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FORECAST METHODOLOGY FOR COPPER RIVER SOCKEYE AND CHINOOK SALMON

by

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ABSTRACT

Copper River (Alaska) sockeye and chinook salmon forecasting techniques are described in detail, including confidence interval determination, data bases utilized and format for submittal to statewide forecast document. In addition, run timing prediction methods for commercial catch of sockeye and chinook salmon and total salmon escapement timing for Miles Lake sonar enumeration site are described.

KEY WORDS: Copper River, sockeye, chinook, forecast, timing

INTRODUCTION

Management of Copper River salmon resources, particularly sockeye and chinook salmon depends in part upon the accuracy with which forecasters are able to predict the size and timing of adult returns. Adding to the complexity of the situation, is the presence of significant numbers of sockeye salmon from enhanced or hatchery production. In recent years the contribution from enhanced production ranged between 15 and 20 percent of the total sockeye return. During the first 10-15 days of the Copper River commercial salmon fishery, little or no escapement data is available thus the fishery is managed primarily using inseason catch and preseason forecast data. As the season progresses, forecast data becomes less important. Relative strengths of forecasted runs of sockeye and chinook salmon determine in part the management plan for early in the season where significant incidental harvest of chinook salmon, in a year of poor return, could severely impact the escapement. Forecast data serves as an "early warning" system preparing the management staff well before the season begins with anticipated strength and timing of natural run returns for each species (sockeye and chinook) as well as the anticipated return of sockeye from enhanced production.

The forecast system for Copper River sockeye and chinook has evolved from an uncomplicated "educated guesstimate" which used age data, various catch and escapement data and environmental extremes to produce a single estimate figure without confidence intervals. The system currently in use is not complicated; however, it does rely upon a number of data base elements, maintenance of which are critical to the forecasting procedure. In the eight years ending in 1992, the sockeye return forecast average error was 9.4% and the chinook return forecast average error was 20.4%. Realizing that the data used to assess the forecast accuracy is subject to interpretation and/or has a confidence interval to be considered, overall performance of the Copper River salmon forecast system is quite acceptable.

This report is presented as a documentation of forecast methodology for both abundance and timing of returns, data base resources used in forecast preparation and a general history of forecasts prepared to date. Clearly, environmental or other data not currently incorporated in the forecast technique may improve future performance. Nearshore and high seas temperature data which is currently available plus potential smolt indexing and other parameter data collection and evaluation may improve forecast accuracy significantly. It may also occur that such data collection is not cost effective relative to potential gains in forecast accuracy.

FORECAST

Methods

Sockeye

Natural Stock Copper River sockeye salmon return as adults primarily as four, five and six year cycle fish, thus forecasting relies heavily on data from spawning populations which precede the return year being forecasted by four, five and six years. Most of the important data series required to prepare the forecast are available from either Annual Finfish Management Reports (AMR's) or Catch And Escapement (C&E's) reports for the Prince William Sound Area. All essential data are maintained on Lotus 123 spreadsheets, examples of which are included in this report. Most of the data sets are named as "Table x." in the reports described above but also are maintained with a "File Name:", "File Date:" and "Disk:" heading to ensure that the proper file is accessed, the most current copy is used and the disk where the file resides is readily determined. The table number and disk file name will be shown for each data set used in the forecast procedure. All tables which present data in statistical week form must be adjusted annually since statistical weeks move one day per year normally.

The forecast worksheet (Lotus spreadsheet) requires little more than entry of appropriate data in labeled cells. Table 1 (Disk file "FCAST93.wk1"), contains the 1993 forecast information and calculations. Table 2 (Disk file "FCST932.wk1") contains the confidence interval calculations for the forecast. In order to provide the forecast in proper format to Headquarters, the forecast result plus other salient data is presented in Table 3 (Disk file "FCST933.wp5"). Note that this last file is prepared in Word Perfect 5, rather than Lotus 123 to satisfy publishing requirements.

Description of Table 1. - "FCAST93.wk1" requires acquisition of various basic data, primarily from AMR and C&E Reports. Step 1 (see Table 1) is to revise the file name to the proper year ie, to prepare the 1994 forecast, change FCAST93 to FCAST94 and enter the current date in the file date cell. Step 2, enter the correct source years which normally requires adjusting all columns by one year when using the previous year's forecast document. The year columns must represent four, five and six years prior to the year being forecasted in order to identify appropriate parent year spawning stocks etc. Step 3, enter the Copper River Delta and Upper Copper River aerial survey indices for the appropriate years

years or from "DELTAESC.wk1" and "CRSESIN.wk1". Step 4, enter Miles Lake sonar estimates for the appropriate years. These data can be acquired from AMR's or "MILESDC.wk1". Step 5, enter the combined subsistence and personal use catches for the Upper Copper River. The figures used are the total estimated catches for all species and gear types which appear in AMR tables and "CRSUPUTB.wk1" for appropriate years. Step 6, enter Upper Copper River sport fishing catch of sockeye salmon and Upper Copper River sport fishing catch of chinook salmon. Sport Fish Division Statewide Harvest Reports or equivalent summaries such as "BOARD901.wk1" (filename subject to revision for year component) provide these data. Step 7, enter the enhanced production escapement (includes fish used for brood stock) but do not include the subsistence, personal use or sport catches from enhanced production as these components will be dealt with elsewhere. File "SOCKTAB.wk1" contains the appropriate estimates of enhanced production escapement. Note: There are two estimates of escapement presented and the average of the two is used for this procedure.

Many steps from this point forward in the forecast process will auto-calculate if using the spreadsheet disk file "FCAST93.wk1". Step 8 will subtract the total subsistence, personal use and sport catch from the sonar count to provide an estimate of sockeye salmon reaching the spawning grounds. The sonar count does not differentiate between sockeye, chinook, coho, steelhead or other species thus reduction by all known catches is necessary to estimate sockeye spawners.

Step 9 requires determination of the percentage of equivalent age classes by parent year, thus the percentage of six year old fish in the escapement six years prior to the year being forecasted. C&E Reports are the best sources for these data. Normally, several age classes may represent one total age group ie age readings 2.2, 1.3 and 0.4 fall within the total age five group for the year being assessed. Determine and enter the percentages as indicated in Table 1.

Step 10 will auto-calculate a weighting of potential parent stocks from total age four, five and six year fish and normalize the resulting weighted index to 100% thus making it comparable to individual or average indices. Shown in Step 11, is the 27 year average index for Upper Copper River aerial surveys. It is available by using a series of AMR Reports or "CRSESIN.wk1".

Steps 12, 13 and 14 are replicates of Steps 9, 10 and 11 using the equivalent data from the Copper River Delta. Step 13 will auto-calculate to provide a weighted index. The data for Step 12 is available from C&E reports and for Step 14 from AMR's or "DELTAESC.wk1".

Step 15 simply requires entering the correct year headings for the columns. Step 16 is entry of the desired sonar counts for the appropriate years, the sources included Personal Use Regulations for the years in question, files "CRSEXWCA.wk1" through 1988 or "CRSEX89.wk1" etc with the two digits in the filename representing the year from 1989 on. Step 17 is entry of the sonar counts for the appropriate years which the spreadsheet will bring down automatically. Step 18 automatically calculates the percentage of the desired escapement which occurred by year. Step 19 automatically calculates the spawning escapement (by year) after subsistence, personal use and sport catches plus hatchery produced escapement (less any catches) have been removed from the original sonar count. Step 20 automatically calculates the percentage of desired escapement (includes kings) based on estimates of catches, hatchery production and other figures entered earlier in this process.

The next section attempts to estimate the proportion of king salmon in the escapement. Step 21 requires entry of the total personal use king salmon catch and total personal use salmon catch by year. The percentage of king salmon in the personal use catch will be automatically calculated. The personal use catch is assumed to be the best estimate of the proportion of chinook salmon in the escapement. Step 22 applies the percentage estimates from Step 21 to the sonar escapement estimate from Step 19 producing an estimate of kings in the spawning escapement. Step 23 subtracts the king escapement estimate in Step 22 from the total spawning escapement figure in Step 19. These figures are one of two "best estimates" of the total Upper Copper River sockeye salmon spawning escapement Step 24 calculates the percentage of desired sockeye salmon spawners compared to the actual estimates by year. Step 25 calculates a weighted (by age class) contribution expected in the return. Step 26 adds together the weighted expectations from Step 25 and calculates the percentage of desired escapement which the weighted estimate results in. Steps 27 and 28 show the weighted aerial indices compared to desired escapements (percentage) for the Copper River Delta and Upper Copper River. These figures will auto-calculate.

Determination of estimates of return will be calculated in this section. Critical to this exercise is the "return-per-spawner" estimate used. Two methods of determination are available, with a simple five-year cycle providing more data points than the totally age-based method. Interestingly, the two methods result in only slight differences in the calculated return-per-spawner relationship. The high proportion of five-year cycle fish combined with the balance between four and six-year fish probably accounts for the lack of significant difference. "CRESCRET.wk1" provides the base data for the five-year cycle calculations, while "CATBYAGE.wk1" provides the base data for the fully age based return- per-spawner calculations.

Using "CRESCRET.wk1", and the five year previous parent "total spawning escapement" figure (1988 for 1993 etc), the "return per spawner" for the five (5) most similar parent year escapements from the previous fifteen (15) years data are averaged to produce the figure used in forecast calculations.

The return-per-spawner figure determined in Step 29 is applied to the weighted sonar escapement figure (Step 30), the Upper Copper River Aerial Index (Step 31) and the Copper River Delta Aerial Index (Step 32) to produce estimates of total return. The Upper Copper River has two estimates (sonar and aerial index based) while the Copper River Delta has only one estimate (aerial index). Step 33 states the escapement assumptions required for spawning, all in-river catches, hatchery brood stock and non-utilized hatchery produced escapement. These figures must be adjusted annually as in-river catches and hatchery production change. The appropriate return-per-spawner figure must be inserted in the text at this point.

Step 34 subtracts desired escapement from the forecasted return for the Copper River Delta area, Steps 35 and 36 do the same function for the Upper Copper River Sonar and Aerial Index estimates of return, collectively producing estimates of available commercial harvest. Step 37 averages the figures in Steps 35 and 36 thus including attributes of both Upper Copper River escapement estimates. Step 38 adds together the Delta and averaged Upper Copper allowable commercial harvest estimates producing the "natural production" estimate of allowable commercial harvest for the entire Copper River system.

Enhanced Stock The Gulkana Hatchery Complex (Gulkana Hatchery I and Gulkana Hatchery II) produce significant quantities of sockeye salmon which impact all harvest components and many escapement components for the Copper River.

The first function (Step 39) in this process is to establish the average age composition of returning adult salmon from hatchery production. This figure should be updated regularly as additional years data is accumulated.

Until recently, only Summit Lake survival (fry to adult) data was available; however, for 1992 and beyond, Crosswind Lake survival data will be available and estimates of Paxson Lake survivals can also be made based on data from the other two fry release points. Step 40 will be to establish average survival (fry to adult) figures for each release point.

Note: Prior to conducting the following steps, it is necessary to combine fry releases from Gulkana I and Gulkana II facilities which are released into Paxson Lake. An alternative is to simply create

an additional line for each age and release group, thus there would be two age-4 fry release calculations for Paxson Lake and two age-5 fry release calculations. Adult return estimates would also require extra calculation lines for each age group returning to Paxson Lake resulting in a total of eight return estimates which then need to be added together.

Step 41 requires insertion of the fry release data for each release point for both the four year and five year adult return group, thus fry release figures from the brood years four and five years prior to the return year being forecasted. Step 42 simply multiplies the expected survival rate from Step 40 times the appropriate fry release figure from Step 41 (by age and release site) to establish a series of six adult return estimates. Step 43 adds the figures from Step 42 together to establish a total expected hatchery return.

Step 44 requires determination of the proportion of the natural stock return which is forecasted to be harvested. Typically this figure is in the 50-65% range but can vary dramatically from year to year. The above figure is multiplied (natural stock expected harvest rate) by the total expected enhanced stock return to establish a forecasted allowable enhanced stock harvest level.

Step 45 combines the natural stock and enhanced stock forecasted harvest levels for sockeye salmon thus creating a total forecasted allowable harvest figure.

Chinook

The chinook salmon forecast methodology is quite similar to that used for sockeye; however, the detail and reliability of the data base used for the chinook forecast is weaker especially in the escapement and resulting return-per-spawner components. Forecasting of the Copper River chinook salmon return utilizing return-per-spawner data does not appear to be viable due to the weakness of the escapement index which is a critical component of the return-per-spawner methodology.

The first step (Step 1) is to adjust the parent year figures so that year headings which are four, five, six and seven years prior to the return year being forecasted are in place.

Step 2 requires determination of the age composition percentage of the equivalent parent group thus, in the C&E or AMR report for six years prior to 1993 (the 1987 reports), determine what percentage of the return in 1987 was from six-year fish. Repeat the process for four, five and seven year cycles.

Step 3 requires determination of the aerial survey index for each age group thus, the aerial survey index for four, five, six and seven years prior to the year being forecasted is placed under the appropriate year heading.

Step 4 will autocalculate weighted aerial index figures for each year heading. Step 5 accumulates the weighted aerial index figures into a total weighted aerial index. Step 6 compares the index from Step 5 with the long term index average from Table: CRKESIN.wk1 to establish the percentage above or below the long term average index.

Step 7 multiplies the percentage figure from Step 6 times the long term average commercial chinook salmon harvest from Table: Board901.wk1 or other appropriate data sources. This is the forecasted allowable commercial harvest figure for Copper River chinook salmon. Note: This figure assumes a desired escapement of 15,000 chinook. Failure to prevent targeting of chinook salmon in the commercial fishery in years of poor sockeye return or delayed arrival of sockeye in the fishery will result in less than desired total chinook salmon escapement. Failure to control in-river harvests consistent with past performance, will result in under escapement of chinook salmon to the spawning grounds.

Confidence Intervals

Preparation of confidence intervals for the sockeye and chinook salmon forecasts requires acquisition of total return and commercial catch figures for both Copper River sockeye and chinook salmon as well as the forecasted returns for the same categories. Table: FCST932.wk1 (year component adjusted annually) contains the calculation tables for confidence intervals. The table requires filing in the appropriate information, adjusting the cells which average or sum columns and determining the new confidence interval for the year in question. The interval is then applied to the forecast figure (plus and minus) to establish the confidence interval for forecasted total returns and commercial catches of sockeye and chinook salmon.

Discussion

This forecast document has been prepared to function as a "how to" guide. Alteration of the methods is not only allowable but at some point desirable as new or better technology or data sets become available; however, modification without full understanding of the ramifications of the change may result in significantly impaired performance of the forecast system. Mr. Hal Geiger and others have admonished in both written and oral form that more complicated or

exotic forecast methodology does not necessarily equate to improved forecast accuracy. The above noted methodology was developed to allow any competent field biologist with access to the proper data sets to perform the mechanics of the forecast and prepare an appropriate summary for common use distribution.

Recommendations

The forecast process should be assigned to one staff person/location with sufficient involvement in the collection, preparation or evaluation of relevant Copper River salmon data to ensure that person has a working knowledge of the enhanced production, harvest group and escapement assessment data sets and from whom the information can be acquired. The person assigned should strive for improving the forecast methodology while ensuring that cost or complexity does not exceed its contribution value nor detract from the current accuracy of the system. Maintenance of all data sets noted in the process are important, if not critical, to the success of the forecast system thus reduction or elimination of any data set continuity may reduce or negate the performance of the forecast system.

CATCH AND ESCAPEMENT TIMING

This section relies heavily upon the forecast data prepared above to distribute through time expected catches and escapement for Copper River sockeye and chinook salmon. The "Forecast" section prepares total numbers and the "Catch and Escapement Timing" section prepares timing, by day, expectation data for sockeye and chinook catch and escapement. All tables require annual adjustment for data presented in statistical week format since statistical weeks move at least one day per year.

Methods

Sockeye

CWT Data Preparation Coded wire tag (CWT) recovery data is available for the Summit Lake stocking site beginning with limited returns in 1984. The first returns for the Crosswind Lake release site occurred in 1992. There are no CWT returns for the Paxson Lake release site. Each year the Copper River commercial fishery catch is examined for CWT's. The head samples are sent to the CWT Laboratory in Juneau for detection and reading. Data for each head

is presented in reports which list the species, tag code, date and site of recovery, fish length and type of sample. The sampling crew in Cordova prepares a summary of samples collected, numbers examined and total catch plus all other data necessary for the CWT Laboratory reports and for tracking individual samples.

Tables "DayCWT5S.wk1" and "DayCWT5X.wk1" are products of the data summaries prepared by the Cordova sampling crew and the CWT Laboratory. The number of tags recovered by date and year are entered into the tables for the appropriate release site and the sampling rate (percent sampled) entered for each sample period. The reciprocal of the sample rate is used to expand the recovered tag numbers to represent the number expected if 100% of the catch had been sampled. It is not unusual to have tag recoveries reported a day or occasionally two days later than the sampled period due to processing plant and delivery delays. Adjustments of one or two days to the tag recovery date to match the catch sample period may be needed. The sampled period will be reported based upon the actual period fished thus the reported tag recovery date will always be moved to an earlier date rather than later. All years of recovered tags (expanded to 100% of the catch) are accumulated by date of recovery and the column smoothed by a moving order of five (5). Calculations for percentage of return by day and week complete the annual update of these tables.

The next step is transfer of the percentage return per day figures from Summit and Crosswind Lake CWT returns to table "DYCWTBAS.wk1". The file "extract" and "combine" feature of Lotus 123 or Symphony can transfer the entire columns easily. In table "DYCWTBAS.wk1", prepare an average percent per day for Paxson Lake returns by averaging the Summit and Crosswind Lake data by day. This constitutes the best timing estimate for Paxson Lake enhanced returns available at this time.

Commercial Catch Data Preparation Copper River commercial catch by day (all subdistricts combined) data is prepared and reported in Prince William Sound Management Area Reports (AMR's). Typically, this data is reported in a condensed fashion (only days fished reported), thus re-entry of the daily catches into table "CRSBYDY0.wk1 (Part #1)" (Copper River sockeye commercial catch by day, by year) is accomplished by re-keying the data. The table is updated each year and includes average and cumulative catch by day plus cumulative percentage catch by day.

Part #2 of "CRSBYDY0.wk1" is a worksheet which includes the summary columns from Part #1. The focus of this table is to compile estimates of enhanced component catch and escapement for each release location by day for the most recent return year (not the year being forecast). The enhanced component catch estimates are subtracted from the total reported commercial catch to produce an estimate of the naturally produced adult salmon harvest by day.

The expanded tag recovery data for the year being estimated and for each tag group by day is imported from the appropriate table and placed in the "number of tags" columns. As noted above, the average of Summit and Crosswind Lakes is used to estimate Paxson Lake figures. It is then necessary to acquire the estimated expansion rate for each tag (tagged to un-tagged ratio) from "SOCKTAB.wk1" or other appropriate source. The multiplier figure times the number of tags estimated for each release site by day produces daily estimates of enhanced contributions to the commercial fishery for the year being estimated. The next step is to subtract the enhanced component estimates by day from the reported total catch by day to produce an estimate of natural population harvest by day. Calculations proceed with percent by day without enhanced component and cumulative percent, by day without enhanced component. The cumulative percent, by day column is extracted and combined into table "CRCATCH2.wk1" and new averages calculated by day for the available data base both in daily and cumulative form plus weekly averages of daily counts. Finally, using the natural stock commercial harvest forecast figure from the appropriate forecast document, the table will auto-calculate the estimated distribution of natural stock adult sockeye returns by day and in cumulative form when the appropriate estimate is placed at the bottom of the column. The daily expected natural stock harvest and percentage columns are file extract and combined into the appropriate columns of table "DYCWTBAS.wk1".

Escapement (Sonar) Data Preparation A separate set of calculations still using table "CRSBYDY0.wk1" are used to estimate the enhanced escapement component by day, by release site for the current year. To establish escapement timing, an eight day delay (requires moving all data eight days later) is used and the ratio of escapement to harvest is used as a multiplier thus an escapement to harvest ratio of 40%:60% or 0.67. The end product is essentially that the commercial harvest figures are reduced to 0.67% and posted by day eight days later per release site to produce to enhanced escapement by day estimates. The sum of the three release sites are calculated by day and then are smoothed by a moving order of five (5).

In order to complete preparation of the natural return component sonar escapement for the current year, table "SONARCWT.wk1" is used. The Miles Lake sonar count by day for the year being calculated is imported from table "MILESDC.wk1" or the appropriate AMR. The daily enhanced component escapement by day estimates described in the above paragraph are subtracted from the reported counts to establish a natural return sonar count by day. The "SONARCWT.wk1" table also calculates sonar count averages for all years combined with and without the enhanced component plus daily percentages for the same figures. Transfer the natural stock sonar average percentage to table "DYCWTBAS.wk1".

Personal Use Fishery Data Preparation Tables "PUSUCATS.wk1" and "PUSUCATK.wk1" contain the historical personal use and subsistence catch data for sockeye and chinook salmon respectively. Due to the rapid changes occurring in the timing of the sockeye harvest, use of the average of the most recent three (3) years of personal use data by day is appropriate. Calculate the daily average as indicated and transfer the data to table "DYCWTBAS.wk1". The chinook salmon harvest timing is more stable, thus using the historical average catch by day from the personal use side of the table is adequate. Again, transfer the data column to table "DYCWTBAS.wk1".

Commercial Catch by day Forecast The table "DYCWTBAS.wk1" will auto-calculate the enhanced component expected catch and expected escapement by release point, by day with insertion of the appropriate figures from Steps 41-44 from the table "FCAST93.wk1" (or equivalent for the year being forecast). As noted earlier, an eight (8) day delay for sonar escapement plus determination of the catch to escapement ratio for the year being forecast will be needed. Placement of the total estimates for each release site at the bottom of the column and application of the release site daily percentages will calculate the appropriate figures. Finally, addition of the enhanced component expected catches by day plus the natural stock expected return per day will generate the expected total sockeye harvest by day for the Copper River. Transfer of this data plus percentages by day and cumulative figures for catch and percentage can be to any medium required via the file extract/combine mode or other means. Preparation of tables for inseason use can be accomplished at the user's choice of format. Table "CRSMGT93.wk1" or its equivalent has been used in the past to summarize the data for inseason use.

Sonar Escapement by day Forecast Following the form noted in the above section, enhanced sonar expected counts by day are generated from the forecast document estimates and the daily percentages in table "DYCWTBAS.wk1". Take the forecasted natural stock escapement total and place it at the bottom of the natural stock escapement by day column in "DYCWTBAS.wk1". The percentages placed in the table earlier will distribute the expected natural stock escapement automatically.

The daily personal use chinook and sockeye columns have had data inserted earlier, thus the next step is addition of the two columns figures by day. Next calculate the daily percentage of the combined figures. The last step is determining a figure which represents the entire chinook salmon escapement (including all in-river harvests) plus the current sockeye allocation. The figure is presently 77,500. Insert this figure at the bottom of the daily personal use/king column and the table will autocalculate an appropriate distribution of timing for this data set.

Sum the enhanced stock and natural stock escapement figures plus the personal use/chinook data to acquire an expected sonar escapement by day goal. Calculation of daily percentages plus cumulative escapement and cumulative percentages are readily accomplished at this point. Transfer as needed the escapement data from this table, "DYCWTBAS.wk1", to what ever form the user requires. Table "CRSON93.wk1" or its equivalent has been used in the past to summarize the data for inseason use.

Chinook

The daily anticipated chinook salmon harvest is based almost entirely upon historical catch by day data found in table "CRKBYDAY.wk1". The forecasted allowable harvest figure is acquired from the current forecast document ("FCAST93.wk1" or equivalent) and placed at the bottom of the column which calculates the anticipated daily catch for the year being forecasted. The data can then be transferred as needed to what ever form the user requires. Table "CRKMGT93.wk1" or its equivalent has been used in past years to summarize the data for in-season use.

Discussion

The procedural logistics necessary to create valid estimates of allowable commercial harvest and escapement timing for sockeye plus harvest timing for chinook salmon are complex and convoluted; however, their preparation requires, more than anything else, a thorough understanding of the process and its parts. Provision for enhanced stock impact upon both catch and escapement plus provision for personal use fishery impact upon escapement are critical to the success of run timing estimation/goals. Each of these components can be identified and scaled to appropriate estimates or predictions which are based in historical performance data sets. Each additional year of CWT tag recovery plus proper evaluation of fishing pattern changes in the personal use fishery in particular, will ensure the continued effectiveness of the procedures described above. Maintenance of all data bases which describe either distribution, timing or abundance of the catch and escapement of the species involved, is fundamental to the success of the run prediction process.

The run prediction system described above may be modified, simplified or made more complicated provided that the critical elements are not removed. Natural stock, enhanced stock (by release site) and personal use fishery harvest timing and abundance must be treated as of equal and irreplaceable importance if the system is to remain effective.

Recommendations

Although the various data sets used in the run prediction process may be collected by staff from several different offices and Divisions, recognition of the importance of continuity in maintaining long term data sets is extremely important. Maintenance of the commercial, personal use and subsistence catch (by species), sonar escapement enumeration, enhanced production by rearing site and spawning ground escapement indices (by species) data sets, are critical to effective management of the Copper River salmon resource. Failure to fund/operate any of these programs places the process and the product and the salmon resource in jeopardy.

One office/staff member should have primary responsibility for preparing the forecast and run timing documents and should have the support of staff responsible for each of the above mentioned data sets as well as support from the appropriate Divisions or organizations.

Table 1. Copper River Forecast Data and Computation File

File: FCAST93.wr1 Date: 2/18/93 Disk: "SF" Step 1

This is the Copper River forecast data and computation file.

