ALASKA POWER AUTHORITY

SUSITNA HYDROELECTRIC PROJECT

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Phase 1 Final Draft
Stock Separation
Feasibility Report
Adult Anadromous Fisheries Project
ADF&G / Su Hydro 1982

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1. SUMMARY

Five species of Pacific salmon return to freshwater systems, including the Susitna River, in Upper Cook Inlet. The Upper Cook Inlet commercial fishery harvests mixed stocks and species migrating north of Anchor Point, with a long term average catch of 2.8 million fish, worth approximately 17.9 million dollars.

The commercial sockeye salmon harvest has averaged 1.2 million fish the past ten years. This species is economically the most valuable species, receiving greatest emphasis in management and research. A stock identification program using scale pattern analysis has been developed to estimate stock contribution of major river systems to the commercial harvest. Estimates for the 1979 and 1980 fisheries show stock contribution by the Susitna River was 22.7% and 19.2% respectively.

The Upper Cook Inlet chum salmon catch has averaged 707,000 fish the past ten years. Though available escapement data identify the Susitna River as the major producer, river systems on the west side of Cook Inlet are known to support chum salmon populations. Evaluation of west side production is necessary to determine the need for a stock separation program. Electrophoresis and scale pattern analysis are two options for stock identification, should a program prove necessary.

The Upper Cook Inlet coho catch has averaged 204,000 fish the past ten years. Though the Susitna River appears to be the single largest producing system in

Upper Cook Inlet, contribution of west side river systems must be addressed. Previous stock identification has been attempted with positive results using fish weight and scale pattern analysis. However, prior to implementing a stock identification program, major Upper Cook Inlet systems must be confirmed to estimate Susitna River contribution.

The ten year average catch for Upper Cook Inlet pink salmon is 146,000 and 1.7 million fish for odd and even years respectively. Two leading pink salmon producers are the Kenai and Susitna river drainages. However, production of west shore systems is unknown. When major producing river systems have been defined, electrophoresis and length-weight data should be examined as stock identification techniques.

Because migration timing relative to 25 June commercial season opening, Susitna River chinook salmon currently are not significantly exploited in the Upper Cook Inlet fishery; a stock separation program is not necessary at this time.

2. INTRODUCTION

The Susitna River drainage is the largest watershed in the Cook Inlet basin. Though considered the highest salmon producing system in Upper Cook Inlet, quantitative contribution of the Susitna River to the commercial fishery is unknown due to the high number of intra-drainage spawning and rearing areas, the paucity of data on other known and suspected salmon producing systems in Upper Cook Inlet and the overlap in migration timing of mixed stocks and species in Cook Inlet harvest areas.

This report focuses on the feasibility of assessing the Susitna River contribution to the commercial salmon fishery in Upper Cook Inlet through a stock identification program and is intended to serve as a planning document. In preparing this report, fishery harvest data was examined and a literature review was conducted centering on stock identification techniques and escapement investigations in Upper Cook Inlet.

This study is part of the Fish Ecology (Subtask 7.10) Phase I investigations of the Susitna Hydroelectric Project.

The primary objectives of the fish ecology studies relative to Susitna Hydroelectric Project are to: (1) describe the fisheries resources of the Susitna River, (2) assess the impacts of development and operation of the Susitna Hydroelectric Project on these fisheries resources, and (3) propose the mitigation measures to minimize adverse impacts (Alaska Power Authority Susitna Hydroelectric Project, Environmental Studies Procedures Manual, Subtask 7.10, Fish Ecology Impact Assessment and mitigation planning, prepared

by Terrestrial Environmental Specialists August 1981). The task of meeting the first of these study objectives is the responsibility of the Alaska Department of Fish and Game (ADF&G) under a reimbursable services agreement (RSA) with the Alaska Power Authority (APA) and the second and third are the responsibility of Terrestrial Environmental Specialists (TES).

3. OBJECTIVE

The purpose of this project was to identify and determine methods, means and feasibility of estimating Susitna River salmon stock contribution to the Upper Cook Inlet commercial fishery.

4. METHODS

Accomplishing the stated objective required examination of salmon harvest data for the Cook Inlet commercial fishery, and review of literature regarding the Upper Cook Inlet fishery programs and stock identification techniques.

To determine the contribution of Susitna River salmon to the Cook Inlet commercial fishery, assessment of salmon production in remaining Cook Inlet river systems is required. Therefore, salmon abundance data in freshwater systems was researched for chinook, sockeye, coho, pink and chum salmon. Whereas the term escapement in literature refers to the total number of adult salmon which have achieved spawning migration into freshwater, the terminology "escapement enumeration or counts" used in this text and appendices refers to sonar, weir or tower escapement monitoring. Reference to "survey counts" or "peak survey counts" is aerial or stream survey data. Aerial ground survey and escapement monitoring data were provided by the Alaska Department of Fish and Game (ADF&G) Division of Commercial Fisheries, Fisheries Rehabilitation and Enhancement Division and Division of Sport Fish, Cook Inlet Aquaculture Association, Dowl Engineers, and Woodward-Clyde Consultants. Biologists from ADF&G Division of Sport Fish, Cook Inlet Aquaculture Association and Woodward-Clyde

Consultants were interviewed regarding observations of fish in areas which had been surveyed but as yet, not documented. Additional observations were provided by Dowl Engineers. Sport fish harvest data (Mills 1980) was included as an indicator of species presence, particularly where escapement or survey data was not available. The abundance data is tabled in the appendices by geographical area and listed by river system in alphabetical order.

5. RESULTS AND DISCUSSION

5.1 The Cook Inlet Commercial Fishery

Cook Inlet is divided into two management areas. The region north of the latitude of Anchor Point is Upper Cook Inlet and the area between the latitudes of Anchor Point and Cape Fairfield on the Kenai Peninsula is defined as Lower Cook Inlet. Commercial fisheries in Lower Cook Inlet are primarily terminal, occurring in small bays. Therefore, few salmon migrating to Upper Cook Inlet are intercepted in the lower inlet area (Middleton 1980). Upper Cook Inlet fisheries harvest stocks bound for river systems north of Anchor Point. These systems account for 78% of the salmon produced in the Cook Inlet area.

To regulate commercial catch and effort, Upper Cook Inlet is divided into two management sections, the Central and Northern districts. These districts in turn are broken into subdistricts (Figure E.5.1) and again into statistical areas. Both set and drift gill nets are fished in the Central District, and only set nets are legal in the Northern District. Five salmon species are harvested in Upper Cook Inlet fisheries. Most of the catch occurs in the

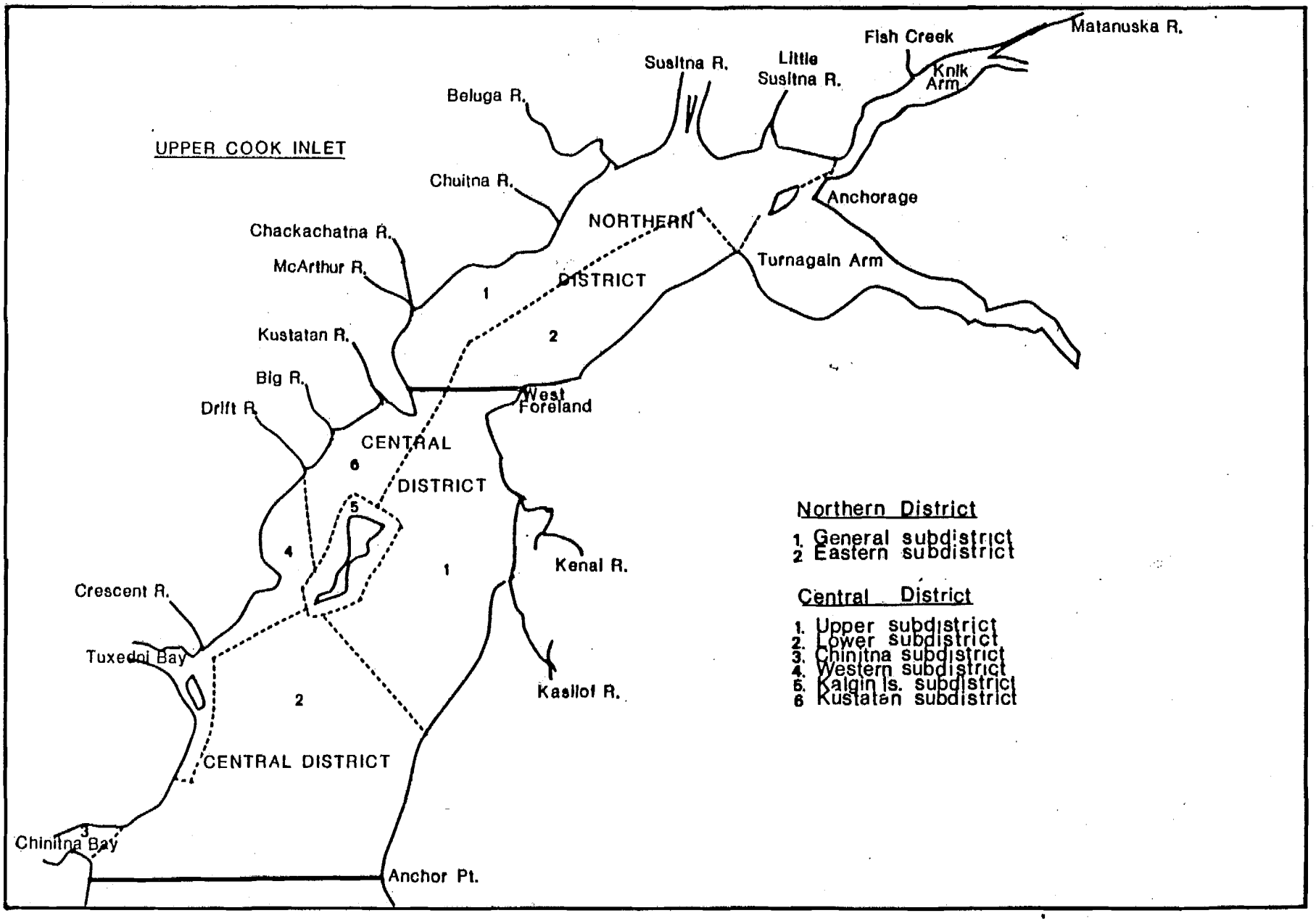

Figure E.5.1. Upper Cook Inlet Management Area, Adult Anadromous Investigations, 1982.

Central District (Tables E.5.1 - E.5.3). The commercial catch has averaged 2.8 million fish between 1970 and 1980, with an ex-vessel value of 17.9 million dollars.

5.2 Sockeye Salmon (Oncorhynchus nerka)

Sockeye salmon is the species of highest value in the commercial fishery, receiving greatest attention in management and research by the Alaska Department of Fish and Game (ADF&G). The commercial catch of sockeye salmon has averaged 1.2 million fish, the past ten years, with an ex-vessel value 6.9 million dollars (Table E.5.1). In 1981, about 1.4 million fish were harvested of which 43% were taken by the drift fleet in the Central District. The fishing season opens by regulation 25 June, except for the Western Subdistrict which opens 16 June. Fishing periods are scheduled Monday and Friday of each week, and are regulated by emergency order, depending on catch and escapement levels.

Major river systems in Upper Cook Inlet are glacially turbid, preventing visual monitoring of escapement. Consequently, hydroacoustic techniques are primarily employed. Side scan sonar counters are used to monitor escapement in the Kenai, Crescent, Kasilof, and Susitna rivers by ADF&G, Division of Commercial Fisheries. Escapement is enumerated by weirs in Fish and Cottonwood creeks by ADF&G Fisheries Rehabilitation and Enhancement Division (F.R.E.D.), and Packers and Wolverine creeks by Cook Inlet Aquaculture Association (C.I.A.A.).

Table E.5.1. Commercial catch of upper Cook Inlet salmon in numbers of fish by species, 1960-1981, Adult Anadromous Investigations, Su Hydro Studies, 1982.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	27,512	923,314	311,461	1,411,605	659,597	3,333,889
1961	19.737	1,162,303	117,778	34,017	349,628	1,683,463
1962	20,210	1,147,573	350,324	2,711,689	970,582	5,200,378
1963	17,536	942,980	197,140	30,436	387,027	1,575,119
1964	4,531	970,055	452,654	3,231,961	1,079,084	5,738,285
1965	9,741	1,412,350	153,619	23,963	316,444	1,916,117
1966	9,541	1,851,990	289,690	2,006,580	531,825	4,689,626
1967	7,859	1,380,062	177,729	32,229	296,837	1,894,716
1968	4,536	1,104,904	470,450	2,278,197	1,119,114	4,977,201
1969	12,398	692,254	100,952	33,422	269.855	1,108,881
1970	8,348	731,214	275,296	813,895	775,167	2,603,920
1971	19,765	636,303	100,636	35,624	327,029	1,119,357
1972	16,086	879,824	80,933	628,580	630,148	2,235,571
1973	5,194	670,025	104,420	326,184	667,573	1,773,396
1974	6,596	497,185	200,125	483,730	396,840	1,584,476
1975	4,790	684.818	227,372	336,359	951,796	2,205,135
1976	10,867	1,664,150	208,710	1,256,744	469,807	3,610,278
1977	14.972	2,054,020	192,975	554,184	1,233,733	4.049,704
1978	17,308	2,622,487	219,234	1,687,092	571,925	5,118,041
1979	13,713	920,780	259,956	74,318	654,462	1,923,229
1980	12,497	1,584,392	283,623	1,871,058	387,078	4,138,648
1981	11,548	1,443,294	494,294	127,857	842,849	2,919.621

1979-1981; Preliminary data.

Table E.5.2. Commercial catch of Central District salmon in numbers of fish by species, 1960-1981, Adult Anadromous Investigations, Su Hydro Studies, 1982.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	19,294	775,067	167,084	969,420	541,043	2,471,908
1961	11,982	1,084,929	76,803	23,252	288,525	1,485,491
1962	10,425	1,013,993	177,441	2,431,246	826,549	4,459,654
1963	10,191	833,517	133,600	21,496	343,333	1,342,137
1964	4,363	809,791	284,726	2,645,575	952,126	4,696,581
1965	9,441	1,380,775	131,717	19,049	299,538	1,840,520
1966	8,119	1,720,885	209,122	1,633,913	496,188	4,068,227
1967	7,675	1,261,997	133,875	23,769	258,453	1,685,769
1968	4,065	964,329	313,802	1,743,358	1,060,660	4,086,214
1969	9,494	654,189	80,527	25,802	258,019	1,028,031
1970	6,887	664,795	192,767	640,201	752,674	2,257,324
1971	10,167	595,770	78,542	27,201	310,426	1,022,106
1972	11,174	794,087	61,587	537,750	610,368	2,014,966
1973	5,024	624,411	80,469	188,934	636,722	1,535,560
1974	6,427	455,622	153,087	440,854	360,350	1,416,340
1975	4,661	619,292	194,321	245,406	921,009	1,984,689
1976	10,466	1,594,585	171,564	1,108,126	455,510	3,340,251
1977	14,277	1,950,605	172,892	444,881	1,208,336	3,790,991
1978	16,634	2,570,863	171,978	1,359,822	534,594	4,653,891
1979	12,128	816,090	208,303	25,515	644,400	1,706,436
1980	11,440	1,473,168	180,842	1,371,754	368,597	3,405,801
1981	10,790	1,193,826	360,992	74,556	796,766	2,436,930

1979-1981; Preliminary Data

Table E.5.3. Commercial catch of Northern District salmon in numbers of fish by species, 1960-1981, Adult Anadromous Investigations, Su Hydro Studies, 1982.

