

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

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2620



Mr. Paul Novak, Fisheries Biologist
Alaska Department of Fish and Game
FRED
Division State Office Building
Ketchikan, AK 99901

Dear Paul:

As you are aware, Forest Service field survey crews monitored the activity of anadromous fish in Bakewell Lake Creek, 101-55-073, during the 1980 season. The results of these monitoring activities are enclosed.

In accordance with ADFG collectors permits for 1980, adult salmon were marked using tagging material with a short term utility. Our technique utilized a streamer of florescent orange plastic survey ribbon, threaded through the trailing edge of the dorsal fin. These streamer tags were 12 to 15 inches in length and were highly visible in the dark waters of Bakewell Lake Creek.

The intent of our monitoring and tagging program was threefold:

1. Establish the time of arrival and duration of anadromous fish runs.
2. Estimate the magnitude of the escapement.
3. Differentiate between fish that were new arrivals at the fishway and those that were present during subsequent observations.

The statistical validity of our monitoring data is crude at best. Attaining statistical validity would have required nearly continuous attendance of a field crew at the fishway or some type of electronic instrumentation. Neither of which were available.

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Using the tagging data that is available, the following estimates of the numbers of fish passing the fishway and entering Bakewell Lake have been made.

Sockeye Salmon	100 -- 200
Pink Salmon	400 -- 500
Coho Salmon	1300 --1500

Having no previous records of pink salmon in Bakewell Lake Creek, we were surprised to observe them passing through the fishway. Also on numerous occasions many lampreys, approximately 24 inches in length, were observed in the lower entrance to the fishway.

On two occasions our field crews walked the stream between Bakewell and Badger Lakes. Salmon have ready access to Badger Lake and several smaller streams tributary to the mainstream. On both occasions numerous coho juveniles were observed in extensive rearing areas. Some adult fish were also observed. The results of these stream surveys are enclosed.

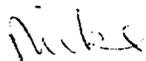
Based on the estimates of salmon returning to Bakewell Lake Creek in 1980 and measurements of available habitat, it appears obvious that considerable opportunity exists to enhance the Bakewell fish stocks. Such stock enhancement will be a necessary element in the proposed enhancement of the Bakewell system by reconstruction of the existing fishway. I would like to suggest that you and your staff, Glen Contreras and myself meet in the near future to examine the opportunities and project scheduling for Bakewell.

On November 25, 1980, the Bakewell Fishway was shut down and secured for the winter. All available stop logs were put in place at the upstream entrance.

A report of the 1980 field work that examined many of the areas enhancement opportunities will be soon forthcoming.

Please do not hesitate to contact me about this matter.

Sincerely,



P. MICHAEL PEASE
Fisheries Biologist, S.O.

Enclosure

1980 BAKEWELL FISHWAY FISH PASSAGE OBSERVATIONS

<u>Date</u>	<u>Flow</u>	<u>Coho Salmon</u>		<u>Sockeye Salmon</u>		<u>Pink Salmon</u>	
		<u>Tagged</u>	<u>Not Tagged</u>	<u>Tagged</u>	<u>Not Tagged</u>	<u>Tagged</u>	<u>Not Tagged</u>
June 9	Mod. Low	0	0	0	0	0	0
June 17	Low	0	0	0	0	0	0
June 23	Low	0	0	0	1*	0	0
June 24	Very low**	0	0	0	0	0	0
June 30	Very low**	0	0	0	1	0	0
July 8	Very low**	0	0	0	0	0	0
July 17	Low	0	0	0	0	0	0
July 24	Moderate	0	0	1	1	0	0
July 28	Moderate	0	0	1	Many*	0	0
August 4	Moderate	5	Many *	5	Many*	0	0
August 11	Mod. low	1	3	1	0	6	2
August 14	Mod. low	1	Many*	0	0	2	0
August 18	Mod. high	10	13	4	0	39	13
Sept. 3	Moderate	13	4	0	0	4	2
Sept. 15	Mod. low	2	1	0	0	2	0
Nov. 25	Mod. high	<u>17</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Subtotals		49	22	12	3	53	17
Total --		Coho	71	Sockeye	15	Pinks	70

* Jumping activity observed in pool below falls.

** Too little flow to operate fish ladder.

Bakewell Lake Creek, Biological and Habitat Survey

On July 24 and 25, 1980, Bakewell Creek was surveyed above Bakewell Lake and the following parameters were established.

1. Lake area (Bakewell and Badger Lakes) -- 1,230 acres.
2. Stream area -- 823,920 ft².
3. Salmon spawning area -- 363,015.60 ft.².
4. Salmon rearing area -- 330,551.15 ft.².
5. Steelhead rearing area -- 135,100.00 ft.².