Basic Data as Follows:

Aerial Survey Index	1987	1988	1989	
Copper River Delta	60698	53315	51700	Step 3
Upper Copper River	54540	58281	44268	
Sonar Estimate	483478	488398	607869	Step 4
Subsistence/Personal Use Catch (Up River)	81050	76435	88231	Step 5
Sport Catch Sockeye (Up River)	4876	3038	4509	Step 6
Sport Catch Chinook (Up River)	2301	1562	2219	
Enhanced Production Escapement (not catch)	25505	94563	120872	Step 7
Sonar Count less Sub./P.U./Sport Catch (less hatchery escapement after catches)	369746	312800	392038	Step 8

Upper Copper River Escapement

Six year old %	8.4			Step 9
Five year old %		55.1		
Four year old %			32.2	

Weighting of age times aerial index for parent years as follows:

Upper Copper River

Four year old	44268	32.2	14254	Step 10
Five year old	58281	55.1	32113	

Table 1. (Page 2 of 5)

Six year old	54540	8.4	4581	
Weighted Index		95.7	50948	
Index corrected to 100% = 100/F53*H53			53238	
Average Index (27 year)			46055	Step 11
Copper River Delta Escapement				
Six year old %	0.3			Step 12
Five year old %		48.8		
Four year old %			32.7	

Weighting of age times aerial index for parent years as follows:

Copper River Delta				
Four year old	51700	32.7	16906	Step 13
Five year old	53315	48.8	26018	
Six year old	60698	0.3	182	
Weighted Index		81.8	43106	
Index corrected to 100% = 100/F79*h79			52696	
Average Index (27 years)			80980	Step 14

	1987	1988	1989	Step 15
Sonar Desired Count	433900	450600	458188	Step 16
Sonar Escapement	483478	488398	607869	Step 17
Percent of desired sonar count	111.4	108.4	132.7	Step 18
Escapement after Sub./P.U./Sport take (also Hatchery Escapement removed)	369746	312800	392038	Step 19
Percent of 315,000 desired (w/Kings)	117.4	99.3	124.5	Step 20

Table 1. (Page 3 of 5)

Chinook Escapement Estimate

	Catch Chinook	Total Salmon	Percentage Chinook				
							Step 21
1987	2916	68385	4.3				
1988	3349	68692	4.9				
1989	3395	62384	5.4				
Chinook estimate times escapement				15766	15250	21335	Step 22
Escapement less chinook contribution				353980	297550	370703	Step 23
Percent of 300,000 desired				118.0	99.2	123.6	Step 24
Sonar Escapement weighted by age class contribution expected at return				29734	163950	119366	Step 25
Sum of weighted sonar estimates						313051	Step 26
Percent of desired						104.4	
Weighted aerial index percent of desired Upper Copper River						115.6	Step 27
Weighted aerial index percent of desired Copper River Delta						65.1	Step 28

A 3.15 return per spawner figure is used based upon the most comparable return years from the return/spawner table (CRESCRET.wk1). Step 29

Note: Based upon preliminary analysis by James J. Hasbrouck, models for Return, Return/Spawner and Return/Spawner/Spawner were developed as follows:

$$RET = 648{,}809 + 1.319(Spawners) \quad (1)$$

$$Ln(RPS) = 1.5767 - 0.000001211(Spawners \quad (2)$$

and

$$Ln(RPSS) = 3.5752 - 0.000003661(Spawners) \quad (3)$$

Using these models as forecast tools within the current forecasting system does not appear to equal or improve performance.

Sonar (weighted) * estimated return per spawner	986109	Step 30
Aerial Index (weighted) * estimated return per spawner (Upper Copper River)	1092382	Step 31
Aerial Index (weighted) * estimated return per spawner (Copper River Delta) Assumes 50% visibility factor	331988	Step 32

Table 1. (Page 4 of 5)

Using desired escapements of 160,000 for the Delta and 416,000 for the Upper Copper, then allowable catch (return less escapement) is as follows: Based upon 3.15 returns per spawner. Step 33

Note: Upriver escapement figure does not include estimated enhanced contribution.

Copper River Delta (aerial Index)	171988	Step 34
Upper Copper River		
Sonar	570109	Step 35
Aerial Index	676382	Step 36
Average (sonar/aerial index)	623245	Step 37
Copper River Delta plus Upper Copper River (Average)	795233	Step 38

Gulkana Hatchery

Total expected return to the Gulkana Hatchery in 1993 can be estimated as follows:

1) Average age composition of Gulkana sockeye: Step 39

4-year class 17%
5-year class 83%

2) Estimated survival from released fry to adult return is: Step 40

Paxson Lake 1.0 %
Summit Lake 0.5 %
Crosswind Lake 1.5 %
(Based upon average of best CWT estimates)

3) Step 41

	Release	% Survive	Adults	Adults * 0.83	Total Age 4 & Age 5
1988 brood year fry release					
Paxson Lake - Gulkana I	10105238	0.01	101052	83873	
Paxson Lake - Gulkana II	765447	0.01	7654	6353	
Summit Lake	12004491	0.005	60022	49819	
Crosswind Lake	3130373	0.015	46956	38973	
1989 brood year fry release				* 0.17	
Paxson Lake - Gulkana I	13298695	0.01	132987	22608	106481
Paxson Lake - Gulkana II	828613	0.01	8286	1409	7762
Summit Lake	6445011	0.005	32225	5478	55297
Crosswind Lake	4906005	0.015	73590	12510	51483

Table 1. (Page 5 of 5)

4)	1988 brood year total expected return	215685 * 83%	179018	Step 42
	1989 brood year total expected return	247088 * 17%	42005	

	Total expected return		221023	Step 43

Since a portion of the return must be treated as escapement, only a part of the hatchery produced return can be shown as allowable catch. That portion is calculated at the same rate as that expected in the commercial fishery for the year estimated. 'x %* 221023 132614 Step 44

Therefore, hatchery produced harvest and naturally produced harvest are: 927847 Step 45

Chinook Salmon Forecast

Procedures used here are the same as used in the sockeye salmon forecast.

Year	1986	1987	1988	1989		
Age composition (%)	2.1	48.7	21.7	2.8		Step 2
Aerial index	5314	2807	2330	3657		Step 3
Weighted aerial index	112	1367	506	102		Step 4
Total weighted aerial index					2087	Step 5
98.6 Percent of 27 year average						Step 6
Recent 25 year average catch 27,536 * 98.6 % =			27141			Step 7

(Expected allowable harvest of chinook salmon in the Copper River fishery).

Note: Escapement (desired) is 15,000 chinook.

Table 2. Sockeye and Chinook Forecast Confidence Interval Data

File: FCST932.wr1 Disc: "SF"

Sockeye and Chinook Forecast Confidence Interval Data

Sockeye Return

Year	Forecast	Actual	Numerical Error	Percent Error
1983	0.971	1.418	0.447	0.315
1984	1.121	1.720	0.599	0.348
1985	1.775	1.646	0.129	0.078
1986	1.558	1.440	0.118	0.082
1987	1.658	1.780	0.122	0.069
1988	1.379	1.173	0.206	0.176
1989	1.734	1.726	0.008	0.005
1990	1.373	1.566	0.193	0.123
1991	1.583	1.956	0.373	0.191
1992	1.754	1.711	0.043	0.025
			---	---
	Total error =		2.238	1.412
	Mean error =		0.224	0.141
	80 % of Mean Error =			0.113
	80 % Confidence interval = (plus or minus) for 1993. Forecasted total return multiplied by 80% mean error			183460

Sockeye Harvest

Year	Forecast	Actual	Numerical Error	Percent Error
1983	0.672	0.633	0.039	0.062
1984	0.701	0.900	0.199	0.221
1985	1.200	0.925	0.275	0.297
1986	0.854	0.781	0.073	0.093
1987	0.937	1.180	0.243	0.206
1988	0.701	0.579	0.122	0.211
1989	0.972	1.028	0.056	0.054
1990	0.658	0.845	0.187	0.221
1991	0.869	1.207	0.338	0.280
1992	0.960	0.971	0.011	0.011
			---	---
	Total error =		1.543	1.657
	Mean error =		0.154	0.166
	80 % of Mean Error =			0.133
	80 % Confidence interval = (plus or minus) for 1993. Forecasted total return multiplied by 80% mean error			91110

Table 2. (Page 2 of 2)

Chinook Return

Year	Forecast	Actual	Numerical Error	Percent Error
1983	37500	68574	31074	0.453
1984	42287	61136	18849	0.308
1985	44500	50226	5726	0.114
1986	44475	68110	23635	0.347
1987	47433	58030	10597	0.183
1988	49500	46372	3128	0.067
1989	57100	50394	6706	0.133
1990	52100	40246	11854	0.295
1991	56500	58959	2459	0.042
1992	55700	50941	4759	0.093
	Total error =		118787	2.035
	Mean error =		11879	0.204
	80 % of Mean Error =			0.163
	80 % Confidence interval = (plus or minus) for 1993. Forecasted total return multiplied by 80% mean error		6862	

Chinook Harvest

Year	Forecast	Actual	Numerical Error	Percent Error
1983	22500	50022	27522	0.550
1984	27287	38955	11668	0.300
1985	29500	42333	12833	0.303
1986	29475	40670	11195	0.275
1987	32433	41430	8997	0.217
1988	34500	31700	2800	0.088
1989	42100	30873	11227	0.364
1990	37100	21702	15398	0.710
1991	41500	34787	6713	0.193
1992	40700	39810	890	0.022
	Total error =		109243	3.022
	Mean error =		12039	0.302
	80 % of Mean Error =			0.242
	80 % Confidence interval = (plus or minus) for 1993. Forecasted total return multiplied by 80% mean error		6562	

Table 3. Formal Forecast Submittal to Headquarters

File: FCST933.wp5 Date: 11/13/92 Disk: "SF"

FORECAST AREA: Prince William Sound/Copper River

SPECIES: Sockeye Salmon

1992 DATA: Escapement: 750,408 2/,3/ Catch: 960,676 1/,2/

Return: 1,711,084 1/,2/,3/

1/ Preliminary
2/ Includes Enhanced Stock Production
3/ Includes Subsistence/Personal Use and Sport Catch

PRELIMINARY FORECAST OF 1993 RETURN:

NATURAL PRODUCTION	Point	Range
Return Estimate:	1,403,200	1,219,700 to 1,586,700
Harvest Estimate:	787,200	696,100 to 878,300
Escapement Goal:	616,000	
SUPPLEMENTAL PRODUCTION		
Gulkana Hatchery		
Return Estimate:	221,300	177,000 to 265,500
Harvest Estimate:	132,800	106,200 to 159,400
Brood Stock and Stream Escapement	88,500	
TOTAL PRODUCTION		
Return Estimate:	1,624,500	1,396,700 to 1,852,200
Harvest Estimate:	920,000	802,300 to 1,037,700
Escapement and Brood Stock:	704,500	

FORECAST METHODS:

Natural Production: The 1993 sockeye salmon forecast utilized historical return per spawner data and parent year escapement weighted by age class (4,5 and 6-year-olds) for the Copper River

Delta and Upper Copper River independently. The 1993 predicted return is influenced heavily by the 1988 and 1989 brood years for the Upper Copper River and for the Copper River Delta with five year returns expected to be the strongest in each area.

Supplemental Production: The 1993 supplemental return will be the result of production from Gulkana hatchery. Brood years 1988 and 1989 using F.R.E.D. Division standard survival assumptions should produce an adult return of 221,300. A harvest level of 60% would contribute 132,800 salmon to the commercial catch.

DISCUSSION OF THE 1993 FORECAST

Natural Production: Continued relatively mild winter conditions, particularly on the Copper River Delta during the freshwater life history stage of the age groups represented in the 1993 return, should produce an above average return per spawner contribution from the below average parent year escapements of 1987, 1988 and 1989. Upper Copper River escapements were near average in all three years, thus generally mild conditions and good distribution should yeild above average returns. The forecast will error on the conservative side if environmental conditions continue to produce above average survival rates; additionally, moderate fry densities should increase the return per spawner.

Supplemental Production: Facility production data and conditions suggest that a wide variation in survival from the expected could significantly alter the 1993 total sockeye return; however, as future years data is collected, predictions will become more reliable.

SPECIES: Chinook Salmon

1992 DATA: Escapement: 11,122 1/,2/,3/ Catch: 39,810 1/,4/

Return: 50,932 1/,3/

1/ Preliminary
2/ Expanded Index
3/ Includes Sport, Subsistence and Personal Use Catches
4/ Commercial Catch Only

PRELIMINARY FORECAST OF THE 1993 RETURN

NATURAL PRODUCTION	Point	Range
Return Estimate:	42,100	35,200 to 49,000
Harvest Estimate:	27,100	20,500 to 33,700
Escapement Goal:	15,000	

FORECAST METHODS

The 1993 chinook salmon forecast utilized historical aerial index and age composition data from the 4,5,6 and 7-year-old age classes. Weighted index figures are combined to create a single index of abundance figure which for lack of better data base is compared to the historical average escapement index. The expected return is then a return per spawner calculation which does not consider relative density, climate conditions or distribution of spawners.

DISCUSSION OF THE 1993 FORECAST

During the past eleven years, chinook salmon returns to the Copper River have tended to be above average and have established several of the top catches on record while escapements have generally been maintained at high levels. Only a failure of the 1987 and/or 1988 brood years or significant extra production from the 1989 brood year could seriously affect the forecasted return. No climate condition or other event is believed to have significantly impacted any of the brood years involved. A chinook salmon harvest of the 27,100 fish magnitude appears to be a solid although conservative estimate.

Table 4. Upper Copper River Sockeye Aerial Survey Index Summary

File: DELTAESC.wr1 *Date: 1/5/93* *Disc: "SA"*

This file contains Copper River Delta sockeye escapement index data.

Stream Name	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	Average
Eyak Lake	2000	800	1360	21000	28366	5800	12275	6000	4625	17500	8500	11500	13450	13500	22500	11300	11700	8900	10390	11025	2960	8800	6775	4110	8270	20840	21470	10945
Hatchery Creek	3400	1840	326	248	376	567	403	687	322	700	450	600	300	1000	700	4750	1800	2000	1200	850	650	625	1225	1150	2800	5100	2200	1343
Power Creek						0				2000	500	1500	2500		4500	1100	300	200	500	0	0	0	350	0	205	1870	1420	941
Ibek Creek	0					0		0	300	50	25	25	0	25	35	0	35	0	0	25	0	0	0	120	160	120	40	44
McKinley Lake	4000	1200	0	500	5000	1700	600	1800	2000	8000	6000	15000	18000	25000	27500	10000	9500	12000	11200	19000	12000	10300	9700	6300	1400	2000	10300	8519
Salmon Creek	2100		0	2100	4000	9000	7204	2000	600	2600	4000	1000	2819	4000	5000	10800	13500	8500	11000	8000	900	2	100	630	2000	3330	25	4047
26/27 Mile Creeks	2653	275	250	325	650	2000	1500	1200	250	1200	2500	3550	2000	1500	7500	9500	5500	8000	7500	8500	2030	4100	2105	3020	3360	3900	1420	3122
39 Mile Creek	4550	1120	2000	3000	5997	8270	14910	5511	2400	2500	3500	4500	6500	17500	18000	11000	13000	13000	17000	27000	9500	6100	3620	7420	5000	5340	4500	8250
Goat Mountain Creek	495	640		2800	350	600	5500	2100	150	600	1500	150	1000		150		3000	100	1500	150	600	1000	220	3150	420	20	620	1117
Pleasant Creek	195		1050	1000	2000	150	550	132	0	25	0	650			250		0	0	7400	2500	1000	1	460	990	3190	1495	1587	1070
Martin River						500	2200	1575	4000	1500	1500	1450	3500	8200	3500	5350	1000	3650	5000	0	2875	1480	0	0	350	2045	1400	2322
Ragged Point River										0	0	0	0	0	0				350	6000	0	4100	0	820	4000			1175
Ragged Point Outlet										500	0	250	0	0	5000	1500	4500	1500	600	1500	200	0	60	300	1100			1063
Ragged Point Lake	0		0	0	4050	3000	5000	5300	2000	2500	4000	3500	5500	20000	13000	8000	7000	8500	8000	11000	3700	0	2000	3300	3850	5900	2600	5065
Martin Lake Outlet									4000	1500	2500	1450	3500	0	9000	3800		5000	12000	3000	0	1200	400	2400	5110			3227
Martin Lake	7210	5400	1000	1500	600	4500	6500	2000	1500	480	4000	4094	10500	10000	17650	26050	5300	9000	11350	7000	10500	2510	5900	2800	6010	10700	14000	6964
Martin Lake Feeders	6045	5250	4200	4000	6000	5000	13000	5000	1500	150	3000	1500	1500	4000	8500	15000	9500	8500	12000	10500	700	2300	140	2650	130			5203
Pothole Lake Outlet										0	0	0	0	0	1400	3500	300	1000	250	1500	0	10	85	50	490			537
Pothole Lake	300	680	1500	0	6000	2000	1500		6	3000	3000	550	1100	5000	8000	4500	1200	5500	2300	0	2200	900	2700	1500	1700	5200	1300	2371
L. Martin Lake Outlet										0	0				1500		20	100	200	0	0	20	0	0	100			162
L. Martin Lake	1050	800	0	400	0	3000	3000	1500	1500	2000	8000	1550	4500	4000	6500	2500	6000	6000	10000	11000	1500	3300	2200	3030	5600	11700	1780	3793
Tokun Springs															2000			0		100	0	200	50	450	100			322
Tokun River										0	0	0	0	0	1500	1700		200	350	300	0	780	410	2000	720			3820
Tokun Lake Outlet										350	2500	700	4000	10000	0			300	200	0	0	1100	300	300	0			1317
Tokun Lake	4900		3500	700	19764	20000	2000	8000	2168	1200	8500	4201	6600	5500	17000	8500	2400	6500	9000	7000	16000	6000	11400	2200	3380	5960	8230	7331
Martin River Slough	2145	600	3500	4000	4450	5000	5000	1990	5000	400	2500	3100	6300	4200	10000	15000	9500	11000	14500	8100	7980	5900	3115	3010	13900	5180	3955	5901
Totals	41043	18605	18686	41573	87603	71087	81142	44795	32321	48735	66475	60820	93569	133425	190685	153850	105055	119450	153790	142050	75295	60728	53315	51700	73345	90500	78827	80980

Table 5. Copper River Delta Sockeye Aerial Survey Index Summary

File: CRSESIN.wr1 Date: 10/27/92 Disk: "SA"

This file contains aerial survey index data for the Upper Copper River 20 stream sockeye salmon index.

Location	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	Through 92 Average	Order	Low	High
Fish Lake	1500	2500	4000	400	13000	700 P	4500	6300	800	2800	900	8000	2650	1700	3175	8800	22560	5500	10950	3750	8750	9530	6800	6700	3600	4350	4250	5499	1 FL	400	22560
Bad Crossing #1 and #2	100	0	5	4050	1650	6	0	9275	650	5	16	8400	600	650	75	15000	4550	2000	760	1125	5300	2575	2075	3025	6050	2625	500	2632	2 B	0	15000
Suslota Lake	320	6	550	800	4000	4550	4830	3400	400	0	100	300	1200	1000	1700	300	1800	5600	700	2200	1300	970	550	525	750	210	1350	1460	3 Su	0	5600
Dickey Lake	0	500	210	150	183	170	73	2500	10	25	0	650	75	13	250	20	410	135	105	290	43	360	57	28	28	56	48	237	4 Dk	0	2500
Keg Creek	0	0	810 *	1400	810 *	810 *	0	1435	190	256	125	725	1050	1300	2335	320	495	620	2505	825	200	400	360	1450	160	95	630	715	5 Kg	0	2505
Mahlo Creek	2550	2500	2200	750	5000	12400	1525	4500	500	314	600	5200	300	450	1000	1800	3300	2400	4300	575	1750	2350	3900	4600	2600	3750	250	2643	6 Ml	314	12400
St. Anne Creek	2720	4500	3200	4300	18300	25100	1900	7400	2100	449	1700	7000	1150	730	5000	4700	8800	9700	10300	1250	4600	6980	6100	3100	1700	4700	450	5479	7 St	449	25100
Fish Creek - Montasta	300	50	115	300	1000	900	650	2200	450	200	250	6900	1300	350	900	10500	1700	900	900	1800	1100	250	650	1500	1000	1050	480	1398	8 FC	50	10500
Swede Lake	0	100	0	5	2	9	400	350	15	6	10	750	80	155	400	450	1400	550	2400	250	385	113	230	275	120	110	875	350	9 S	0	2400
Tana River	404 *	404 *	404 *	404 *	50	404 *	180	1425	520	60	25	404 *	504	465	2130	290	1100	2485	3665	1145	1825	472	2034	245	89	750	740	838	10 TR	50	3665
Montasta Lake	500	800	500	2000	3800	2295	800	2700	700	450	600	3500	3600	2500	3200	7400	3250	6800	4850	3850	2850	1800	4300	3270	2900	1550	600	2643	11 M	450	7400
Tanada Lake	10	490	150	6	1000	3843	480	10	2800	700	2200	2800	525	3375	4200	5300	3880	4300	9100	5900	3960	4950	2100	2550	1650	1725	2250	2602	12 TL	6	9100
Salmon Creek	275 *	275 *	275 *	0	0	275 *	0	200	400	0 P	300	275 *	50	450	1500	250	850	1550	1350	575	300	1150	700	425	350	350	1500	505	13 Sa	0	1550
Paxson Inlet to Mud Creek	4139	800	7000	3200	8850	7900	5818	10500	14300	2100	4200	6000	2700	5400	8200	2200	1150	7500	15700	7500	7000	4250	6350	3200	2850	4800	6450	5928	14 P	800	15700
Mud Creek and Lake	75	2000	750	600	1500	600	850	500	300	400	1100	650	150	460	740	810	1900	470	270	200	70	0	150	0	35	100	425	559	15 M	0	2000
Mendeltna Creek	3098	632	1350	6805	4700	870	1950	1200	332	325	900	3900	725	350	1125	4830	400	2850	1900	2300	3325	2275	1550	2000	3700	3050	1750	2155	16 M	325	6805
Paxson Lake Outlet	5300	2500	700	2578 *	3500	3400	2700	4300	1000	550	2800	3800	2500	1900	3800	1500	3800	3300	4100	3600	1810	5100	3200	900	1350	2300	950	2713	17 P	550	5300
Mud Creek to Summit Lake	1830	1200	2075	2500	4000	3250	1675	5700	2700	1200	1900	5900	800	2600	3075	3400	17400	5700	9600	8150	3375	9050	15400	6800	2950	9625	3800	5024	18 M	800	17400
Long Lake	2066 *	1000	3000	5000	2000	2000	3000	150	750	1100	2450	877	1425	3100	2650	1325	1700	5600	1360	590	1300	1225	1125	1225	1950	1919 *	1050	1887	19 Lg	150	5600
Tonsina Lake	0	0	200	1100	500	500	250	300	200	250	900	432 *	4	775	650	1725	1700	2850	975	290	350	740	650	2450	1450	770 *	1350	791	20 Tn	0	2850
Totals	25187	20257	27494	36348	73845	69982	31581	64345	29117	11190	21076	66463	21388	27723	46105	70920	82145	70810	85790	46165	49593	54540	58281	44268	35282	43885	29696	46055			

* = Interpolated
G = Ground Survey
P = Poor Survey

Fish Lake	Peak count of live and or dead
Bad Crossing #1 and #2	Peak count of live and or dead
Suslota Lake	Peak count of live and or dead
Dickey Lake	Peak count of live and or dead
Keg Creek	Peak live count
Mahlo Creek	Peak live count
St. Anne Creek	Peak live count
Fish Creek - Montasta	Peak live count
Swede Lake	Peak live count
Tana River	Peak live count, All Tana River count areas
Montasta Lake	Peak live count
Tanada Lake	Peak live count, Lake only, not outlet area.
Salmon Creek	Peak live count
Paxson Inlet to Mud Creek	Peak live count
Mud Creek and Lake	Peak live count
Mendeltna Creek	Peak live count, mouth to Old Man Lake only.
Paxson Lake Outlet	Peak live count
Mud Creek to Summit Lake	Peak live count
Long Lake	Peak live count
Tonsina Lake	Peak live count

Table 6. Miles Lake Sonar Daily Estimate Summary, 1978-92

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Appendix Table X2. Copper River daily sonar estimates, Miles Lake sonar, 1978 - 1992.