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1960	8,218	148,247	144,377	442,185	118,954	861,981
1961	7,755	77,374	40,975	10,765	61,103	197,972
1962	9,785	133,580	172,883	280,443	144,033	740,724
1963	7,345	109,463	63,540	8,940	43,694	232,982
1964	168	160,264	167,928	586,386	126,958	1,041,704
1965	300	31,575	21,902	4,914	16,906	75,597
1966	1,422	131,105	80,568	372,667	35,637	621,399
1967	184	118,065	43,854	8,460	38,384	208,947
1968	471	140,575	156,648	534,839	58,454	890,987
1969	2,904	38,065	20,425	7,620	11,836	80,850
1970	1,461	66,419	82,529	173,694	22,493	346,596
1971	9,598	40,533	22,094	8,423	16,603	97,251
1972	4,912	85,737	19,346	90,830	19,780	220,605
1973	170	45,614	23,951	137,250	30,851	237,836
1974	169	41,563	47,038	42,876	36,490	168,136
1975	129	65,526	33,051	90,953	30,787	220,446
1976	401	69,565	37,146	148,618	14,297	270,027
1977	515	103,415	20,083	109,303	25,397	258,713
1978	669	51,624	47,256	327,270	37,331	464.150
1979	1,585	104,690	51,653	48,803	10,062	216,793
1980	1,057	111,224	102,781	499,304	18,481	732,847
1981	758	249,468	133,081	53,301	46,083	482,691

1979-1981; Preliminary Data

The Kasilof, Kenai, Susitna and Crescent rivers, and Fish Creek (Big Lake) are considered principle sockeye salmon producing systems in the Upper Cook Inlet fishery. Run timing of these major stocks overlap (Figure E.5.2) requiring a method to assess individual stock contribution to the commercial fishery.

Stock separation using scale pattern analysis has been used in the sockeye salmon fishery since 1978 (Bethe and Krasnowski 1979; Bethe, et al. 1980; Cross et al. 1981). This tool provides an inseason estimate of stock composition of the commercial catch by fishing period and assists in regulating fishery openings and closures. In addition, the catch allocation provided by stock identification combined with escapement data, estimates the season's return to each major river system.

Scale measurements, length and weight data have been used as variables for stock delineation with linear discriminant function analysis. Stock identification models are built from measurements representing fish of known origin, i.e. escapements. Measurements from unknown fish (catch samples) are then classified with the models to their river of origin. Systems currently included in the analysis are the Kasilof, Kenai, Susitna, and Crescent rivers and Fish Creek (Big Lake). In 1979, about 22.7% of the sockeye run to Cook Inlet was from the Susitna drainage and about 26.7% and 36.0% of the run was produced by the Kasilof and Kenai rivers, respectively (Cross 1981). The 1980 run composition by river system was 19.2% Susitna, 38.3% Kenai and 31.3% Kasilof (Cross 1981).

Success of the sockeye identification program varies each season and confidence intervals for these limits are wide. One problem is continual mis-

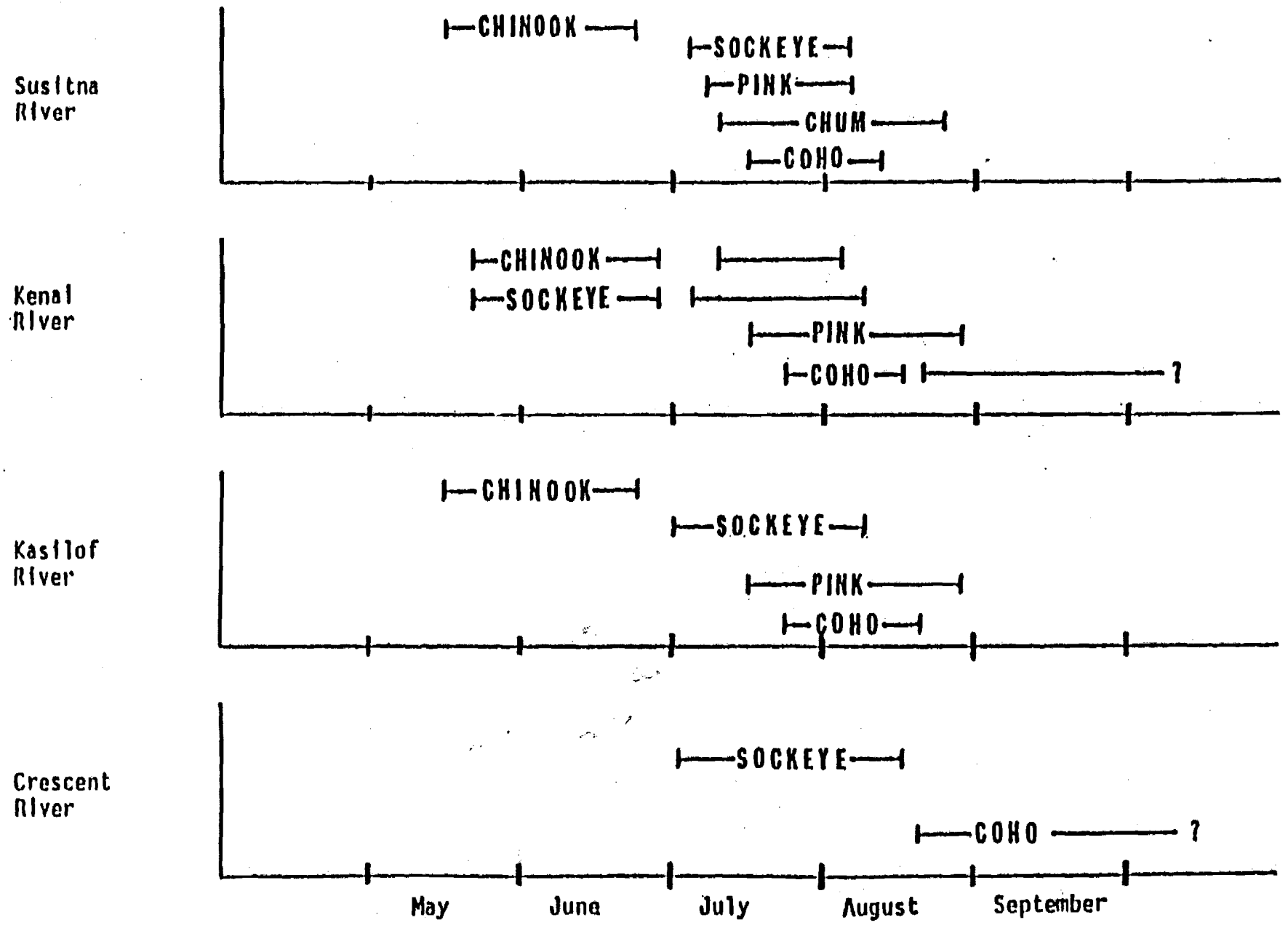

Figure E.5.2. Timing of sockeye, pink, coho and chinook returns into the Kenai, Kasilof, Crescent and Susitna Rivers, Adult Anadromous Investigations, Su Hydro Studies, 1982.

classification of Susitna River sockeye to either the Kenai or Kasilof rivers. Clarification of the model could be addressed by possibly identifying sub-stocks within the Susitna River drainage or refining pattern measurement techniques.

5.3 Chum Salmon (Oncorhynchus keta)

The commercial chum salmon catch has averaged 707,000 fish the past ten years. Chum salmon are second to sockeye salmon in economic value averaging 2.3 million dollars, ex-vessel. The 1981 fishery produced a catch of 842,000 chum salmon (Table E.5.1). Approximately 90% of the catch was taken by the Central District drift net fleet. During the 1981 season, the drift net fleet was harvesting substantial numbers of chum salmon by 27 June, continuing through mid-August. Chum salmon catches occur coincidentally with sockeye salmon in the fishery. At this time, the best data available regarding chum salmon and a good indicator of run strength for each area are twenty years of commercial catch statistics collected by statistical area and day. This data, however, has yet to be analyzed.

Survey and escapement data regarding chum salmon is limited (Appendices EA-EE). Production areas for chum salmon have been identified as Chinitna Bay, west shore river systems of Upper Cook Inlet, and the Susitna River. Escapement has been indexed into the Susitna River by sonar and tag/recapture operations, and into the Chinitna Bay by aerial survey. Though the Susitna River has been identified as the largest chum salmon producer, contribution by west shore systems is virtually unknown and may be significant. If it is

determined that the contribution of systems other than the Susitna River is insignificant, then a stock separation project is not necessary. However, should major chum salmon systems be identified, a stock separation program should be initiated.

In Bristol Bay, catch allocation of sockeye salmon stocks has been attempted where percent age composition of adult returns differs for each river system (Meacham and Nelson 1980). The possibility that salmon in west side systems may differ from Susitna River fish and may be distinquished by age composition should not be overlooked. Calculation of age and length data for chum salmon in the commercial catch has been non-existent, and for escapements, limited.

Both electrophoresis and scale pattern analysis have been used to distinguish between chum salmon populations. Electrophoresis is a biochemical method for detecting genetic differences in proteins. Because protein genotypes for individual fish can be identified, the same genetic characteristics may portray traits of a specific population. A basis for distinquishing between groups of populations of fish is then provided. Electrophoresis has proven successful in distinquishing between mature and immature chum salmon and identifying chum stocks to river of origin in a mixed stock situation (Okazaki 1979). Differences in chum salmon from western Alaska, central Alaska, and British Columbia have also been discerned by electrophoresis (Okazaki 1981).

Chum salmon caught in the north Pacific Ocean have been identified to continent of origin based on scale pattern analysis (Tanaka 1969). In addition, the ADF&G stock separation program has examined the feasibility of identifying

chum salmon stocks in Southeastern Alaska. This study has resulted in development and support of a project on chum salmon in that area (Cross, personal communication). Therefore, potential stock separation of Upper Cook Inlet chums by scale patterns warrants further investigation should several major producing systems be identified. Scale collection is a relatively simple process, compared to collection of electrophoresis tissue samples which require freezing within 24 hours of removal from the fish. Implementing a stock identification program by either scale pattern analysis or electrophoresis requires primary assessment of major production areas, run timing and collection of age-weight-length data from escapements. This information would assist in evaluating the necessity of a stock separation program and which approach to implement.

5.4 Coho Salmon (Oncorhynchus kisutch)

Upper Cook Inlet coho salmon rank third in commercial value. Since 1960, the commercial catch has averaged 240,000 fish. The 1981 season produced the best harvest since statehood of 494,070 coho salmon (Table E.5.1). Distribution of the catch has gradually shifted with increased gear efficiency and drift net fleet participation. In the early 1950's, 50% of the Upper Cook Inlet catch was taken by Northern District set nets with the drift net fleet accounting for 10% of the harvest. Comparatively, in 1981, the Northern District set net and Central District drift net fishery provided 27% and 48% of the harvest, respectively. Coho salmon catches have usually peaked in the Northern District set net fishery 25 July and in the Central drift net fleet, Kalgin Island and west side set net fisheries about 21 July.

Based on run timing and fish weight, major coho salmon stocks have been identified as Kenai, Kasilof or Susitna River fish (Middleton 1980). The problem with this stock definition is the term Susitna refers to all systems in the Northern District. Significant numbers of coho salmon have been documented in the Northern District by aerial and ground surveys, escapement enumeration and sport fish harvest. These systems include Fish Creek (Big Lake), Little Susitna River, Susitna River, Cottonwood Creek and systems on the west side of the Inlet. In the Central District, coho salmon are known to return to the Kenai, Kasilof, and Crescent rivers, Packers Creek (Kalgin Island) and west side systems. Run strength information is documented only for the Kenai River, Susitna River, Fish Creek, Cottonwood Creek and Packers Creek. Run magnitude and contribution to the commercial fishery of coho salmon returns to remaining areas is unknown (Appendices EA-EE).

The Susitna River coho salmon run begins in early July and is coincidental to the Fish Creek, Kasilof River and early Kenai River runs in the commercial fishery. Timing of late run Kenai River fish appears distinct from these other stocks (Figure E.5.2). Crescent River returns begin in mid-August and continue into fall. Late coho salmon returns to other west side rivers have also been reported, but abundance and run timing are unknown. Should run timing of any of these populations be distinct from the Susitna River returns, they need not be considered for a stock identification model, thereby simplifying the design of the program. However, these run characteristics must be examined before any system can be eliminated from such a study.

Identification of coho salmon stocks exploited by the commercial fishery has been attempted using fish weight (Wadman 1976). Coho salmon from Northern

District rivers vary in weight between systems yet overall are significantly smaller than fish from the early Kenai and Kasilof river returns. Apportioning the commercial catch to system of origin was also attempted, using fish weight as criteria. Results indicated that prior to 23 July, the drift net fleet harvested mostly small coho salmon, or fish migrating to the Northern District (Larry Engel, Personal Communication). Commercial catch data has not been analyzed for stock identification of coho salmon since the 1976 study.

A feasibility study performed by Robertson (1979) examined classification of Cook Inlet coho salmon populations by scale patterns. Scales from adult salmon captured in the Kenai and Susitna rivers were used for known samples and overall, self-classification was high (89.0% and 72.2% respectively). Stock composition estimates of the fishery indicated, with one exception, that most fish captured on the western side of the Inlet were bound for the Susitna River and catches in east side fisheries were from the Kenai River. Analysis however, of the Central District west side set net fishery showed an extremely high proportion of Kenai River fish in the stock composition estimate. These results may have been misleading due to presence of unknown stocks in the catch that were not included in the model as known samples. Scale characteristics of these unknown samples were similar to Kenai River fish, least comparable to Susitna River fish and classified accordingly. The weakness of the analysis was attributed to not having representative samples from all major systems.

It is possible to include additional variables other than scale information to the linear discriminant model. Because fish weight appears to differ signifi-

cantly between groups, the addition of this variable to the analysis may provide a key to a successful classification model.

The feasibility of a coho stock identification study based on scale pattern analysis and fish weight should be examined, once production of west side streams and run timing of west side coho returns has been determined.

5.5 Pink Salmon (Oncorhynchus gorbuscha)

Upper Cook Inlet pink salmon returns exhibit even year run strength. The catch since 1960 has averaged 146,000 in odd years and 1,671,000 for even years. About 127,900 pink salmon were harvested in 1981 (Table E.5.1). Approximately 42% and 43% of the catch was taken by the Northern set net and Central District drift net fisheries, respectively. Though the Kasilof River supports a small run, the Kenai and Susitna river systems are considered primary producers of pink salmon in the Upper Inlet. Pink salmon have also been documented in the west side river systems (Appendices EA-EE). As with the other salmon species, the importance of west side production is unknown and needs to be addressed.