With an operating fish ladder this stream has the potential of producing a large run of sockeye and coho salmon. The stream is navigable to salmon all the way from Bakewell Lake to Badger Lake. Quantities and distribution of fish habitat is presented in the following tables.

On September 13, 1980, the stream from Badger Lake to Bakewell Lake was surveyed for adult salmon. One tagged sockeye and 21 untagged sockeye were observed in the lower one-half mile of this section. Three dead sockeye and one dead coho were also observed in the same section of creek. No adult salmon were observed above, but coho fry were seen throughout the system. At the confluence of the creek and Bakewell Lake, a school of approximately 100 adult coho salmon was observed.

From observations and the results of these surveys, it is apparent that adult salmon are readily passing the fish ladder but that the spawning area in the stream is still under utilized.

Using the results of the habitat surveys and unit production estimates prepared in Sheridans 1969 Benefit/Cost handbook and subsequent revisions in appropriate factors, the production capability of Bakewell Lake and Creek is estimated as follows.

Sockeye Salmon

Total Run	102,500
Harvestable Surplus	61,500
Optimum Escapement	41,000

Coho Salmon

Total Run	41,333
Harvestable Surplus	24,800
Optimum Escapement	16,533

Estimates of Benefit/Cost for the reconstruction of the Bakewell Fishway and economic return potential for the above production estimates must be done at a later date when more refined data are available.

Observations of Previously Tagged Fish

- 8/11 Two tagged fish, species unknown, observed, one in fishway, (No. 1 well) and one in the large pool below the falls.
- 8/14 One tagged pink salmon and two of unknown species in the large pool below the falls.
- 9/13 One tagged sockeye salmon in Bakewell Creek above Bakewell Lake.
- 9/30 One tagged fish of unknown species in the large pool below the falls.

Note: On numerous occasions, many trout sized fish were observed in the Bakewell fish . These fish, cutthroat trout and Dolly Varden, ranged from 6 to 14 inches in length. They were too small to be caught with our dip nets. These fish being resident or anadromous is not known.

BAKEWELL LAKE CREEK HABITAT SURVEY

July 24-25, 1980

Survey Starting at Head of Bakewell Lake

Distance (ft.)	Length (ft.)	Width (ft.)	Area(ft. ²) L x W	P/R	% ASA	Spawning Habitat(ft. ²)	Rearing Habitat(ft. ²)	% Gradient	Depth Inches
0	--	--	--	--	--	--	--	--	--
285	285	50	14250	100/0	0	0	14250	0-.25	24
514	229	100	22900	80/20	20	4580	18320	.5	10-14
658	144	60	8640	100/0	0	0	8640	0	48
786	128	30	3840	50/50	40	1536	1920	1	12-24
965	179	30	5370	20/80	50	2685	1074	.5	15
1202	237	30	7110	60/40	40	2844	4266	1	12-24
1313	111	40	4440	20/80	60	2664	888	1	8-12
1483	170	40	6800	90/10	10	680	6102	0-.5	12-18
1661	178	50	8900	90/10	10	890	8010	1	36
1831	170	30	5100	10/90	80	4590	5100	1	10
1971	140	35	4900	50/50	40	1960	2450	.5	12
2305	334	20	6680	10/90	90	6012	668	1-2	12-15
Side	120	8	960	60/40	40	384	576	1	10
Channel									
2517	212	35	7420	50/50	50	3710	3710	1-1.5	8-12
3060	543	40	21720	50/50	30	6516	10860	.5-1	10
3363	303	40	12120	10/90	80	1212	9696	1-1.5	10-14
3730	367	30	11010	10/90	70	7707	1101	2	15-20
4130	400	35	14000*	20/80	20	2800	2800	3-4	12-15
4428	298	40	11920*	10/90	10	1192	1192	2-3	12
4921	493	35	17225*	5/95	0	0	862.75	3-4	12-15
5156	235	25	5875*	5/95	0	0	293.75	5-6	18
5600 reset									
to 0	444	35	15540	95/5	5	777	14763	.5	18
265	265	30	7950	20/80	80	6360	1590	2	12-18
534	269	35	9415	5/95	90	8473	470.75	2	12-15
1119	585	25	14625*	20/80	5	731	2925	4-5	18
1605	486	35	17010	10/90	80	13608	1701	1-2	8-12
1989	384	40	15360	40/60	10	1536	6144	1	12-18
2197	208	25	5200*	10/90	5	260	520	4	18-24
2382	185	25	4625*	30/70	10	462.5	1387.5	2	24
2494	112	30	3360	20/80	40	1344	672	1	10-18
2288	894	30	26820	5/95	60	16092	1341	1-2	10-15
8988			96415			42507	15161		