SUMMARY OF INITIAL RECONNAISSANCE OF SALMON STREAMS IN PRINCE WILLIAM SOUND, CORDOVA RANGER DISTRICT,

August 20-24, 1962, visited nine streams in Prince William Sound with Dick Behan, Lyle Jack and W. H. Noerenberg, the latter a State Fish and Game biologist. The purpose of this trip was to find out if any of these streams was suitable for improvement of existing spawning areas by removing fine materials from the streambed, creating artificial spawning channels, or installing fishways at barrier falls and opening up unused portions of the stream to spawning salmon.

Discussion of facts needed for decisions on laddering and other type improvements will be sent under separate cover. To wisely create an artificial channel we must be fairly certain that maximum five-year flood peak for the stream does not exceed limitation of channel design. Before we attempt a cleaning project, we should be certain that flash floods and consequent bedload movement will not fill in the cleaned areas before these show increased production. Although there are streams where areas can be cleaned with expectation of long lasting effects, such streams will be those with least fluctuation of discharge and may not be too common in Prince William Sound.

Streams examined at this time, along with evaluation, recommendations and comments are as follows:

Outer Sheep Bay, Number 13A

Very limited intertidal zone spawning area. Lower falls 10-12-feet high, second falls 200 feet upstream from first is also 10-12-feet high. Both falls can be laddered with a total of at least three sections of aluminum steeppass. However, there is a third falls which may be difficult or impassible, ¼ mile above the second. Boulders and bedrock in the lower portion of stream.

Do not recommend any type of improvement at this time.

Outer Olson Bay - Control Creek, No. 24

Grade above falls is good, gravel is ample and adequate in size. Stream is confined between two banks, flood damage and gravel flow vey possible. Should be checked with crest gauge and buried ping pong balls.

Below falls grade is good, there is ample gravel. This is a setup for an artificial spawning channel. Flood plain, easily manipulated, is over 100-feet wide, has a potential spawning area of 12,000 square feet. There is at least three times this or 36,000 plus square feet of spawning area above falls.

Falls is in two stages. The bottom stage is two feet high and can possibly be blasted. Upper stage is five to seven feet high and will require at least two sections of steeppass plus more blasting.

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This stream can be laddered, a spawning channel can be constructed, or both can be achieved.

Need maximum peak five-year flood flow.

Inner Olson Bay, No. 23

Long mainstream channel through intertidal zone lends itself to an Indian Creek type spawning channel. Side channel on right, facing upstream, is ½ mile long and would also make a good regulated flow channel. Gravel cleaning would increase production in mainstream.

The Fish and Wildlife Service is interested in getting Forest Service cooperation for artificial spawning channels here. They have three years of summer streamflow data and a detailed map of the stream plus escapement counts of pink and chum salmon. Total square foot area of stream can be calculated from map and measurements already on hand. Evaluation of improvement can be done by Fish and Wildlife Service personnel already at location.

Galina Bay, Millard Creek

There is a barrier falls at high tide, a second falls ½ mile above first, a third and fourth falls above these. At mile one is an old mining dam. Falls will require blasting and a total of 6-10 sections of steeppass.

Between first and second falls there is about 2,000 square feet of spawning area and another 60,000 square feet of spawning area above and between other falls.

Below all falls, in the intertidal zone, there are two riffles, about 6,000 square feet, suitable for either construction of a channel or a gravel cleaning operation.

Suggest laddering improvement project of this magnitude not be attempted at this time.

Jack Bay, No. 48

A five-foot high falls about 1/3 mile above tide level. The falls and cascades above might be made passable with blasting alone--definitely with blasting and one section of ladder. However, above the falls rock is coarse, and there is evidence of a four to five-foot rise in stream level with terrific gravel bar throw. Check discharge and five-year peak flood flow.

There is possible creation of an artificial spawning channel with a diversion dam at head of a 500-yard-long side channel where stream splits If anything is to be done, suggest examination by an engineer.

Twin Falls Creek, No. 58

A glacial stream. There are two good improvements possible. The first is a side channel through the flats; this will give about 30,000 square feet. It is formed by seepage from the main stream; hence glacial water is somewhat filtered. There is a very low velocity, less than 1 ft/sec., gravel is small with large amount of fine materials, is now used principally by chum salmon; an excellent gravel cleaning proposition.

Second is a ½-mile-long side channel coming off the main stream. Gravel is available at site and grade appears good. Would either install a diversion structure (headworks) at head of channel or would pipe in water from clearwater tributary entering opposite side of mainstream ½ mile above.