Pink salmon escapement into the Susitna River peaks about 20 July, whereas Kenai River fish peak about two weeks later (Figure E.5.2). Kenai Peninsula pink salmon migrate close to the eastern shore and are caught primarily by the east side set net fishery. Pink salmon moving into the Northern District are harvested by the drift net fleet, when more valuable species become less abundant (Middleton 1980). The best source of information concerning run

strength and timing, as with chum salmon, is historical catch data, yet to be analyzed. With exception of that for the Susitna River, escapement and available weight and length data is minimal for pink salmon.

Absence of a freshwater growth zone and small differences found in marine growth patterns appear to limit application of scale pattern analysis as a stock separation tool for pink salmon. Therefore, scale pattern analysis is usually bypassed. Scale pattern analysis of British Columbian and Alaskan fish distinguished between even and odd year returns, but correctly classified samples only to region and not river or origin (Bilton 1971). A feasibility study of Southeastern Alaskan pink salmon showed little potential for using scale characteristics as a means for stock identification (Robertson 1978). Therefore, scale pattern analysis is a technique that should be disregarded for Upper Cook Inlet.

Stock identification of pink salmon has been accomplished using electrophoresis with varying degrees of success. The major drawback with this technique is that frequently differences between stocks occur only over wide geographical regions larger than the Upper Cook Inlet area (Johnson 1979). In contrast, however, studies in Prince William Sound were able to differentiate between stocks of several streams and subpopulations within one stream (Nickerson 1979). In the same paper, Nickerson noted that differences in length-weight data for pink salmon were useful in differentiating between populations.

Electrophoresis appears to be the best option for pink salmon stock identification. Assessing the contribution of west side pink salmon stocks to the commercial fishery, confirming the differences in run timing, and sampling systems that will be classified as major producing systems for length, weight and tissue samples are necessary for preliminary investigation of any stock specific characteristics.

5.6 Chinook Salmon (Oncorhynchus tschwyatscha)

Three Upper Cook Inlet stocks of chinook salmon have been tentatively identified as Kenai, Kasilof and Susitna river fish. Abundance data for chinook salmon has been limited mainly to aerial surveys conducted by ADF&G, and catch statistics of the freshwater sport fishery (Mills 1980). Chinook salmon have also been documented in the Little Susitna River and in many east and west side streams (Appendices EA-EE). However, abundance information is not complete because many river systems have not been completely surveyed (Appendices EA-EE).

The Susitna River chinook salmon run begins in late May and peaks in mid-June. Therefore Susitna River fish have mostly passed through the area in which they would be subject to the commercial fishery prior to the season opening 25 June. In 1964, the continued depressed condition of Susitna chinook salmon stocks resulted in changing the opening date of the commercial fishery from mid-May to the end of June. Commercial catches of chinook salmon in the Upper Cook Inlet fishery since that time have primarily been Kenai and Kasilof river fish.

About 11,500 chinook salmon were caught in the 1981 commercial fishery. Of this total, only 364 fish were caught in the Western Subdistrict prior to 25 June opening for the remainder of the Upper Cook Inlet fisheries. Therefore, assuming these fish are the end of the Susitna River run, commercial exploitation is minimal. Though commercial effort is much less for chinook salmon than other species, the subsistence and recreational harvests are substantial. In 1980, about 2,270 and 16,650 fish were taken in the subsistence and sport fisheries, respectively (Mills 1980).

Positive results have been attained in feasibility analysis of using scale patterns to differentiate between chinook salmon populations. Preliminary studies on the Yukon River resulted in high self-classification of upper, middle, and lower river fish (McBride 1981). This program is being expanded to refine the classification estimates by spawning population and to apportion commercial catches. Feasibility analysis of Upper Cook Inlet chinook has also been examined (Bethe 1978). Escapement samples from Susitna, Kenai, Ninilchik and Anchor rivers were collected and analyzed. Separability was high for all two-way comparisons, (range 72.0% to 73.3%) and for Susitna River fish versus combined samples from Kenai, Anchor and Ninilchik rivers (range 71.0% to 83.2%).

Because Susitna River chinook salmon presently are not exploited by the commercial fishery, a stock identification program is not necessary at this time. Even if a program were attempted, the number of fish currently harvested commercially is too small to obtain adequate numbers of samples for analysis. Should commercial catch levels again become substantial, escapement

assessment for all systems, an inventory of the west side populations, and consideration of use of scale pattern analysis or electrophoresis for stock separation should be examined.

6. RECOMMENDATIONS

To pursue a program that will assess the contribution of Susitna River salmon stocks to the Upper Cook Inlet commercial fishery, the following are first year recommendations:

1. Develop an inventory system to determine characteristics (timing, length, weight, age) of salmon runs to west side systems of Upper Cook Inlet. This data will help to determine the feasibility of pursuing a stock identification program. The accuracy of any stock identification program is also dependent on the entirety of the known samples used to build the model. Should the west side systems not be considered, the actual contribution by the Susitna River drainage will be misrepresented.

2. Escapement sampling for age-weight-length information currently implemented in major sockeye salmon producing systems should be expanded to include chum and coho salmon. Length-weight data and tissue samples for electrophoresis should also be collected from pink salmon. This data combined with run timing and information regarding west side systems will provide the basis for determining if stock specific characteristics are present for each species by which a stock separation program may be developed.

7. ACKNOWLEDGEMENTS

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APPENDIX EA

SALMON ABUNDANCE DATA FOR UPPER COOK INLET

WEST SIDE SYSTEMS

Appendix Table EA-1. Salmon abundance data for Upper Cook Inlet west side river systems, compiled from escapement enumeration programs[1/], sportfish harvest data[2/] and aerial ground survey data[1,3/], Adult Anadromous Investigations, Su Hydro Studies, 1982.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Bachatna Creek	1981	7/20		100				Tom Mears, Cook Inlet Aquaculture Ass'n (T.M.,CIAA
Bear Creek	1981	7/21	0	0	0	0	0	T.M., CIAA
Beluga River System								
Beluga Lake	Before 1970							Max. count 50 sockeye (1957); large numbers chinook and coho (1946)
	1970	9/01		10				
Beluga River	Before 1970							No fish observed (1953-57)
	1978	8/24			520		1,500	Upper River
	1980	10/30						T.M., CIAA, large numbers of salmon, species unknown
Bishop Creek	1976		12					
	1977		468					
	1979		30					
	1980	6/27	0	0	0	0	0	T.M., CIAA
	1981		174					
	1981	7/16	10					T.M., CIAA
	Personal Comm.			Present			Present	Stan Kubik, ADF&G Div. Sport Fish (S.K.,SF) Abundance estimate from several years observations
Bishop Lake	Before 1970							Max. count 81 chinook (1964)
	1981	7/16	0	0	0	0		T.M., CIAA
Capps Creek	Before 1970							Max. count 2,000 sockeye (1950); 5 pinks, 8 chums (1958)
	1980	6/27	0	0	0	0	0	T.M., CIAA
Chichantna River	Before 1970							No fish observed
	1980	6/27	0	0	0	0		T.M., CIAA
	1981	7/16	0	0	0	0		T.M., CIAA
Coal Creek	Before 1970							Max. count 2,000 sockeye (1950); 25 pinks, 25 chums (1965)
	1972			1,250				Peak survey count
	1973		31					
	1975	8/29	0	0	0	0	0	
	1976		17					
	1977	8/25		47				
	1977	9/01		151				
	1978	8/09		2,200				
	1978	8/24		75				

1/ Courtesy of Alaska Department of Fish and Game Div. of Commercial Fisheries, Div. of Sport Fish, and Fisheries Rehabilitation and Enhancement Div. (FRED); Cook Inlet Aquaculture Association (CIAA); Woodward-Clyde Consultants (WWC); Dowling Engineers Consulting Firm (DE).

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3/ All entries are aerial or ground stream survey data unless otherwise designated.

Appendix Table EA-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Coal Creek	1978		1,551	2,313				Peak survey count
	1979	8/22	0	0	0	0	0	
	1979	9/19		500	5			
	1979		178					
	1980	6/29	0	0	0	0	0	T.M., CIAA
	1980	8/22		500				
	1980	9/11		700				
	1981		223					
	Personal Comm.				Present		Present	S.K., SF
Coal Creek Lake	Before 1970							Max. count less than 300 sockeye (1958-59)
	1972	9/01		1,700	150			Includes west fork
	1977			51				Peak survey count
	1978			75				Peak survey count
	1979			300				
	1981	9/04		1,100				Includes west fork
Drill Creek	1976		11					
	1978		77					
	1979		11					
	1980	6/27	0	0	0	0	0	T.M., CIAA
	Personal Comm.			1,000			5,000	S.K., SF
Lone King Creek	Before 1970							Max. count 2,000 sockeye (1950); chums, pinks, chinook observed
	Personal Comm.			5,000			Present	S.K., SF, west end of lake
	1981	7/15	25					T.M., CIAA
Mouth Creek	Personal Comm.		Present				Present	S.K., SF
Olson Creek	Before 1970							Max. count 3 chinook (1958)
	1973		2					
	1974	7/13	Present				0	
	1976		247					
	1977		1,229					
	1978		94					
	1979		17					
	1980							T.M., CIAA
	1981		116					
	Personal Comm.		Present				Signif.	Thousands of pinks, S.K.,SF
Pretty Creek	Before 1970							Max. count 10 chinook, 1,153 pinks (1958)
	1980	6/27	0	0	0	0	0	T.M., CIAA
	Personal Comm.		100				1,000	S.K., SF
Scarp Creek	Personal Comm.		1,000	Present				S.K., SF
West Fork	Personal Comm.			1,000				S.K., SF
Big River System	Before 1970							Max. count 3,275 sockeye (1960); good coho run, some pinks (1961)
	1970	9/01		1,200				
	1980	7/02	0	0	0	0	0	T.M., CIAA
	1980	8/29		5,000				T.M., CIAA
	1981	6/11		20,000				T.M., CIAA, upper and lower river

Appendix Table EA-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
North Fork	1976	8/19		35				
	1980	7/08		10,000				
	1980	8/01		840				
	1980	9/19		3,750	1,250			
	1981	7/13	0	0	0	0	0	
Wolverine Creek	Before 1970							Coho present
	1981	7/13	0	0	0	0	0	
	1981	9/30		900	400			
	1981			17522				Escapement count (weir), T.M., CIAA
Buchitna Creek	1981	7/07	0	0	0	0	0	T.M., CIAA
Cannery Slough	1981	7/13	0	0	0	0	0	T.M., CIAA
	Personal Comm.			Present	Signif.		Present	S.K., SF
Chakachamna River System								
Chakachatna Lake	Before 1970							Max. count 590 sockeye (1955)
	1980	9/02			50			T.M., CIAA
	1981	9/14	Present	Present	Present	Present	5,000	Mike Joyce, Woodward and Clyde Consultants (M.J., WWC)
Chilligan River	Before 1970							Max. count 2,000 sockeye (1952)
	1981	9/14		10,000				M.J., WWC
	Personal Comm.		12	1,000				S.K., SF
Kenibuna Lake	Before 1970							Few sockeye observed (1952)
McArthur River	Before 1970							Good run of sockeye in West Creek (1961)
	1980	9/14	Present	Present	Present		5,000	M.J., WWC
	1981	7/15		40				
	Personal Comm.				Present			S.K., SF
Middle River	Before 1970							A few coho reported (1961)
	1980	9/02	0	0	0	0	0	T.M., CIAA
	1981	9/14	Present		Present			M.J., WWC
	Personal Comm.				Present		Present	S.K., SF
Neacola River	1981	9/14		Present				M.J., WWC
	Personal Comm.						Present	S.K., SF
Noautka Slough	Personal Comm.			5,000		Present	Present	S.K., SF
	1981							Large numbers of fry, M.J. WWC
Snodgrass Creek	Before 1970							Sockeye and coho present (1961)
Straight Creek	1973		5					
	1975		9					
	1976		59					
	1977		24					
	1978		108					
	1981		126					
	1981	9/14		3,000		Present	Present	M.J., WWC
	Personal Comm.		100			Present	5,000	S.K., SF

Appendix Table EA-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Chinitna Bay	Before 1970							Max. count 7,000-8,000 chums (1959-60)
Chinitna River	1980	9/10			200	100		T.M., CIAA
	1981	8/03				1,000		
	1981	8/05				760		
	1981	8/15				2,200		
Clearwater Creek	1971	8/15				5,000		
	1973	8/18				8,450		
	1974	8/22				1,800		
	1975	8/17				4,400		
	1976	8/11				12,500		
	1977	8/21				12,700		
	1978	8/12				6,500		
	1979	8/21				1,350		
	1980	8/25				2,250		
	1980	9/10				5,000		T.M., CIAA
	1981	8/03				1,000		
	1981	8/15				6,150		
East Glacier Creek	1980	9/10				25		T.M., CIAA
Fritz Creek	Before 1970							Max. count 11,000 chums (1966)
	1978	8/12				800		
	1979	8/21				700		
	1980	8/22				1,000		
	1980	9/10			200	100		T.M., CIAA
	1981	8/03				200	50	
	1981	8/15				500		
Inishin River	Before 1970							43 chum (1965)
Johnson River	Before 1970							Max. count 500 coho, 50 pinks (1955)
	1980	9/10			600	300		T.M., CIAA
Marsh Creek	Before 1970							Max. count 35,000 chums (1963)
	1981						810	
Middle Glacier Creek	1980	9/10				200		T.M., CIAA
Portage Creek	Before 1970							Max. count 5 chums (1965)
Red River	1980	9/10	0	0	0	0	0	T.M., CIAA
Silver Salmon Creek	Before 1970							Fair sockeye and chum runs; Max. count 60 coho, 200 pinks (1961)
West Glacier Creek	1980	9/10			400	200		T.M., CIAA
Chuitna River	Before 1970							Max. count 17 chinook, 40 coho, 20 chums and 600-700 pinks (1958)
	1973		149					
	1974		171					
	1975		629					
	1976		1,984					
	1977		1,981					
	1978		1,130					
	1979		1,246					