Date	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1978-1992 Average	S.D.	C.V.	Average Daily Percent
17-May				5372								732				407	2320	100.0	0.6
18-May		381	218	9665								3660				928	3825	129.1	0.8
19-May		487	167	11409			725				313	6588				1313	4279	137.6	0.6
20-May		847	221	10733			1924			167	877	6935				1447	3803	134.8	0.6
21-May		1199	88	9729			1986			36	1440	4834	1121	1087		1435	2915	128.3	0.6
22-May		1916	391	7558			5124			482	2256	4030	4843	1717		1888	2263	83.6	0.7
23-May		2901	594	6214		3310	5042			1732	5078	6472	7177	3161		2779	2054	56.3	0.8
24-May		3402	494	12985	90	8620	4486			2040	11033	7448	11923	2465		4332	4478	99.9	1.3
25-May		2397	713	12816	493	11587	3120		534	4263	9979	4658	14333	3046		4529	4870	104.6	1.2
26-May	502	4927	1057	6383	1023	10575	4645		1694	7115	8946	8318	11337	3274		4653	3596	80.4	1.1
27-May	837	6821	2115	2842	12091	8661	5836		2092	12176	13247	13143	12060	3893	1226	6469	4560	74.9	1.6
28-May	1047	2768	1693	2560	47303	8456	4978	1031	3384	16392	14201	13880	7434	3389	1431	8663	11694	144.9	2.2
29-May	661	3905	1080	2160	19671	6380	7126	417	2393	14485	10022	10677	9176	3933	2362	6297	5504	102.4	1.5
30-May	3241	7482	1903	11822	8781	8296	4951	599	3173	18196	6806	5375	9541	4417	5736	6688	4380	70.1	1.6
31-May	2549	8655	3620	21126	11389	17123	4278	1758	4150	18540	7586	7316	10343	9362	7931	9048	5887	70.9	2.2
01-Jun	2616	4078	5257	18415	15385	18428	8536	3462	7001	16395	5205	7041	10026	16833	6610	9686	5707	60.4	2.3
02-Jun	2811	3465	7061	23771	17213	14414	8483	6726	20638	14385	3558	5234	9909	21151	7919	11116	6933	58.7	2.7
03-Jun	1837	3536	7437	16716	13383	13137	9730	10691	20237	17666	4626	6867	8576	17808	11536	10919	5584	50.5	2.6
04-Jun	3256	2778	8996	9755	12355	15357	12496	24272	26626	14632	7877	8555	7572	14557	7921	11800	6620	55.2	3.0
05-Jun	2970	4352	9746	10478	14806	19110	16728	30507	27934	10962	6756	7512	10173	18673	9295	13333	7948	58.1	3.3
06-Jun	3318	6453	5407	11975	15585	14069	18097	32953	14527	4322	8895	7719	10410	11688	14552	11998	7262	63.7	2.9
07-Jun	3808	7031	2093	13585	12606	19309	18515	27256	9858	5755	9096	12693	11137	8440	16734	11841	6462	60.4	2.8
08-Jun	3275	11078	1349	14412	8430	16094	26619	30925	24938	6366	11322	14565	7637	9471	17729	13614	8472	64.8	3.3
09-Jun	2252	7985	3543	15694	7017	11415	20476	29702	28242	7922	14641	9440	9905	11665	20719	13375	7996	66.2	3.2
10-Jun	3475	5205	7301	12856	7599	8009	19275	12010	29952	11553	15216	12126	11660	8565	23430	12549	6403	61.0	2.9
11-Jun	2490	4426	12032	7877	7879	9563	17237	11826	25418	11194	16255	9663	16181	8104	18591	11916	6655	55.8	2.7
12-Jun	2082	2227	11584	4844	8587	13292	21706	8231	16494	6506	14969	8256	23929	12688	14096	11299	6389	61.8	2.4
13-Jun	2419	3903	7600	3556	9932	13444	12072	6829	11453	4053	10751	10626	24448	9066	18257	9894	5407	49.7	1.9
14-Jun	2835	2563	6661	5228	12551	13831	5981	6800	11393	8053	9382	13548	14302	9236	20456	9455	3862	47.9	1.8
15-Jun	2913	3351	7308	7071	12677	15915	10291	8825	8747	5485	9910	9922	8390	14967	23957	9982	3671	44.4	2.0
16-Jun	2782	3473	5655	6885	13595	7938	13930	9347	10099	5516	6484	8889	10112	14367	13914	8866	3564	44.2	1.9
17-Jun	2779	4640	7189	6467	12030	5671	19809	6270	8772	5406	4910	10020	12695	10129	14509	8753	4239	56.7	1.8
18-Jun	2261	3911	6741	4565	6544	5689	12850	3738	9050	4815	6469	11131	8052	11051	14893	7451	3030	46.0	1.4
19-Jun	3035	3413	2391	2985	4369	6461	7474	3251	7910	3983	7856	8345	9763	12921	12324	6432	3035	45.3	1.1
20-Jun	3035	1954	3597	2891	3352	7382	9268	2423	7240	3933	7952	7575	9315	14146	19480	6902	3406	54.9	1.1
21-Jun	2515	2223	4142	3446	3346	8124	7169	2061	6741	3924	5770	7169	10292	8750	16882	6170	2565	46.2	1.1
22-Jun	2068	2586	3954	3997	4467	8005	5522	2763	9026	6379	6985	8868	10157	7830	9452	6137	2555	45.1	1.2
23-Jun	2841	2865	3896	4363	7031	7528	5913	3369	8010	10111	7699	5850	10166	6358	7234	6216	2365	42.0	1.4
24-Jun	2616	1877	5217	4651	6329	6009	6741	2950	6968	15708	5582	3927	9340	5963	6319	6013	3291	59.5	1.4
25-Jun	2130	3013	5104	3398	4903	5226	6503	1585	5731	16517	5597	2996	10010	7660	6675	5803	3692	70.5	1.3
26-Jun	1771	1973	3595	2412	4416	5638	4385	2381	5410	12500	6378	3426	6812	9500	7180	5185	2934	65.4	1.1
27-Jun	2178	1315	3421	2507	2732	4738	7224	3035	5153	7010	6559	3240	9234	10355	6266	4998	2677	50.4	1.0
28-Jun	1103	1697	4324	2949	2174	4771	6728	2264	5022	5644	6259	6302	6881	10810	8084	5001	2530	50.7	0.9
29-Jun	1604	1450	3845	3421	2130	4304	4453	2147	3578	6836	8220	6490	4499	10439	9258	4845	2533	60.2	0.9
30-Jun	1632	1899	3465	2378	2313	6146	6449	2139	3771	4636	6497	7354	3975	9113	7416	4612	2261	51.9	0.9
01-Jul	1587	2651	3559	2723	2190	6106	8226	2620	3584	2012	5602	7930	4323	7303	7120	4502	2215	55.9	0.9
02-Jul	2533	2524	3365	2606	4420	6113	7554	2608	3152	3406	4680	5296	5067	5109	5591	4268	1489	41.2	0.9
03-Jul	2527	2859	4104	2548	5751	6026	8581	1819	2311	4096	4222	4976	4682	6335	4641	4365	1825	47.7	1.0
04-Jul	2980	3806	2934	4094	5245	6943	6515	3636	1805	7100	3532	7369	5665	6680	5413	4908	1779	37.8	1.0
05-Jul	2269	3008	2879	4256	4995	5347	6662	3254	1499	4351	3304	10739	7998	5845	4424	4722	2386	36.9	0.9
06-Jul	1623	1996	3025	3476	6300	3973	5449	4664	2809	3393	3510	10024	7749	6213	6987	4746	2255	36.2	0.9
07-Jul	1152	892	3291	3863	6171	4209	4040	3627	2991	5617	4324	10236	5700	6222	7361	4646	2248	42.5	0.9
08-Jul	831	2091	2995	3774	3990	4080	3906	3893	2860	6616	8499	11113	5192	7069	5758	4844	2620	56.5	0.9
09-Jul	947	3190	2817	3449	2210	3353	3210	6827	3077	6352	5167	10761	5153	6453	11937	4994	2409	47.1	0.9
10-Jul	1252	4209	3642	2942	2070	3644	2927	10607	5435	8585	6347	9506	6620	4610	9139	5436	2731	59.8	1.1
11-Jul	841	3684	5763	2271	1980	4454	3608	5457	5115	5322	7620	8453	5402	4477	8380	4855	1996	48.6	1.0
12-Jul	341	3262	4788	3468	3420	4541	4280	6329	5042	5757	7881	11953	9338	4818	7959	5545	2755	45.0	1.1
13-Jul	167	3144	1725	2265	4032	4543	4582	5252	3696	6583	7087	9329	11432	3969	6741	4970	2878	54.3	0.9
14-Jul	290	4124	1679	2596	4339	5819	6573	6113	3530	6439	7012	10270	8206	7498	8574	5537	2615	50.9	1.0
15-Jul	275	3535	1743	3691	4714	6496	5521	5024	4699	5722	6924	12283	8309	7550	8971	5697	2818	45.8	1.0
16-Jul	538	5175	2515	2580	3561	6970	6755	5339	2227	6259	5457	10897	6093	9671	7683	5448	2767	48.4	1.0
17-Jul	304	3555	3419	780	2925	6327	4955	5960	4108	4467	4877	8903	6259	9668	6718	4882	2539	49.4	0.9
18-Jul	284	3760	5878	8633	3413	4326	4736	5110	4993	4620	3857	11811	5726	7340	8807	5553	2580	41.5	1.1
19-Jul	321	3344	5613	20975	4296	3703	3140	4560	6066	4127	4583	10567	5975	7513	8615	6227	4711	90.7	1.3
20-Jul	238	2716	5060	20511	3920	3988	3389	8176	5997	3634	4483	10169	4315	10681	7102	6292	4815	87.8	1.3
21-Jul	81	2583	3826	15741	4049	4463	3204	4128	4746	2441	3964	8639	2534	10268	4898	5038	3842	83.4	1.1
22-Jul	18	2012	3173	6566	3871	4881	3780	3158	3408	1273	2797	8908	2457	9702	4612	4041	2630	51.7	0.8
23-Jul	15	1915	2143	5787	3099	3603	3205	2870	2909	1002	3429	8103	3901	9017	5426	3762	2397	63.7	0.6
24-Jul	40	2182	1353	5063	3061	3903	2198	2162	2633	625	3900	6250	2883	4245	3821	2955	1628	60.9	0.6
25-Jul	13	1112	1623	3391	3374	4535	1937	2449	2292	2014	4023	5303	2050	3066	2984	2678	1351	55.4	0.6
26-Jul		771	1256	2493	2596	3839	1687	1974	1799	368	4142	5706	2257	4422	3412	2448	1493	62.0	0.5
27-Jul		318	1198	2451	2247	3887	1391	2191	1626	626	3920	5699	2885	3884	3619	2383	1463	64.4	0.5
28-Jul		387	698	2785	2375	5234	1004	2839	1797	2494	3452	4926	1934	4793	3205	2528	1522	62.7	0.5
29-Jul		365	400	3686	1426	4138	891	2813	1563	2341	3476	4150	2808	5354	3954	2491	1510	67.0	0.5
30-Jul		491	470	3814	963	3512	938	2790	1489	2075	2423	2591	2462	4711	3872	2173	1265	62.9	0.5
31-Jul		703	353	3802	1176	1835	1093	1848	1259	2226	1920	1551	2550	2901	3855	1805	900	57.8	0.4
01-Aug		758	825	3396	511	1912	1047	1070	1172	2726	1438	2299	3839			1400	1045	69.1	0.4
02-Aug		379	1034	2304	942	2211	1088	703	1045	1299	1098	1744	5249			1273	1230	47.1	0.3
03-Aug		227	764	1913	494	2088	1213		770	1702						611	647	56.4	0.3
04-Aug		286	708	1297	581	2897	1118		814	1499						613	756	65.8	0.3
05-Aug		173	768	1181	122		1009		435	518						280	373	62.2	0.1
06-Aug		103	877	1170			533		416							207	370	59.7	0.1
07-Aug		76	615						192							69	232	78.7	0.1
08-Aug			166						33							13	67	66.8	0.0
09-Aug			239						47							19	96	67.1	0.0
																0			
Total	107011	237173	276538	535263	467306	545724	536806	436313	508600	483478	488398	607869	581869	579435	601952	466248	272452	5434.1	100.0

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Appendix Table X3. Copper River cumulative sonar estimates, Miles Lake sonar, 1978 - 1992.

Date	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1978-1992 Average	S.D.	C.V.	Cumulati Average Daily Percent
17-May				5372								732				407	2320	0.0	0.1
18-May		381	218	15037								4392				1335	6027	133.3	0.3
19-May		868	385	26446			725				313	10980				2648	9649	145.7	0.6
20-May		1715	606	37179			2649			167	1190	17915				4095	12962	158.4	0.9
21-May		2914	694	46908			4635			203	2630	22749	1121	1087		5529	14882	151.0	1.3
22-May		4830	1085	54466			9759			685	4886	26779	5964	2804		7417	16653	133.8	1.6
23-May		7731	1679	60680		3310	14801			2417	9964	33251	13141	5965		10196	17478	128.5	2.2
24-May		11133	2173	73665	90	11930	19287			4457	20997	40699	25064	8430		14528	20379	126.7	3.1
25-May		13530	2886	86481	583	23617	22407		534	8720	30976	45357	39397	11476		19058	23617	127.6	4.1
26-May	502	18457	3943	92864	1606	34092	27052		2228	15835	39922	53675	50734	14750		23711	25823	122.3	5.1
27-May	1339	25278	6058	95706	13697	42753	32888		4320	28011	53169	66818	62794	18643	1226	30180	27232	97.7	6.6
28-May	2386	28046	7751	98266	61000	51209	37866	1031	7704	44403	67370	80698	70228	22032	2657	38843	30188	87.9	8.8
29-May	3047	31951	8831	100426	80671	57589	44992	1448	10097	58888	77392	91375	79404	25965	5019	45140	33454	83.2	10.3
30-May	6288	39433	10734	112248	89452	65885	49943	2047	13270	77084	84198	96750	88945	30382	10755	51828	36419	78.6	11.9
31-May	8837	48088	14354	133374	100841	83008	54221	3805	17420	95624	91784	104066	99288	39744	18686	60876	40876	75.6	14.1
01-Jun	11453	52166	19611	151789	116226	101436	62757	7267	24421	112019	96989	111107	109314	56577	25296	70562	44620	71.8	16.4
02-Jun	14264	55631	26672	176560	133439	115850	71240	13993	45059	126404	100547	116341	119223	77728	33215	81678	47627	66.3	19.0
03-Jun	16101	59167	34109	192276	146822	128987	80970	24684	65296	144070	105173	123208	127799	95536	44750	92597	49937	61.2	21.6
04-Jun	19357	61945	43105	202031	159177	144344	93466	48956	91922	158702	113050	131763	136371	110093	52671	104397	49887	53.8	24.6
05-Jun	22327	66297	52851	212509	173983	163454	110194	79463	119856	169664	119805	139275	145544	128766	61966	117730	50398	47.8	27.9
06-Jun	25645	72750	58258	224484	189568	177523	128291	112416	134383	173986	128700	146994	155954	140464	76518	129728	51557	44.3	30.8
07-Jun	29453	79781	60351	238069	202074	196832	146806	139672	144041	179741	137796	159687	167091	148894	93252	141569	54371	42.8	33.6
08-Jun	32728	90859	61700	252481	210504	212926	173425	170597	168979	186107	149118	174252	174728	158365	110981	155183	57386	41.2	37.0
09-Jun	34980	98844	65243	268175	217521	224341	193901	200299	197221	194029	163759	183682	184633	170030	131700	168558	61147	40.6	40.2
10-Jun	38455	104049	72544	281031	225120	232350	213176	212309	227173	205582	178975	195818	196293	178595	155130	181107	64228	39.9	43.1
11-Jun	40945	108475	84576	288908	232999	241913	230413	224135	252591	216776	195230	205481	212474	186699	173721	193022	66681	39.0	45.8
12-Jun	43027	110702	96160	293752	241586	255205	252119	232382	269085	223282	210189	213737	236403	199387	187817	204321	69301	38.4	48.2
13-Jun	45446	114605	103760	297308	251518	268649	264191	239195	280538	227335	220940	224363	260851	208453	206074	214215	71668	38.0	50.0
14-Jun	48281	117168	109421	302536	264069	282480	270172	245995	291931	235388	230322	237911	275153	217689	226530	223670	74093	37.7	51.9
15-Jun	51194	120519	116729	309607	276746	298395	280463	254820	300678	240873	240232	247833	283543	232656	250487	233652	76288	37.5	53.9
16-Jun	53976	123992	122384	316492	290341	306333	294393	264167	310777	246389	246716	256722	293655	247023	264401	242517	78611	37.3	55.7
17-Jun	56755	128632	129573	322959	302371	312004	314202	270437	319549	251795	251626	266742	306350	257152	278910	251270	80786	37.0	57.5
18-Jun	59016	132543	136314	327524	308915	317693	327052	274175	328599	256610	258095	277873	314402	268203	293803	258721	82281	36.6	59.0
19-Jun	62051	135956	138705	330509	313284	324154	334526	277426	336509	260593	265950	286218	324165	281124	306127	265153	83725	36.5	60.1
20-Jun	65086	137910	142302	333400	316636	331536	343784	279849	343749	264526	273902	293793	333480	295270	325607	272055	85332	36.3	61.3
21-Jun	67601	140133	146444	336846	319982	339660	350943	281810	350490	268450	279672	300962	343772	304020	342489	278225	86832	36.2	62.3
22-Jun	69669	142718	150398	340843	324449	347665	356465	284673	359516	274829	286667	309830	353929	311850	351941	284362	88547	36.1	63.6
23-Jun	72510	145583	154294	345206	331480	355193	362378	288042	367526	284940	294356	315680	364095	318208	359175	290578	90069	35.9	64.9
24-Jun	75126	147460	159511	349857	337809	361202	369119	290992	374494	300648	299938	319607	373435	324171	365494	296591	91430	35.6	66.3
25-Jun	77256	150473	164615	353255	342712	366428	375622	292577	380225	317165	305535	322603	383445	331831	372169	302394	92699	35.3	67.6
26-Jun	79027	152446	168210	355667	347128	372066	380007	294958	385635	329665	311913	326029	390257	341331	379349	307579	94003	35.2	68.7
27-Jun	81205	153761	171631	358174	349860	376804	387231	297993	390788	336875	318472	329269	399491	351686	385615	312577	95512	35.1	69.7
28-Jun	82308	155458	175955	361123	352034	381575	393959	300257	395810	342319	324731	335571	406372	362496	393699	317578	96954	35.1	70.6
29-Jun	83912	156908	179800	364544	354164	385879	398412	302404	399388	349155	332951	342061	410871	372935	402957	322423	98072	35.0	71.6
30-Jun	85544	158807	183265	366922	356477	392025	404861	304543	403159	353791	339448	349415	414846	382048	410373	327035	99261	34.9	72.4
01-Jul	87131	161458	186824	369645	358667	398131	413087	307163	406743	356803	345050	357346	419169	389351	417493	331537	100377	34.9	73.3
02-Jul	89664	163982	190189	372251	363087	404244	420641	309771	409895	359209	349730	362641	424236	394460	423084	336806	101282	34.7	74.3
03-Jul	92191	166841	194293	374799	368838	410270	429222	311590	412206	363305	353952	367617	428918	400795	427725	340171	102180	34.5	75.2
04-Jul	95171	170647	197227	378893	374083	417213	435737	315126	414011	370405	357484	374986	434583	407475	433138	345079	103108	34.3	76.3
05-Jul	97440	173655	200106	383149	379078	422560	442399	318380	415510	374756	360788	385725	442581	413320	437562	349801	104332	34.1	77.2
06-Jul	99063	175651	203131	386625	385378	426533	447848	323044	418319	378149	364298	395749	450330	419533	444549	354547	105660	34.0	78.1
07-Jul	100215	176543	206422	390488	391549	430742	451888	326671	421310	383766	368622	405985	456030	425755	451910	359193	107071	34.0	78.9
08-Jul	101046	178634	209417	394262	395539	434922	455794	330564	424170	390382	377121	417098	461222	432824	457668	364028	108479	34.0	79.9
09-Jul	101993	181824	212234	397711	397749	438175	459004	337391	427247	396734	382288	427859	466375	439277	469605	369031	109527	33.8	80.7
10-Jul	103245	186033	215876	400653	399819	441819	461931	347998	432682	405319	388636	437365	472995	443887	478744	374467	110416	33.6	81.9
11-Jul	104086	189717	221639	402924	401799	446273	465539	353455	437797	410641	396255	445818	478397	448364	487124	379322	111187	33.3	82.9
12-Jul	104427	192979	226427	406392	405219	450814	469819	359784	442839	416398	404136	457771	487735	453182	495083	384867	112778	33.3	83.9
13-Jul	104594	196123	228152	408657	409251	455357	474401	365036	446535	422981	411223	467100	499167	457151	501824	389837	114689	33.3	84.9
14-Jul	104884	200247	229831	411253	413590	461176	480974	371149	450065	429420	418235	477370	507373	464649	510398	395374	116645	33.3	85.9
15-Jul	105159	203782	231574	414944	418304	467672	486495	376173	454764	435142	425159	489653	515682	472199	519369	401071	118841	33.4	86.9
16-Jul	105697	208957	234089	417524	421865	474642	493250	381512	456991	441401	430616	500550	521775	481870	527062	406519	120567	33.4	88.0
17-Jul	106001	212512	237508	418304	424790	480969	498205	387472	461099	445868	435493	509453	528034	491538	533770	411401	122196	33.3	88.9
18-Jul	106285	216272	243386	426937	428203	485295	502941	392582	466092	450488	439350	521264	533760	498878	542577	416954	123620	33.1	89.9
19-Jul	106606	219616	248999	447912	432499	488998	506081	397142	472158	454615	443933	531831	539735	506391	551192	423181	125225	33.0	91.3
20-Jul	106844	222332	254069	468423	436419	492986	509470	405318	478155	458249	448416	542000	544050	517072	558294	429472	127106	33.0	92.6
21-Jul	106925	224915	257885	484164	440468	497449	512674	409446	482901	460690	452380	550639	546584	527340	563192	434510	128858	33.0	93.7
22-Jul	106943	226927	261058	490730	444339	502330	516454	412604	486309	461963	455177	559547	549041	537042	567804	438551	130459	33.1	94.4
23-Jul	106958	228842	263201	496517	447438	505833	519659	415474	489218	462985	458809	567250	552942	546059	573230	442313	132072	33.1	95.1
24-Jul	106998	231024	264554	501580	450499	509836	521857	417636	491851	463590	462506	573900	555825	550304	577061	445267	133186	33.1	95.7
25-Jul	107011	232136	266177	504971	453873	514371	523794	420085	494143	465604	466529	579203	557875	553370	580035	447945	134176	33.2	96.2
26-Jul	107011	232907	267433	507464	456469	518210	525481	422059	495942	465972	470671	584909	560132	557792	583447	450393	135265	22.8	96.7
27-Jul	107011	233225	268631	509915	458716	521897	526872	424250	497568	466598	474591	590608	563017	561676	587066	452776	136392	22.7	97.1
28-Jul	107011	233612	269329	512700	461091	527131	527876	427089	499365	469092	478043	595534	564951	566469	590271	455304	137576	22.8	97.6
29-Jul	107011	233977	269729	516386	462517	531269	528767	429902	500928	471433	481519	599684	567759	571823	594225	457795	138791	22.9	98.1
30-Jul	107011	234468	270159	520200	463480	534781	529705	432692	502417	473508	483942	602275	570221	576534	598097	459969	139763	22.9	98.5
31-Jul	107011	235171	270652	524002	464656	536616	530798	434540	503676	475734	485862	603826	572771	579436	601952	461773	140465	23.0	98.8
01-Aug	107011	235929	271377	527398	465167	538528	531845	435610	504848	478460	487300	606125	576610	579436	601952	463173	141805	23.0	99.2
02-Aug	107011	236308	272411	529702	466109	540739	532933	436313	506893	479759	488398	607869	581859	579436	601952	464446	142566	23.0	99.4
03-Aug	107011	236535	273175	531615	466603	542827	534146	436313	506663	481461	488398	607869	581859	579436	601952	465057	142787	25.5	99.6
04-Aug	107011	236821	273883	532912	467184	545724	535264	436313	507477	482980	488398	607869	581859	579436	601952	465671	143018	25.5	99.8
05-Aug	107011	236994	274641	534093	467306	545724	536273	436313	507912	483478	488398	607869	581859	579435	601952	465951	143057	26.6	99.9
06-Aug	107011	237097	275518	535263	467306	545724	536806	436313	508328	483478	488398	607869	581859	579435	601952	466167	143059	31.9	100.0
07-Aug	107011	237173	276133	535263	467306	545724	536806	436313	508520	483478	488398	607869	581859	579435	601952	466216	143000	35.2	100.0
08-Aug	107011	237173	276299	535263	467306	545724	536806	436313	508553	483478	488398	607869	581859	579435	601952	466229	142986	29.6	100.0
09-Aug	107011	237173	276538	535263	467306	545724	536806	436313	508600	483478	488398	607869	581859	579435	601952	466248	142966	29.6	100.0

Table 7. Personal Use and Subsistence Data Summary

File: CRSUPUTB.wr1 Date: 2/12/93 Disk: PD

Table 18. Copper River subsistence and personal use fisheries data, 1965 - 1992.

	Permits Issued			Reported Catch			Reported Catch by Species			Total Catch (all species)	
Year	Dip Net	Fish Wheel	Total	Dip Net	Fish Wheel	Total	Chinook	Sockeye	Coho	Reported	Estimated
1965	982	143	1125	7215	5813	13028	664	12760	52	13476	16818
1966	1132	138	1270	7452	9188	16640	555	16718		17273	21896
1967	1166	154	1320	6146	8360	14506	419	14457		14876	19007
1968	1235	143	1378	8040	6071	14111	644	14819	233	15696	20383
1969	1415	167	1582	18054	6220	24274	719	27604	224	28547	29266
1970	3220	267	3487	22700	9886	32586	427	36500	554	37481	42757
1971	4168	374 1	4542	28115	9370	37485	1363	37517	363	39243	48449
1972	3485	205	3690	18996	7854	26850	1501	26850	248 2	28599	32468 2
1973	3840	305	4145	16407	10943	27350	1846	27350	51 3	29247	29248 3
1974	3305	288	3593	15143	7657	22800	1141	22800	163 4	24104	26001 4
1975	2452	350	2802	7694	5626	13320	1705	13320		15025	15357
1976	2512	451	2963	12130	8321	20451	2017	20451	17	22485	23623
1977	3526	540	4066	22612	12751	35363	2171	35363	454	37988	41815
1978	3313	392	3705	12569	6638	19207	2050	19207	633	21890	22029
1979	2730	470	3200	11887	10251	22138	2372	22138	705	25215	30963
1980	2804	399	3203	14650	9805	24455	2256	21437	639	24332	35081
1981	3555	523	4078	28872	26924	55796	1913	53008	849	55770	68746
1982	5475	615	6090	62614	38120	100734	2532	96799	1246	100577	110006 5
1983	6911	630	7541	72257	35791	108228	5421	100995	1690	108106	118728
1984 s	104	458	562	1288	20374	21662	415	20999	237	21651	23093
p	5311	17	5328	46018	223	46241	1592	44079	552	46223	49940
s&p	5415	475	5890	47306	20597	67903	2007	65078	789	67874	73033
1985	4153	533	5686	29856	22877	52733	1673	50488	544	52705	64200
1986 s	39	366	405	645 6	25136	25781	622	24890	264	25776	28423
p	3966	65	4031	41641	1054	42695	2294	39794	521	42609	44047
s&p	4005	431	4436	42286	26190	68476	2916	64684	785	68385	72470
1987 s	59	372	431	1114	24157	25271	587	24616	100	25303	34142
p	4186	73	4259	42842	567	43409	2762	40225	402	43389	46908
s&p	4245	445	4690	43956	24724	68680	3349	64841	502	68692	81050
1988 s	70	339	409	1860	18955	20815	672	19761	245	20678	30514
p	4205	46	4251	40492	1238	41730	2723	38533	450	41706	45921
s&p	4275	385	4660	42352	20193	62545	3395	58294	695	62384	76435
1989 s	78	308	386	2235	25377	27612	744	26716	65	27525	29317
p	4447	137	4584	53321	3223	56544	2160	53505	825	56490	58914
s&p	4525	445	4970	55556	28600	84156	2904	80221	890	84015	88231
1990 s	95	311	406	2703	27942	30645	604	29947	87	30638	32290
p	5631	58	5689	67241	747	67988	2594	63793	1446	67833	70478
s&p	5726	369	6095	69944	28689	98633	3198	93740	1533	98471	102768
1991 s	293	418	711	6071	31634	37705	1216	36234	213	37663	40259
p	6222	0	6222	82743	0	82743	3947	75475	3264	82686	84703
s&p	6515	418	6933	88814	31634	120448	5163	111709	3477	120349	124962
1992 s	151	504	655	4075	38835	42910	1320	41199	330	42849	46946
p	6387	0	6387	89279	0	89279	3316	84450	1478	89244	91793
s&p	6538	504	7042	93354	38835	132189	4636	125649	1808	132093	138739

Table 7. (Page 2 of 2)

1 Last use of Dip Net/Fishwheel combination permits.
2 First issue of permits at Chitina
3 Last "Blacklist" used
4 Issue of permits at Chitina and Glennallen only.
5 Return requirement enforced.
6 Estimated

s = subsistence
p = personal use
s + p = total catch (1984 and 1986-19--).