If main river water is used for channel, it could be filtered through gravel. If clearwater tributary is used, must check on base flow during winter and temperature regimen during summer. It might be possible to use water from clearwater tributary during summer spawning season, then switch to water from main river fall, winter and spring. Glacier water in this area becomes clear in late fall and remains so until spring.

This is a good improvement opportunity if not too expensive to install headworks and obtain water source. Needs examination by an engineer.

Johnson Cove, No. 46

First falls ¼ mile up is 35 feet high. Second falls 200-300 yards above first is 50-feet high. Do not recommend for laddering, but has an excellent intertidal zone spawning area for gravel cleaning.

Landlocked Bay, Lagoon Creek, No. 39

This stream has about 0.5 grade from a high barrier falls downstream for 150-plus yards, then makes a sharp right bend. At this point stream braids, first going down one channel, then another, on high water. Just around the bend the stream disappears into the gravel on low flows, preventing salmon from reaching upper stable area and also preventing salmon from spawning in extensive area where stream has disappeared.

A side channel 300 yards long and about 15 feet wide takes off main channel and is heavily spawned in. Fed by seepage from mainstream, it is a good possibility for gravel cleaning.

The spawning area could be increased considerably by re-routing stream so it would not go underground. Removal of overburden might be possible but a headworks would have to be installed to prevent gravel flow from upstream.

Worthwhile project for further examination. Suggest examination by engineer.

Sheep Bay, No. 12

Mainstream slightly glacial. Stepped falls runs for 150-200 yards. None of the steps is higher than five to seven feet and falls appear to be almost passable to at least coho salmon. However, although thousands of pink and chum salmon were in the stream below the falls and a few salmon were part way up the series, no fish were observed above the falls except several dolly varden in pool at confluence of mainstream with lake-fed tributary coming in from left, facing upstream.

Falls could be made passable by blasting and two to four sections of fish ladder. However, there is a bypass channel that leaves the mainstream above falls and makes its way in steps into another bypass channel that enters mainstream below falls.

Flow down this side channel can be regulated and, with some modification, a natural fish pass can be developed. An orifice control can be installed at point where side channel leaves mainstream.

We do not know if the downstream population of pink salmon will be attracted to and enter the fish pass. If not, the upstream area would have to be seeded from adjacent upstream populations of pinks and chums.

There is another improvement possibility in this stream. A bypass channel on left, facing upstream, runs through the flats for 1,200 feet and appears to be a natural for an Indian Creek type channel of 24,000-30,000 square feet. Grade good, ample gravel. At a 40 percent survival rate this channel should produce over two million fry.

Afognak Island

In addition to streams discussed in this reconnaissance report (more streams will be added to this list on later visits) there are two potential improvements on Afognak Island that are certainly worthy of mention. These are as follows:

1. Artificial spawning channel in Big Kitoi Creek adjacent to Kitoi Bay Research Station. After State completes installation of new control dam, pipeline and hydroelectric plant this stream, never subject to violent streamflow fluctuations, will be even more controlled.

An artificial spawning channel 400-feet-long by 20-feet-wide could be constructed, depending on flow figures from State engineers after completion of installation mentioned above.

Construction of spawning channel would require some bulldozer work and the addition of graded gravel to channel, since gravel of the right size is not now available in vicinity of stream. About 300 cubic yards of gravel are needed for the channel.

State Fish and Game would probably be quite interested in this project and would possibly cooperate in the way of money, engineering advice, manpower, and evaluation.

2. Cleaning operation and fish pass in Afognak Island system. Cleaning operation conducted in pink and chum spawning areas in outlet to Afognak Lake. Area to be cleaned would require more detailed examination than I have made in the past. Since outlet stream does not fluctuate widely because of gentle slope of watershed and because of lake storage area, flow is regulated naturally; hence possibility of flow of bedload materials into cleaned areas is decreased. And, since spawning area is extensive, fry production could undoubtedly be considered ably increased.

Possible location for fish pass is on barrier falls just inside edge of timber, on Egg Take Creek which enters the lake southeast of State Fish and Game cabin. This barrier would have to carefully examined for laddering possibilities. I have flown this stream several times and from the air there are very extensive spawning areas in stream above falls. Strictly a sockeye spawning stream with possibly some cohoes using the system.

Navy has a recreation camp on Afognak Lake, they have at least one cat at camp and LSM made a w y supply trip during the summer. Could be a cooperative project be n Forest Service, State Fish and Game, and U. S. Navy.

Recommend your consider a of these two projects.