Appendix Table EA-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Chuitna River	1981	7/14	165					Ron Dagan, Dowling Engineers (R.D.,DE)
	1981	7/16	40					T.M., CIAA
	1981	8/03	375					R.D., DE
	1981	8/04	35		2			R.D., DE
	1981	8/05	Present		4	1	1	R.D., DE
	1981	8/06	6		5	1		R.D., DE
	1981	8/24	1		80	22		R.D., DE
	1981	8/25			9			R.D., DE
	1981	9/24			269			R.D., DE
	1981	9/25			27			R.D., DE
	1981	9/26			12			R.D., DE
	1981	9/27			63			R.D., DE
	1981	9/28			23			R.D., DE
	Personal Comm.			Present	1,000	Present		S.K., SF
Congahbuna Lake	1981	7/15	0	0	0	0	0	T.M., CIAA
Old Tyonek Creek	Before 1970							Sockeye, coho, and pinks present (1961)
Crescent River System								
Crescent Lake (Grecian Lake)	Before 1970							Max. count 132 sockeye (1954); chums, pinks and chinook present (1961)
	1970	9/15		Present				
	1972			10,000				
	1974	9/16		69				
		9/17						
	1975	8/16		Signif.				
Stream #1	Before 1970							Max. count 2,500 sockeye (1952)
	1981	9/01		Present				
Stream #2	Before 1970							Max. count 1,000 sockeye (1952)
	1974	8/15		0				
	1981			Present				Sockeye present in September
Stream #3	Before 1970							Max. count 6 sockeye (1954)
Stream #4	Before 1970			Present				Max. count 250 sockeye (1952)
Crescent River	Before 1970							Max. count 2,000 sockeye (1952)
	1979			87,000				Escapement count (sonar)
	1980			91,000				Escapement count (sonar)
	1981			41,213				Escapement count (sonar); cohos present in mid-August
Dog Creek	Before 1970							Thousands of chums (1959-1961)
Drift River	Before 1970							Cohos present in fall (1961)
	1980	9/10	0	0	0	0	0	T.M., CIAA

Appendix Table EA-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Elling Lake (Blue Lake)	1970	7/24		1,200				
	1972	8/31		1,000				
	1972	10/31		1,000				
	1980	8/07			100			T.M., CIAA
	1980	8/27		5,000				T.M., CIAA
Falls Creek	1981				Present	Present		
Harriet Creek	Before 1970							No fish observed (1952)
	1981	7/21	0	0	0	0	0	T.M., CIAA
Bear Lake	1981	7/21	0	0	0	0	0	T.M., CIAA
Indian Creek	Before 1970							Sockeye before 1932, coho and pinks present (1961)
Island Creek	Before 1970							Sockeye, coho, and chums present (1961)
Ivan Creek	Before 1970		0	0	0	0	0	No fish observed (1965)
	1980	7/06	0	0	0	0	0	T.M., CIAA
Kustatan River	Before 1970							No fish observed (1958)
	1981	7/15	0	0	0	0	0	T.M., CIAA
Blacksand Creek	1981		0	0	0	0	0	T.M., CIAA
Jenson Creek	Before 1970							Sockeye and chums present (1961)
	1981	6/10		2,000	Present			
Lewis River	Before 1970							Max. count 67 chinook (1962)
	1970		12					
	1972		7					
	1973		173					
	1974		135					
	1975		75					
	1976		380					
	1977		454					
	1978		561					
	1979		546					
	1980	7/06	0	0	0	0	0	T.M., CIAA
	1981		560					
	Personal Comm.				1,000		5,000	S.K., SF
Montana Bill Creek	1981	7/02	0	0	0	0	0	T.M., CIAA
Moose Creek	1981	5/28	0	0	0	0	0	
Nikolai Creek	Before 1970							Max. count 1 chinook and some pinks (1961); Few suitable spawning areas
	1977		143					
	1981	7/15	0	0	0	0	0	T.M., CIAA
	Personal Comm.		100		500		10,000	S.K., SF

Appendix Table EA-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Nigishlamna River	1980	9/02	0	0	0	0	0	T.M., CIAA
Packers Lake (Kalgin Is.)	Before 1970							Max. count 100,000 sockeye (1926); 5,600 coho (1952)
	1970	9/01		500				
	1971	8/10		507				
	1971	9/10		3,356				
	1972	7/20		200				
	1972	10/09		298				
	1972			3,700				
	1974			1,454				
	1980			16,400			Present	T.M., CIAA
	1981			13,000	2,000			T.M., CIAA
	1981			7,100			2,040	
	1981			13,024	2,440			Escapement count (weir), T.M. CIAA
Polly Creek	Before 1970							Max. counts 2,000 coho; pinks and chums present (1961)
	1980	8/29				10,000		T.M., CIAA
Redoubt Creek	Before 1970							Cohos present (1961)
	1981	7/21	0	0	0	0	0	T.M., CIAA
South Fork Creeks	1981			2,000				T.M., CIAA
Theodore River	Before 1970							Max. count 67 chinook (1962)
	1970		36					
	1971		0					
	1972		79					
	1973		205					
	1974		205					
	1975		95					
	1976		1,032					
	1977	7/23	2,263					
	1978		547					
	1979		512					
	1980	7/06	0	0	0	0	0	T.M., CIAA
	1981		535					
	Personal Comm.				1,000		5,000	S.K., SF
Three Mile Creek	1980	6/27	0	0	0	0	0	T.M., CIAA
	Personal Comm.			1,000			5,000	S.K., SF
Tuxedni Bay								
Bear Creek	1980	9/20	0	0	0	0	0	T.M., CIAA
Difficult Creek	1980	9/16	0	0	0	0	0	T.M., CIAA
Hungryman Creek	1980	9/16	0	0	0	0	0	T.M., CIAA
Open Creek	1980	9/16	0	0	0	0	0	T.M., CIAA
Tuxedni River	1980	9/16		50	60			T.M., CIAA
Unnamed Tux. Streams	1980	9/16	0	0	0	0	0	T.M., CIAA

Appendix Table EA-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Waddell Lake	1980	8/25		500				T.M., CIAA
	1981	7/21	0	0	0	0	0	T.M., CIAA
	1981	Aug.		1,200				T.M., CIAA
	1981	9/11		1,200				T.M., CIAA
Westforeland Lakes	1981	7/07	0	0	0	0	0	
Whiskey Jack Slough	Before 1970							Cohos present (1961)
#13 Creek	Before 1970							Cohos present in fall (1961-69)
	1970				Present			
#14 Creek	Before 1970							Cohos present in fall (1961-69)
	1970				Present			
#23 Creek	Before 1970							Pinks present (1960)
#24 Creek	Before 1970							Pinks present (1960)
#25 Creek	Before 1970							Cohos and pinks present (1961)

APPENDIX EB

SALMON ABUNDANCE DATA FOR TURNAGAIN ARM RIVER SYSTEMS

Appendix Table EB-1. Salmon abundance data for Turnagain Arm river systems, compiled from escapement enumeration programs[1/], sport fish harvest data[2/], and aerial/ground surveys[1,3/], Adult Anadromous Investigations, Su Hydro Studies, 1982.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Bird Creek	Before 1970							Max. count 6 chinook (1957), 6,000 pinks (1964)
	1973		2					
	1974		3					
	1976		6					
	1976	8/25	6			7	906	
	1977	9/01	3			56	647	
	1979						654	Sport fish harvest
	1980				26		2,127	Sport fish harvest
	Personal Comm.		Present		Present	Present	5,000	Stan Kubik, ADF&G Div. of Sport Fish (S.K., SF) Max. abundance estimate from several years observations
California Creek	1976	8/21					155	
	1976	8/25	2	1	4	6	516	
	1978	8/10	4		5		59	
	1978	9/01		1			919	
Campbell Creek	Before 1970							Max. count 187 chinook (1964); 1,000 pinks (1958)
	1973		201					
	1974		79					
	1976		210					
	1977		349					
	Personal Comm.			Present	300		5,000	S.K., SF
Chikaloon	Before 1970							Max. count 20,000 sockeye (1947); 75,000 pinks (1960)
	1976	8/19		1,543				
	1981	5/28	0	0	0	0	0	
	Personal Comm.				Present	Present	Present	S.K., SF
Indian Creek	Before 1970							Max. count 8 sockeye (1962); 238 pinks (1958)
	1976	8/25					102	
	1977	9/01					63	
	1978	9/01					232	
Ingram Creek	Before 1970							Max. count 217 pinks (1958)
	1976	8/21					489	
McHugh Creek	Personal Comm.						Present	S.K., SF

1/ Courtesy of Alaska Department of Fish and Game Div. of Commercial Fisheries, Div. of Sport Fish, and Fisheries Rehabilitation and Enhancement Div. (FRED); Cook Inlet Aquaculture Association (CIAA); Woodward-Clyde Consultants (WWC); Dowling Engineers Consulting Firm (DE).

2/ Mills, Michael J. 1980. Statewide Harvest Study - 1979 Data. Alaska Department of Fish and Game Div. of Sport Fish, Federal Aid Report, Vol. 22 Study SW-1 Mills, Michael J. 1980. Statewide Harvest Study - 1980 Data. Alaksa Department of Fish and Game Div. of Sport Fish, Federal Aid Report, Vol. 22 Study SW-1C.

3/ All entries are aerial or ground stream survey data unless otherwise designated.

Appendix Table EB-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Portage Creek	Personal Comm.			500		500	5000	S.K., SF
Gravel Pit Area	Before 1970							Max. count 350 chinook (1950); 650 sockeye (1952); 1 pink (1954); 1 chum (1953)
	Personal Comm.		500		200		1,000	S.K., SF
Williwaw Creek	Before 1970							Max. count 291 sockeye,13 chums (1928)
	1974	9/11		48				
	1974	9/25		17				
	1975	8/22		42				
	1975	8/30		47				
	1975	9/06		51				
	1975	9/15		47				
	1976	8/11	0	0	0	0	0	
	1976	8/21		264				
	1976	8/25		76				
	1976	9/03		81				
	1977	8/24		244				
	1977	9/01		441		42		
	1978	8/10		44				
	1978	8/30		195				
	1978	9/19		142				
Potter Creek	Personal Comm.						Present	S.K., SF
Rabbit Creek	Personal Comm.				100		500	S.K., SF
Resurrection Creek	Before 1970							Max. count 80,000 pinks (1960); 35 chums (1958)
	1976	8/11					840	
	1976	8/21			20		6,000	
Seattle Creek	1976	8/21			Present		600	
Six Mile Creek	Before 1970							Max. count 896 pinks (1958)
	1976	8/21					800	
	1978	8/23					1,200	
Skookum Creek	Personal Comm.				Present			S.K., SF
Three Mile Creek and Lake	Before 1970							Max. count 49 sockeye (1954); 896 pinks (1958)
Twenty Mile Creek	1979			204	362		36	Twenty Mile River sport fish harvest
	1980			146	439	43	43	Twenty Mile River sport fish harvest
Carmen Lake	1976	8/20		2				
	1976	8/21					9	
	1978	8/23		603		18		
	1981			29	20		30	

APPENDIX EC

SALMON ABUNDANCE DATA FOR KNIK ARM RIVER SYSTEMS

Appendix Table EC-1. Salmon abundance data for Knik Arm river systems, compiled from escapement enumeration programs[1/], sport fish harvest data[2/], and aerial/ground surveys[1,3/], Adult Anadromous Investigations, Su Hydro Studies, 1982.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Chester Creek	Personal Comm				100	Present		Stan Kubik, ADF&G Div. of Sport Fish (S.K., SF) Max. abundance estimate from several years observervations
Cottonwood Creek	Before 1970							Max. sockeye count 8-10,000 (1936); 1,161 coho (1960)
	1970	9/22			5			
	1971	8/18		253				
	1971	9/17			29			
	1972	8/22		10	Present			
	1972	9/01		38				
	1972	9/08		1,199				
	1972	9/21			21			
	1973	9/24			18			
	1974	9/23			20			
	1974	9/25			6			
	1974	9/26			1			
	1974	9/27			9			
	1974	10/02			11			
	1974				21			
	1975	9/22			108			
	1975	9/24			128			
	1976				204			
	1976	9/20			104			
	1976	9/22			100			
	1977				264			
	1980				530			
	1979			1,525	1,198			Sport fish harvest
	1980			2,660	3,375			Sport fish harvest
	1981			25,180	2,436			Escapement count (weir)
Cottonwood Lake	Before 1970							Max. count 500 fish (1951)
	1972	8/22		225				
Meadow Creek	Before 1970							Max. count 5,000 sockeye (1952-1969); 175 coho (1968)
	1970	9/21		43	49			
	1970	9/29			25			
	1971	9/20			9			
	1971	9/28			2			
	1972	8/22		290				
	1972	9/25			27			
	1979	8/18		1,879				
Neklason Lake	Before 1970							Max. count 256 sockeye (1956)
	1972	8/22		110				

1/ Courtesy of Alaska Department of Fish and Game Div. of Commercial Fisheries, Div. of Sport Fish, and Fisheries Rehabilitation and Enhancement Div. (FRED); Cook Inlet Aquaculture Association (CIAA); Woodward-Clyde Consultants (WWC); Dowling Engineers Consulting Firm (DE).

2/ Mills, Michael J. 1980. Statewide Harvest Study - 1979 Data. Alaska Department of Fish and Game Div. of Sport Fish, Federal Aid Report, Vol. 22 Study SW-1
Mills, Michael J. 1980. Statewide Harvest Study - 1980 Data. Alaksa Department of Fish and Game Div. of Sport Fish, Federal Aid Report, Vol. 22 Study SW-1C.

3/ All entries are aerial or ground stream survey data unless otherwise designated.

Appendix Table EC-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Eagle River	Before 1970							Chinook present (1966-1969); Max. count 3,000 pinks (1963)
	1970		81					
	1973		61					
	1976		81					
	1977		313					
	1977		31					South fork
	1978		182					
	Personal Comm.			Present	Present	Present	Present	S.K., SF
Eklutna River	Personal Comm.				Present	Present	Present	S.K., SF
Fire Creek	Personal Comm.		Present		Present			S.K., SF
Fish Creek (Big Lake)	Before 1970							Max. count 306,982 sockeye (1940); 19,417 coho (1938); 699 pinks (1950)
	1970			31,470	1,048		3,940	Escapement count (weir)
	1970	9/30			176			
	1971			31,900	583			Escapement count (weir)
	1971	8/24		4,250				
	1971	9/30			141			
	1972			6,981	709		57	Escapement count (weir)
	1972	9/08		572				
	1973			2,705	210		6	Escapement count (weir)
	1974			16,225	1,154			Escapement count (weir)
	1975			29,880	1,601			Escapement count (weir)
	1975	8/21		34				
	1975	8/26		318	1			
	1975	8/29		487	1			
	1975	9/05		1,192	1			
	1975	9/23		968				
	1975	9/29		194		1		
	1976			14,032	765			Escapement count (weir)
	1977	9/01		372				
	1977			5,183	970		189	Escapement count (weir)
	1978			3,555	3,121			Escapement count (weir)
	1979			68,739	3,000			Escapement count (weir)
	1979			157				Big Lake sport fish harvest
	1980			43				Big Lake sport fish harvest
	1981			50,479	2,261			Escapement count (weir) FRED
Blodgett Lakes	Before 1970							Max. count 15-20,000 sockeye
	1972	8/22		53				
Kern Creek	Personal Comm.						Present	S.K., SF
Knik River	Personal Comm.			6,000				Larry Engel, ADF&G Div. of Sport Fish (L.E., SF) Max. abundance estimate from several years observations
	Personal Comm.			4,000		50		Tom Nears, Cook Inlet Aquaculture Ass'n (T.M., CIAA) Observ. from Aug-Sep., 1979-81
Jim Lake	Personal Comm.				Signif.			L.E., SF
	1981				Present			T.M., CIAA
	1981				35			Test fish catch