Note: All 1990 and 1991 data preliminary!!

Table 8. Copper River Sockeye and Chinook Salmon Data Summary

File: Board901.wr1 Date: 1/13/93 Disk: MA

Table 1. Copper River sockeye and chinook salmon data, 1966 - 1992.

	SOCKEYE SALMON								CHINOOK SALMON						SOCKEYE				CHINOOK				Ratio (percent) each type of catch is of commercial catch for that year: SOCKEYE			
		Aerial Index			Subsist./Personal Use						Subsist./Personal Use															
Year	Commercial Catch	Delta	Upriver	Sonar Count	Fish Wheel	Dip Net	Sport Catch	Total Catch	Commerci Catch	Aerial Index	Fish Wheel	Dip Net	Sport Catch	Total Catch	Comm. %	FW %	DN%	Sport %	Comm. %	FW %	DN %	Sport %	Subs.	P.U.	Sport	Year
66	1007342	41043	25187		12188	9849	300	1029679	11026	882	439	288	500	12253	97.83	1.18	0.96	0.03	89.99	3.58	2.35	4.08	0.012	0.010	0.000	66
	516271	18605	20257		9255	9564	400	535490	10307	1429	223	345	500	11375	96.41	1.73	1.79	0.07	90.61	1.96	3.03	4.40	0.018	0.019	0.001	
68	577437	18686	27494		10650	10672	700	599459	8960	1185	411	512	500	10383	96.33	1.78	1.78	0.12	86.29	3.96	4.93	4.82	0.018	0.018	0.001	68
	696228	41573	36348		12158	21257	1500	731143	14106	620	297	572	500	15475	95.22	1.66	2.91	0.21	91.15	1.92	3.70	3.23	0.017	0.031	0.002	
70	1116355	87603	73845		14408	32518	1800	1165081	19299	1181	128	422	600	20449	95.82	1.24	2.79	0.15	94.38	0.63	2.06	2.93	0.013	0.029	0.002	70
	616950	71087	69982		13180	35233	4000	669363	16158	1217	383	1367	600	18508	92.17	1.97	5.26	0.60	87.30	2.07	7.39	3.24	0.021	0.057	0.006	
72	727120	81142	31581		10020	22366	2000	761506	22349	1904	385	1412	750	24896	95.48	1.32	2.94	0.26	89.77	1.55	5.67	3.01	0.014	0.031	0.003	72
	332816	44795	64345		12035	17558	4000	366409	19948	1496	703	1312	850	22813	90.83	3.28	4.79	1.09	87.44	3.08	5.75	3.73	0.036	0.053	0.012	
74	608126	32321	29117		9462	15614	3000	637202	18980	1703	400	896	900	21176	95.44	1.48	2.61	0.47	89.63	1.89	4.23	4.25	0.016	0.027	0.005	74
	335681	48735	11190		7185	8198	200	351264	19644	1233	973	1005	750	22372	95.56	2.05	2.33	0.06	87.81	4.35	4.49	3.35	0.021	0.024	0.001	
76	865064	66475	21076		10412	13311	1000	889787	31483	1335	1056	1279	400	34218	97.22	1.17	1.50	0.11	92.01	3.09	3.74	1.17	0.012	0.015	0.001	76
	614784	60820	66463		15790	26188	3662	660424 C	22089	1514	857	1698	532	25176	93.09	2.39	3.97	0.55	87.74	3.40	6.74	2.11	0.026	0.043	0.006	
78	250629	93569	21388	107011	6406	19377	1606	278018	29062	1665	453	1786	641	31942	90.15	2.30	6.97	0.58	90.98	1.42	5.59	2.01	0.026	0.077	0.006	78
	75762	133425	27723	237173	18795	14301	1599	110457	17678	2973	1596	1820	2948	24042	68.59	17.02	12.95	1.45	73.53	6.64	7.57	12.26	0.248	0.189	0.021	
80	18451	190685	46105	276538	15811	15230	2109	51601	8454	1746	845	2190	2101	13590	35.76	30.64	29.51	4.09	62.21	6.22	16.11	15.46	0.857	0.825	0.114	80
	489915	153850	70920	535263	30545	34623	1523	556606	20178	1476	585	1824	1717	24304	88.02	5.49	6.22	0.27	83.02	2.41	7.50	7.06	0.062	0.071	0.003	
82	1190730	111105	82145	467306	39968	65463	3343	1299504	47362	4016	681	2083	1802	51928	91.63	3.08	5.04	0.26	91.21	1.31	4.01	3.47	0.034	0.055	0.003	82
	610023	119450	70810	545724	37596	73198	2619	723436	50022	2570	1275	4675	2579	58551	84.32	5.20	10.12	0.36	85.43	2.18	7.98	4.40	0.062	0.120	0.004	
84	895235	141990	85790	536806	27941	48236	3267	974679	38955	4391	509	1760	2787	44011	91.85	2.87	4.95	0.34	88.51	1.16	4.00	6.33	0.031	0.054	0.004	84
	952965	142050	46165	436313	30666	30885	4752	1019268	42333	1110	629	1329	2101	46392	93.50	3.01	3.03	0.47	91.25	1.36	2.86	4.53	0.032	0.032	0.005	
86	780808	75295	49593	508600	27441	41054	4137	853440	40670	5314	686	2367	3663	47386	91.49	3.22	4.81	0.48	85.83	1.45	5.00	7.73	0.035	0.053	0.005	86
	1181205	83318	54540	475734	33106	43492	4876	1262679	41001	2807	813	2968	2301	47083	93.55	2.62	3.44	0.39	87.08	1.73	6.30	4.89	0.028	0.037	0.004	
88	576950	53315	58281	488398	28969	42403	3038	651360	30741	2330	985	2997	1562	36285	88.58	4.45	6.51	0.47	84.72	2.71	8.26	4.30	0.050	0.073	0.005	88
	1025923	51700	44268	607869	28366	55748	4509	1114546	30863	3657	790	2251	2219	36123	92.05	2.55	5.00	0.40	85.44	2.19	6.23	6.14	0.028	0.054	0.004	
90	844767	73345	35282	581859	31555	66129	3569	946020	21702	2906	636	2689	2232	27259	89.30	3.34	6.99	0.38	79.61	2.33	9.86	8.19	0.037	0.078	0.004	90
	1206811	90500	43885	579412	41773	80374	5511	1334469	34787	3432	1538	4249	4427	45001	90.43	3.13	6.02	0.41	77.30	3.42	9.44	9.84	0.035	0.067	0.005	
92 A	970938	76827	29696	601952	23305	81073	4000	1079316	39810	1057	776	3222	1200	45008	89.96	2.16	7.51	0.37	88.45	1.72	7.16	2.67	0.024	0.083	0.004	92
Average	706862	81604	46055	465731	20703	34626	2704	764897	26221	2117	706	1827	1543	30296	89.65	4.16	5.66	0.53	86.25	2.58	6.00	5.17	0.067	0.082	0.009	

A 1992 data preliminary or estimates.
B Subsistence/Personal Use catches combined by gear since nearly all subsistence catch is by fish wheel and nearly all personal use catch by dip net.
C Beginning of statewide creel census
D Subsistence/Personal Use catches are reported catches

Table 9. Gulkana Hatchery Production Data Summary

File: SOCKTAB.wr1 (Part #1) Date: 2/17/93

Production data from Gulkana Hatchery. 10/
(File has three parts, see Line 100)

Disk: CWT
Based upon 1% Fry to Adult Survival through the 1992 return year. 9/

(See columns T,U,V,W)

Estimated Escapement Ratio (percent) each type of catch Based is of commercial catch for that year

Brood Year	Fry Release Site	Fry Released	Smolt Tagged	Adult Return Year	Age-4 Return Estimate	Age-5 Return Estimate	Total Return Estimates	Total Combined Returns	Estimated Commercial Catch	Estimated Subsistence Catch	Estimated Personal Use Catch	Estimated Sport Catch	Estimated Total Catch (all sources)	Estimated 6/ Escapement	Upon CF Catch/ Escapement Ratio	SOCKEYE Adult Return Year	SOCKEYE Subsi.	SOCKEYE Pers.	SOCKEYE Sport
1973	Hatchery	79,891		1977	135		135	305	81 8/	2	3	0	87	54 8/	54	1977	0.026	0.043	0.006
	Ten Mile Lake	99,620			169		169		102 8/	3	4	1	109	68 8/	68				
1974	Hatchery	785,110		1978	1335	661	1996	2995	320 8/	8	25	2	355	500 7/	372	1978	0.026	0.077	0.006
	Ten Mile Lake	101,446			172	827	999		400 3/	10	31	3	444	800 1/	465				
1975	Hatchery	627,081		1979	1066	6516	7582	8597	800 8/	198	151	17	1,166	2,500 7/	5255	1979	0.248	0.189	0.021
	Ten Mile Lake	101,600			173	842	1015		100 3/	25	19	2	146	925 1/	657				
1976	Hatchery	514,922		1980	875	5205	6080	7114	300 8/	257	248	34	839	4,000 7/	10614	1980	0.857	0.825	0.114
	Ten Mile Lake	112,248			191	843	1034		50 3/	43	41	6	140	250 1/	1769				
1977	Hatchery	477,219		1981	811	4274	5085	6194	3,000 8/	186	212	9	3,407	4,500 7/	5137	1981	0.062	0.071	0.003
	Ten Mile Lake	104,058			177	932	1109		600 3/	37	42	2	681	150 1/	1027				
1978	Hatchery	940,974		1982	1600	3961	5561	6594	3,000 8/	101	165	8	3,274	5,300 7/	1726	1982	0.034	0.055	0.003
	Ten Mile Lake	99,589			169	864	1033		600 3/	20	33	2	655	440 1/	345				
1979	Hatchery	1,105,397		1983	1879	7810	9689	12795	6,000 8/	370	720	26	7,115	6,500 7/	7633	1983	0.062	0.120	0.004
	Summit Lake	1,340,660	1,301		2279	827	3106		600 3/	37	72	3	712	2 1/	763				
1980	Hatchery	3,388,682		1984	5761	9175	14936	29226	4,054 5/	127	218	15	4,414	13,700 7/	3694	1984	0.031	0.054	0.004
	Summit Lake	1,860,491	18,432		3163	11127	14290		1,264 4/	39	68	5	1,376	950 1/	1152				
1981	Hatchery	5,985,270		1985	10175	28126	38301	57225	21,790 5/	701	706	109	23,306	16,500 7/	16380	1985	0.032	0.032	0.005
	Summit Lake	2,047,947	18,360		3482	15442	18924		10,165 4/	327	329	51	10,873	4,180 1/	7641				
1982	Hatchery	5,470,056		1986	9299	49678	58977	83306	22,721 5/	799	1195	120	24,835	19,000 7/	18887	1986	0.035	0.053	0.005
	Summit Lake	4,312,628	19,208		7331	16998	24329		7,883 4/	270	404	41	8,398	1,975 1/	6421				
1983	Hatchery	6,162,450		1987	10476	45401	55878	99733	25,268 5/	708	930	104	27,011	20,000 7/	13611	1987	0.028	0.037	0.004
	Summit Lake	4,741,759	19,223		8061	35795	43856		22,079 4/	619	813	91	23,602	8,200 1/	11894				
1984	Hatchery	9,261,708		1988	15745	51148	66893	122806	58,373 5/	2931	4290	307	65,902	19,000 7/	59641	1988	0.050	0.073	0.005
	Summit Lake	8,451,782	52,361		14368	39357	53725		32,259 4/	1620	2371	170	36,419	10,500 1/	32960				
	Crosswind Lake	1,287,042			2188	0	2188		1,920	96	141	10	2,168	625 1/	1962				
1985	Hatchery	8,586,509		1989	14597	76872	91469	197800	59,898 5/	1651	3244	262	64,855	16,000 7/	41082	1989	0.028	0.054	0.004
	Summit Lake	14,999,085	0		25498	70150	95648		86,096 4/	2380	4678	378	93,533	23,075 1/	59249				
					0	10682	10682		29,849	825	1622	131	32,428	8,000 1/	20541				
1986	Hatchery	9,905,907		1990	16840	71268	88108	233837	44,184 5/	1650	3459	262	49,555	13,000 7/	37728	1990	0.037	0.078	0.006
	Summit Lake	12,491,826	0		21236	124492	145729		20,733 11/	774	1623	123	23,253	6,100 1/	17703				
1987	Hatchery	6,204,332		1991	10547	82219	92766	221438	87,810 5/	3039	5848	439	97,137	35,000 7/	54544	1991	0.035	0.067	0.005
	Summit Lake	12,026,642	48,341		20445	103682	124127		11,955 4/	414	796	60	13,225	4,765 1/	7426				
	Crosswind Lake	2,487,396			4229	0	4229		1,945 11/	67	130	10	2,152	775 11/	1208				
	Gulkana II	185,631			316	0	316		299 11/	10	20	1	330	119 11/	186				
1988	Hatchery	10,105,238		1992	17179	51496	68675	217713	27,481 11/	1237	2473	247	31,438	10,219 11/	21239	1992	0.045	0.09	0.009
	Summit Lake	12,004,491	51,046		20408	99821	120229		6,325 4/	285	569	57	7,236	1,800 1/,5/	4889				
	Crosswind Lake	3,130,373	9,557		5322	20645	25967		52,176 12/	2348	4696	470	59,690	19,954 12/	40325				
	Gulkana II	765,447			1301	1541	2842		1,137 11/	51	102	10	1,301	423 11/	879				
1989	Hatchery	13,298,695		1993	22608	83873	106481	220776								1993			
	Summit Lake	6,455,011	63,167		5487	49819	55305												
	Crosswind Lake	4,906,005	42,602		12448	38779	51227												
	Gulkana II	828,613			1409	6353	7762												
1990	Hatchery	10,522,819		1994	17869	110379	128248	243084								1994			
	Summit Lake	6,109,833	62,438		5193	26788	31982												
	Crosswind Lake	5,469,759	25,204		13878	60776	74654												
	Gulkana II	765,902			1302	6877	8180												
1991	Hatchery	10,563,621		1995	17958	87339	105298	233906								1995			
	Summit Lake	7,048,536			5891	25566	31347												
	Crosswind Lake	8,420,351			21365	67760	89125												
	Gulkana II	1,047,110			1780	6357	8137												
1992	Hatchery			1996		87678	87678	229932								1996			
	Summit Lake					29251	29251												
	Crosswind Lake					104312	104312												
	Gulkana II					8691	8691												

1/ Aerial survey data.
2/ Major blockage by beaver dams.
3/ Commercial fishery closures significant during migration period for this stock.
4/ Based upon coded wire tag recovery rate.
Note: Current data suggest facility releases return at 1.5 times the rate of Summit Lake releases.
5/ Assumes same exploitation rate as for CWT group.
6/ Average escapement to Hatchery spring prior to facility development (1,500 spawners).
7/ Actual number used in egg take beyond the 1,500 fish needed for natural seeding requirement.
(Assumes at least 1,500 fish are natural production returns)
8/ Interpolated from relative fry production.
9/ Assumes 17% age-4, and 83% age-5 at return.
Beginning in 1993, best estimates of fry survival used (S = 0.5, P = 1.0, CW = 1.5)
10/ All data conservative, minimum estimates and preliminary.
11/ Interpolated from adjacent years data.
12/ Estimate unreliable due to low tag recovery, catch to escapement ratio used instead.

Table 9. (Page 2 of 4)

File: SOCKTAB.wr1 (Part #2) Date: 2/11/93

Estimates of adult return based upon CWT data.

	COPPER RIVER COMMERCIAL FISHERY					SUMMIT LAKE ESCAPEMENT			CATCH TO ESCAPEMENT RATIO				
Recovery Year	Comm. Catch	Comm. Exam	% Exam	Tags	Expand CF Tags 1/	Summit 2/ Crosswind Lake Exam	Number with Tags	Tag Untag Ratio	Percent Commer. Catch	Total Escapement	Percent Total Escape.	Multiplier
1977	614784								59.96	410551	40.04	0.67
1978	250629								46.25	291269	53.75	1.16
1979	75762								13.21	497659	86.79	6.57
1980	18451								2.75	652772	97.25	35.38
1981	489915								36.87	838836	63.13	1.71
1982	1190730								63.48	684950	36.52	0.58
1983	610023								44.01	776095	55.99	1.27
1984	895235	271724	27.77	3	10.8	234	2	117.0	52.32	815730	47.68	0.91
1985	952965	281613	30.47	46	151.0	1010	15	67.3	57.09	716354	42.91	0.75
1986	780808	236318	31.56	76	240.8	1053	33	31.9	54.48	652475	45.52	0.84
1987	1181205	375754	31.82	85	267.1	4381	53	82.7	64.99	636288	35.01	0.54
1988	576950	217563	37.71	54	143.2	5857	26	225.3	49.46	589484	50.54	1.02
1989	1025923	432104	42.04	230	547.1	4721	30	157.4	59.24	706010	40.76	0.69
1990	844767			0	0.0	5638	0	0	53.94	721338	46.06	0.85
1991	1206811	578202	47.91	52	108.5	2974	27	110.1	61.68	749625	38.32	0.62
92 Su	970938	435447	44.85	284	633.2	899	90	10.0	56.41	750408	43.59	0.77
92 Xw	970938	435447	44.85	18	40.1	17474	4	4368.5	56.41	750408	43.59	0.77

1/ Expanded to represent 100% of the commercial catch from percent sampled.
2/ Prior to 1992, all data Summit Lake, 1992 and beyond, Crosswind Lake also.
(Summmit = Sum, and Crosswind = Xwd in file).

Notes: 1988 and 1989 Paxson and Summit Lake escapement estimates are not consistent with observed spawning populations.
Crosswind Lake expansion factor is probably low based upon observed spawning populations.

Table 9. (Page 3 of 4)

File: SOCKTAB.wr1 (Part #3) Date: 2/11/93

Recovery Year	Estimated Catch CF, Sub. PU, Sport Based Upon CWT CF Recoveries	Aerial Survey and to Brood Stock Used Escape	Ratio of CF Sonar & Delta Aerial Survey Escape	Total Return r Based Upon CWT & Brood Aerial	Total Return Based Upon CWT & Sonar Etc.	Total Return Based Upon 1% Fry to Adult
1977	196	122	122	318	319	305
1978	799	1300	837	2099	1635	2995
1979	1312	3425	5912	4737	7224	8597
1980	979	4250	12383	5229	13361	7114
1981	4089	4650	6164	8739	10253	6194
1982	3929	5740	2071	9669	6000	6594
1983	7827	6502	8397	14329	16224	12795
1984	5790	14650	4846	20440	10636	29226
1985	34179	20680	24021	54859	58200	57225
1986	33233	20975	25407	54208	58640	83306
1987	50613	28200	25505	78813	76118	99733
1988	104489	30125	94563	134614	199052	122806
1989	190816	47075	120872	237891	311688	197800
1990	72808	19100	55432	91908	128239	233837
1991	112844	40659	63364	153503	176208	221438
1992	99665	32396	67332	132061	166997	217713
1993	0	0	0	0	0	220776
1994	0	0	0	0	0	243084
1995	0	0	0	0	0	233906
1996	0	0	0	0	0	229932
Percent of 1% survival est.				0.607	0.767	for 1992
Average of estimates					0.687	

Table 9. (Page 4 of 4)

File: Socktab.wr1 Part #4 Production value Date: 2/11/93

Recovery Year	Estimated Commercial Catch	1/ Estimated Value Per Pound	2/ Estimated Average Weight	Estimated Value of Commercial Catch	Project Cost by Fiscal Year (Year Produced)
1977	183	1.000	7.3	1335	$25,000 (74)
1978	720	1.230	6.1	5402	$25,000 (75)
1979	900	1.400	6.8	8568	$25,000 (76)
1980	350	0.850	6.7	1993	$25,000 (77)
1981	3600	1.289	6.4	29699	$25,000 (78)
1982	3600	0.800	6.5	18720	$35,000 (79)
1983	6600	0.950	6.1	38247	$50,000 (80)
1984	5318	1.000	6.4	34035	$75,000 (81)
1985	31955	1.550	5.9	292233	$168,000 (82)
1986	30404	1.650	5.82	291974	$128,112 (83)
1987	47347	1.900	6.49	583838	$133,194 (84)
1988	92552	3.200	6.04	1788848	$340,839 (85)
1989	175643	2.300	6.73	2718777	$266,000 (86)
1990	64917	2.130	6.11	844847	$275,000 (87)
1991	102009	1.280	6.12	799096	$285,100 (88)
1992	87120	1.500	5.95	777544	$337,800 (89)
1993					$332,800 (90)
1994					$332,800 (91)
1995					$421,800 (92)
1996					$420,000 (93)
1997					

1/ CFEC Data - 1980 to 1990. ADF&G Data - 1978,1979, 1991. 1977 data estimated

2/ Commercial Fishery average, probably underestimates weight of Gulkana sockeye which have a high percentage of age-5 fish.

* Estimate Preliminary

Table 10. Expected Weekly Catch and Escapement, Copper River, 1993

File: CRSEX93.wr1 *Date: 2/22/93* *Disk: SA*

Appendix Table 2. Expected weekly catch and escapement with supplemental split between Paxson, Summit and Crosswind, 1993.

Date	Stat. Week	Percent	1/ Cumm. Percent	Anticipated 2/ Comm. Catch (Natural Run)	3/ Supplemental Percent Paxson	3/ Supplemental Catch Paxson	4/ Production Percent Summit	4/ Production Catch Summit	4/ Production Percent Xwind	4/ Production Catch Xwind	Comb. 5/ Antic. Sockeye Harvest	Cumul. Antici. Sockeye Harvest	6/ Wild Expt. Escape.	Paxson Supple. Expect Escape	Summit Supple. Expect Escape	Xwind Supple. Expect. Escape.	8/ Personal Use/King Escape.	Comb. Antic. Escape.	9/ Cumul. Antic. Escape.	Summit Percent	Xwind Percent	Paxson % is Sum/Xwind Average	Sonar Wild Escape %	Sonar PU/King
May 9-15	20	0.97	0.97	7636	0.85	583	1.7	564	0.00	0	8783	8783	0	0	0	0	0	0	0				0.00	0.00
May 16-22	21	12.16	13.13	95724	5.51	3773	11.02	3656	0.00	0	103153	111936	5180	189	377	0	4913	10659	10659	1.7	0.00	0.85	1.48	5.78
May 23-29	22	21.88	35.01	172239	6.48	4442	12.94	4293	0.00	0	180974	292910	27160	1222	2444	0	10107	40933	51592	11.01	0.00	5.51	7.76	11.89
May 30-Jun 5	23	17.15	52.16	135005	3.74	2564	7.49	2485	0.00	0	140053	432964	55790	1435	2870	0	11781	71877	123469	12.93	0.00	6.47	15.94	13.86
Jun 6-12	24	12.05	64.21	94858	2.12	1450	4.24	1407	0.00	0	97714	530678	66535	830	1661	0	11178	80203	203672	7.48	0.00	3.74	19.01	13.15
Jun 13-19	25	9.10	73.31	71635	2.62	1796	5.25	1742	0.00	0	75173	605851	47530	470	939	0	8832	57770	261442	4.23	0.00	2.12	13.58	10.39
Jun 20-26	26	7.32	80.63	57623	4.37	2995	8.75	2903	0.00	0	63522	669372	33600	582	1163	0	8696	44040	305482	5.24	0.00	2.62	9.60	10.23
Jun 27-Jul 3	27	4.55	85.18	35818	5.14	3520	10.28	3411	0.00	0	42748	712120	25235	970	1940	0	10761	38906	344389	8.74	0.00	4.37	7.21	12.66
Jul 4-10	28	3.60	88.78	28339	17.32	11872	14.94	4957	19.71	6088	51257	763377	26180	1140	2280	0	5908	35507	379896	10.27	0.00	5.14	7.48	6.95
Jul 11-17	29	2.72	91.50	21412	28.38	19453	12.41	4117	44.32	13690	58673	822050	25585	3844	3312	4060	4157	40958	420854	14.92	19.71	17.32	7.31	4.89
Jul 18-24	30	3.82	95.32	30071	10.17	6974	7.02	2329	13.33	4118	43492	865542	21805	6296	2753	9130	3341	43324	464178	12.4	44.32	28.36	6.23	3.93
Jul 25-31	31	2.68	98.00	21097	11.75	8054	3.19	1058	20.28	6264	36474	902016	10570	2259	1558	2746	2329	19462	483641	7.02	13.33	10.18	3.02	2.74
Aug 1-7	32	1.24	99.24	9761	1.51	1032	0.65	216	2.36	729	11738	913753	4655	2605	708	4178	986	13132	496773	3.19	20.28	11.74	1.33	1.16
Aug 8-14	33	0.42	99.66	3306	0.06	41	0.12	40	0.00	0	3387	917140	175	334	144	486	927	2066	498839	0.65	2.36	1.51	0.05	1.09
Aug 15-21	34	0.15	99.81	1181	0.00	0	0	0	0.00	0	1181	918321	0	13	27	0	723	762	499601	0.12	0.00	0.06	0.00	0.85
Aug 22-28	35	0.09	99.90	708	0.00	0		0	0.00	0	708	919030	0	0	0	0	221	221	499822	0	0.00	0.00	0.00	0.26
Aug 29-Sep 4	36	0.07	99.97	551	0.00	0		0	0.00		551	919581	0	0	0	0	94	94	499916		0.00	0.00	0.00	0.11
Sept 5-11	37	0.02	99.99	157	0.00	0		0	0.00		157	919738	0	0	0	0	51	51	499967		0.00	0.00	0.00	0.06
Sept 12-18	38	0.01	100.00	79	0.00	0		0	0.00		79	919817	0	0	0	0	0	0	499967		0.00	0.00		
																					0.00	0.00		
Totals		100.00	100.00	787,200	100.00	68,546	100.00	33,178	100.00	30,890	919,817	919,817	350,000	45,700	22,200	20,600	85,000	499,967	499,967				100	100

1/ Data from cumulative percentage catch by day for 1969 to 1992.
2/ Based upon 1993 forecast report which uses comparative return per spawner escapement data and considers the impact of environmental influences.
3/ Eight years (1984-89, 1991-92) of coded wire tag recovery percentages, smoothed by a moving average of five, having equal weight.
4/ Based upon Paxson (1%), Summit (0.8%) and Crosswind (1.5%) fry to adult survival and partitioned by 17% four year old and 83% five year old return.
5/ Anticipated natural production harvest plus anticipated supplemental production harvest.
6/ Sonar enumerated escapement at Miles Lake includes only sockeye. Does not included 160,000 sockeye bound for delta streams.
7/ Expected escapement includes 20,000 for brood stock (hatchery produced escapement), thus total supplemental (88,500) includes 20,000 for brood stock and 68,500 excess.
8/ Adjusted timing to provide for personal use fishery and chinook escapement.
9/ Anticipated natural and supplemental production (includes brood stock requirements).

