

The role of the Fish and Wildlife Branch was to provide the steelhead adults for stripping and all information available on the complexities of handling steelhead in a hatchery environment. Fisheries and Marine Service, under the direction of Ron Ginetz, Fisheries Biologist, agreed to strip, fertilize, rear and tag the juvenile steelhead at the Services' hatchery on the Fulton River, a tributary of Babine Lake located about 72 km. up the lake from the steelhead spawning grounds.

In early April of 1977, the Branch fish collecting crew, under the direction of Bill Chudyk, Fisheries Biologist, set up camp at the Fisheries and Marine counting weir. The crew consisted of Ron Tetreau and Gord Wadley, experienced steelheaders and veterans of Kispiox and Sustut River steelhead projects.

In the first week the crew caught and released, by angling, 66 steelhead weighing between six and 27 pounds. Scale samples were taken, and lengths, weights and degree of sexual maturity were estimated. The scale samples were analyzed within the week to determine the life history of the steelhead. This first group of steelhead were no where near sexually mature ("ripe") so all were released. By April 28, water temperatures in the Babine were increasing rapidly but the numbers of steelhead caught were declining just as rapidly.

It was feared that enough ripe steelhead would not be available at the critical time unless held in pens and allowed to ripen in captivity. During the next three weeks, Tetreau and Wadley caught and penned 50 steelhead of which 30 were females. Again assuming a minimum egg to smolt survival rate, 30 females were required to supply eggs to meet the goal of 20,000 smolts. From April 13 to May 18, the crew caught 160 steelhead and incidentally sampled 212 resident rainbows, 74 Dolly Varden char, and 16 Rocky Mountain whitefish. By May 18, many of the penned steelhead were ripe enough to begin the egg-take and on that day the helicopter arrived from Fulton River ready to transport the eggs and sperm back to the hatchery. The first day's egg take was only a partial success due to poor quality and limited amount of sperm and only 50% fertilization was achieved in the first batch of eggs. However, subsequent egg-takes were more successful and the target was more than fulfilled. Only two steelhead of the 50 penned died, and the remaining 48 fish were released in good condition below the weir. The fertile eggs were incubated in Heath trays at Fulton for approximately four weeks until 53,000 alevins hatched.

A rather severe mortality was experienced during the alevin and fry stages caused by first an external protozoan parasite (Chilodonella sp.) and then a fungus (Saprolegnia sp.). These diseases reduced the numbers of steelhead fry to less than 35,000. By late fall of 1977, however, the situation had stablized and mortalities in the young fish became almost negligible and in April, 1978, 32,000 yearlings were nose tagged and moved to an outdoor pond for their second and last year of rearing before release.

The second phase of the project also began in April 1978 with the return of Tetreau and Wadley to the collection site at the Babine weir. This time, however, a new wrinkle was added to the project. In addition to the capture and penning of the 50 steelhead for the egg take, the crew was instructed to capture and tag as many steelhead as possible during their two-month stay. The objective of this exercise was to estimate the total population of the Babine steelhead run by the mark and recapture method (the ratio of total number of tagged fish to number of recaptured tagged fish). By mid-May, the crew with periodic help from the Smithers Steelhead Society and Federal Fisheries personnel had angled 322 steelhead which included 20 recaptured fish. By plugging these numbers into a formula, it was estimated that the number of steelhead spawning at the outlet of Nilkitkwa Lake (in 1978) was between 2,000 and 2,500 fish.

As for the egg take, approximately 125,000 eggs were collected during May 23 - 24. As before, the eggs were fertilized and moved to the Fulton River hatchery where they will be hatched and reared for two years.