Appendix Table EC-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Little Susitna River	1973		374					
	1979		800	1,478	3,382	364	618	Sport fish harvest
	1980		646	2,127	6,302	465	3,918	Sport fish harvest
Horsehoe Lake	Before 1970							Max. count 45,000 pinks (1964), 2 chinook (1958)
Matanuska River	Before 1970							Chinook present
	Personal Comm.			2,500	150	2,500		T.M., CIAA, Kings River confluence 1981 observations
Bodenburg Slough	1972			464				Peak survey count
	1973	8/21		57				
	1973	8/24		162				
	1973	8/27		208				
	1973	8/30		237				
	1973	9/04		252				
	1973	9/16		199				
	1974	8/23		88				
	1974	8/29		135				
	1974	9/04		141				
	1974	9/12		171				
	1974	9/16		147				
	1975	8/21		138				
	1975	8/26		138				
	1975	8/29		164				
	1975	9/05		160				
	1975	9/23		109				
	1976	8/23		48		1		
	1976	8/27		84		1		
	1976	9/02		108		1		
	1976	9/07		107				
	1976	9/12		111				
	1977	8/22		146				
	1977	8/30		174				
	1977	9/06		164				
	1977	9/15		140				
	1978	8/22		270				
	1978	9/11		81				
	1978			505				Peak survey count
Granite Creek	Before 1970							Max. count sockeye 116 (1959), chum 61 (1957)
Moose Creek	1970	7/24		120				
	1971	7/28		22				
	1971	7/29		40				
	1972	7/28		15				
	1972	7/31		6				
	1973	8/01		36				
	1974	8/01		32				
	1975	8/01		55				
	1976	7/28		101				
Mud Lake	Before 1970							Max. count 90 sockeye (1957)
Nancy Lake	Before 1970							Max. count 7,000 sockeye (1954)
	1972	8/15		5,000				
	1972	9/07		530				
	1972	9/11		1,979				
	1972			1,731				Peak survey count
	1973			283				Peak survey count

Appendix Table EC-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Nancy Lake	1974			140				Peak survey count
	1975			84				Peak survey count
	1975	8/21		31				
	1975	8/24		56				
	1975	8/26		74				
	1975	9/05		68				
	1975	9/23		42				
	1976	8/23		47				
	1976	8/27		230				
	1976	9/02		284				
	1976	9/07		267				
	1976	9/12		282				
	1977			4,801	3			Escapement count (weir)
	1977	8/23		170				
	1977	8/30		844				
	1977	9/06		573				
	1978			2,050				Escapement count (weir)
	1979			3,831				Escapement count (weir)
	1979	9/07		800				
	1980			69				Sport fish harvest
Lake Creek	Before 1970							Max. count 60 chinook (1967); 200 sockeye (1958)
	1970			1				
	1971			2				
	1972			14				
	1974			535				
	1975			281				
	1976			3,375				
Nancy Creek	Before 1970							Max. count 142 sockeye (1954)
	1975	8/26		8				
	1975	8/29		11				
	1975	9/05		9				
Palmer Creek	Before 1970							Max. count 144 sockeye (1957); 20 chums (1950)
	1978	8/22		83				
	1978	9/11		505				
	1978	9/21		351				
Peter's Creek	Before 1970							Max. count 101 chinook (1965)
	Personal Comm.				Present	Present	Present	S.K., SF
Petersen Creek	Personal Comm.						Present	S.K., SF
Ship Creek	Before 1970							Max. count chinook 1,764 (1964); chums 600 (1953); pinks 1,258 (1952)
	1970		1,746					
	1971		221					
	1972		121					
	1973		165					
	1974		146					
	1975		120					

Appendix Table EC-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Ship Creek	1976		806					
	1977		1,011					
	1978		867					
	1979		124					
	1979				512		91	Sport fish harvest
	1980				301	9	405	Sport fish harvest
	1981		1,000					
	Personal Comm.			Present		Present		S.K., SF
Six Mile Creek	1980			300		100		T.M., CIAA, 1980 observations
Six Mile Lake	Personal Comm.			200	200			S.K., SF
Wasilla Creek	1970	9/25			101			
	1970	9/28			94			
	1971				104			
	1972	9/21			19			
	1973				28			
	1974				30			
	1975				158			
	1976				162			
	1978				158			
	1979				187			
	1979				1,211	45	136	Sport fish harvest
	1980				3,555	9	210	Sport fish harvest
Wasilla Lake	Before 1970							Max. count 3,581 sockeye (1960) 1,161 coho (1960)
	1972	8/22		660				

APPENDIX ED

SALMON ABUNDANCE DATA FOR KENAI PENINSULA RIVER SYSTEMS

Appendix Table ED-1. Salmon abundance data for Kenai Peninsula river systems, compiled from escapement enumeration programs[1/], sport fish harvest data[2/], and aerial surveys[1,3/], Adult Anadromous Investigations, Su Hydro Studies, 1982.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Bishop Creek	Before 1970							Max. count 23,000 sockeye (1958)
	1974	9/19		24				
	1976	8/20		154				
	1977	7/22		7,000				
	1981	Aug.		2,000				Tom Mears, Cook Inlet Aquaculture Association (T.M., CIAA)
Bishop Lake	1981	9/03		170				T.M., CIAA
Daniels Lake & Creek	1981	9/03		2,000				T.M., CIAA
Parsons Lake & Creek	1981	9/03	0	0	0	0	0	T.M., CIAA
Timberlost Lake & Creek	1981	9/03		2				T.M., CIAA
Deep Creek	Before 1970							Max. count 3,600 chinook (1951); 13 coho (1958); 72 pink (1959)
	1972		530					
	1973		220					
	1974		740					
	1975		610					
	1976		1,680					
	1977		990					
	1978		1,010					
	1979		4,773	1,006	749		91	Sport fish harvest
	1980		1,818	878	883		795	Sport fish harvest
Tustamena Drainage								
Kasilof River	Before 1970							Max. count 89,000 sockeye 1968
	1970			38,000				Escapement count (sonar)
	1971			90,000				Escapement estimate (partial survey & sonar counts)
	1972			113,000				Escapement count (sonar)
	1973			40,000				Escapement count (sonar)
	1974			70,000				Escapement count (sonar)
	1975			48,000				Escapement count (sonar)
	1976			139,000				Escapement count (sonar)
	1977			152,000				Escapement count (sonar)
	1978			116,000				Escapement count (sonar)
	1979			144,000				Escapement count (sonar)
	1980			184,000				Escapement count (sonar)
	1981			256,625				Escapement count (sonar)

1/ Courtesy of Alaska Department of Fish and Game Div. of Commercial Fisheries, Div. of Sport Fish, and Fisheries Rehabilitation and Enhancement Div. (FRED); Cook Inlet Aquaculture Association (CIAA); Woodward-Clyde Consultants (WWC); Dowling Engineers Consulting Firm (DE).

2/ Mills, Michael J. 1980. Statewide Harvest Study - 1979 Data. Alaska Department of Fish and Game Div. of Sport Fish, Federal Aid Report, Vol. 22 Study SW-1
Mills, Michael J. 1980. Statewide Harvest Study - 1980 Data. Alaksa Department of Fish and Game Div. of Sport Fish, Federal Aid Report, Vol. 22 Study SW-1C.

3/ All entries are aerial or ground stream survey data unless otherwise designated.

Appendix Table ED-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Bear Creek	Before 1970							Max. count 22,000 sockeye (1950); 37 pinks (1952); 1 coho (1957)
	1970	8/08		3,521				
	1970	8/16		6,652				
	1970			6,900				Peak survey count
	1971			12,645				
	1972			27,736				Peak survey count
	1972	7/20		80				
	1972	7/27		350				
	1972	8/01		684			2	
	1972	8/06		5,592			2	
	1972	8/11		10,261			7	
	1972	8/15		27,736			5	
	1972	8/23		14,846			2	
	1972	8/30		9,000				
	1973			3,463				Peak survey count
	1974			1,454				Peak survey count
	1975	8/14		15,000			39	
	1975	8/20		15,595				
	1975			16,616				Peak survey count
	1976	8/07		6,000			1	
	1976	8/22		31,000			4	
	1977	8/01		11,000				
	1977	8/13		27,000			50	
	1977	8/26		34,784			24	
	1978	8/10		17,507				
	1978			48,000				Peak survey count
	1979	8/11		22,081			15	
	1981	7/01		0	0	0	0	
	1981	7/28		10,000				T.M., CIAA
Clear Creek	1970			553				Peak survey count
	1971			1,203				Peak survey count
	1972			300				
	1972			198	1	1		Peak survey count
	1972	9/01		162		1	3	
	1973			166				Peak survey count
	1974			130				Peak survey count
	1975	8/13		181		1	13	
	1975	8/15		326		4	3	
	1975	8/22		281		1	5	
	1975			328				Peak survey count
	1976	8/09		155			1	
	1977	8/06		319			14	
	1977	8/11		1,432			32	
	1977	8/18		1,621			28	
	1977	8/27		1,017			2	
	1978	8/13		181		1	13	
	1979	8/10		360			2	
	1980	7/30		200			1	
	1981	7/01		1,500				
	1981	7/28		200				T.M., CIAA
	1981	8/17		2,478				
Cliff House Creek	Before 1970							Max. count 7,000 sockeye (1949); 3 chums (1953); 7 pinks (1958)
Coal Creek	1979	8/30		0	0	0	0	T.M., CIAA

Appendix Table ED-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Crooked Creek	1979		868					Escapement count (weir)
	1980		2,460					Escapement count (weir)
Crystal Creek	1971			569				Peak survey count
	1971			1,002				
	1972	8/05		286	1		1	
	1972	8/09		531				
	1972	8/12		582			1	
	1972	8/26		816				
	1972	9/01		90				
	1972	9/05		59				
	1972			1,144				
	1975	8/15		441				
	1975	8/22		89				
	1976	8/09		345				
	1976	9/18		806			1	
	1977	8/06		0	0	0	0	
	1977	8/13		163				
	1977	8/18		589				
	1977	8/27		479				
	1979	8/10		499			2	
	1981	7/01	0	0	0	0	0	
	1981	8/17		860				
Glacier Flats Creek	Before 1970							Max. counts 10,500 sockeye (1968); 120 pinks (1962)
	1970			5,124				Peak survey count
	1971			26,266				
	1972	8/16		24,843			1	Max. count 7 pinks (1958)
	1972	8/21		29,859		1		
	1972	8/27		39,048		1		
	1972	9/03		20,352				
	1972	9/07		11,361				
	1972	9/15		2,436				
	1972			52,175				Peak survey count
	1973			10,623				Peak survey count
	1974			11,248				Peak survey count
	1975			14,355				Peak survey count
	1976	8/09		1,483				
	1976	8/18		2,252				
	1976	8/22		2,968				
	1976			7,122				Peak survey count
	1977	8/05		2,781			4	
	1977	8/16		3,866				
	1977	8/26		5,763				
	1977			5,835				Peak survey count
	1978			6,144				Peak survey count

Appendix Table ED-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Glacier Flats Creek	1979	8/10		3,593				
	1981	7/01	0	0	0	0	0	
	1981	7/28		10,000				T.M., CIAA
	1981	8/08		20,000				
	1981	8/19		800				
Indian Creek	Before 1970							Partial escapement count (weir)
	1981	7/28	0	0	0	0	0	Max. count 12 sockeye (1962); 98 pinks (1954) T.M., CIAA
Moose creek	Before 1970							Max. count 18,000 sockeye (1968); 52 pinks (1957)
	1970			2,800				Peak survey count
	1971			9,439				
	1972	7/20		138				
	1972	7/27		100				
	1972	7/29		7,553			4	
	1972	8/08		7,743			10	
	1972	8/14		14,323		1	15	
	1972	8/22		11,341		1	10	
	1972			15,971				
	1973			290				Peak survey count
	1974			4,444				Peak survey count
	1975	8/13		3,116		1	17	
	1975			2,747				Peak survey count
	1976	8/08		7,300		1	3	
	1976	8/19		12,364			21	
	1976			12,000				Peak survey count
	1977	8/04		11,210			39	
	1977	8/14	6	11,503			4	
	1977	8/25		13,857				
	1977			14,565				Peak survey count
	1978	8/01		15,899				
	1979	8/09		8,000			23	
	1980	7/31		2,910				
	1980	8/13		15,645			2	
	1981	7/01		100				
	1981	7/28		10,000				T.M., CIAA
	1981	8/19		8,415			Present	
Nikolai Creek	Before 1970							Max. count 20,000 sockeye (1946); 96 pinks (1966); 1 chum (1955)
	1971			2,231				
	1972	8/13		3,921		1	20	
	1972			13,760				Peak survey count
	1975	8/11		2,552		1	161	
	1975	8/19		698	4		35	
	1976	8/05		6,500				
	1977	7/30	3	10,851		2	97	
	1977	8/10		5,200			58	
	1978	8/09		4,890		1	22	
	1979	8/08	5	6,838			18	
	1980	8/22		5,100				
	1981	7/01	0	0	0	0	0	
	1981	7/30		34,722				
	1981	7/28		10,000				T.M., CIAA
Olsen Creek	Before 1970							Max. count 34 sockeye (1954)
	1975	8/20		4				

Appendix Table ED-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Kenai River System								
Kenai River	Before 1970							Max. count 88,000 sockeye (1951)
	1970			73,000				Escapement count (sonar)
	1971			278,000				Estimates partially survey and sonar counts
	1972			318,000				Escapement count (sonar)
	1973			367,000				Escapement count (sonar)
	1974			161,000				Escapement count (sonar)
	1975			142,000				Escapement count (sonar)
	1976			380,000				Escapement count (sonar)
	1977			707,000				Escapement count (sonar)
	1978			399,000				Escapement count (sonar)
	1979			285,000				Escapement count (sonar)
	1980			464,000				Escapement count (sonar)
	1981			407,638				Escapement count (sonar)
Beaver Creek	Before 1970							Cohos and pinks present (1967)
	1980	6/28	0	0	0	0	0	T.M., CIAA
Carter Creek	Before 1970							Max. count 250 sockeye (1967)
Cooper Creek	Before 1970							Max. count 300 sockeye, 35 chinook (1950), some coho (1936)
Cottonwood & Pipe Creeks	1981	8/03	0	0	0	0	0	T.M., CIAA
Crescent Creek	Before 1970							Max. count 250 sockeye (1946); 500 chinook (1947)
	1979	7/25	141					
Funny River	Before 1970							Max. Count 7 pinks (1952)
	1980	9/11	0	0	0	0	0	T.M., CIAA
Grant Creek & Lake	Before 1970							Max. count 76 chinook (1963); 324 sockeye (1962)
	1977	8/11	0	0	0	0	0	
	1977	8/24		4				
	1978	8/12	5					
	1979	8/07	42					
	1980	8/01	5					
Hidden Creek	Before 1970							Max. count 3,194 sockeye (1965); 6 coho (1953)
	1970	8/28		112				
	1970	9/12		158				
	1970	9/22		323				
	1971	8/18		32				
	1971	8/28		112				
	1971			1,958				Escapement count (weir)
	1972	8/28		1,000				