Table 11. Copper River Sockeye Return-Per-Spawner Data (Based upon five (5) year cycle primary age class)

File: CRESCRET.wr1 Date: 1/13/93 Disc: "SA"

This table contains Copper River Sockeye Salmon Return per Spawner calculations and data.

	ESCAPEMENT										RETURN								
	DELTA		UP RIVER																
YEAR	INDEX	E/ EXPANDED ESCAPEMENT	INDEX	SUB/PU CATCH SOCKEYE	SUB/PU CATCH CHINOOK	SPORT CATCH SOCKEYE	SPORT CATCH CHINOOK	SONAR COUNT	F/ ADJUSTED ESCAPEMENT	TOTAL SPAWNING ESCAPEMENT	YEAR	COMMERCI CATCH	TOTAL ESCAPEMEN	TOTAL	RETURN PER SPAWNER	RETURN/ SPAWNER/ SPAWNER	DELTA & UPRIVER INDEX	RETURN/ SPAWNER USING INDEX	Percent Escapemen
1966	41043	82086	25187	21967	727	300	500		315344 B	397430	1971	616801	628779	1245580	3.13	7.89	230689.3	5.40	50.5
1967	18605	37210	20257	18819	568	400	500		132090 B	169300	1972	727144	445053	1172197	6.92	40.90	156726.3	7.48	38.0
1968	18686	37372	27494	21321	923	700	500		212320 B	249692	1973	332816	293782	626598	2.51	10.05	199586.6	3.14	46.9
1969	41573	83146	36348	33415	869	1500	500		468271 B	551417 A	1974	607766	244566	852332	1.55	2.80	297599.2	2.86	28.7
1970	87603	175206	73845	46927	551	1800	600		258675 B	433881	1975	335687	203620	539307	1.24	2.86	610891.5	0.88	37.8
1971	71087	142174	69982	48413	1750	4000	600		434192 B	576366 A	1976	865195	296239	1161434	2.02	3.50	555067.8	2.09	25.5
1972	81142	162284	31581	32386	1797	2000	750		248383 B	410667	1977	619140	410551	1029691	2.51	6.11	348611.9	2.95 *	39.9
1973	44795	89590	64345	29593	2015	4000	850		170599 D	260189	1978	249872	291269	541141	2.08	7.99	469225.5	1.15 *	53.8
1974	32321	64642	29117	26076	1297	3000	900		150848 D	215490	1979	80528	497659	578187	2.68	12.45	236432.3	2.45	86.1
1975	48735	97470	11190	15384	1978	200	750		90566 D	188036	1980	18908	652772	671680	3.57	19.00	163491	4.11	97.2
1976	66475	132950	21076	23724	2335	1000	400		138565 D	271515	1981	477662	838836	1316498	4.85	17.86	257298.4	5.12	63.7
1977	60820	121640	66463	41978	2555	3662	532		243271 D	364911	1982	1177632	684950	1862582	5.10	13.99	513771.7	3.63	36.8
1978	93569	187138	21388	25783	2239	1606	641	107011	76742 C	263880	1983	633010	776095	1409105	5.34	20.24	313327.2	4.50	55.1
1979	133425	266850	27723	33096	3416	1599	2948	237173	196114 C	462964 A	1984	899776	815730	1715506	3.71	8.00	430415.7	3.99 *	47.6
1980	190685	381370	46105	31041	3035	2109	2101	276538	238252 C	619622	1985	925365	716354	1641719	2.65	4.28	653389.5	2.51	43.6
1981	153850	307700	70920	65168	2410	1523	1717	535263	464445 C	772145	1986	780808	652475	1433283	1.86	2.40	728128	1.97	45.5
1982	111105	222210	82145	105432	2764	3343	1802	467306	353965 C	576175 A	1987	1181205	636288	1817493	3.15	5.47	706865.5	2.57	35.0
1983	119450	238900	70810	110794	5950	2819	2579	545724	423782 C	662682	1988	576950	589484	1166434	1.76	2.66	656679	1.78	50.5
1984	141990	283980	85790	76177	2269	3287	2787	536806	452306 C	736286	1989	1025923	706010	1731933	2.35	3.19	790141	2.19	40.8
1985	142050	284100	46165	61550	1958	7613	2101	436313	363091 C	647191 A	1990	844767	722856	1567623	2.42	3.74	556473.5	2.82	46.1
1986	75295	150590	49593	68495	3052	4137	3663	508600	429253 C	579843 A	1991	1206811	750198	1957009	3.38	5.82	443188.7	4.42 *	38.3
1987	83318	166636	54540	76598	3781	4876	2301	475734	388178 C	554814 A	1992	970938	750408	1721346	3.10	5.59	488422	3.52 *	43.6
1988	53315	106630	58281	71372	3982	3038	1562	488398	408444 C	515074									
1989	51700	103400	44268	84114	3040	4509	2219	607869	513987 C	617387								3.21	
1990	73345	146690	35282	97456	3461	3569	2232	581859	475141 C	621831				Average	3.09				
1991	90500	181000	43885	122147	5787	5511	4427	579412	441540 C	622540							1.690 (Ln)	1993	
1992 *	76827	153654	29696	125000	3998	4000	1200	601952	467754 C	621408							or 5.42 R/S/S		

* = Preliminary
A = Average of five most similar spawning population years = R/S = 3.15
(Most recent 15 years R/S ratios only considered)
B = Tagging estimate less subsistence catch
C = Sonar estimate less subsistence/personal use (estimated catch, sockeye and chinook) and sport (sockeye and chinook)catch
D = Index * 5.9 observation factor correction based upon sonar and tagging.
E = Delta Index * 2 is expansion figure
F = Total escapement less subsistence/personal use and sport catch
1988 - 1992 Data preliminary

Table 12. Copper River Sockeye Return-Per-Spawner Data (Age based)
(Summary portion only incuded)

File: CATBYAGE.wk1 Date: 1/23/93 Disk: S-E/R

Year	Spawners	Return Years	Total Return Commercial Catch	Total Return Sub/PU Catch	Total 1/ Return Upriver Escapement	Total Return Delta Escapement	Total Return	Return per Spawne
1961	343140	63-68	1036203	23348	352078	106361	1494642	4.36
1962	454199	64-69	562288	17799	166428	41488	770204	1.70
1963	332333	65-70	432810	16452	170363	28623	631796	1.90
1964	257532	66-71	732514	30003	396162	77265	1205941	4.68
1965	416193	67-72	1165139	58078	521936	185515	1872590	4.50
1966	397659	68-73	879733	48395	446789	185528	1512050	3.80
1967	169888	69-74	507209	27285	250344	114834	872387	5.14
1968	249354	70-75	420596	28533	327765	101367	849728	3.41
1969	548768	71-76	589430	31306	257868	80242	927540	1.69
1970	431511	72-77	320263	14787	106238	77872	504373	1.17
1971	581842	73-78	812628	25259	173808	132057	1118494	1.92
1972	412749	74-79	646580	40656	274210	134417	1055207	2.56
1973	439895	75-80	201905	22775	105445	158224	465574	1.06
1974	218490	76-81	140462	34245	199273	275485	615220	2.82
1975	188236	77-82	46741	28126	213088	303146	562975	2.99
1976	272446	78-83	399601	55053	422236	314828	1136665	4.17
1977	368448	79-84	1133713	106373	521006	163952	1818671	4.94
1978	259336	80-85	681350	96311	451176	233087	1365612	5.27
1979	444150	81-86	1038033	107665	656478	314639	2009150	4.52
1980	592098	82-87	813709	60297	411477	239497	1464682	2.47
1981	751006	83-88	646740	56039	384827	154435	1186002	1.58
1982	569673	84-89	1281338	80792	505276	232403	2019017	3.54
1983	641067	85-90	618503	49930	320933	146665	1086101	1.69
1984	725712	86-91	1082118	100340	657108	102976	1842201	2.54
1985	640857	87-92	649434	74901	445871	102459	1197764	1.87
1986	562973	88-93	1129398	130938	672091	169331	1970819	3.50
1987	542631	89-94						
1988	491420	90-95						
1989	603567	91-96						
1990	611663	92-97						
1991	618871	93-98						
1992	731527	94-99						
1993		95-100						

Average R/S = 3.07

Last 10 yr. = 3.19

Note: 1/ These figures include the subsistence/personal use catches
(In order to get spawning escapement figures, subsistence/personal use catch must be subtracted.

Note: The data presented here are only a small portion of the entire file.

Table 13. Upper Copper River Chinook Aerial Survey Index Summary

Filename: CRKESIN File Date: 8/12/92 Disc: "KA"

This file contains aerial survey index data for the Upper Copper River Chinook salmon index streams. /1

Location	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	AVG.	Name	Low	High
East Fork Chistochina River	152	291 *	150	200	368	512	348	476	137	71	289	132	137	810	575	120	1260	575	577	360	618	764	684	740	615	865	88	441	E.Fork	71	1260
Gulkana River	250	757 *	757 *	147	364	269	1200	623	1317	741	777	1090	921	1380	718	754 *	1656	931	2189	321	3182	1228	967	1993	1356	1303	656	1031	Gulk	147	3182
Mendeltna Creek	12	6	100	38 *	38 *	56	49	15	15	38 *	35	73	52	5	3	51	70	12	26	26	76	10	17	185	320	305	83	63.6	Mendlt	3	320
Kiana Creek	272	123 *	100	34	162	81	89	172	55	123 *	37	91	125	279	247	191	200	166	382	91	328	80	249	344	411	520	79	186	Kiana	34	520
St. Anna Creek	48	53	26 *	26 *	35	4	25	26 *	32	26 *	15	10	24	16	8	19	35	87	89	15	182	192	62	90	42	115	12	48.7	St.Ann	4	192
Manker Creek	64	2	9	19 *	17	30	4	17	29	19 *	6	15	20	16	35	23	49	141	264	22	251	141	115	165	41	101	14	60.3	Manker	2	264
Grayling Creek	22	48 *	4	7	48 *	45	47	47	49	48 *	17	48 *	92	153	66	107	127	287	279	58	224	112	161	72	49	151	17	88.3	Graylg	4	287
Little Tonsina River	42	129 *	19	129 *	129 *	200	129 *	100	65	161	98	35	285	285	70	191	440	330	568	203	424	247	75	65	57	54	107	172	Lt.Ton	19	568
Indian River	20 *	20 *	20 *	20 *	20 *	20 *	13	20 *	4	6	61	20	9	29	24	20 *	179	41	17	14	29 *	33	0	3	15	18	1	25	Indian	0	179
Total without interpolated counts	862	61	382	388	946	1197	1775	1450	1703	979	1335	1446	1665	2973	1746	712	4016	2570	4391	1110	5285	2807	2330	3657	2906	3432	1057	2117			
Counts Missing	1	6	3	5	4	1	1	2		5		2				2					1										
Total with interpolated counts	882	1429	1185	620	1181	1217	1904	1496	1703	1233	1335	1514	1665	2973	1746	1476	4016	2570	4391	1110	5314	2807	2330	3657	2906	3432	1057	2117			

* = Interpolated Counts

1/ Due to survey conditions (late and poor visibility) live and dead counts utilized in 1992.

East Fork Chistochina River	Live count, entire East Fork not including Eagle Creek
Gulkana River	Live count, all survey areas above confluence w/West Fork including West Fork
Mendeltna Creek	Live count, entire stream
Kiana Creek	Live count, entire stream
St. Anna Creek	Live count, entire stream
Manker Creek	Live count, entire stream
Grayling Creek	Live count, entire stream
Little Tonsina River	Live count, entire stream
Indian River	Live count, entire stream

Year	Count
66	882
	1429
68	1185
	620
70	1181
	1217
72	1904
	1496
74	1703
	1233
76	1335
	1514
78	1665
	2973
80	1746
	1476
82	4016
	2570
84	4391
	1110
86	5314
	2807
88	2330
	3657
90	2906

Table 14. Summit Lake CWT Commercial Catch Recovery by Day Summary

File: DayCWT65.wr1 Date: 1/11/93 Disk: CWT

This file contains only Summit Lake CWT tag recovery data!!!

This file contains tag data adjusted up one day in order to match the percent sampled information (which matches commercial fish openers). Adjustments made when necessary!!!

	1984 Tags	Percent Sampled	Expanded Tags 1984	1985 Tags	Percent Sampled	Expanded Tags 1985	1986 Tags	Percent Sampled	Expanded Tags 1986	1987 Tags	Percent Sampled	Expanded Tags 1987	1988 Tags	Percent Sampled	Expanded Tags 1988	1989 Tags	Percent Sampled	Expanded Tags 1989	1990 No tags expected or recovered	1991 Tags	Percent Sampled	Expanded Tags 1991	1992 Tags	Percent Sampled	Expanded Tags 1992	7 Yrs Actual Tags	7 Yr Expanded Tags	Moving Avg Orders		STAT WEEK	
10-May				0			0			0			0										0			0	0				10-May
11-May				0			0			0			0										0			0	0				11-May
12-May				0			0	32.1	0	0			0										0			0	0	2	0.10%		12-May
13-May				2	30.4	7	0	32.1	0	1	27.5	4	0										0			3	10	4	0.17%		13-May
14-May	6.2	0		0	30.4	0	0			0	27.5	0	0										0			0	0	7	0.36%		14-May
15-May	6.2	0		0			0			0			0			3	39.2	8					0	36.8	0	3	8	7	0.36%	0.99%	15-May
16-May				3	21.7	14	0			0			0	32.6	0	2	39.2	5			46.1		0			5	19	15	0.72%		16-May
17-May				0	21.7	0	0			0			0	32.6	0						46.1		0			0	0	32	1.53%		17-May
18-May				0			0			3	32.4	9	0			15	39.4	38					0	44.2	0	18	47	33	1.61%		18-May
19-May				0			1	31.1	3	0	32.4	0	0			30	39.4	76					2	44.2	5	33	84	31	1.52%		19-May
20-May				3	30.9	10	1	31.1	3	0			0								46.0		1	44.2	2	5	15	43	2.11%		20-May
21-May	18.1	0		1	30.9	3	0			2	27.8	7	0								46.0		0			3	10	38	1.90%		21-May
22-May	18.1	0		0			1	23.4	4	2	27.8	7	0			18	38.8	46					1	42.7	2	22	60	23	1.10%	10.49%	22-May
23-May				0	29.7	0	0	23.4	0	0			1	36.3	3	8	38.8	21					1	42.7	2	10	26	26	1.24%		23-May
24-May				0	29.7	0	0			0			0	36.3	0					1	46.3	2	0			1	2	38	1.83%		24-May
25-May				0			0			4	32.3	12	0			3	39.8	8			46.3		4	43.2	9	11	29	37	1.78%		25-May
26-May				0			5	32.8	15	1	32.3	3	1	38.8	3	11	39.8	28					10	43.2	23	28	72	32	1.57%		26-May
27-May	28.1	0		8	23	36	0	32.8	0	0			2	38.8	5	3	39.8	8		1	40.9	2	2	43.2	5	16	56	46	2.26%		27-May
28-May	26.1	0		1	23	4	0			0	27.8	0	0	38.8	0								0			1	4	47	2.29%		28-May
29-May				0			0			8	27.8	29	0			11	38.7	28					6	39	15	25	73	36	1.75%	12.73%	29-May
30-May				1	29.1	3	0			0			4	29.3	14	3	38.7	8					3	39	8	11	33	30	1.44%		30-May
31-May				1	29.1	3	0			0			2	29.3	7					3	47.7	6	0			6	17	38	1.82%		31-May
01-Jun				0			0			3	30.9	10	0				41.3	0					5	38.1	13	8	23	27	1.31%		01-Jun
02-Jun				0			0	28.4	0	4	30.9	13	3	28.5	11	1	41.3	2					7	39.1	18	15	44	22	1.08%		02-Jun
03-Jun				3	36.6	8	0	28.4	0	2	30.9	6	0	28.5	0					2	40.9	5	0			7	20	22	1.05%		03-Jun
04-Jun				0	36.6	0	0			1	29.7	3	0							2	40.9	5	0			3	8	20	0.98%		04-Jun
05-Jun	28.2	0		0			0			1	29.7	3	0			4	38.0	11					0			5	14	14	0.69%	8.38%	05-Jun
06-Jun	28.2	0		1	27.5	4	0			2	29.7	7	0			2	38.0	5			47.3		0			5	16	11	0.54%		06-Jun
07-Jun				2	27.5	7	0			0			0							3	47.3	6	0			5	14	13	0.65%		07-Jun
08-Jun				0			0			0	30.1	0	0				52.0	0					2	45.6	4	2	4	11	0.55%		08-Jun
09-Jun	23.5	0		0			2	31.1	6	2	30.1	7	2	31.1	6		52.0	0					0			6	20	9	0.45%		09-Jun
10-Jun	23.5	0		1	27.5	4	0	31.1	0	0			0	31.1	0						51.9		0			1	4	12	0.59%		10-Jun
11-Jun	23.5	0		0	27.5	0	0			1	30.1	3	0							1	51.9	2	0			2	5	14	0.69%		11-Jun
12-Jun				0			1	30.4	3	2	30.1	7	0			1	42.6	2					7	44	16	11	28	12	0.60%	4.07%	12-Jun
13-Jun				0	38.1	0	1	30.4	3	0			4	36.1	11		42.6	0					0			5	14	14	0.70%		13-Jun
14-Jun	1 21.5	5		2	38.1	5	0			0			0	36.1	0						36.9		0			3	10	17	0.86%		14-Jun
15-Jun	21.5	0		0	38.1	0	0			1	32.5	3	0			1	49.1	2			36.9		4	44.7	9	5	14	13	0.62%		15-Jun
16-Jun	21.5	0		0			1	29.6	3	0	32.5	0	2	40.3	5	5	49.1	12					0			9	21	10	0.46%		16-Jun
17-Jun				0	49	0	0	29.6	0	0			2	40.3	5						56.5		0			2	5	15	0.72%		17-Jun
18-Jun	22.9	0		0	49	0	0			0			0								56.5		0			0	0	18	0.87%		18-Jun
19-Jun	22.9	0		0	49	0	3	34	9	0			0			12	60.7	20					2	33.6	6	17	36	16	0.77%	5.00%	19-Jun
20-Jun	22.9	0		0	39.6	0	1	34	3	0			2	36.9	5	4	60.7	7			46.6		5	33.6	15	12	30	19	0.93%		20-Jun
21-Jun	43.4	0		3	39.6	8	0			0			0	36.9	0					1	46.6	2	0			4	10	31	1.51%		21-Jun
22-Jun	43.4	0		0	39.6	0	0			4	36.8	11	0			3	52.1	6					2	41.6	5	9	21	25	1.21%		22-Jun
23-Jun	43.4	0		0			0	27.3	0	5	36.8	14	1	57.4	2	13	52.1	25					8	41.6	19	27	60	21	1.01%		23-Jun
24-Jun				0	50.5	0	1	27.3	4	0			0	57.4	0						61.0		0			1	4	25	1.19%		24-Jun
25-Jun	26.9	0		5	50.5	10	0			0			0								61.0		0			5	10	32	1.56%		25-Jun
26-Jun	26.9	0		0	50.5	0	0	36.1	0	0			0			15	53.6	28					0			15	28	21	1.04%	8.44%	26-Jun
27-Jun	26.9	0		0			2	36.1	6	0			2	59.9	3	4	53.6	7			42.0		17	39.1	43	25	60	25	1.23%		27-Jun
28-Jun	24.4	0		0			2	36.1	6	0			0	59.9	0						42.0		0			2	6	29	1.39%		28-Jun
29-Jun	24.4	0		0			0			8	34.2	23	0										0			8	23	26	1.27%		29-Jun
30-Jun	24.4	0		0			0	34.4	0	0	34.2	0	0	47.5	0								11	41	27	11	27	22	1.06%		30-Jun
01-Jul				0	30.2	0	3	34.4	9	0			3	47.5	6						66.1		0			6	15	28	1.37%		01-Jul
02-Jul	43.6	0		4	30.2	13	0	34.4	0	5	30.7	16	0							8	66.1	9	0			15	39	37	1.82%		02-Jul
03-Jul	43.6	0		0	30	0	0	28.6	0	0	30.7	0	0			16	43.0	37					0			16	37	35	1.70%	9.84%	03-Jul
04-Jul	43.6	0		2	30	7	1	28.6	3	0			4	55.6	7	5	43.0	12			52.0		18	44.2	41	30	70	36	1.76%		04-Jul
05-Jul	50.2	0		1	30	3	2	28.6	7	0			0	55.6	0					2	52.0	4	0			5	14	34	1.64%		05-Jul
06-Jul	50.2	0		2	30	7	0			7	47.8	15	0								59.5		0			9	21	39	1.89%		06-Jul
07-Jul	50.2	0		0	30	0	0	39.8	0	0	47.8	0	1	32.9	3					1	59.5	2	12	55	22	14	27	36	1.73%		07-Jul
08-Jul				4	30	13	11	39.8	28	0			0	32.9	0						59.5		12	55	22	27	63	42	2.06%		08-Jul
09-Jul	59.5	0		4	30	13	5	39.8	13	8	42.1	14	0							8	59.5	13	0			23	54	55	2.68%		09-Jul
10-Jul	1 59.5	2		0	30	0	0	55	0	0	42.1	0	0			14	31.1	45					0			15	47	56	2.71%	14.44%	10-Jul
11-Jul	1 59.5	2		5	30	17	4	55	7	0			10	44.5	22	4	31.1	13			58.2		12	50.5	24	36	85	46	2.23%		11-Jul
12-Jul	97.7	0		1	30	3	2	55	4	0			0	44.5	0					5	58.2	9	8	50.5	16	16	31	45	2.21%		12-Jul
13-Jul	97.7	0		1	30	3	0	55	0	3	56.2	5	0							3	58.2	5	0			7	14	44	2.11%		13-Jul
14-Jul	97.7	0		1	30	3	0	30	0	0	56.2	0	2	34.9	5								22	52.4	42	25	51	31	1.51%		14-Jul
15-Jul				3	30	10	8	30	27	0			0	34.9	0						42.2		0			11	37	29	1.40%		15-Jul
16-Jul	57.7	0		1	30	3	0	30	0	3	55.9	5	0							6	42.2	14	0			10	23	42	2.02%		16-Jul
17-Jul	57.7	0		0	32.3	0	0	38.7	0	0	55.9	0	0			12	60.2	20					0			12	20	36	1.72%	13.21%	17-Jul
18-Jul	57.7	0		1	32.3	3	1	38.7	3	0			4	43.9	9	3	60.2	5					34	58.6	58	43	78	29	1.42%		18-Jul
19-Jul	54.4	0		0	32.3	0	2	38.7	5	0			0	43.9	0					1	43.0	2	7	58.6	12	10	19	31	1.51%		19-Jul
20-Jul	54.4	0		0			0			0	30.3	0	0							2	43.0	5	1	52.8	2	3	7	32	1.56%		20-Jul
21-Jul	54.4	0		0			0	55.5	0	1	30.3	3	1	46.5	2								14	52.8	27	16	32	19	0.93%		21-Jul
22-Jul				0	32.6	0	2	55.5	4	0			0	46.5	0						63.2		11	52.8	21	13	24	20	0.96%		22-Jul
23-Jul	68.9	0		3	32.6	8	0	55.5	0	1	46.5	2	0							1	63.2	2	0			5	13	20	0.96%		23-Jul
24-Jul	68.9	0		0	32.6	0	0	30.9	0	0	46.5	0	0				41.3	0					12	52.8	23	12	23	13	0.65%	7.98%	24-Jul
25-Jul	68.9	0		0	36.1	0	1	30.9	3	0			1	72.8	1		41.3	0			47.5		1	52.8	2	3	7	10	0.47%		25-Jul
26-Jul	72.4	0		0	36.1	0	0	30.9	0	0			0	72.8	0		41.3	0			47.5		0			0	0	9	0.45%		26-Jul
27-Jul	72.4	0		0	36.1	0	0			1	45.3	2	0								47.5		2	55.4	4	3	8	9	0.42%		27-Jul
28-Jul	72.4	0		0			0	54.5	0	0	46.3	0	0	74.3	0								6	55.4	11	5	11	10	0.51%		28-Jul
29-Jul				0	41.8	0	8	54.5	15	0			0	74.3	0						52.3		3	55.4	5	11	20	11	0.53%		29-Jul
30-Jul	98.8	0		1	41.8	2	4	54.5	7	0	20.2	0	0							1	52.3	2	2	50.8	4	8	16	11	0.56%		30-Jul
31-Jul	98.8	0		0	41.8	0	0			0	20.2	0	0			1	43.7	2					0	50.8	0	1	2	9	0.45%	3.38%	31-Jul
01-Aug	98.8	0		0	84.1	0	0			0			0			2	43.7	5			42.7		2	50.8	4	4	9	6	0.29%		01-Aug
02-Aug	87.8	0		0	84.1	0	0			0			0			0	43.7	0			42.7		0			0	0	3	0.14%		02-Aug
03-Aug	87.8	0		0	84.1	0	0			0	61	0	0							1	42.7	2	0			1	2	3	0.13%		03-Aug
04-Aug	87.8	0		0			0			0	61	0	0										1	85.4	1	1	1	2	0.06%		04-Aug
05-Aug				0			0			0			0								45.9		1	85.4	1	1	1	2	0.09%		05-Aug
06-Aug	57	0		0			0			1	57.4	2	0							1	45.9	2	0			2	4	1	0.07%		06-Aug
07-Aug	57	0		0			0			0	57.4	0	0										1	88.5	1	1	1	1	0.06%	0.86%	07-Aug
08-Aug	57	0		0			0			0			0								23.5		0			0	0	1	0.07%		08-Aug
09-Aug	57	0		0			0			0			0								23.5		0			0	0	1	0.03%		09-Aug
10-Aug				0			0			0	5.1	0	0								23.5		1	49.8	2	1	2	0	0.02%		10-Aug
11-Aug				0			0			0	5.1	0	0										0			0	0	1	0.03%		11-Aug
12-Aug				0			0			0	5.1	0	0										0			0	0	1	0.03%		12-Aug
13-Aug	100	0		0			0			0			0										1	141	1	1	1	0	0.01%		13-Aug
14-Aug	100	0		0			0			0			0										0			0	0	0	0.01%	0.19%	14-Aug
15-Aug	100	0		0			0			0			0										0			0	0	0	0.01%		15-Aug
16-Aug	100	0		0			0			0			0										0			0	0	0	0.00%		16-Aug
17-Aug				0			0			0			0										0			0	0	0	0.00%		17-Aug
18-Aug				0			0			0			0										0			0	0	0	0.00%		18-Aug
19-Aug				0			0			0			0										0			0	0	0	0.00%		19-Aug
20-Aug				0			0			0			0										0			0	0	0	0.00%		20-Aug
21-Aug				0			0			0			0										0			0	0	0	0.00%	0.01%	21-Aug
22-Aug				0			0			0			0										0			0	0	0	0.00%		22-Aug
23-Aug				0			0			0			0										0			0	0	0	0.00%		23-Aug
24-Aug				0			0			0			0										0			0	0	0	0.00%		24-Aug
25-Aug				0			0			0			0										0			0	0	0	0.00%		25-Aug
26-Aug				0			0			0			0										0			0	0	0	0.00%		26-Aug
27-Aug				0			0			0			0										0			0	0	0	0.00%		27-Aug
28-Aug				0			0			0			0										0			0	0	0	0.00%	0.00%	28-Aug
29-Aug				0			0			0			0										0			0	0	0	0.00%		29-Aug
30-Aug				0			0			0			0										0			0	0	0	0.00%		30-Aug
31-Aug				0			0			0			0										0			0	0	0	0.00%	0.00%	31-Aug
	3	8		71		236	76		202	86		247	54		137	230		538		52		102	284		590	855 *	2062	2060	100.00%	100.00%	01-Sep 02-Sep 03-Sep 04-Sep 05-Sep 06-Sep
Est. Fish/Tag in Catch (Expanded)						161.4			246.2			238.3			512.8			229.4													

* 26 of 873 are interpolated additions

Note: Data for July 3 - 16, 1985 is interpolated.