In the spring of 1979, the first group of steelhead juveniles will be moved back to the Babine River where they will be penned until such time as they display signs of smolting. This period of time will allow the smolts to "imprint" on the stream to which they will return as adults after one to three years in the ocean. The first adult returns from the 1977 group are expected in 1980 or 1981. The 1978 group will be released in 1980 with adult returns expected to begin in 1981. During the period of suspected adult returns (1980 - 84), head recovery teams will be on the lookout for nose-tagged Babine steelhead captured in the commercial, Indian, and sport fisheries.

In summary, the final results of the Babine project will provide valuable information on the involvement of Babine steelhead in the commercial fishery and may provide answers to the interception problem.

In the interim, more fish will be added to the sport fishery and managers will glean greater knowledge of steelhead habits, life histories, and populations numbers. If the Babine project continues as successfully as its beginnings in 1977 it will be a testament to Provincial-Federal co-operation.

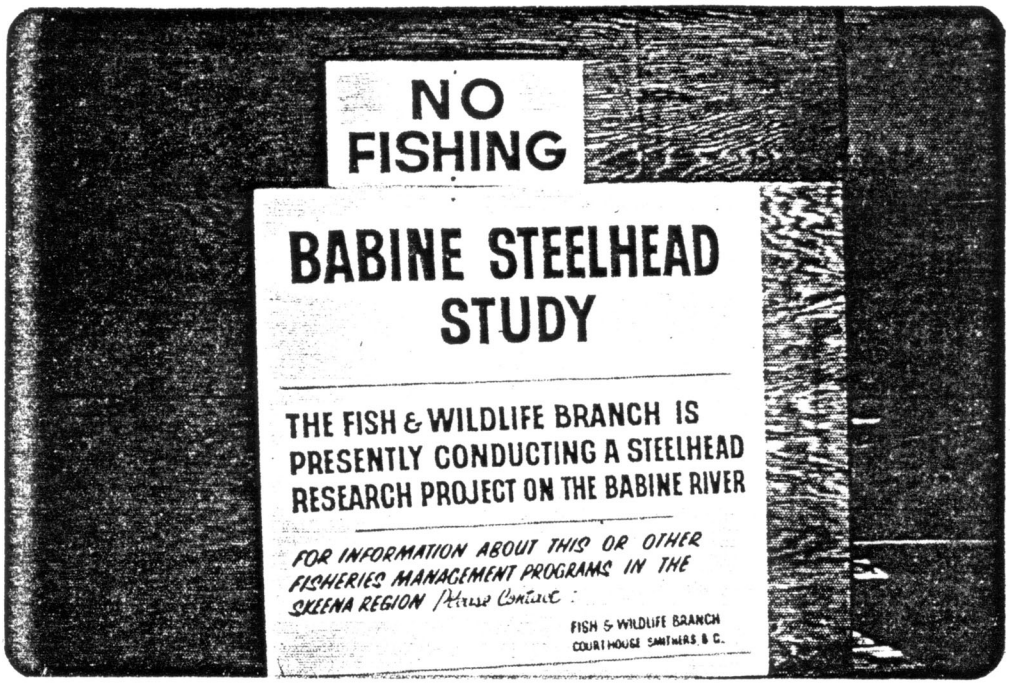

Figure 1. Project Sign

Figure 2. Fisheries Camp, Babine River

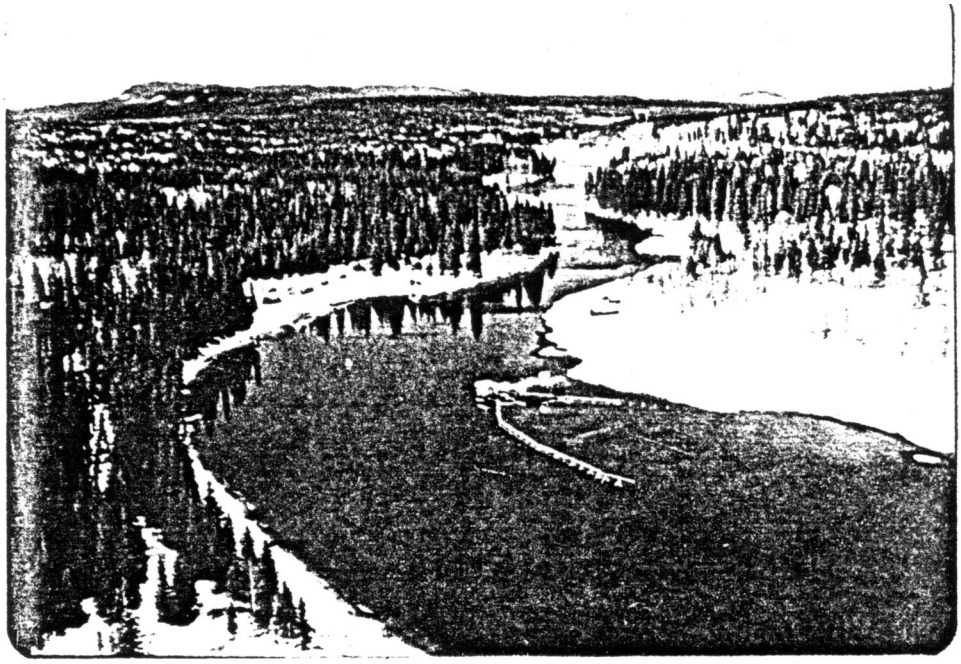

Figure 3. Babine River

Nilkitkwa Lake immediate foreground and Fisheries Service sockeye smolt trap and weir. Adult fence and Fisheries camp just beyond the last bend in the river as it disappears in background.