Appendix Table ED-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Hidden Lake	Before 1970							Max. count 3,700 sockeye (1963)
	1970			323				Escapement count (weir)
	1971			1,958				Escapement count (weir)
	1972			4,956				Escapement count (weir)
	1973			690				Escapement count (weir)
	1974			1,150				Escapement count (weir)
	1975			1,375				Escapement count (weir)
	1976			4,860				Escapement count (weir)
	1977			1,055				Escapement count (weir)
	1978			4,647				Escapement count (weir)
	1979			5,762				Escapement count (weir)
	1980			8,421	307			Escapement count (weir)
Jean Creek & Lake	Before 1970							Max. count 1,200 sockeye (1947)
	1974	8/28		526				
	1974			26,860	2,389			Escapement count (weir)
	1975	8/07		20				
	1976	8/09		78				
	1976	8/18		250				
	1977	8/09		68				
	1977	8/22		119				
	1977	8/23		129				
	1978	8/09		63				
	1980	9/18		1,091				T.M., CIAA
	1981	8/03		60				T.M., CIAA
Johnson Creek	Before 1970							Max. count 625 Sockeye (1969)
	1970			626				Peak survey count
	1971			160				Peak survey count
	1972			150				Peak survey count
	1973			713				Peak survey count
	1974	8/27		19				
	1974			46				Peak survey count
	1975	8/10		105				
	1975	8/20		63				
	1976	8/07	0	0	0	0	0	
	1976	8/09	0	0	0	0	0	
	1976	8/17	0	0	0	0	0	
	1977	8/02		25				
	1977	8/11		271				
	1977			450				Peak survey count
	1978	8/08	0	0	0	0	0	
	1978	8/13		769	21			
	1978	8/24		252	98			
	1978			780				Peak survey count
	1979	8/01		588				
	1980	8/05		253				
Juneau Creek & Lake	Before 1970							Max. count 72 chinook (1957); large numbers of sockeye (1936)
	1976	8/08	0	0	0	0	0	
	1977	8/09	18	2				
	1977	8/23	5	15				
	1978	8/09	42	7			1	
	1979	7/12	90					

Appendix Table ED-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Killey River	Before 1970							Max. count 100 pinks (1960)
King County Creek	Before 1970							No fish observed
	1981	8/03	0	0	0	0	0	T.M., CIAA
Moose Creek	Before 1970							Max. count 1,061 sockeye; 3 chum (1953); 3 pink (19
	1970			348				Peak survey count
	1971			3,201				
	1972			3,400				Peak survey count
	1973			660				Peak survey count
	1974	8/21		942				
	1974	8/27		939				
	1975	8/11		686				
	1975	8/26		602				
	1975			1,278				Peak survey count
	1976	8/05		3,191				
	1976	8/17		5,558				
	1977	8/01		6,329				
	1977	8/10		6,515			1	
	1977	8/25		5,578				
	1978	8/10		1,919	14		2	
	1978	8/29		1,055	27			
	1978			1,933				Peak survey count
	1979	7/25		3,986				
Morning Slough	1978	8/11		320				
	1978	8/23		281				
Mud Lake	Before 1970							Max. count 100 chinook (1949); 1,000 sockeye (1948
	1970			561				Peak survey count
	1971			1,370				
	1972			1,200				Peak survey count
	1973			1,731				Peak survey count
	1974	8/09		1,216				
	1974	8/20		1,214				
	1974	8/29	0	0	0	0	0	
	1975	8/14		652				
	1975	8/25		910				
	1975	8/25		657				
	1975	8/25		1,010				
	1975			1,214				Peak survey count
	1976	8/05		802				
	1976	8/18		1,548				
	1977	8/03		1,740				
	1977	8/12		1,840				
	1977	8/26		2,230				
	1978	8/09		1				
	1978	8/22		825				
	1980	8/12	9	1			1	Dave's Creek
	1980	8/19	3	4	15			Dave's Creek

Appendix Table ED-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Pipe Creek	1975	8/12		6				
	1976	8/08		136				
	1976	8/23		55				
	1977	8/02		500			2	
	1977	8/11		210				
	1977	8/23		207				
	1978	8/11		202			2	
	1979	8/09		160			2	
Ptarmigan Creek	Before 1970							Max. count 3,000 sockeye (1947); 300 chinook (1948)
	1970	8/18	7					
	1971	8/02	9	45				
	1972	8/08	0	0	0	0	0	
	1973			1,041				Peak survey count
	1974	8/24	13	558				
	1974	8/27	9	506				
	1975	8/11	0	0	0	0	0	
	1975	8/19		32				
	1975			186				Peak survey count
	1976	8/06	0	0	0	0	0	
	1976	8/16	0	0	0	0	0	
	1976	8/30	11	505				
	1977	7/31	0	0	0	0	0	
	1977	8/12		3				
	1977			1,513				Peak survey count
	1978	8/13	1					
	1978	8/25	3,529					
	1979	8/20	25	532				
	1980	9/05	8					
Quartz Creek	Before 1970							Max. count 15 chinook (1952); 1,456 sockeye; 1 pink and 10 chum (1954)
	1970			200				Peak survey count
	1971			800				Peak survey count
	1973			3,173				Peak survey count
	1974	8/20	33	255		1		
	1974	8/26		153				
	1975	8/11	7	1,068				
	1975	8/21	27	908				
	1976	8/09	5	3,372				
	1976	8/19	7	1,086				
	1977	8/01	2					
	1977	8/09	11	127				
	1977	8/26	4	143				
	1977	8/27	5	3 037				
	1978	8/12	44	10,627				
	1978	8/23		9,176	4	1	1	
Railroad Creek	Before 1970							Max. count 275 sockeye (1967)
	1970			99				Peak survey count
	1971			194				Peak survey count
	1972			700				Peak survey count
	1973			521				Peak survey count
	1974	8/21		3				
	1975	8/10		573				
	1975	8/20		192				

Appendix Table ED-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Railroad Creek	1976	8/07		1,032				
	1976	8/17		679				
	1977	8/02		1,175				
	1977	8/11		1,239				
	1977	8/24		732				
	1977			1,262				Peak survey count
	1978			1,749				Peak survey count
	1980	8/05		1,259				
	1980	8/13		1,749				
Rocky Creek	1981			163				
Russian River (Upper)	Before 1970							Max. count 2,100 chinook (1958); 62,000 sockeye (1968); 18 coho (1956); 25 chum (1960); 100 pinks (1958)
	1970	9/01		33,000	87	77		Escapement count, sockeye (weir); other species estimates from surveys
	1970			227				Peak survey count
	1971			67,000				Escapement count (weir)
	1971			11,442				Peak survey count
	1972			94,000				Escapement count (weir)
	1972			7,113				Peak survey count
	1973			45,000				Escapement count (weir)
	1973			8,571				Peak survey count
	1974			40,000				Escapement count (weir)
	1974			2,909				Peak survey count
	1975			39,000				Escapement count (weir)
	1975			866				Peak survey count
	1976			4,813				Peak survey count
	1976	8/18	88	40,000	7		2	Escapement count, sockeye (weir); other species estimates from surveys
	1977			38,982				Peak survey count
	1977			56,000				Escapement count (weir)
	1978			87,000				Escapement count (weir)
	1978			26,885				Peak survey count
	1979			112,000	1,098			Escapement count, sockeye (weir); Sport fish harvest, coho
	1980			116,000	1,025			Escapement count, sockeye; Sport fish harvest, coho
Seepage Creek	Before 1970							Max. count 25,000 sockeye (1946)
	1971			2,292				
	1972	8/26		34		1	5	
	1972			3,872				Peak survey count
	1975	8/15		2,000				
	1975	8/22		3,416				
	1976	8/09		179				
	1976	8/18		223				
	1977	8/05		612				
	1977	8/12		3,376				
	1977	8/16		840				
	1977	8/26		587				

Appendix Table ED-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Seepage Creek	1978	8/12		1,055				
	1979	8/10		788				
	1980	7/30		800				
	1980	8/12		1,811				
	1981	7/01	0	0	0	0	0	
	1981	7/28						Approx. 1,000 fish, species unknown, (T.M.,CIAA)
	1981	8/08		3,376				
Ship Creek	Before 1970							Max. count 650 pinks (1951)
Skilak River	1981	8/03	0	0	0	0	0	T.M., CIAA
Slikok Creek (Lake)	Before 1970							Max. count 5 pinks (1957)
	1980		0	0	0	0	0	T.M., CIAA
	1981	8/03	0	0	0	0	0	T.M., CIAA
Snow River	Before 1970							No fish observed (1952)
Soldotna Creek	Before 1970							No fish observed (1957)
Tern Creek	1979	7/21		1,693				
Trail Creek (Upper)	1977	8/02		124				See Morning Slough for additional counts
	1977	8/27		196				
Trail Lake	Before 1970							No fish observed (1952)
Trail River	Before 1970							Peak count 10,000 sockeye (1977)
	1976	8/17		78				
	1977	8/02		124				
	1977	8/11		106				
	1977	8/24		35				
	1978	8/13		71				
Swanson River	Before 1970							Max. count 2,043 coho (1965)

APPENDIX EE

SALMON ABUNDANCE DATA FOR

THE SUSITNA RIVER

Appendix Table EE-1. Salmon abundance data for Susitna River Mainstream and main stream tributaries, compiled from escapement enumeration programs[1/], sport fish harvest data[2/], and aerial surveys[1,3/], Adult Anadromous Investigations, Su Hydro Studies, 1982.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Mainstem								
Susitna Station (system-wide estimates)	1970			38,000				
	1971							
	1972			113,000				
	1973		15,000	40,000				Chinook estimate from aerial surveys, includes sport harvest
	1974		15,000	70,000				Chinook estimate from aerial surveys, includes sport harvest
	1975		11,500	108,000				Chinook estimate from aerial surveys, includes sport harvest
	1976		71,200	111,000			933,000	Escapement-population estimate; chinook estimate from aerial surveys, includes sport harvest
	1977		118,100	238,000	50,000	105,000	1,490,000	Escapement-population estimate; chinook estimate from aerial surveys, includes sport harvest
	1978		81,100	94,000	100,800	148,000	2,478,100	Escapement count (sonar); chinook estimate from aerial surveys, includes sport harvest
	1979		77,200	157,000		125,000		Escapement count (sonar); chinook estimate from aerial surveys, includes sport harvest
	1980			191,000		7,939	2,047,000	Escapement count (sonar); chinook estimate from aerial surveys, includes sport harvest
	1981		60-70,000	340,232	33,470	46,461	113,349	Escapement count (sonar); chinook estimate from aerial surveys
Sunshine Station	1981			89,906	22,793	59,630	72,945	Abundance estimate (sonar)
	1981			133,489	19,841	262,851	49,501	Mark/recapture estimate
Talkeetna Station	1981			3,464	3,522	10,036	2,529	Abundance estimate (sonar)
	1981			4,809	3,306	20,835	2,335	Mark/recapture estimate
Curry Station	1981			2,804	1,146	13,068	1,041	Mark/recapture estimate
Tributaries								
Alexander Creek	Before 1970							Max. count 1,868 chinook (1953), sockeye present (1964), 2,000 coho (1963), 100,000 pinks (1964); 500 chum (1963)
	1970	7/26	280	2,720 sockeye and coho				
	1970		491					
	1972		202					
	1973		875					
	1974		2,193					
	1975		1,878					

1/ Courtesy of Alaska Department of Fish and Game Div. of Commercial Fisheries, Div. of Sport Fish, and Fisheries Rehabilitation and Enhancement Div. (FRED), and Cook Inlet Aquaculture Association (CIAA).

2/ Mills, Michael J. 1980. Statewide Harvest Study - 1979 Data. Alaska Department of Fish and Game Div. of Sport Fish, Federal Aid Report, Vol. 22 Study SW-1B
Mills, Michael J. 1980. Statewide Harvest Study -1980 Data. Alaska Department of Fish and Game Div. of Sport Fish, Federal Aid Report, Vol. 22 Study SW-1C.

3/ All entries are aerial or ground stream survey data, unless otherwise designated.

Appendix Table EE-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Alexander Creek	1976		5,412					
	1977	7/26	2,504					
	1977		13,385					
	1978		5,854					
	1979		6,215					
	1979		712	79	1,560	45	236	Sport fish harvest
	1980		1,438	52	999	121	809	Sport fish harvest
	Personal Comm.			5,000			250,000	Stan Kubik, ADF&G Div. Sport Fish (S.K.,SF)
								Max. abundance estimate from several years observations
Sucker Creek	Before 1970							Max.count 20 chinook (1964); 1,000,000 pinks (1966)
Wolverine Creek	Before 1970							Max. count 14 chinook (1964)
Birch Creek	Before 1970							Large numbers of sockeye observed 1953; few coho some chums; 75,000 pinks (1969)
	1970	9/17			201			
	1970	9/23			206			
	1971	9/27			138			
	1972	8/18		107	15	10	3,051	
	1972	9/28			69			
	1973	8/31		16				
	1973	9/07		1				
	1973	9/16		4				
	1973	9/26			106			
	1974	8/23	0	0	0	0	0	
	1974	8/29	0	0	0	0	0	
	1974	9/04		2	8			
	1974	9/16	0	0	0	0	0	
	1974	9/26			49			
	1975	8/21		55			2	
	1975	8/26		8				
	1975	8/29		11	10			
	1975	9/05		1	15		1	
	1975	9/23	0	0	0	0	0	
	1976	8/24		49			19	
	1976	8/27		25	11		7	
	1976				40			
	1978	9/11		299	146			
	1979	8/28		100	25			
	1981	8/25		150	10	10		
Fish Lakes (Birch Creek)	Before 1970							Max. counts 500 sockeye (1953)
	1972	8/18		107				
	1973	8/21		251				
	1973	8/31		205				
	1973	9/07		158				
	1973	9/16		158				
	1974	8/23		43				
	1974	8/29		95				
	1974	9/04		67				
	1974	9/16		67				
	1975	8/21		70				
	1975	8/26		93				
	1975	8/29		113				
	1975	9/05		132				
	1975	9/23		46				
	1975			187				Peak survey count

Appendix Table EE-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Fish Lakes (Birch Creek)	1976	8/24		82	17		48	
	1976	8/27		25	11		26	
	1976	9/03		47			7	
	1976	9/07		23			14	
	1977			611				Peak survey count
	1978	8/22		79			42	
	1978	9/25		242	28			
	1978			299				Peak survey count
	1980	8/18		2,100				
Fourth of July Creek	1974	9/11			26	594		
	1974	8/16					159	
Goose Creek	Before 1970							Chinook, chum present, max. count 5,000 pinks (1969); 177 coho (1968)
	1970	9/16				2		
	1974	7/26	41					
	1975	8/03	13					
	1976	7/15	160					
	1976	7/23	104					
	1977		133					
	1978		283					
	1981		262					
Indian River	Before 1970							Max. count 1,002 chinook (1957)
	1972	7/30	35					
	1973	7/26	110					
	1973	7/29	122					
	1974	7/25	102					
	1974	8/19					577	
	1974	9/10			64			
	1975	8/04	31					
	1975		35					
	1976	7/23	537					
	1977		393					
	1978		114					
	1979	10/29				150		Cook Inlet Aquaculture Ass'n (CIAA)
	1979		285					
	1981		422					
Kashwitna River-North Fork	Before 1970							Chinook present, max count 10,000 pinks (1966)
	1971		1					
	1972		31					
	1973		183					
	1974		103					
	1975		33					
	1976		203					
	1977		336					
	1978		362					
	1979		457					
	1981		557					