Table 15. Crosswind Lake CWT Commercial Catch Recovery by Day Summary

File: DayCWT5X.wr1 Date: 1/11/93 Disk: CWT

This file contains only Crosswind Lake CWT tag recovery data!!!

	1992 Tags	Per-cent Sam-pled	Expe-nded Tags 1992	1993 Tags	Per-cent Sam-pled	Expe-nded Tags 1993	1994 Tags	Per-cent Sam-pled	Expe-nded Tags 1994	1995 Tags	Per-cent Sam-pled	Expe-nded Tags 1995	1 Yrs Actual Tags	1 Yr Expanded Tags	Moving Avg Order5		STAT WEEK	
10-May	0												0	0				10-May
11-May	0												0	0				11-May
12-May	0												0	0	0	0.00%		12-May
13-May	0												0	0	0	0.00%		13-May
14-May	0												0	0	0	0.00%		14-May
15-May	0	35.8	0										0	0	0	0.00%	0.00%	15-May
16-May	0												0	0	0	0.00%		16-May
17-May	0												0	0	0	0.00%		17-May
18-May	0	44.2	0										0	0	0	0.00%		18-May
19-May	0	44.2	0										0	0	0	0.00%		19-May
20-May	0	44.2	0										0	0	0	0.00%		20-May
21-May	0												0	0	0	0.00%		21-May
22-May	0	42.7	0										0	0	0	0.00%	0.00%	22-May
23-May	0	42.7	0										0	0	0	0.00%		23-May
24-May	0												0	0	0	0.00%		24-May
25-May	0	43.2	0										0	0	0	0.00%		25-May
26-May	0	43.2	0										0	0	0	0.00%		26-May
27-May	0	43.2	0										0	0	0	0.00%		27-May
28-May	0												0	0	0	0.00%		28-May
29-May	0	39	0										0	0	0	0.00%	0.00%	29-May
30-May	0	39	0										0	0	0	0.00%		30-May
31-May	0												0	0	0	0.00%		31-May
01-Jun	0	39.1	0										0	0	0	0.00%		01-Jun
02-Jun	0	39.1	0										0	0	0	0.00%		02-Jun
03-Jun	0												0	0	0	0.00%		03-Jun
04-Jun	0												0	0	0	0.00%		04-Jun
05-Jun	0												0	0	0	0.00%	0.00%	05-Jun
06-Jun	0												0	0	0	0.00%		06-Jun
07-Jun	0												0	0	0	0.00%		07-Jun
08-Jun	0	45.6	0										0	0	0	0.00%		08-Jun
09-Jun	0												0	0	0	0.00%		09-Jun
10-Jun	0												0	0	0	0.00%		10-Jun
11-Jun	0												0	0	0	0.00%		11-Jun
12-Jun	0	44	0										0	0	0	0.00%	0.00%	12-Jun
13-Jun	0												0	0	0	0.00%		13-Jun
14-Jun	0												0	0	0	0.00%		14-Jun
15-Jun	0	44.7	0										0	0	0	0.00%		15-Jun
16-Jun	0												0	0	0	0.00%		16-Jun
17-Jun	0												0	0	0	0.00%		17-Jun
18-Jun	0												0	0	0	0.00%		18-Jun
19-Jun	0	33.6	0										0	0	0	0.00%	0.00%	19-Jun
20-Jun	0	33.6	0										0	0	0	0.00%		20-Jun
21-Jun	0												0	0	0	0.00%		21-Jun
22-Jun	0	41.6	0										0	0	0	0.00%		22-Jun
23-Jun	0	41.6	0										0	0	0	0.00%		23-Jun
24-Jun	0												0	0	0	0.00%		24-Jun
25-Jun	0												0	0	0	0.00%		25-Jun
26-Jun	0												0	0	0	0.00%	0.00%	26-Jun
27-Jun	0	39.1	0										0	0	0	0.00%		27-Jun
28-Jun	0												0	0	0	0.00%		28-Jun
29-Jun	0												0	0	0	0.00%		29-Jun
30-Jun	0	41	0										0	0	0	0.00%		30-Jun
01-Jul	0												0	0	0	0.00%		01-Jul
02-Jul	0												0	0	0	0.00%		02-Jul
03-Jul	0												0	0	0	0.00%	0.00%	03-Jul
04-Jul	0	44.2	0										0	0	0	0.00%		04-Jul
05-Jul	0												0	0	0	1.09%		05-Jul
06-Jul	0												0	0	0	1.09%		06-Jul
07-Jul	1	55	2										1	2	0	1.09%		07-Jul
08-Jul	0	55	0										0	0	0	1.09%		08-Jul
09-Jul	0												0	0	1	3.47%		09-Jul
10-Jul	0												0	0	2	5.93%	13.77%	10-Jul
11-Jul	2	50.6	4										2	4	2	5.93%		11-Jul
12-Jul	3	50.6	6										3	6	3	8.23%		12-Jul
13-Jul	0												0	0	3	8.23%		13-Jul
14-Jul	2	52.4	4										2	4	2	5.85%		14-Jul
15-Jul	0												0	0	1	2.29%		15-Jul
16-Jul	0												0	0	2	7.42%		16-Jul
17-Jul	0												0	0	2	6.15%	44.10%	17-Jul
18 Jul	5	58.6	9										5	9	2	6.15%		18-Jul
19-Jul	1	58.6	2										1	2	2	6.15%		19-Jul
20-Jul	0	52.8	0										0	0	2	6.15%		20-Jul
21-Jul	0	52.8	0										0	0	0	1.03%		21-Jul
22-Jul	0	52.8	0										0	0	0	0.00%		22-Jul
23-Jul	0												0	0	0	0.00%		23-Jul
24-Jul	0	52.8	0										0	0	0	0.00%	19.48%	24-Jul
25-Jul	0	52.8	0										0	0	0	0.00%		25-Jul
26-Jul	0												0	0	0	1.08%		26-Jul
27-Jul	0	55.4	0										0	0	1	2.17%		27-Jul
28-Jul	1	55.4	2										1	2	1	3.35%		28-Jul
29-Jul	1	55.4	2										1	2	1	3.35%		29-Jul
30-Jul	1	50.8	2										1	2	2	4.53%		30-Jul
31-Jul	0	50.8	0										0	0	1	3.45%	17.92%	31-Jul
01-Aug	1	50.8	2										1	2	1	2.36%		01-Aug
02-Aug	0												0	0	0	1.18%		02-Aug
03-Aug	0												0	0	0	1.18%		03-Aug
04-Aug	0	85.4	0										0	0	0	0.00%		04-Aug
05-Aug	0	85.4	0										0	0	0	0.00%		05-Aug
06-Aug	0												0	0	0	0.00%		06-Aug
07-Aug	0	86.5	0										0	0	0	0.00%	4.72%	07-Aug
08-Aug	0												0	0	0	0.00%		08-Aug
09-Aug	0												0	0	0	0.00%		09-Aug
10-Aug	0	49.6	0										0	0	0	0.00%		10-Aug
11-Aug	0												0	0	0	0.00%		11-Aug
12-Aug	0												0	0	0	0.00%		12-Aug
13-Aug	0	141	0										0	0	0	0.00%		13-Aug
14-Aug	0												0	0	0	0.00%	0.00%	14-Aug
15-Aug	0												0	0	0	0.00%		15-Aug
16-Aug	0												0	0	0	0.00%		16-Aug
17-Aug	0												0	0	0	0.00%		17-Aug
18-Aug	0												0	0	0	0.00%		18-Aug
19-Aug	0												0	0	0	0.00%		19-Aug
20-Aug	0												0	0	0	0.00%		20-Aug
21-Aug	0												0	0	0	0.00%	0.00%	21-Aug
22-Aug	0												0	0	0	0.00%		22-Aug
23-Aug	0												0	0	0	0.00%		23-Aug
24-Aug	0												0	0	0	0.00%		24-Aug
25-Aug	0												0	0	0	0.00%		25-Aug
26-Aug	0												0	0	0	0.00%		26-Aug
27-Aug	0												0	0	0	0.00%		27-Aug
28-Aug	0												0	0	0	0.00%	0.00%	28-Aug
29-Aug	0												0	0	0	0.00%		29-Aug
30-Aug	0												0	0	0	0.00%		30-Aug
31-Aug	0												0	0	0	0.00%	0.00%	31-Aug
																		01-Sep
	18		33	0		0	0		0	0		0	18 *	33	33	100.00%	100.00%	02-Sep
																		03-Sep
Est. Fish/Tag in Catch (Expanded)						0			0			0						04-Sep

Table 16. Copper River CWT Data Calculations for Forecast Use

File: DyowtBas.wr1 Date: 2/12/93 Disk: CWT

Enhanced Production Estimates for year being forecasted, Copper River Commercial Catch and Sonar Escapement estimates.

Date	Average Daily Percent 1993 Catch Expect Summit	1993 Catch Expect Xwind	1993 Catch Expect Paxson	Average Daily Catch 1993 Catch Expect Summit	1993 Catch Expect Xwind	1993 Catch Expect Paxson	Comm. Catch W/O Enhanced 1993 % Catch Expect Comm.	1993 Catch Expect Comm.	(W/ Enhanced) Total Expected Comm. Catch 1993 Expect Total Catch	1993 % Expect Total Catch	(W/ Enhanced Cumulative Expected Catch 1993 Cum.Ex. Total Catch	1993 Cum.Ex. Total Catch
10-May	0.00%	0.00%	0.00%	0	0	0	0.00	0	0	0.00	0	0.00
11-May	0.00%	0.00%	0.00%	0	0	0	0.00	0	0	0.00	0	0.00
12-May	0.10%	0.00%	0.05%	33	0	34	0.03	267	334	0.04	334	0.04
13-May	0.17%	0.00%	0.09%	58	0	59	0.16	1448	1565	0.17	1899	0.21
14-May	0.36%	0.00%	0.18%	119	0	122	0.17	1321	1562	0.17	3461	0.38
15-May	0.36%	0.00%	0.18%	119	0	122	0.58	4562	4803	0.52	8264	0.90
16-May	0.72%	0.00%	0.36%	238	0	246	0.84	6646	7129	0.77	15393	1.67
17-May	1.53%	0.00%	0.77%	508	0	526	0.71	5587	6600	0.72	21993	2.39
18-May	1.61%	0.00%	0.80%	533	0	550	0.98	7687	8770	0.95	30763	3.34
19-May	1.52%	0.00%	0.76%	505	0	522	2.50	19696	20723	2.25	51486	5.60
20-May	2.11%	0.00%	1.05%	699	0	722	2.34	18419	19840	2.16	71326	7.75
21-May	1.90%	0.00%	0.95%	629	0	650	2.01	15847	17127	1.86	88452	9.61
22-May	1.10%	0.00%	0.55%	366	0	378	2.78	21901	22646	2.46	111098	12.08
23-May	1.24%	0.00%	0.62%	411	0	425	2.40	18899	19736	2.15	130833	14.22
24-May	1.83%	0.00%	0.92%	609	0	629	2.54	19993	21231	2.31	152064	16.53
25-May	1.78%	0.00%	0.89%	591	0	610	3.91	30814	32015	3.48	184078	20.01
26-May	1.57%	0.00%	0.79%	522	0	539	3.54	27873	28934	3.14	213012	23.15
27-May	2.26%	0.00%	1.13%	749	0	773	2.17	17113	18635	2.03	231647	25.18
28-May	2.29%	0.00%	1.14%	759	0	784	2.81	22158	23702	2.58	255349	27.76
29-May	1.75%	0.00%	0.88%	582	0	601	4.49	35379	36561	3.97	291910	31.73
30-May	1.44%	0.00%	0.72%	478	0	494	3.11	24446	25418	2.76	317328	34.49
31-May	1.82%	0.00%	0.91%	605	0	625	2.47	19422	20653	2.24	337981	36.74
01-Jun	1.31%	0.00%	0.66%	436	0	450	2.49	19595	20480	2.23	358462	38.96
02-Jun	1.08%	0.00%	0.54%	357	0	369	2.67	21005	21732	2.36	380193	41.33
03-Jun	1.05%	0.00%	0.53%	349	0	360	2.47	19408	20118	2.19	400311	43.51
04-Jun	0.98%	0.00%	0.49%	327	0	337	1.96	15461	16115	1.75	416425	45.26
05-Jun	0.69%	0.00%	0.35%	229	0	237	1.98	15597	16064	1.75	432489	47.01
06-Jun	0.54%	0.00%	0.27%	180	0	186	1.42	11163	11529	1.25	444018	48.26
07-Jun	0.65%	0.00%	0.33%	218	0	223	1.83	14402	14841	1.61	458859	49.88
08-Jun	0.55%	0.00%	0.28%	183	0	189	1.88	14816	15188	1.65	474048	51.53
09-Jun	0.45%	0.00%	0.23%	149	0	154	1.65	12984	13288	1.44	487334	52.97
10-Jun	0.59%	0.00%	0.30%	196	0	203	1.80	14191	14590	1.59	501925	54.56
11-Jun	0.69%	0.00%	0.34%	229	0	236	1.70	13397	13862	1.51	515787	56.06
12-Jun	0.60%	0.00%	0.30%	198	0	204	1.76	13893	14295	1.55	530082	57.62
13-Jun	0.70%	0.00%	0.35%	231	0	239	1.07	8457	8927	0.97	539009	58.59
14-Jun	0.85%	0.00%	0.42%	281	0	290	1.26	9964	10624	1.14	549633	59.73
15-Jun	0.62%	0.00%	0.31%	206	0	212	1.79	14052	14470	1.57	564003	61.30
16-Jun	0.48%	0.00%	0.24%	159	0	165	1.55	12229	12553	1.36	576556	62.67
17-Jun	0.72%	0.00%	0.36%	239	0	247	1.47	11564	12040	1.31	588596	63.98
18-Jun	0.87%	0.00%	0.44%	290	0	299	0.94	7393	7982	0.87	596578	64.85
19-Jun	0.77%	0.00%	0.38%	255	0	263	1.02	8012	8530	0.93	605108	65.77
20-Jun	0.93%	0.00%	0.46%	308	0	318	1.15	9075	9702	1.05	614810	66.83
21-Jun	1.51%	0.00%	0.75%	500	0	516	1.23	9647	10663	1.16	625473	67.99
22-Jun	1.21%	0.00%	0.60%	400	0	413	1.24	9730	10544	1.15	636016	69.13
23-Jun	1.01%	0.00%	0.51%	336	0	347	1.18	9267	9950	1.08	645966	70.21
24-Jun	1.19%	0.00%	0.59%	395	0	408	0.99	7787	8589	0.93	654555	71.15
25-Jun	1.56%	0.00%	0.78%	518	0	535	0.76	5965	7009	0.76	661564	71.91
26-Jun	1.04%	0.00%	0.52%	344	0	356	0.78	6124	6824	0.74	668388	72.65
27-Jun	1.23%	0.00%	0.61%	408	0	421	0.62	4842	5672	0.62	674060	73.27
28-Jun	1.39%	0.00%	0.70%	462	0	478	0.58	4571	5511	0.60	679571	73.87
29-Jun	1.27%	0.00%	0.63%	421	0	436	0.70	5541	6388	0.70	685967	74.56
30-Jun	1.06%	0.00%	0.53%	352	0	364	0.69	5441	6157	0.67	692124	75.23
01-Jul	1.37%	0.00%	0.68%	454	0	469	0.64	5037	5961	0.65	698085	75.88
02-Jul	1.82%	0.00%	0.91%	604	0	624	0.54	4251	5479	0.60	703564	76.47
03-Jul	1.70%	0.00%	0.85%	563	0	582	0.78	6113	7258	0.79	710822	77.26
04-Jul	1.76%	0.00%	0.88%	583	0	602	0.44	3481	4666	0.51	715488	77.77
05-Jul	1.64%	1.09%	1.37%	544	337	937	0.53	4134	5953	0.65	721441	78.42
06-Jul	1.89%	1.09%	1.49%	627	337	1022	0.61	4811	6797	0.74	728238	79.16
07-Jul	1.73%	1.09%	1.41%	576	337	968	0.53	4197	6078	0.66	734316	79.82
08-Jul	2.05%	1.09%	1.57%	680	337	1076	0.50	3965	6059	0.66	740375	80.48
09-Jul	2.66%	3.47%	3.06%	884	1071	2101	0.47	3671	7726	0.84	748101	81.32
10-Jul	2.71%	5.93%	4.32%	899	1833	2962	0.52	4117	9811	1.07	757912	82.38
11-Jul	2.23%	5.93%	4.08%	741	1833	2799	0.46	3597	8970	0.98	766882	83.36
12-Jul	2.21%	8.23%	5.22%	733	2541	3577	0.38	2964	9815	1.07	776697	84.42
13-Jul	2.11%	8.23%	5.17%	701	2541	3543	0.37	2899	9684	1.05	786380	85.48
14-Jul	1.51%	5.85%	3.68%	502	1808	2525	0.41	3235	8069	0.88	794449	86.35
15-Jul	1.40%	2.29%	1.85%	465	708	1267	0.38	2968	5406	0.59	799855	86.94
16-Jul	2.02%	7.42%	4.72%	671	2292	3237	0.25	1980	8180	0.89	808036	87.83
17-Jul	1.72%	6.15%	3.93%	570	1901	2697	0.48	3783	8950	0.97	816985	88.80
18-Jul	1.42%	6.15%	3.79%	472	1901	2597	0.43	3399	8369	0.91	825354	89.71
19-Jul	1.61%	6.15%	3.83%	502	1901	2627	0.31	2425	7454	0.81	832809	90.52
20-Jul	1.56%	6.15%	3.86%	518	1901	2642	0.39	3080	8139	0.88	840947	91.41
21-Jul	0.93%	1.03%	0.98%	307	317	669	1.20	9464	10776	1.17	851724	92.58
22-Jul	0.96%	0.00%	0.48%	318	0	328	0.60	4697	5342	0.58	857066	93.16
23-Jul	0.96%	0.00%	0.48%	318	0	328	0.62	4915	5560	0.60	862626	93.76
24-Jul	0.65%	0.00%	0.32%	215	0	222	0.27	2086	2523	0.27	865149	94.04
25-Jul	0.47%	0.00%	0.23%	155	0	160	1.08	[illegible]	8661	0.94	873810	94.98
26-Jul	0.46%	1.08%	0.76%	148	335	524	0.44	3468	4465	0.49	878275	95.46
27-Jul	0.42%	2.17%	1.29%	139	669	887	0.26	2023	3718	0.40	881993	95.87
28-Jul	0.61%	3.35%	1.93%	189	1034	1322	0.21	1664	4188	0.46	886181	96.32
29-Jul	0.53%	3.35%	1.94%	176	1034	1329	0.41	3199	5739	0.62	891920	96.95
30-Jul	0.56%	4.53%	2.54%	186	1399	1743	0.18	1427	4754	0.52	896674	97.46
31-Jul	0.45%	3.45%	1.95%	150	1064	1336	0.13	1005	3554	0.39	900228	97.85
01-Aug	0.28%	2.36%	1.32%	93	730	905	0.35	2768	4495	0.49	904723	98.34
02-Aug	0.14%	1.18%	0.66%	48	365	452	0.09	698	1562	0.17	906285	98.51
03-Aug	0.13%	1.18%	0.65%	43	365	449	0.10	820	1676	0.18	907961	98.69
04-Aug	0.08%	0.00%	0.04%	28	0	29	0.09	730	787	0.09	908748	98.78
05-Aug	0.09%	0.00%	0.05%	31	0	32	0.28	2173	2237	0.24	910985	99.02
06-Aug	0.07%	0.00%	0.04%	24	0	25	0.06	439	487	0.05	911472	99.07
07-Aug	0.06%	0.00%	0.03%	20	0	21	0.27	2124	2165	0.24	913637	99.31
08-Aug	0.07%	0.00%	0.03%	23	0	24	0.10	805	851	0.09	914489	99.40
09-Aug	0.03%	0.00%	0.02%	10	0	10	0.09	694	715	0.08	915203	99.48
10-Aug	0.02%	0.00%	0.01%	6	0	7	0.03	257	270	0.03	915473	99.51
11-Aug	0.03%	0.00%	0.01%	9	0	9	0.05	426	444	0.05	915917	99.56
12-Aug	0.03%	0.00%	0.01%	9	0	9	0.02	190	208	0.02	916125	99.58
13-Aug	0.01%	0.00%	0.00%	2	0	2	0.08	597	602	0.07	916727	99.64
14-Aug	0.01%	0.00%	0.00%	2	0	2	0.04	322	327	0.04	917054	99.68
15-Aug	0.01%	0.00%	0.00%	2	0	2	0.03	241	246	0.03	917299	99.71
16-Aug	0.00%	0.00%	0.00%	0	0	0	0.02	191	191	0.02	917491	99.73
17-Aug	0.00%	0.00%	0.00%	0	0	0	0.02	130	130	0.01	917621	99.74
18-Aug	0.00%	0.00%	0.00%	0	0	0	0.03	215	215	0.02	917836	99.76
19-Aug	0.00%	0.00%	0.00%	0	0	0	0.02	157	157	0.02	917993	99.78
20-Aug	0.00%	0.00%	0.00%	0	0	0	0.02	150	150	0.02	918143	99.80
21-Aug	0.00%	0.00%	0.00%	0	0	0	0.03	214	214	0.02	918357	99.82
22-Aug	0.00%	0.00%	0.00%	0	0	0	0.02	129	129	0.01	918487	99.84
23-Aug	0.00%	0.00%	0.00%	0	0	0	0.02	157	157	0.02	918644	99.85
24-Aug	0.00%	0.00%	0.00%	0	0	0	0.02	157	157	0.02	918802	99.87
25-Aug	0.00%	0.00%	0.00%	0	0	0	0.01	79	79	0.01	918881	99.88
26-Aug	0.00%	0.00%	0.00%	0	0	0	0.01	79	79	0.01	918959	99.89
27-Aug	0.00%	0.00%	0.00%	0	0	0	0.01	79	79	0.01	919038	99.90
28-Aug	0.00%	0.00%	0.00%	0	0	0	0.01	79	79	0.01	919117	99.90
29-Aug	0.00%	0.00%	0.00%	0	0	0	0.01	79	79	0.01	919195	99.91
30-Aug	0.00%	0.00%	0.00%	0	0	0	0.01	79	79	0.01	919274	99.92
31-Aug	0.00%	0.00%	0.00%	0	0	0	0.01	79	79	0.01	919353	99.93
01-Sep	0.00%	0.00%	0.00%	0	0	0	0.01	79	79	0.01	919432	99.94
02-Sep	0.00%	0.00%	0.00%	0	0	0	0.01	79	79	0.01	919510	99.95
03-Sep	0.00%	0.00%	0.00%	0	0	0	0.01	79	79	0.01	919589	99.96
04-Sep	0.00%	0.00%	0.00%	0	0	0	0.01	79	79	0.01	919668	99.96
05-Sep	0.00%	0.00%	0.00%	0	0	0	0.01	79	79	0.01	919747	99.97
06-Sep	0.00%	0.00%	0.00%	0	0	0	0.01	79	79	0.01	919825	99.98
07-Sep	0.00%	0.00%	0.00%	0	0	0	0.00	75	75	0.01	919900	99.99
08-Sep	0.00%	0.00%	0.00%	0	0	0	0.00	50	50	0.01	919950	99.99
09-Sep	0.00%	0.00%	0.00%	0	0	0	0.00	50	50	0.01	920000	100.00
				33178	30890	68648	100.00	787200	920000	100		