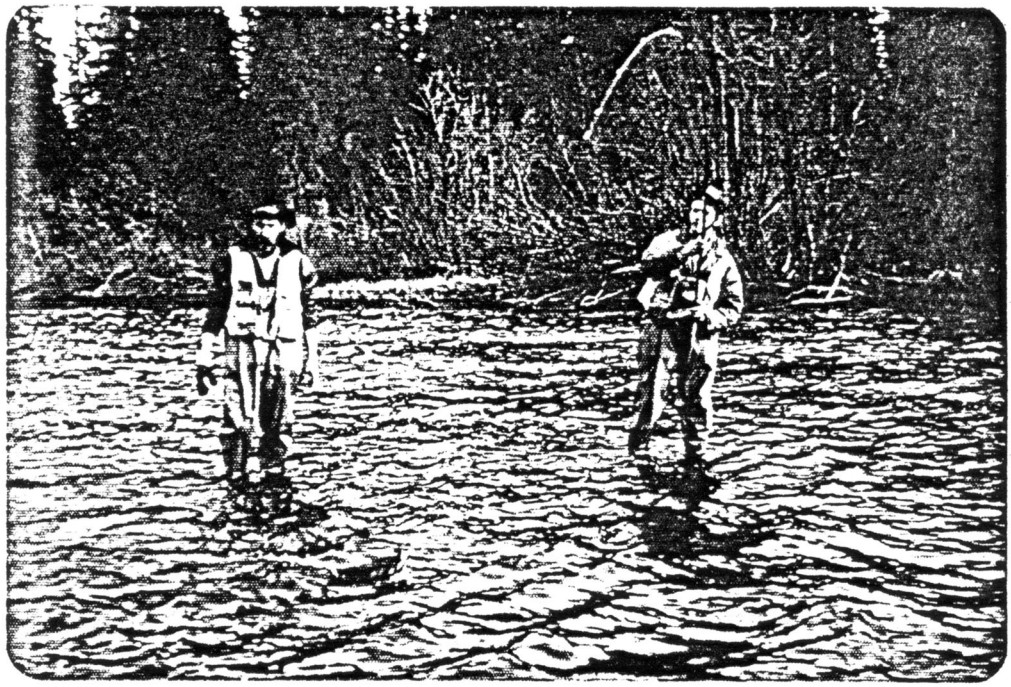

Figure 4. Ron Tetreau with steelhead, Gord Wadley prepared to beach the fish

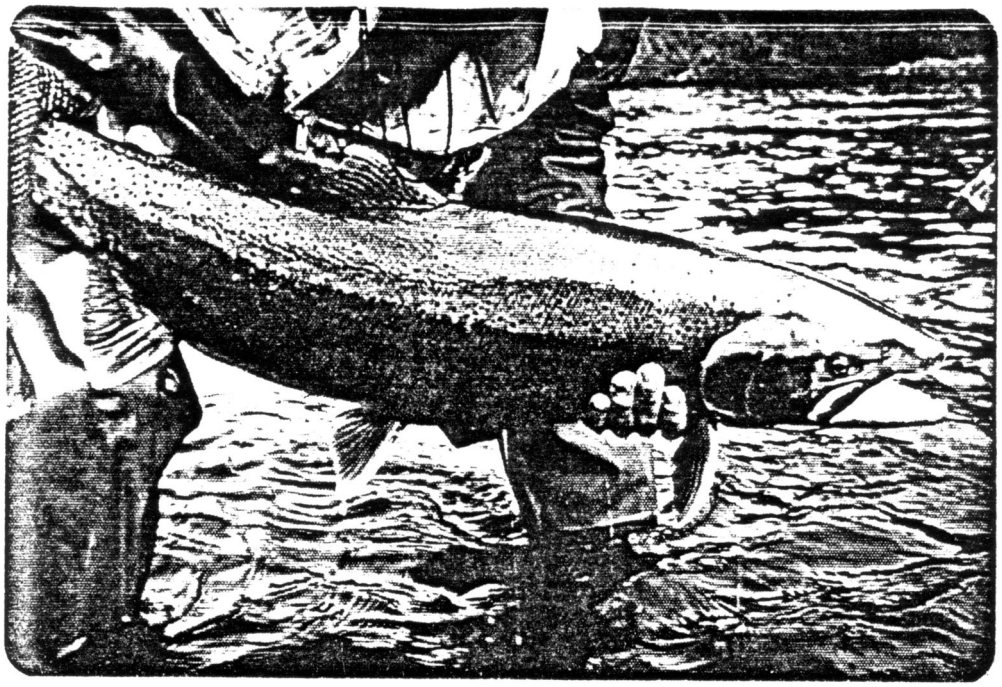

Figure 5. The Catch - a mid-sized 15-20 pound buck steelhead.

Figure 6. Wadley holds the fish while Tetreau quickly takes scales and measurements.

Figure 7. Tetreau preparing to place fish in holding pen. The plastic garbage pail proved to be an ideal means of transporting fish from capture site to pens.

Figure 8. Removing a fish from a pen in preparation for the egg-take.

Figure 9. Tetreau and Fisheries Service technician, Colin Harrison, placing fish in vat of anaesthetic. The egg take is conducted in the enclosure at the far end of the cat walk.