Appendix Table EE-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Kroto Creek	Before 1970							Max. count chinook 3,000 (1954); 86 sockeye (1950); 300,000 pinks (1954)
	1970		579					Sport fish harvest
	1970		1,417					West Fork only
	1971		434					Sport fish harvest
	1972		275					Sport fish harvest
	1972		1,780					
	1973		2,381					
	1974		5,279					
	1975		4,737					
	1976		21,693					
	1977		39,642					Entire Deshka River System
	1978		24,639					
	1979		27,385					
	1979		3,685		2,290		689	Sport fish harvest
	1980		2,811		973		109	Sport fish harvest
	Personal Comm.			500	10,000		500,000	S.K., SF (entire Deshka River System)
Lane Creek	Before 1970							Chinook present
	1974	8/9/74					74	
	1975					3	106	Peak survey count
	1981		40		3	76	291	Peak survey count
Little Willow Creek	Before 1970							Max. count 278 chinook (1969); 35,000 pinks
	1970	7/28	45					
	1972	8/01	99					
	1976		833					
	1977		598					
	1978		436					
	1979			141	262	118	745	Sport fish harvest
	1979		324					
	1980		32	77	494	270	6,420	Sport fish harvest,
	1981		459					
Montana Creek	Before 1970							Chinook present, max. count 30,000 pinks (1966); 450 coho (1951)
	1970		161					
	1970	7/27	260					
	1970	7/28	21					
	1971	8/03	20					
	1971	8/05	24					
	1972	7/25	211					
	1972	7/26	106					
	1973		527					
	1974	7/24	280					
	1975	7/29	229					
	1976	7/26	1,445					
	1977		1,443					
	1978		881					
	1979		1,094					
	1979		312	346	1,735	745	2,472	Sport fish harvest
	1980		559	257	2,684	571	8,230	Sport fish harvest
	1981		814					

Appendix Table EE-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Moose Creek	1970		126					
	1971		40					
	1972		21					
	1973		36					
	1974		32					
	1975		55					
	1976		116					
	1977		153					
	1978		237					
	1979		253					
	1981		239					
Portage Creek	1972	7/30	68					
	1973	7/26	153					
	1973	7/29	174					
	1974	7/27	260					
	1974	8/18			150	276	218	
	1975	8/04	32					
	1976	7/23	702					
	1977		374					
	1978		140					
	1979		190					
	1981		659					
Question Creek and Lake	Before 1970							Max. count 5,970 sockeye (1957)
	1973	9/28			59			
	1974				3			
	1975	9/23			111			
	1976	9/28			126			
	1977				87			
	1978				45			
	1979				384			
	1980				321			
Rabideaux Creek	Before 1970							Chinook present
	1975	9/26				67		
	1976	9/29				91		
	1977		99					
	1978					88		
	Personal Comm.		Present		Present		Present	S.K., SF
Red Shirt Creek	Before 1970							Max. counts, 2,600 sockeye (1952); 380 coho (1952)
	1972	8/29		160	100			
	1973	8/17		35				
	1973	9/14		47				
	1974	8/26		0	0	0	0	
	1974	9/09		0	0	0	0	
	1974	10/03		1				
	1974			160				Peak survey count
	1975	8/29		135				
	1976	8/17		66				
	1976	8/26		92				

Appendix Table EE-1. Continued.

Area		Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Red Shirt Creek		1976	9/14		117				
		1976	9/16		130				
		1977	8/24		43				
		1977	9/01		4				
		1978	8/29		13				
		1979	9/07		645	92			
		1980	9/11		650				
		1981	8/25		600				
Role Jo Lake	Before	1970							Sockeye and coho present
		1972	8/16		40				
		1972	8/29		160				
		1973	8/17	0	0	0	0	0	
		1973	9/04		47				
		1974		0	0	0	0	0	
		1975	8/29		24				
		1976	9/26		25				
		1976			35				Peak survey count
		1977	8/24		43				
		1977	9/01		4				
Sheep Creek	Before	1970							Max count 768 chinook (1958); 20,000 pinks (1958); chums present
		1972	6/06	Present		Present	Present	Present	Memo from Div. of Sport Fish
		1972	8/01	101					
		1973	7/24	444					
		1973	7/26	402					
		1974	7/26	202					
		1975	8/03	42					
		1976		455					
		1977		630					
		1978		1,209					
		1979		778					
		1979		10	31	462	682	2,412	Sport fish harvest
		1980		45	0	430	648	6,362	Sport fish harvest
		1981		1,013					
Sloughs 6,9,11,14,16,17,19,20,21		1974	8/28-9/18		103		1,352		
Sunshine Creek	Before	1970							Max. count 25 chinook (1963); 1,000 pinks (1962)
		1979		10	157	774	55	700	Sport fish harvest
		1980		13	116	1,534	225	2,408	Sport fish harvest
Trapper Creek	Before	1970							Max. count 234 chinook (1964)
Willow Creek	Before	1970							Max. count 4,500 chinook (1947); 2,000 coho (1950); 20,000 chum (1950); 40,000 pink (1950); 60 sockeye (1957)
		1970		640					
		1971		165					
		1972		370					
		1972		11					Sport fish harvest

Appendix Table EE-1. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Willow Creek	1973	7/24	678					
	1973	7/25	981					
	1973		1,074					
	1974	7/26	402					
	1975	8/04	177					
	1976	7/15	1,660					
	1977		1,065					
	1979		459	94	402	582	3,445	Sport fish harvest
	1980		289	83	1,207	989	23,638	Sport fish harvest
	1981		1,357					
	Personal Comm.					7,000	250,000	Larry Engel, ADF&G Div. of Sport Fish (L.E., SF) Max. abundance estimate from several years observations

Appendix Table EE-2. Salmon abundance data for the Yentna River subdrainage of the Susitna River, compiled from escapement enumeration programs[1/], sport fish harvest data[2/], and aerial surveys[1,3/], Adult Anadromous Investigations, Su Hydro Studies, 1982.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Bear Creek	Personal Comm.		100				5,000	Stan Rubik, ADF&G Div. of Sport Fish (S.R., SF) Max. abundance estimate from several years observations
Cache Creek	Personal Comm.		100				Present	S.R., SF
Camp Creek	Before 1970							Max. count 101 chinook (1965)
Canyon Creek	1974		10					
	1975		2					
	1976		44					
	1977		135					
	Personal Comm.						Present	S.R., SF
Chelatna Lake	1975	8/29		50				
	1980	8/29		4,120				
	1981	8/27		14,900				
Spring Creek	Before 1970							Max. count 142 sockeye (1954)
	1972	8/29		33				
	1973	9/06		11				
	1974	9/06	0	0	0	0	0	
	1975	9/01		4				
Christmas Tree Creek	Before 1970							Sockeye present
	1972	8/29		50				
	1973	8/17		0				
	1973	8/28		29				
	1973	9/11		40				
	1973	9/12		Present				
	1974	8/26		49				
	1974	9/09		56				
	1974	9/18		80				
	1975	8/24		84				
	1975	9/03		55				
	1976	8/26		58				
	1976	9/09		54				
	1978	8/28		30				
	1980	8/22		0				
	1980	9/11		50				
Clearwater Creek	1977		47					
	Personal Comm.		100				5,000	S.R., SF

1/ Courtesy of Alaska Department of Fish and Game Div. of Commercial Fisheries, Div. of Sport Fish, and Fisheries Rehabilitation and Enhancement Div. (FRED), and Cook Inlet Aquaculture Association (CIAA).

2/ Mills, Michael J. 1980. Statewide Harvest Study - 1979 Data. Alaska Department of Fish and Game Div. of Sport Fish, Federal Aid Report, Vol. 22 Study SW-Mills, Michael J. 1980. Statewide Harvest Study -1980 Data. Alaska Department of Fish and Game Div. of Sport Fish, Federal Aid Report, Vol. 22 Study SW-1C.

3/ All entries are aerial or ground stream survey data, unless otherwise designated.

Appendix Table EE-2. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Coffee Creek	Before 1970							Sockeye present
	1972	8/29		254				
	1972	8/30		24				
	1973	9/06	0	0	0	0	0	
	1975	8/30		70				
	1975	9/01		7				
	1977	8/27		231				
	1978	8/27		18				Coffee Creek and Snowslide Creek
Contact Creek	Personal Comm.		100			Present	1,000	S.K, SF
Cripple Creek	1975	8/23		427				
	1975	8/30		48				
	1976	8/23		438				
	1976	9/02	24	428				
	1977	9/12	0	0	0	0	0	
	1979	8/26	0	0	0	0	0	
Crystal Creek	1972	8/29		33				
	1972	9/06		11				
Deception Creek	1978		49					
	1979		239					
	1981		366					
Dickason Creek	Personal Comm.		Present				Present	S.K., SF
Donkey Creek	Personal Comm.		100	1,000			5,000	S.K., SF
Fish Lakes	Before 1970							Sockeye escapements exceeding 1,000 (1950)
	1974			1,048				Escapement count (weir)
	1981		200		500			S.K., SF
Flag Creek	Personal Comm.						Present	S.K., SF
Friday Creek	1980	7/26	82					
Gagman Creek	1981		Present				Present	S.K., SF
Grayling Creek	Before 1970							Chinook, coho present in 1953, 5313 pinks (1954), 322 chums (1952)
	1975	8/29				2		

Appendix Table EE-2. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Hewitt Lake	Before 1970							Max. count 3060 sockeye (1956)
	1972	8/23		990				
	1972	8/29		290				
	1973	8/29		134				
	1973	9/12		453				
	1973	8/18		69				
	1974	8/27		151				
	1974	9/10		204				
	1974	9/18		288				
	1975	8/25		113				
	1975	9/04		247				
	1976	8/26		419				
	1976	9/10		1,984				
	1976			2,017				Peak survey count
	1977	8/29		729			1	
	1978	8/29		225				
	1978			1,594				Peak survey count
	1979	8/26		275				
	1979	9/07		415				
	1980	8/22		1,200				
	1980	9/11		1,100				
	1981	9/04		3,215				Hewitt and Whiskey Lakes combined
	1981			9,850				Hewitt and Whiskey Lakes combined
Hewitt Creek	Before 1970							Sockeye, pink, chinook present, max. count 312 coho (1954)
	1972	8/23		137				
	1973	8/18		29				
	1973	8/29		49				
	1973	9/12		67				
	1974	8/27		94				
	1974	9/09		78				
	1974	9/18		32				
	1975	8/25		30				
	1975	9/03		30				
	1976	8/26		17				
	1976	9/19		236				Combined with Whiskey Lake
	1977	8/28		14			17	
	1978	8/29		93				
	1979	9/07		40				
	1979	8/26		20				
	1980	8/22		50				
	1980	9/11		50	50			
	Personal Comm.		Present					Present S.K., SF
Happy River	Personal Comm.		Present					Present S.K., SF
Huckleberry Creek	Before 1970							Max. count 434 sockeye (1953)
	1972	8/23	1					
	1973	8/17		110				
	1973	8/28		389				
	1973	9/11		511				
	1972	8/23	1					
	1973	8/17		110				
	1973	8/28		389				
	1973	9/11		511				
	1974	8/27		79				
	1974	9/18		129				
	1974	9/19		369				
	1975	8/29	328					

Appendix Table EE-2. Continued

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Huckleberry Creek	1975	9/03		263				Peak survey count
	1976			182				Peak survey count
	1977			8				Combined with Whiskey Lake count
	1978	8/29	311					
	1979	8/26	500					
	1980	8/22	1,000					
	1980	9/11	1,750					
Hungryman Creek	Personal Comm.		100	5,000				S.K., SF
Indian Creek	Personal Comm.		Present			Present		S.K., SF
Johnson Creek	Personal Comm.		Present		Present	Present		S.K., SF
Kichatna	1977		120					
	Personal Comm.		1,000		10,000		10,000	S.K., SF
Lake Creek	Before 1970							Max. count 770 chinook (1969), 559 sockeye (1956)
	1970	7/26	189				700	
	1971		119					
	1972		920					
	1972	8/30	114	112				
	1973		761					
	1974		535					
	1975		281					
	1976	7/26	3,735					
	1977		7,391					
	1978		8,931					
	1979		4,196					
	1979		1,796	440	2,671	136	882	Sport fish harvest
	1980		775	267	2,351	69	2,101	Sport fish harvest
	Personal Comm.		6,000	5,000	2,500	15,000	500,000	S.K., SF
Martin Creek	Before 1970							Chinook present
	1974		23					
	1975		6					
	1976		791					
	1977		1,061					
Moose Creek	Personal Comm.		present	600				S.K., SF
Nakochna River	Personal Comm		100				1,000	S.K., SF
Peters Creek	1974		124					
	1975		8					
	1976		1,489					
	1977		3,042					
	Personal Comm .		4,000		1,000		10,000	S.K., SF
Pickle Creek	Personal Comm.		100				5,000	S.K., SF

Appendix Table EE-2. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Puntella Lake	1977	8/24		2,100				
	1978	8/24		1,105				
	1979	8/26		90				
	1980	8/22		550				
Quartz Creek	1973	9/14		250				
	1976	8/17		60			35	
	1976			150				Peak survey count
	1977			450				Peak survey count
	1978			125				Peak survey count
	1979	8/26	5	480				
	1981	9/04		1,210	50			
	Personal Comm.						Present	S.K., SF
Red Creek	Before 1970							Chinook present
	1977		1,511					
	1978	8/24	0	0	0	0	0	
	1978		385					
	1981		749					
	Personal Comm.						5,100	S.K., SF
Red Salmon Lake	1973	9/14		250				Peak survey count
	1974	9/09		160				Peak survey count
	1975	8/29		142				Peak survey count
	1976	9/02		376	40			
	1976	9/14		35				
	1977	8/24		150	1			
	1977			372				Peak survey count
	1978	8/09		200				
	1978	8/24		235	230			
	1980	8/22		1,100			900	
Rich Creek	Personal Comm.						few	S.K., SF
Shell Creek	Before 1970							Signif. numbers of sockeye
	1972	7/28		5,000			5	
	1972	8/10		0	0	0	0	
	1972	8/18		0	0	0	0	
	1972	8/29		50				
	1973	9/14		200				
	1973			295				Peak survey count
	1974	8/26		35	15			
	1974	9/09		64	20			
	1974	10/03		0	0	0	0	
	1974			956	1		3	Escapement count (weir)
	1975	8/29		0	0	0	0	
	1975			2,027		2	76	Escapement count (weir)
	1976	8/17		900			20	
	1976	8/26		170	55			
	1976	9/14		120				
	1976			344				Peak survey count
	1977	8/24		127				
	1979	9/07		1,000	200			
	1981	9/04		5,100				