Assumes eight (8) day delay from fishery Avg. Sonar Escapement 1993 Sonar Expect Summit	1993 Sonar Expect Xwind	1993 Sonar Expect Paxson	Sonar W/O Enhanced 1993 % Sonar Expect Natural	1993 Sonar Expect Natural	1993 Expected Take Personal Use/King 81-82 Avg. King Number	90-92 Avg. Red Number	Combined Avg. Red/Kng Number	1993 Expect Red/Kng Percent	1993 Expect Red/Kng Number	1993 Total Expected Sonar Count Includes enhanced Paxson, Summit Crosswind, natural return plus personal use sockeye & king 1993 Expect Sonar Goal	1993 % Expect Sonar Goal	1993 Expect Cum. Sonar	1993 % Expect Cum. Sonar	DATE	From V" Weekly Percent Wild Sonar	From AB" Weekly Percent PU/King Sonar
								0.00	0	0	0.00	0	0.00	10-May		
								0.00	0	0	0.00	0	0.00	11-May		
								0.00	0	0	0.00	0	0.00	12-May		
								0.00	0	0	0.00	0	0.00	13-May		
								0.00	0	0	0.00	0	0.00	14-May		
								0.00	0	0	0.00	0	0.00	15-May	0.00	0.00
								0.00	0	107	0.02	107	0.02	16-May		
			0.08	266	44	466	634	0.86	664	931	0.18	1038	0.20	17-May		
0	0	0	0.18	638	61	340	638	0.86	669	1307	0.25	2345	0.45	18-May		
0	0	0	0.26	897	48	378	589	0.80	617	1514	0.29	3858	0.75	19-May		
22	0	23	0.29	1013	48	358	572	0.77	599	1857	0.32	5515	1.07	20-May		
38	0	40	0.29	1003	55	435	680	0.92	712	1793	0.35	7308	1.42	21-May		
79	0	82	0.39	1357	86	824	1167	1.58	1222	2740	0.53	10048	1.95	22-May	1.48	5.78
79	0	82	0.57	1999	75	1054	1293	1.75	1354	3513	0.68	13561	2.63	23-May		
159	0	164	0.89	3101	77	1093	1338	1.81	1401	4825	0.94	18386	3.58	24-May		
339	0	360	0.89	3129	73	1037	1266	1.71	1325	5143	1.00	23529	4.58	25-May		
355	0	387	0.95	3320	76	1008	1262	1.71	1322	5363	1.04	28892	5.60	26-May		
337	0	348	1.38	4841	68	851	1085	1.47	1137	6663	1.29	35555	6.89	27-May		
466	0	481	1.82	6356	69	866	1104	1.49	1156	8459	1.64	44015	8.53	28-May		
420	0	434	1.26	4413	95	1103	1450	1.96	1518	6784	1.31	50799	9.84	29-May	7.76	11.89
244	0	252	1.52	5334	109	1366	1747	2.36	1829	7660	1.48	58459	11.33	30-May		
274	0	283	2.03	7100	109	1374	1750	2.36	1833	9490	1.84	67949	13.17	31-May		
406	0	419	2.11	7380	90	1215	1515	2.05	1587	9792	1.90	77741	15.07	01-Jun		
394	0	407	2.40	8410	55	1144	1245	1.68	1304	10515	2.04	88255	17.10	02-Jun		
348	0	359	2.33	8139	87	1188	1354	1.83	1418	10265	1.99	98520	19.09	03-Jun		
499	0	516	2.63	9213	52	1134	1221	1.65	1279	11508	2.23	110027	21.32	04-Jun		
508	0	523	2.91	10197	81	1176	1424	1.92	1492	12718	2.46	122745	23.79	05-Jun	15.94	13.86
388	0	401	2.63	9201	75	1349	1529	2.07	1602	11591	2.25	134336	26.03	06-Jun		
319	0	329	2.58	9046	61	1348	1448	1.96	1616	11208	2.17	145544	28.21	07-Jun		
404	0	417	3.01	10551	52	1197	1270	1.72	1331	12702	2.46	158247	30.67	08-Jun		
290	0	300	2.89	10108	31	1275	1208	1.63	1265	11963	2.32	170210	32.99	09-Jun		
238	0	246	2.77	9706	40	1464	1410	1.91	1477	11666	2.26	181876	35.25	10-Jun		
233	0	240	2.67	9331	43	1439	1408	1.90	1472	11276	2.19	193151	37.43	11-Jun		
218	0	225	2.47	8630	42	1512	1469	1.97	1528	10601	2.05	203752	39.49	12-Jun	19.02	13.15
163	0	168	2.16	7576	40	1580	1508	2.04	1578	9464	1.83	213216	41.32	13-Jun		
120	0	124	2.08	7274	37	1391	1334	1.80	1398	8915	1.73	222131	43.05	14-Jun		
144	0	149	2.23	7788	40	1129	1143	1.54	1197	9277	1.80	231408	44.85	15-Jun		
122	0	126	1.98	6934	22	1017	944	1.28	989	8171	1.58	239579	46.43	16-Jun		
100	0	103	1.98	6927	26	962	921	1.24	965	8094	1.57	247673	48.00	17-Jun		
131	0	136	1.68	5894	34	819	860	1.16	900	7080	1.37	254734	49.37	18-Jun		
162	0	167	1.47	5141	40	931	982	1.33	1028	6480	1.26	261213	50.62	19-Jun	13.58	10.39
132	0	136	1.52	5333	23	1016	951	1.29	996	6597	1.28	267810	51.90	20-Jun		
164	0	169	1.37	4799	27	1036	992	1.34	1039	6151	1.19	273962	53.09	21-Jun		
187	0	193	1.37	4783	20	1004	922	1.25	966	6129	1.19	280091	54.28	22-Jun		
137	0	142	1.43	4997	20	1140	1029	1.39	1078	6354	1.23	286445	55.51	23-Jun		
108	0	110	1.39	4860	25	1213	1120	1.51	1173	6249	1.21	292694	56.72	24-Jun		
159	0	164	1.35	4730	28	1293	1201	1.62	1258	6312	1.22	299006	57.95	25-Jun		
193	0	199	1.17	4086	27	1486	1352	1.83	1416	5894	1.14	304899	59.09	26-Jun	9.60	10.23
170	0	176	1.12	3921	28	1692	1508	2.04	1580	5847	1.13	310746	60.22	27-Jun		
206	0	212	1.08	3782	25	1686	1498	2.02	1569	5769	1.12	316515	61.34	28-Jun		
333	0	344	1.06	3713	20	1551	1362	1.84	1427	5817	1.13	322332	62.47	29-Jun		
267	0	276	0.98	3431	20	1480	1302	1.76	1364	5337	1.03	327669	63.50	30-Jun		
224	0	231	0.98	3418	15	1506	1297	1.75	1368	5231	1.01	332900	64.52	01-Jul		
263	0	272	0.98	3437	14	1431	1231	1.66	1289	5261	1.02	338162	65.54	02-Jul		
346	0	357	1.01	3523	14	1356	1171	1.58	1226	5452	1.06	343614	66.59	03-Jul	7.21	12.66
230	0	237	1.14	4003	7	1234	1026	1.39	1075	5545	1.07	349158	67.67	04-Jul		
272	0	281	1.08	3775	12	1069	925	1.25	968	5296	1.03	354454	68.69	05-Jul		
308	0	316	1.02	3582	6	829	896	0.94	729	4938	0.96	359393	69.65	06-Jul		
280	0	290	0.98	3422	8	681	578	0.78	605	4698	0.89	363990	70.54	07-Jul		
235	0	243	1.02	3586	8	720	612	0.83	641	4706	0.91	368696	71.45	08-Jul		
303	0	313	1.05	3672	5	759	639	0.86	670	4958	0.96	373653	72.41	09-Jul		
403	0	416	1.18	4139	5	800	670	0.91	701	5659	1.10	379312	73.51	10-Jul	7.48	6.95
375	0	388	1.04	3638	6	779	650	0.88	681	5082	0.98	384394	74.50	11-Jul		
389	0	402	1.13	3946	4	703	587	0.79	615	5351	1.04	389745	75.53	12-Jul		
363	225	625	0.96	3375	5	557	473	0.64	496	5083	0.99	394828	76.52	13-Jul		
418	225	681	1.11	3882	3	549	460	0.62	482	5689	1.10	400517	77.62	14-Jul		
383	225	646	1.09	3802	3	591	489	0.66	512	5568	1.08	406085	78.70	15-Jul		
453	225	716	1.07	3733	2	542	446	0.60	468	5595	1.08	411680	79.78	16-Jul		
589	714	1400	0.91	3202	1	633	515	0.70	640	6445	1.25	418125	81.03	17-Jul	7.31	4.89
599	1222	1976	1.02	3571	3	683	546	0.74	571	7938	1.54	426063	82.57	18-Jul		
494	1222	1868	1.15	4022	3	600	497	0.67	521	8125	1.57	434188	84.14	19-Jul		
489	1694	2364	1.21	4223	2	482	397	0.54	416	9206	1.78	443393	85.93	20-Jul		
487	1694	2362	0.95	3317	1	466	381	0.52	399	8240	1.60	451633	87.53	21-Jul		
335	1206	1883	0.70	2445	1	425	344	0.47	360	6029	1.17	457662	88.69	22-Jul		
310	472	844	0.69	2400	1	418	343	0.46	359	4386	0.85	462048	89.54	23-Jul		
448	1528	2158	0.52	1822	1	491	398	0.54	416	6372	1.23	468420	90.78	24-Jul	6.23	3.93
380	1287	1798	0.45	1591	0	509	409	0.55	429	5464	1.06	473884	91.84	25-Jul		
315	1267	1731	0.40	1404	1	462	375	0.51	393	5110	0.99	478994	92.83	26-Jul		
334	1267	1751	0.44	1553	1	380	308	0.42	323	5228	1.01	484222	93.84	27-Jul		
344	1267	1781	0.48	1673	2	321	271	0.37	284	5329	1.03	489551	94.87	28-Jul		
205	211	446	0.47	1667	2	278	233	0.32	244	2783	0.54	492315	95.41	29-Jul		
212	0	219	0.42	1467	2	264	222	0.30	233	2130	0.41	494444	95.82	30-Jul		
212	0	219	0.35	1212	2	250	210	0.28	220	1863	0.36	496307	96.18	31-Jul	3.02	2.74
143	0	148	0.32	1133	1	239	198	0.27	207	1631	0.32	497939	96.50	01-Aug		
103	0	107	0.29	1021	1	206	173	0.23	181	1412	0.27	499350	96.77	02-Aug		
98	223	349	0.23	818	0	121	97	0.13	102	1591	0.31	500941	97.08	03-Aug		
93	446	591	0.22	764	0	94	78	0.10	80	1974	0.38	502915	97.46	04-Aug		
112	669	881	0.12	425	1	100	84	0.11	88	2195	0.43	505110	97.89	05-Aug		
117	889	886	0.09	319	2	124	110	0.15	115	2128	0.41	507238	98.30	06-Aug		
123	933	1162	0.05	161	1	149	123	0.17	129	2508	0.49	509746	98.79	07-Aug	1.33	1.16
100	710	890	0.02	81	1	194	163	0.22	171	1952	0.38	511697	99.17	08-Aug		
62	486	803	0.02	65	0	166	149	0.20	156	1373	0.27	513070	99.43	09-Aug		
31	243	302	0.01	43	0	167	136	0.18	143	762	0.15	513831	99.58	10-Aug		
28	243	299		0	1	136	116	0.16	122	693	0.13	514524	99.71	11-Aug		
18	0	19		0	0	110	90	0.12	94	131	0.03	514655	99.74	12-Aug		
21	0	22		0	1	79	66	0.09	69	112	0.02	514767	99.76	13-Aug		
16	0	16		0	0	101	83	0.11	87	119	0.02	514886	99.78	14-Aug	0.05	1.09
13	0	14		0	0	121	97	0.13	102	129	0.02	515015	99.81	15-Aug		
15	0	16		0	2	136	117	0.16	123	154	0.03	515169	99.84	16-Aug		
7	0	7		0	0	131	106	0.14	111	125	0.02	515294	99.86	17-Aug		
4	0	4		0	1	115	97	0.13	101	110	0.02	515404	99.88	18-Aug		
8	0	8		0	3	90	89	0.12	93	105	0.02	515509	99.90	19-Aug		
8	0	8		0	2	73	72	0.10	75	87	0.02	515596	99.92	20-Aug		
2	0	2		0	1	59	61	0.07	63	56	0.01	515652	99.93	21-Aug	0.00	0.86
2	0	2		0	0	55	45	0.06	47	50	0.01	515702	99.94	22-Aug		
2	0	2		0	2	46	52	0.07	54	57	0.01	515759	99.95	23-Aug		
0	0	0		0	0	39	33	0.04	35	35	0.01	515794	99.96	24-Aug		
0	0	0		0	1	27	26	0.04	27	27	0.01	515821	99.97	25-Aug		
0	0	0		0	1	14	14	0.02	15	15	0.00	515836	99.97	26-Aug		
0	0	0		0	0	10	8	0.01	8	8	0.00	515844	99.97	27-Aug		
0	0	0		0	1	16	17	0.02	18	18	0.00	515862	99.97	28-Aug	0.00	0.26
0	0	0		0	0	19	17	0.02	18	18	0.00	515880	99.98	29-Aug		
0	0	0		0	0	18	15	0.02	16	15	0.00	515895	99.98	30-Aug		
0	0	0		0	1	17	17	0.02	18	18	0.00	515913	99.98	31-Aug		
0	0	0		0	0	14	11	0.01	12	12	0.00	515924	99.99	01-Sep		
0	0	0		0	0	9	8	0.01	9	9	0.00	515933	99.99	02-Sep		
0	0	0		0	0	8	6	0.01	7	7	0.00	515940	99.99	03-Sep		
0	0	0		0	0	12	10	0.01	11	11	0.00	515951	99.99	04-Sep	0.00	0.11
0	0	0		0	0	13	11	0.01	11	11	0.00	515962	99.99	05-Sep		
0	0	0		0	0	14	11	0.01	11	11	0.00	515974	99.99	06-Sep		
0	0	0		0	0	13	12	0.02	13	13	0.00	515987	100.00	07-Sep		
0	0	0		0	0	10	8	0.01	9	9	0.00	515995	100.00	08-Sep		
0	0	0		0	0	5	4	0.01	4	4	0.00	516000	100.00	09-Sep	0.00	0.06
22118	20593	46897		360000	2434	74240	73994	100.0	77600	516000	100					

Table 17. Copper River Sockeye Salmon Catch by Day Summary

File: CR89YDYO.wr1 Date: 2/11/93 Disk: 5A

No weighting and
No Enhanced Adjustment

This file contains Copper River drift gill net catches of sockeye salmon in sub areas 212-10,20 and 30 combined.

Date	1909	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	Average	Cum. Catch	Cum. Per.	Date	1992 Per. Dy/day	1992 Cum. Per.	1992 Summit #	1992 Xwind #	1992 Paxson #	1992 Natural less Enhanced	1992 Summit Tags	1992 Xwind Tags	1992 Paxson Sum/Xwind (Ave. of	1992 Percent W/O Enhance	1992 Cum. % W/O Enhance
May 10																						0			0	0	0.0	May 10	0.00	0.0	0	0	0	0			0.00	0.00	0.00
11																						0			0	0	0.0	11	0.00	0.0	0	0	0	0			0.00	0.00	0.00
12																		6124				0			255	255	0.0	12	0.00	0.0	0	0	0	0			0.00	0.00	0.00
13																	32149	2674	8690			0			1736	1995	0.3	13	0.00	0.0	0	0	0	0			0.00	0.00	0.00
14																13276	14106		4681			6749			1617	3602	0.5	14	0.00	0.0	0	0	0	0			0.00	0.00	0.00
15		16090					136			11777						18795	132				29837	12998		10249	4163	7765	1.1	15	1.06	1.1	0	0	0	10249	0	0	0.00	1.14	1.14
16	2252	13702					6075	595		9272					12706	1520	57313			15127	18320	0	2336		6904	13669	1.9	16	0.00	1.1	0	0	0	0			0.00	0.00	1.14
17	1826	298	41				486	18400		3909			15	844	25818		29866			7744		6622	42746		5767	19306	2.7	17	0.00	1.1	0	0	0	0			0.00	0.00	1.14
18		52240						26965	52	1312	4		10076	1233	6819		629		37237		8133	61067	0		8574	27910	3.9	18	0.00	1.1	0	0	0	0	0	0	0.00	0.00	1.14
19	11522	57606					8441	11721	22196	17903		92	68605	864				34395	28458		144710	0	0	29093	10062	45973	6.5	19	2.99	4.0	68	0	173	20062	5	0	2.28	3.21	4.36
20	14205	15590				33997	8751	2683	73294	17147			32379	17274			68114	32598				0	60498		15693	81665	8.7	20	0.00	4.0	0	0	0	0	2	0	1.13	0.00	4.36
21	4236	17691	80			19555	6311	47524	19242	1986				141074		53235	28935		21309			36502	54267		18939	60504	11.4	21	0.00	4.0	0	0	0	0			0.00	0.00	4.36
22	2824	56649				22674	30964	49913	1650	10445				70216		101454	1280	11548	95384		65979	44814	0	66361	25169	106673	14.9	22	5.69	9.7	46	0	120	55195	2	0	1.17	8.15	10.50
23	29932	25204				6603	37836	611	31177	14467				5259	26803	60671	20154	43314		23887	44932	0	1890		15522	121195	17.1	23	0.00	9.7	0	0	0	0	2	0	1.17	0.00	10.50
24	18245	219	120			13147	10730	91471	41432	3969	2950			486	63659		55235			43044		0	75140		17495	139689	19.6	24	0.00	9.7	0	0	0	0			0.00	0.00	10.50
25	1056	61618				18901	3052	65407	38475	92	22036		19967	110555	20958		11800		56108		16327	59624	0	99958	25289	163978	23.1	25	10.27	20.0	139	0	364	99485	9	0	4.63	11.08	21.58
26	32571	58331				1652	13433	50974	12091		14412		67069	97448				36018	39948	4404	99096	0	0	28344	23565	187544	26.5	26	2.91	22.9	232	0	591	27521	23	0	11.59	3.07	24.65
27	13364	33182				7373	11304	8686	19521	33	927	69	27070	20755		23378	05743	26260		36598	36970	0	52805		18794	204337	28.9	27	0.00	22.9	0	0	0	0	5	0	2.32	0.00	24.65
28	12066	11206			39843	18120	3156	36974	23989	861	12273	4		3689		73267	58018		19533	23654		33745	0	10731	15846	220183	31.1	28	1.10	24.0	154	0	392	10186			0.00	1.13	25.78
29	12441	35615		98479	30610	20170	2800	19840	5959	26344	17392			58276		40114	8915		107034		56073	53461	0	69050	27932	248115	35.0	29	7.10	31.1	77	0	198	68777	15	0	7.88	7.88	33.44
30	27603	27271		102716	23778	4078	27397	2291	9754	21900	5160	86		14362	31394		36026			29119	52818	0	0		17367	265472	37.4	30	0.00	31.1		0	0	0	8	0	3.84	0.00	33.44
31	4728	3292	20336	79720	5951	9729	1836	13758	28817	6711	671	4		2657	44263		48942			37911		2727	134368		16646	284018	40.1	31	0.00	31.1	0	0	0	0			0.00	0.00	33.44
June 1	646	36237	59311	7414	17067	21419		14940	33626	2514		39	13102	27525	17198		413		78907		12022	45154	0	60433	10623	302641	42.7	June 1	6.21	37.3	307	0	703	59343	13	0	8.40	8.61	40.05
2	42032	52318	50027	34902	4641	3475	7240	13698	12146	15987			36985	36099				51056	67876	4361	26524	0	0		18094	321736	45.4	2	0.00	37.3	0	0	0	0	18	0	8.96	0.00	40.05
3	40146	37628	18609	21556	7	19969	9668	3187	15083	22098		93	20763	1050			40270	24753	33027	28190		0	75612		17070	336805	47.6	3	0.00	37.3	0	0	0	0			0.00	0.00	40.05
4	21870	17562	66584	373	10125	37977	9950	16421	9009	3649		19	1394	14410			16981		7389			29480	75199		14137	362942	49.8	4	0.00	37.3	0	0	0	0			0.00	0.00	40.05
5	3767	31614	59842	20140	16736	22816	2396	11146	7134			325		44719		1801	271		60036		55306	26477	0		16189	368131	51.9	5	0.00	37.3	0	0	0	0			0.00	0.00	40.05
6	27270	34960	1292	33404	9114	8545	13421	7660	2956			5		15860	8906	33687	11248		20460		33758	0	2869		16981	379113	53.5	6	0.00	37.3	0	0	0	0			0.00	0.00	40.05
7	24832	2614	15746	47498	2447	24510	8986	9508	16572					16536	29609	26773	26598					0	90888		14363	393475	55.5	7	0.00	37.3	0	0	0	0			0.00	0.00	40.05
8	3018	7578	18279	4862	15677	36108	1097	27453	16562				7619	49534	34563		11124		58411		3012	0	0	51057	14419	407890	57.5	8	5.33	42.7	44	0	112	51701	4	0	2.19	5.76	46.81
9	9149	23411	3655	17643	20999	3780	11167	21848	5568				15928	43654	9126	4139		28491	46789	1061	27118	0	0		12230	420124	59.3	9	0.00	42.7	0	0	0	0			0.00	0.00	46.81
10	18878	30191	5078	6382	1174	16743	18302	10346	5743	64			27206	16824		22365	20696	31703		41068		0	27649		12509	432632	61.0	10	0.00	42.7	0	0	0	0			0.00	0.00	46.81
11	8251	14870	25211	251	11743	22707	12372	9368	11150			58	14522	20768		49134	22275		7810			27468	32909		12494	445126	62.8	11	0.00	42.7	0	0	0	0			0.00	0.00	46.81
12	5764	16298	17114	5445	13770	15097	1969	13750	7710			26		26313	2461	19623	4189	6745	78486		29219	41258	0	45297	14631	459757	64.9	12	4.66	47.3	159	0	406	44732	16	0	7.98	4.98	50.80
13	17596	10965	2110	9367	4197	3998	10975	3696	3642					2276	8088		9790	44980		23714	19867	0			7330	467067	65.9	13	0.00	47.3	0	0	0	0			0.00	0.00	50.80
14	13901	2441	9511	5453	1675	14763	8525	4408	12699					26290	26675	16450	19905			21751		3341	36965		9370	476457	67.2	14	0.00	47.3	0	0	0	0			0.00	0.00	50.80
15		30714	22431	1205	7598	22633	820	17781	9312				4059	47599	13624	32542	18092		36570		6028	36818	0	44890	14687	491144	69.3	15	4.81	51.9	90	0	228	44572	9	0	4.48	4.86	55.76
16	14923	50345	12656	5987	4643	5198	5415	15323	7109				15617	32434	3117	34400	806	30306	38337	2284	31561	0	0		12936	504090	71.1	16	0.00	51.9	0	0	0	0			0.00	0.00	55.76
17	30006	16506	3308	11488	684	11661	10094	10064	3908				13016	12157		9250	6598	43657		42195		0	19567		10260	514340	72.6	17	0.00	51.9	0	0	0	0			0.00	0.00	55.76
18	21659	2100	8717	1048	3044	24061	5792	11377	5965				2062	12986	1	8334	12589					17712	23973	2728	8906	521245	73.5	18	0.28	52.2	0	0	0	2728			0.00	0.30	56.06
19	2814	15117	5793	14272	5551	15820	2589	11971						7613		20472	8431	5152			19821	19100	0	40068	8130	529375	74.7	19	4.15	56.4	80	0	152	40156	6	0	2.98	4.47	60.54
20	14257	6246	518	19258	4367	4390	4638	4327	6045	10340				901	4148	14996	10643	27182		13291	14407	0	1996	21575	7646	537021	75.8	20	2.22	58.6	149	0	360	21046	15	0	7.46	2.34	62.88
21	14125	1575	7059	7662	2128	11777	3384	9482	8060	12655				17488	12456	4623	14733	18962		14136		6218	41487		9983	546684	77.0	21	0.00	58.6	0	0	0	0			0.00	0.00	62.88
22	2916	13323	10657	1807	3609	8110	547	16057	5278	5907			2762	23047	12793	11032	14012		36284		864	31978	0	30533	8599	555284	78.3	22	3.14	61.7	48	0	123	30362	5	0	2.40	3.38	66.26
23	15690	16981	5618	4775	8039	53	3066	7769	6145	1376			9577	9228	588	29009		25950	42729	1780	29681	0	0	15218	8590	564874	79.7	23	1.56	63.3	192	0	491	14536	19	0	9.82	1.02	67.88
24	15067	10642	2338	3632		1496	5555	2654	6909				8394	2823	5469		12206	36347		30746		0	19494		8945	571818	80.7	24	0.00	63.3	0	0	0	0			0.00	0.00	67.88
25	17358	1052	13226	366	5058	4990	6258	5153	3607				2806	9582	13723	3003	8965					11993	13294	3664	8216	577034	81.4	25	0.38	63.7	0	0	0	3664			0.00	0.41	68.29
26	4395	12460	13482	9052	5694	4157	1777	4954	2608					4168		16911	9561	3440			15390	11327	0	29960	8217	583251	82.3	26	3.08	66.7	0	0	1106	28852			0.00	3.21	71.50
27	8772	16218	2343	17337	3728	368		1261	3232					455	4320	12024	463	19360		7215	8138	0	680	8777	4695	587946	82.9	27	0.90	67.6	436	0	0	8342	43	0	21.73	0.93	72.43
28	9748	2341	4349	7940	360	5209		5959	4910					3612	12811	2121		7295		4504		1960	41998		4792	592739	83.6	28	0.00	67.6	0	0	0	0			0.00	0.00	72.43
29	2570	6636	14175	1648	4112	3042		8448	1890				1900	9056	9179	7222			14986			20178	0	20105	5327	598065	84.4	29	2.07	69.7	0	0	684	19421			0.00	2.16	74.60
30	9344	9431	5998	10264	771	206	3449	4566	2292				7762	5667	4436	13078		15270	29697	1362		7181	0	7423	5783	603848	85.2	30	0.78	70.5	268	0	0	7155	27	0	13.42	0.80	75.39
July 1	12711	3629	1145	12508		2438	4454	2263	4068				4094	1922	5070	2017	11984	9562		12942		0	16512		4583	608431	85.8	July 1	0.00	70.5	0	0	0	0			0.00	0.00	75.39
2	8603	869	7718	873	1598	4015	3126	5115	540				1169	9115	13437	4815	5482	7148	152			8755	21161	1700	4390	612821	86.4	2	0.17	70.6	0	0	0	1700			0.00	0.19	75.58
3	1442	8000	8112	9042	4100	2308	920	10031					293	3700	1637	15406	7554	3008	10914		19464	13603	0	31558	6779	619599	87.4	3	3.24	73.9	0	0	1040	30518			0.00	3.40	78.98
4	7059	6298	360	9692	2791	311		4075	1898					609	5183	12609		12428		4673	6071	0	361	6773	5974	625974	87.9	4	0.70	74.6	408	0	0	6365	41	0	20.39	0.71	79.69
5	6680		10933	5049	1106	3245		9066	440					6419	12386	3134		8362		6115		2549	26906		4294	627268	88.5	5	0.00	74.6	0	0	0	0			0.00	0.00	79.69
6	2464	4428	9000	1188	2360	2227		10078	1299				2545	9668	7675	8994			9949			20641	0	22440	4756	632024	89.2	6	2.31	76.9	218	0	618	21806			0.00	2.41	82.10
7	4998	9792	2264	7034	2700	41	2361	8820	2426				3223	3682	2040	10398		12692	9692	1815		6661	0	20708	4634	636658	89.8	7	2.13	79.0	218	2729	567	17206	22	2	12.09	1.82	84.01
8	8050	1275	1803	8210	895	2194	3128	2070	2521				2549	1349	5056	2100		6632	0	16924		0	21279		3672	640230	90.3	8	0.00	79.0		0		0	22	0	10.92	0.00	84.01
9	3955	1702	6169	836	1328	4449	903	3909	1748	30			2363	6544	5890	7726		5647	2918			12346	36298	1061	4410	644639	90.9	9	0.11	79.1	0	0	0	1061			0.00	0.12	84.13
10	459	6895	1280	4753	5705	2557		4143	1131	2225				3701	4	13412		2062	18379		19609	6490	0	24618	4893	649532	91.6	10	2.53	81.7	237	5928	733	17720			0.00	1.97	88.11
11	3091	1849		7836	2971	376		1510	1509	1763				609	5436	3037		10032		8052	16221	0	4042	21061	3812	653344	92.2	11	2.16	83.8	168	8892	596	11416	24	4	14.37	1.27	87.38
12	1144	166	3195	3779	663	2446		3667	3272	166				279	12460	419		2301		10613		1601	29294		3149	656493	92.6	12	0.00	83.8				0	16	6	11.68	0.00	87.38
13			3441	217	1287	3478		3728	998	624			1392	260	8215	11709			1872			16445	12819	13011	3228	659721	93.1	13	1.34	86.2	0	0	1195	11816			0.00	1.32	88.68
14	2581	3652	5968	3952	716	487	179	1921		2002			1700	176	1693	6621		8070	1520	5506		11339	0	18845	3192	662913	93.5	14	1.92	87.1	420	5728		12498	42	4	23.44	1.39	90.09
15	2976	2662	600	4332		1695	694	969	2797	955			3625		4306	408		10250		10681		0	17804		2696	665609	93.9	15	0.00	87.1	0	0	0	0			0.00	0.00	90.09