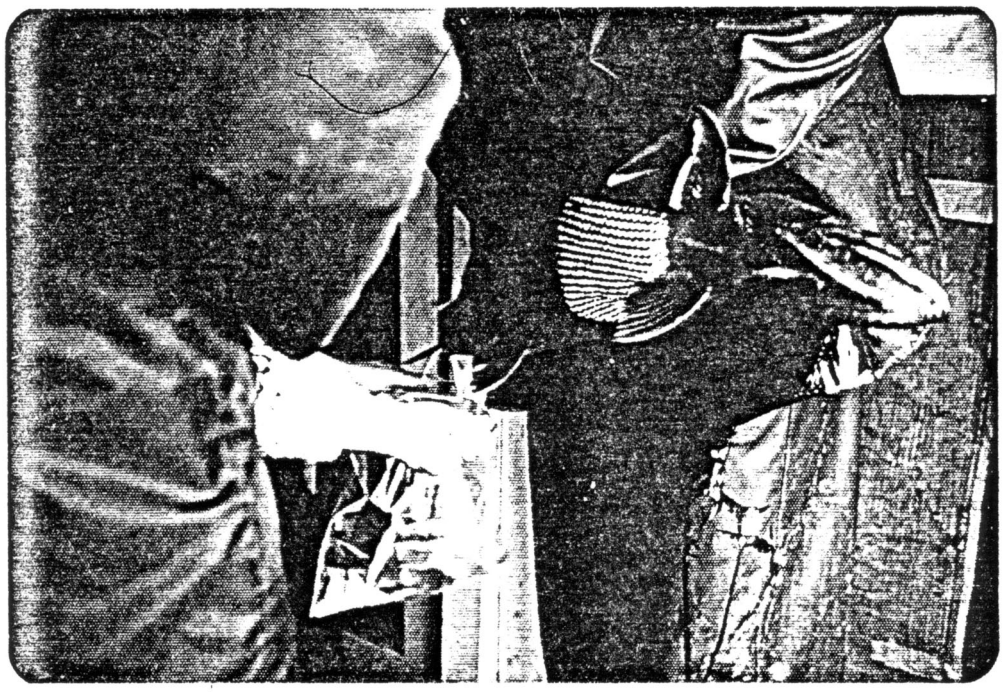

Figure 10. A male being "spawned".

Figure 11. The donation from one female.

Figure 12. After recovery in a vat of freshwater, the fish are released (fish in left foreground).

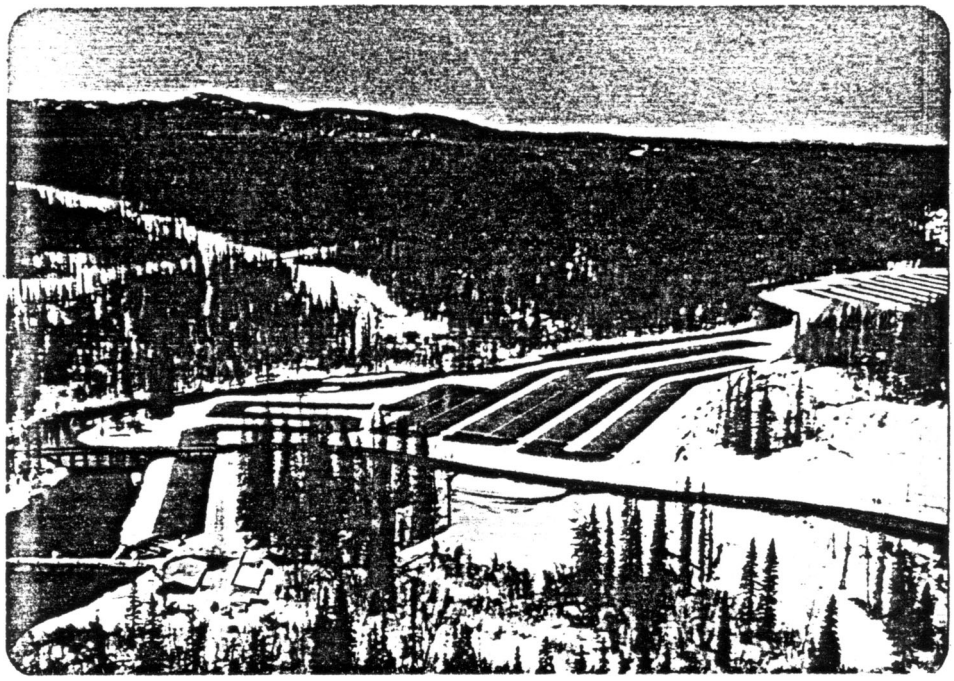

Figure 13. Eggs and sperm are transported by helicopter to the Fulton River Fisheries camp. Sockeye artificial spawning channels in middle ground, the hatchery in the bottom left corner.