Appendix Table EE-2. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Shell Lake	Before 1970							Signif. number of sockeye
	1972	7/28		0	0	0	0	
	1972	8/29		640				
	1973	9/04		115				
	1973	9/14		95				
	1974	8/26		0	0	0	0	
	1974	9/09		20				
	1974	10/03		5				
	1975	8/29		251				
	1976	8/26		194	55			
	1976	9/14		309				
	1977	8/24		172				
	1977	8/26		194				
	1977	9/01		247				
	1978	8/24		127				
	1979	9/07		480				
	1979			94				Sport fish harvest
	1980	8/22		4,800				Includes outlet
	1980	9/11		5,500				Includes outlet
	1980			198				Sport fish harvest
	1981	9/08		6,050				
	1981	10/02		3,500				
Skwentna River	Before 1970							Max. count 75 sockeye (1953)
	1976	8/26		150	20	1	140	
	1977	9/01		450				
	1978	8/29		308				
Snowslide Creek	1972			33				
	1973			11				
	1974		0	0	0	0	0	
	1975			4				
	1976		0	0	0	0	0	
	1977			171				
Sunflower Creek	Before 1970							Max. count 151 chinook (1964), 1 pink (1953)
Talachulitna River System	1972			6,501				Peak survey count
	1972		405	15,730	458	12,783	202,915	Escapement count (tower)
	1973			12,362				Peak survey count
	1973		291	19,727	8	707	92,496	Escapement count (tower)
	1974			6,186				Peak survey count
	1974		303	15,976	193	415	50,496	Escapement count (tower)
	1975			5,105				Peak survey count
	1976		1,319					
	1976	8/17		10,249			30,000	
	1976	8/26		10,553				
	1976	9/14		13,210				
	1977		1,856					
	1977	9/01		25,935				
	1978		1,375					
	1978	8/24		12,570			500,000	
	1978	9/6-9/7		14,308			6,783	
	1979	8/22		9,295				
	1979		1,648					

Appendix Table EE-2. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Talachulitna River System	1979			220				Sport fish harvest
	1980			267				Sport fish harvest
	1980	8/22		15,000			135,000	
	1980	9/11		21,125				
	1980	10/02		17,150	25		5,800	
	1981	9/08		10,000			100	
	1981	10/02		4,660	125			
	1981		2,025					
	Personal Comm.				2,000	10,000	500,000	S.K., SF
Judd Lake	Before 1970							Max. counts 100,000 sockeye (1966), 10,062 pinks (1952), 56 chinooks (1963) and 370 chums (1952)
	1970	9/01		600				
	1972	9/16		4,900				
	1973	8/17		5,350				
	1973	9/05		10,364				
	1973	9/28		4,225				
	1974	8/28		4,050				
	1974	9/10		5,675				
	1975	8/29		4,720				
	1979			220				Sport fish harvest
	1980			267				Sport fish harvest
Judd Springs #2	Before 1970							Max. count 2,858 sockeye (1956)
	1972	9/16		180				
	1973	8/17	0	0	0	0	0	
	1973	9/05		335				
	1973	9/28		75				
	1974	8/29	0	0	0	0	0	
	1974	9/10		82				
	1975	8/29	0	0	0	0	0	
Talachulitna Creek	Before 1970							Max. count 1,199 sockeye (1956)
	1972	9/16		390				
	1973	8/17		270				
	1973	9/05		960				
	1973	9/28		1,350				
	1974	8/28		74				
	1974	9/10		205				
	1975	8/29		86				
Talachulitna River	Before 1970							Max. count 52,900 sockeye (1962); 30,000 coho (1952); 1,522 chums(1956); 1,000,000 pinks (1960)
	1972	9/16		30				Upper river
	1972		405					
	1973	7/05		78				Upper river
	1973	7/05		231				Talachulitna Lake
	1973	7/17		26				Talachulitna Lake
	1973	8/17		510				Upper river
	1973	9/05		78				Upper river
	1973	9/05		390				Talachulitna Lake
	1973	9/28		65	6	10		Upper river

Appendix Table EE-2. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Talachulitna River	1973		333					
	1974	8/28		55				
	1974	9/10		102				
	1974		303					
	1975	8/06		86				
	1975	8/29		95				
	1975	8/29		150				Upper river
	1975		120					
	1976	8/17		10,249			30,000	
	1976	8/25		20,550				Includes Talachulitna Lake and Judd Spring #2
	1976	8/26		10,553				Included Judd Lake
	1976	9/14		13,210				
	1976		1,319					
	1977	9/01		29,935				
	1977		1,856					
	1979	8/31		2,699				
	1979		293	47	125	55	100	Sport fish harvest
	1980		121	112	491	17	276	Sport fish harvest
Trinity Lakes	Before 1970							Max. counts 417 sockeye (1957), 6,000 pinks (1962)
	1972	8/18		350				
	1973	9/14		75				
	1976	9/14		42				
	1977	8/25		148				
	1977	9/01		186				
	1978	8/26		140	20			
	1978			150				Peak survey count
	1979	9/07		195				
	1980	8/22		50				
	1980	9/11		200				
Whiskey Lake	Before 1970							Max. count 1,000 sockeye (1953)
	1972	8/29		20				
	1973	9/11		1				
	1974	8/26		49				
	1974	9/09		216				
	1974	9/18		118				
	1975	9/03		62				
	1976	8/26		150				
	1976			17				
	1978	8/28		8				
	1978	9/28		192	2			
	1979			221				Peak survey count
	1979	8/26		190				
	1979	9/07		110				
	1979			252				Sport fish harvest
	1980	8/22		425				
	1980	9/11		300				Sport fish harvest

Appendix Table EE-3. Salmon abundance data for the Talkeetna River subdrainage of the Susitna River, compiled from escapement enumeration programs[1/], sport fish harvest data[2/], and aerial/ground surveys[1,3/], Adult Anadromous Investigations, Su Hydro Studies, 1982.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Chunilna Creek (Clear Creek)	Before 1970							Max. counts 349 chinook (1964), coho present, 10,000 chums (1953), 75,000 pinks (1954)
	1970		72	7,000				
	1970		58					
	1971		5					
	1972	7/30	91					
	1973	7/25	245					
	1973	7/28	292					
	1974	7/27	236					
	1974	7/31	283					
	1974		823					
	1975	7/28	101					
	1976	7/16	1,220					
	1976	7/23	1,237					
	1977		769					
	1979		312	31	1,248	355	645	Sport fish harvest
	1980		172	6	661	385	622	Sport fish harvest
Mama and Papa Bear Lakes	1976	8/23		30	100		7,700	
	1977	9/12		75	23			
	1978	8/29		310	250		20,250	
	1980	8/18		300			10,000	
	1981	8/25		450			100	
Larson Lake	Before 1970							Sockeye, coho, pinks and chums present
	1972	9/07		300				
	1973	9/06		20				Max. count 559 sockeye (1956)
	1974	9/09		19				
	1975	8/30		32				
	1975	7/06		63				
	1975	9/13		47				
	1976	8/23		485				
	1976	9/02		327				
	1977			330				
	1977	8/05		50				Entire System
	1977	8/10		150				Entire system
	1977	8/16		1,300				Entire system
	1977	8/29		2,500				Entire system
	1977	9/12		1,655				Entire system
	1978			117				Peak survey count
	1979	8/28		160				
	1981	8/25		5,500				

1/ Courtesy of Alaska Department of Fish and Game Div. of Commercial Fisheries, Div. of Sport Fish, and Fisheries Rehabilitation and Enhancement Div. (FRED), and Cook Inlet Aquaculture Association (CIAA).

2/ Mills, Michael J. 1980. Statewide Harvest Study - 1979 Data. Alaska Department of Fish and Game Div. of Sport Fish, Federal Aid Report, Vol. 22 Study SW-1B
Mills, Michael J. 1980. Statewide Harvest Study -1980 Data. Alaska Department of Fish and Game Div. of Sport Fish, Federal Aid Report, Vol. 22 Study SW-1C.

3/ All entries are aerial or ground stream survey data, unless otherwise designated.

Appendix Table EE-3. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Prairie Creek	Before 1970							Max. count 275 chinook (1963) sockeye present
	1970	7/29	675					
	1970		820					
	1971		40					
	1972		630					
	1972	8/22		202				
	1973	7/29	3,286					
	1973	8/23		21				
	1973	9/06		21				
	1973	9/17		7				
	1973		4,190					
	1974	7/26	1,498					
	1974	8/25		37				
	1974	9/05		12				
	1974	9/17		2				
	1975	8/04	369					
	1975	8/23		36				
	1975	9/02		49	44			
	1975	9/26		5	12			
	1976	7/20	6,513					
	1976	8/25		81	2			
	1976	9/03		80	36			
	1976	9/10		60	11			
	1976		339					
	1977		5,790					
	1977	8/27	9	120				
	1978		5,154	120				Peak survey count
	1981		1,900					
Stephan Lake	Before 1970							Max. count 6,500 sockeye (1951)
	1972	8/21		38				
	1972	9/07	0	0	0	0	0	
	1972			166				Peak survey count
	1973	8/23		85				
	1973	9/06		106				
	1973	9/17		128				
	1973			234				Peak survey count
	1974	8/25		51				
	1974	9/05		48				
	1974	9/17		40				
	1974			78				Peak survey count
	1975	8/24		124				
	1975	9/03		155				
	1975	9/27		136				
	1975			212				Peak survey count
	1976	8/25		197				
	1976	9/10		346	11			
	1976			381				Peak survey count
	1977	8/27		419				Peak survey count
	1978	9/12		1,022	2			
	1980	8/18		220				
	1981	8/25		475				
Talkeetna River	Before 1970							Large number chums (1953)
	1976	8/23				410		
	Personal Comm.		Signif.					Larry Engel, ADF&G Div. of Sport Fish (L.E., SF) Abundance estimate from several years observation
Twenty Mile Creek	Before 1970							Max. count 2,705 chinook (1965)

Appendix Table EE-4. Salmon abundance data for the Chulitna River subdrainage of the Susitna River, compiled from escapement enumeration programs[1/], sport fish harvest data[2/], and aerial/ground surveys[1,3/], Adult Anadromous Investigations, Su Hydro Studies, 1982.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Bunco Creek	1973	8/02	34					
	1976	7/23	112					
	1977		136					
Bunco Lake	Before 1970							Good escapement of pinks in 1964
Byers Creek	Before 1970							Few chinook, 1,200 sockeye (1964), good pink escapement (1964)
	1971	8/29	2					
	1971	9/08			35	1,100		
	1972	7/30	7					
	1973	7/26	1					
	1973	9/26			49			
	1974	7/25	0	0	0	0	0	
	1976	7/23	53					
	1976	8/23		50			39	
	1977		69					Peak survey count
	1977	8/04	1					
	1977	8/05	2	300				
	1977	8/10		200				
	1977	8/16		100				
	1977	9/12		6	314			
	1979	10/29		1,000	500	0		Cook Inlet Aquaculture Ass'n (CIAA)
Byers Lake	1977			300				Peak survey count
	1981	8/27		275	100		200	
Chulitna River, East Fork	Before 1970							Chinook present, max. count sockeye 500 (1964)
	1973		42					
	1973	8/02	41					
	1974	7/25	41					
	1975	8/04	7					
	1976	7/23	112					
	1977		168					
	1978		59					
Chulitna River, Mainstream	Before 1970							Chinook, coho, pinks and chinook present (1958)
	1976	7/23	124					
	1977		229					
	1978		62					
	Personal Comm.							Larry Engel, ADF&G Div. of Sport Fish (L.E., SF) Max. abundance estimate from several years observations

1/ Courtesy of Alaska Department of Fish and Game Div. of Commercial Fisheries, Div. of Sport Fish, and Fisheries Rehabilitation and Enhancement Div. (FRED), and Cook Inlet Aquaculture Association (CIAA).

2/ Mills, Michael J. 1980. Statewide Harvest Study - 1979 Data, Alaska Department of Fish and Game Div. of Sport Fish, Federal Aid Report, Vol. 22 Study SW-1B
Mills, Michael J. 1980. Statewide Harvest Study -1980 Data. Alaska Department of Fish and Game Div. of Sport Fish, Federal Aid Report, Vol. 22 Study SW-1C.

3/ All entries are aerial or ground stream survey data, unless otherwise designated.

Appendix Table EE-4. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
Chulitna River, Middle Fork	1973		219					
	1973	8/02	206					
	1974	7/25	159					
	1974	8/04	55					
	1976	7/23	1,870					
	1977		1,782					
	1978		900					
Coal Creek	Before 1970							Chinook, pinks present
	1976	8/17	0	0	0	0	0	
	1976	8/26	0	0	0	0	0	
	1976	9/14	0	0	0	0	0	
Honolulu Creek	1973	7/26	17					
	1973	7/29	8					
	1974	7/25	12					
	1976	7/23	24					
	1977		36					
Parker Creek	Before 1970							Max. count 200 sockeye (1965)
Slim Creek	Before 1970							Max. count 150 sockeye (1954)
	1970	8/24		516				
	1972	8/25		63				
	1973	8/22	0	0	0	0	0	
	1973	9/05		53				
	1973	9/18		168				
	1973			195				Peak survey count
	1974	8/24	0	0	0	0	0	
	1974	9/06		83				
	1974	9/17		195				
	1975			176				Peak survey count
	1975	9/25		50				
	1975	8/30		50				
	1975	9/26		75				
	1976	8/24		69				
	1976	9/08		64				
	1977	8/24		755	3			
	1977	9/12-9/13		739				
	1978			263				Peak survey count
	1979	8/28		40				
Spink Creek	Before 1970							Max. count 60 chinook (1958)
Swan Lake	Before 1970							Max. count 150 sockeye (1954)
	1975	8/22		229				
	1975	8/30		289				
	1975	9/25		90				
	1978	8/25-8/26		734				
	1978	9/14		263				
	1978	9/21-9/22		234				
	1980	8/18		1				
	1981	8/25		350				

Appendix Table EE-4. Continued.

Area	Year	Date	Chinook	Sockeye	Coho	Chum	Pink	Comments
T-Creek	Before 1970							Max. count 400 sockeye (1954)
	1972	8/26		182				
	1972			239				Peak survey count
	1973	8/22		35				
	1973	9/05		88				
	1973	9/18		78				
	1973			115				Peak survey count
	1974	8/24		176				
	1974	9/05		163				
	1974	9/17		82				
	1974			191				Peak survey count
	1975	8/22		229				
	1975	8/30		223				
	1975			289				Peak survey count
	1976	8/24		447				
	1976	9/08		39	50			
	1977			745		Present	Present	Peak survey count
Tokositna River	Before 1970							Max. count 97 sockeye (1954)
	1981			Present	Present			
Troublesome Creek	Before 1970							Max. count 100 chinook (1958)
	1971	7/21	5					
	1971	7/27	5					
	1971	9/08	5			70		
	1972	7/30	5					
	1972	8/26		182				
	1973	7/26	7					
	1973	9/05		141				
	1973	9/26			5			
	1974	7/25	0	0	0	0	0	
	1976	7/23	92					
	1977		95					
	1979	10/29				100		CIAA