-Continued-

Table 17. (Page 2 of 2)

File: CR6BYDY0.wr1 Date: 2/11/93 Disk: 6A

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No weighting and
No Enhanced Adjustment

This file contains Copper River drift gill net catches of sockeye salmon in sub areas 212-10,20 and 30 combined.

Date	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	Average	Cum. Catch	Cum. Per.	Date	1992 Per. By/day	1992 Cum. Per.	1992 Summit #	1992 Xwind #	1992 Paxson #	1992 Natural less Enhanced	1992 Summit Tags	1992 Xwind Tags	1992 Paxson (Ave. of Sum/Xwind	1992 Percent W/O Enhance	1992 Cum. % W/O Enhance
16	907	165	5606	303	1792	3706	2054	2333	1562	216			411	606	7529	2687		4908	273			9103	13159	1459	2456	668065	94.2	16	0.16	97.2	0	0	0	1159			0.00	0.16	90.25
17	584	4233	5760	6059	3213	2675	64	3617		1637			1830	269	1819	5036	4343	110	5315		20075	11364	0	15600	3971	671936	94.8	17	1.61	98.8	581	2501	1758	10790			0.00	1.20	91.45
18	2249	4052	172	4931	1258	881		1007	1537	1757			2070	313	1824	8609	3734	10117		9541	12726	0	354	23437	3774	675710	95.3	18	2.41	91.2	120	12807	360	10160	58	9	34.47	1.13	92.58
19	1306	361	3213	1054	53	2440		2069	2229	1153			23	3111	6175	547	4479	4144		4966		81	21249		2177	678106	95.7	19	0.00	91.2				0	12	2	7.07	0.00	92.58
20	52	3991	5776	406	1707	1769		2973	1284	1176			764	3441	6260	4236	71		4466			10025	15778	11599	3161	681347	96.1	20	1.19	92.4	19	0	627	10943	2	0	0.95	1.22	93.80
21	1007	4365	3706	1722	719		433	3221		1145		4014	2346	1406	1360	4169		6875	8361	1199		3795	0	19184	2375	684222	96.5	21	1.97	94.4	265	0	676	10243	27	0	13.25	2.03	95.83
22	1363	1096	577	1451		1262	2707	1192	860	36		1328	4130	863	2802	438	2027	5184		9882		0	6067	9136	2184	686406	96.8	22	0.94	95.3	208	0	531	6398	21	0	10.41	0.94	96.77
23	2984	365	3617		608	2561	683	1806	55	437		1965	294	2653	3661	1360	2960	60	157			3896	1273	3472	1453	687859	97.0	23	0.36	95.7	19	0	48	3405			0.00	0.36	97.15
24		4044	2064	1056	882	1541		3684		554		44	1331	2273	638	2198	2369	1366	7652		7447	5941	0	6697	2196	690065	97.3	24	0.69	96.4	227	0	0	6470	23	0	11.36	0.72	97.87
25	84	2062	206	3967	580	179		1409	1017	1898		3887	789	827	2150	3756	1382	4364		1726	6114	0	869		1688	691642	97.6	25	0.00	96.4	0	0	0	0	2	0	0.95	0.00	97.87
26	172		733	2811	245	1293		645	454	1400		1106	256	2341	4390	936	1115	3185		2093	2652	137	10802		1532	693174	97.8	26	0.00	96.4	0	0	0	0			0.00	0.00	97.87
27	465	1515	2458	914	393	1618		1729		537		234	301	2876	2499	2566	2765		4694			6984	4477	7959	1870	695044	98.0	27	0.82	97.2	36	2707	1682	3834	4	0	1.90	0.40	98.27
28	49	2157	2711	1439	342	527		1153	1268	801		273	1573	1774	916	1524	806	3803	5194	121		1044	0	3765	1302	696346	98.2	28	0.39	97.6	108	2707	592	369	11	2	6.58	0.04	98.31
29	111	490	423	3221		537		89	384	1223		1171	1472	189	4276	143	1279	3349		2510		0	5736	332	1122	697468	98.4	29	0.03	97.6	54		0	278	5	2	3.98	0.03	98.34
30	753		2329	50		960		779	348	788		293	83	1727	3055	726	2307	2446	34			2381	1321	3217	983	698451	98.5	30	0.33	98.0	39	2960	0	227	4	2	3.22	0.03	98.37
31		483	2476	513	378	676		1470		701			383	192	1422	998	2636	389	1661		3112	4089	0	4066	1097	699548	98.7	31	0.42	99.4	0	2000	954	1112	0	0	0.00	0.12	98.49
Aug. 1	51	68	470	2020	176	291			118	1295		1108	810	366	1699	1969	396	3118		614	3151	0	0	2018	330	700378	98.8	Aug. 1	0.21	98.8	39	950	990	39	4	2	3.22	0.00	98.50
2	368		1065	1433		392		394	206	716				1298	4196	42	591	554		1066	350	55	2365		629	701007	98.9	2	0.00	98.8	0	0	0	0			0.00	0.00	98.50
3	432	933	2292	186	275	592		1097	236	166			227	1613	2024	1054	1519		1411			2362	2005	2111	864	701870	99.0	3	0.22	98.8	12	0	30	2069			0.00	0.23	98.73
4	146	1278	670	311	343			868		739			258	1190	216	1116	9	1893	2368	14		4663	0	281	682	702552	99.1	4	0.03	98.8	12	0	30	239	1	0	0.59	0.03	98.75
5	417	514	162	862	145	177		588	327	149	3	937	1367	96	906	120	1024	1842		1142		0	1745		523	703075	99.2	5	0.00	98.8		0	0	0	1	0	0.59	0.00	98.75
6	194	113	1633	80		376		425	146			31		748	18	946	1363	1474	42			1617	1989	65	166	703640	99.2	6	0.01	98.8	0	0	0	65			0.00	0.01	98.76
7		57	697		31	469		518		139	931	686		407		1322	1375	631	1247		1803	2108	0	3501	663	704203	99.3	7	0.36	99.2	11	0	29	2461	1	0	0.57	0.38	98.15
8	48	255			41			125	19	291	1367			1	157	866	794			936	1982	0	187		295	704498	99.4	8	0.00	99.2	0	0	0	0			0.00	0.00	98.15
9	62		108		115	45		204	67	242	1070			898	619	874	321			704	845	4	891		294	704792	99.4	9	0.00	99.2	0	0	0	0			0.00	0.00	98.15
10			236		29			450	62	23			128	215	1293	26			282	636		721	92	1610	242	705033	99.5	10	0.17	99.4	20	0	51	1538	2	0	1.01	0.17	99.32
11		25	405					182	26	50		49	709	375	1705			772	839			1370	0	962	311	705346	99.5	11	0.10	99.5	0	0	0	962			0.00	0.11	99.42
12	6	1	187					192				40	321	213	4		399	987	835			0	0		129	705473	99.5	12	0.00	99.5	0	0	0	0			0.00	0.00	99.42
13		2	70					33			173	221	221	24		110	749	941	280			694	0	471	162	705636	99.5	13	0.05	99.5	7	0	18	446	1	0	0.36	0.05	99.47
14		41	318							56	338	17	20			131	374	607			332	1209	0	490	164	705799	99.6	14	0.05	99.6	0	0	0	490			0.00	0.05	99.53
15	6	23							71	69	94	19			1066	93	386			517	636	718	0		154	705953	99.6	15	0.00	99.6	0	0	0	0			0.00	0.00	99.53
16			18					519	36	111	68			132	1538	39	106			280	648	0	0		146	706099	99.6	16	0.00	99.6	0	0	0	0			0.00	0.00	99.53
17		4	62					49	108	90	6		196	232	958	1			339	210		0	0	349	108	706207	99.6	17	0.04	99.6	0	0	0	349			0.00	0.04	99.57
18		1	33					2	66	42		43	102	320	696			612	621	107		0	0	843	141	706348	99.6	18	0.09	99.7	0	0	0	843			0.00	0.09	99.66
19		1	50					5				4	48	338	124		157	497	416			0	217		77	706425	99.6	19	0.00	99.7	0	0	0	0			0.00	0.00	99.66
20											66	28	19	104		17	245	631	208			233	273	275	87	706513	99.7	20	0.03	99.7	0	0	0	275			0.00	0.03	99.69
21		1									151	48		312		18	99	470			187	258	168	311	95	706598	99.7	21	0.03	99.7	0	0	0	311			0.00	0.03	99.73
22				19					15	78	156		1		199	10	98			362	128	324	0		58	706655	99.7	22	0.00	99.7	0	0	0	0			0.00	0.00	99.73
23			7	2				11	41	47	120			18	222	5	36			160	125	0	0		33	706688	99.7	23	0.00	99.7	0	0	0	0			0.00	0.00	99.73
24			2	1				56	38	78	72			246	126	1			45	133		0	0	45	36	706724	99.7	24	0.00	99.8	0	0	0	45			0.00	0.01	99.73
25		1	15		3			6	30	17			73	47	62			134	264	91		0	0	116	36	706759	99.7	25	0.01	99.8	0	0	0	116			0.00	0.01	99.74
26			11				4	1	1				220	39			28	41	56			3	0	144	23	706782	99.7	26	0.01	99.8	0	0	0	144			0.00	0.02	99.76
27			10								40	155	376	25		1	62	68				105	0		36	706817	99.7	27	0.00	99.8	0	0	0	0			0.00	0.00	99.76
28			2				2			3	45					3	51	82				199	0		16	706833	99.7	28	0.00	99.8	0	0	0	0			0.00	0.00	99.76
29			4	2					6	39	30				16		22			12		144	0		11	706845	99.7	29	0.00	99.8	0	0	0	0			0.00	0.00	99.76
30			2					2	15	2	20			5	96		8			309		0	0		19	706864	99.7	30	0.00	99.8	0	0	0	0			0.00	0.00	99.76
31								5	5		12			8	17					10	9	0	0	29	4	706868	99.7	31	0.00	99.8	0	0	0	29			0.00	0.00	99.76
Sept 1								6	9			283		7	46			38		37	23	0	0	43	21	706889	99.7	Sept 1	0.00	99.8	0	0	0	43			0.00	0.00	99.77
2			2					3	3					5	13		4	24			10	0	8	15	4	706892	99.7	2	0.00	99.8	0	0	0	15			0.00	0.00	99.77
3								1			7			7			10	24				0	14	28	4	706896	99.7	3	0.00	99.8	0	0	0	28			0.00	0.00	99.77
4										1	4					78	5	30				0	0	15	6	706901	99.7	4	0.00	99.8	0	0	0	15			0.00	0.00	99.77
5									4	13	7			13	4		6			4		0	3		2	706904	99.7	5	0.00	99.8	0	0	0	0			0.00	0.00	99.77
6								7	3	2	7				9		1			17		1	5		2	706906	99.7	6	0.00	99.8	0	0	0	0			0.00	0.00	99.77
7									1					7	18					5		19	0	5	2	706908	99.7	7	0.00	99.8	0	0	0	5			0.00	0.00	99.77
8									8	2					3			7		12		20	0	4	2	706910	99.7	8	0.00	99.8	0	0	0	4			0.00	0.00	99.78
9								1				63	125		1		4	24				0	0	13	10	706920	99.7	9	0.00	99.8	0	0	0	13			0.00	0.00	99.78
10											2						3	15				0	4	2	1	706921	99.7	10	0.00	99.8	0	0	0	2			0.00	0.00	99.78
11								22			7						3	3			2	0	0	5	2	706923	99.7	11	0.00	99.8	0	0	0	5			0.00	0.00	99.78
12									2	2	3				1		1			0	8	6	2		1	706924	99.7	12	0.00	99.8	0	0	0	0			0.00	0.00	99.78
13									1						1					10	2	17	1		1	706925	99.7	13	0.00	99.8	0	0	0	0			0.00	0.00	99.78
14									2													1	0	1	0	706925	99.7	14	0.00	99.8	0	0	0	1			0.00	0.00	99.78
15									2									20				0	0	2	1	706926	99.7	15	0.00	99.8	0	0	0	2			0.00	0.00	99.78
16												68										0	0	1	2	706929	99.7	16	0.00	99.8	0	0	0	1			0.00	0.00	99.78
17											2						2					0	4		0	706929	99.7	17	0.00	99.8	0	0	0	0			0.00	0.00	99.78
18											3					1						0	2		0	706929	99.7	18	0.00	99.8	0	0	0	0			0.00	0.00	99.78
19															1							0	0		0	706929	99.7	19	0.00	99.8	0	0	0	0			0.00	0.00	99.78
20																						5	1		0	706930	99.7	20	0.00	99.8	0	0	0	0			0.00	0.00	99.78
21																					2	0	0	0	0	706930	99.7	21	0.00	99.8	0	0	0	0			0.00	0.00	99.78
22		118																				0	0	1	5	706936	99.7	22	0.00	99.8	0	0	0	1			0.00	0.00	99.78
23																						0	0	0	0	706936	99.7	23	0.00	99.8	0	0	0	0			0.00	0.00	99.78
24																						0	0		0	706936	99.7	24	0.00	99.8	0	0	0	0			0.00	0.00	99.78
25																						0	0		0	706936	99.7	25	0.00	99.8	0	0	0	0			0.00	0.00	99.78
26																						2	0		0	706936	99.7	26	0.00	99.8	0	0	0	0			0.00	0.00	99.78
27																						0	0		0	706936	99.7	27	0.00	99.8	0	0	0	0			0.00	0.00	99.78
28																						0	0		0	706936	99.7	28	0.00	99.8	0	0	0	0			0.00	0.00	99.78
29																						0	0		0	706936	99.7	29	0.00	99.8	0	0	0	0			0.00	0.00	99.78
30													74									0	0		3	706936	99.7	30	0.00	99.8	0	0	0	0			0.00	0.00	99.78
																							0		0				0.00		0	0	0	0			0.00	0.00	99.78
Total	693112	1116133	618772	728319	332674	609508	337369	867171	604714	251850	82507	20888	479553	1179614	625205	933682	932067	782794	1182769	576938	1027912	846768	1208802	972930	701918	708918			2091.8		7896	51951	21297	897702	2582	2025	2308		

1 Ratio of Summit/Xwind

Table 18. Copper River Sockeye Percentage Catch by Day, Corrected for Enhanced Production (removed)

File: CRCATCH2.wr1 Date: 2/11/93 Disk: CWT Page 1 of 3.

The table contains Copper River Sockeye Salmon cumulative percentage catch by day,by year.
(Corrected for enhanced production which is removed from the catches in 1985-1992)

Date	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1969-1992 Cumulative	1969-1992 Daily	1969-1992 Weekly	Date	1993 Catch Daily w/o Enh.	1993 Catch Cum. 787200 w/o Enh
5-10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00		5/10	0	0
5-11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00	0.00		11	0	0
5-12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.03	0.03		12	267	267
5-13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	1.1	0.6	0.0	0.0	0.1	0.0	0.0	0.22	0.18		13	1448	1715
5-14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	5.0	1.1	1.0	0.0	0.0	0.8	0.0	0.0	0.39	0.17		14	1321	3036
5-15	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.0	3.4	5.0	1.1	1.0	0.0	2.9	2.4	0.0	1.2	0.97	0.58	0.97	15	4562	7598
5-16	0.3	2.7	0.0	0.0	0.0	0.0	1.9	0.1	0.0	8.4	0.0	0.0	0.0	0.0	2.1	3.6	11.1	1.1	1.0	2.6	4.7	2.5	0.2	1.2	1.81	0.84		16	6645	14243
5-17	0.6	2.7	0.0	0.0	0.0	0.0	2.0	2.2	0.0	10.0	0.0	0.0	0.0	0.1	6.2	3.6	14.3	1.1	1.0	4.0	4.7	2.8	4.0	1.2	2.52	0.71		17	5567	19810
5-18	0.6	7.4	0.0	0.0	0.0	0.0	2.0	5.3	0.0	10.5	0.0	0.0	2.1	0.2	7.3	3.6	14.4	1.1	4.1	4.0	5.5	10.5	4.0	1.2	3.49	0.98		18	7687	27497
5-19	2.3	12.8	0.0	0.0	0.0	0.0	3.9	6.7	3.7	17.7	0.0	0.5	16.5	0.2	7.3	3.6	14.4	5.5	6.5	4.0	19.6	10.5	4.0	4.4	5.99	2.50		19	19696	47192
5-20	4.3	14.0	0.0	0.0	0.0	5.6	6.5	7.0	15.9	24.5	0.0	0.5	23.2	1.7	7.3	3.6	21.7	9.7	6.5	4.0	19.6	10.5	9.4	4.4	8.33	2.34		20	18419	65611
5-21	4.9	15.5	0.0	0.0	0.0	8.8	8.4	12.5	19.0	25.3	0.0	0.5	23.2	13.7	7.3	9.3	24.8	9.7	8.3	4.0	19.6	14.6	14.3	4.4	10.35	2.01		21	15847	81458
5-22	5.3	21.5	0.0	0.0	0.0	12.5	9.6	18.2	19.3	29.5	0.0	0.5	23.2	19.7	7.3	20.2	25.0	11.2	16.4	4.0	26.0	20.6	14.3	10.7	13.13	2.78	12.16	22	21901	103359
5-23	9.7	23.8	0.0	0.0	0.0	13.6	20.8	18.3	24.5	35.3	0.0	0.5	23.2	20.1	11.6	26.7	27.1	16.7	16.4	8.1	30.4	20.6	14.5	10.7	15.53	2.40		23	18899	122258
5-24	12.3	23.8	0.0	0.0	0.0	15.8	24.0	28.9	31.4	36.9	3.7	0.5	23.2	20.1	21.8	26.7	33.1	16.7	16.4	15.6	30.4	20.6	21.0	10.7	18.07	2.54		24	19993	142251
5-25	12.5	29.3	0.0	0.0	0.0	19.1	25.0	36.5	37.7	36.9	31.0	0.5	27.4	29.5	25.1	26.7	34.4	16.7	21.2	15.6	32.0	27.6	21.0	21.9	21.98	3.91		25	30814	173065
5-26	17.2	34.7	0.0	0.0	0.0	19.3	29.0	43.3	39.8	36.9	48.9	0.5	41.5	37.8	25.1	26.7	34.4	21.4	24.6	16.3	41.7	27.6	21.0	25.0	25.53	3.54		26	27873	200938
5-27	19.1	37.6	0.0	0.0	0.0	20.5	32.3	44.3	43.0	36.9	50.1	0.9	47.1	39.6	25.1	29.2	43.6	24.8	24.6	22.7	45.2	27.6	25.5	25.0	27.70	2.17		27	17113	218051
5-28	20.9	38.7	0.0	0.0	12.0	23.5	33.3	48.4	47.0	37.3	65.3	0.9	47.1	39.9	25.1	37.1	49.8	24.8	26.2	26.8	45.2	31.3	25.5	26.2	30.51	2.81		28	22158	240209
5-29	22.7	41.9	0.0	13.3	21.3	26.8	34.1	50.7	47.9	47.8	86.9	0.9	47.1	44.8	25.1	41.4	50.8	24.8	35.3	26.8	50.6	39.6	25.5	33.9	35.01	4.49	21.88	29	35379	275588
5-30	26.7	44.3	0.0	27.4	28.5	27.5	42.3	51.0	49.6	56.6	93.3	1.3	47.1	46.0	30.2	41.4	54.7	24.8	35.3	31.9	55.8	39.6	25.5	33.9	38.11	3.11		30	24446	300033
5-31	27.3	44.6	3.3	38.4	30.3	29.1	42.8	52.6	54.3	58.9	94.0	1.3	47.1	46.3	37.3	41.4	60.0	24.8	35.3	38.4	55.8	39.6	37.1	33.9	40.58	2.47		31	19422	319455
6-1	27.4	47.9	13.0	39.4	35.7	32.6	42.8	54.3	59.9	59.9	94.0	1.5	49.9	48.6	40.0	41.4	60.0	24.8	41.8	38.4	56.9	45.6	37.1	40.6	43.07	2.49		6/1	19595	339050
6-2	33.5	52.5	21.1	44.2	37.1	33.2	44.9	55.9	61.9	66.3	94.0	1.5	57.4	51.7	40.0	41.4	60.0	31.4	47.5	39.2	59.5	45.6	37.1	40.6	45.74	2.67		2	21005	360056
6-3	39.3	55.9	23.8	47.2	37.1	36.5	47.8	56.2	64.4	75.2	94.0	2.0	61.8	51.8	40.0	41.4	64.4	34.5	50.3	44.1	59.5	45.6	43.4	40.6	48.20	2.47		3	19408	379464
6-4	42.5	57.5	34.6	47.2	40.1	42.8	50.8	58.1	66.1	76.7	94.0	2.1	62.0	53.0	40.0	41.4	66.2	34.5	51.0	44.1	59.5	49.4	49.8	40.6	50.17	1.96		4	15451	394915
6-5	43.0	60.3	44.3	50.0	45.2	46.5	51.5	59.4	67.3	76.7	94.0	3.8	62.0	56.8	40.0	41.6	66.2	34.5	56.0	44.1	64.9	52.9	49.8	40.6	52.15	1.98	17.14	5	15597	410512
6-6	47.0	63.5	44.5	54.6	48.0	47.6	55.5	60.3	67.7	76.7	94.0	3.8	62.0	58.1	41.5	45.2	67.4	34.5	57.8	44.1	68.2	52.9	50.0	40.6	53.57	1.42		6	11163	421675
6-7	50.5	63.7	47.0	61.2	48.7	51.6	58.2	61.4	70.5	76.7	94.0	3.8	62.0	59.5	46.2	48.1	70.5	34.5	57.8	44.1	68.2	52.9	57.7	40.6	55.40	1.83		7	14402	436077
6-8	51.0	64.4	50.0	61.8	53.4	57.4	58.5	64.6	73.2	76.7	94.0	3.8	63.6	63.7	51.8	48.1	71.7	34.5	62.7	44.1	68.5	52.9	57.7	46.5	57.28	1.88		8	14816	450893
6-9	52.3	66.5	50.6	64.3	59.8	58.0	61.8	67.1	74.2	76.7	94.0	3.8	67.0	67.4	53.2	48.5	71.7	38.2	66.7	44.3	71.2	52.9	57.7	46.5	58.93	1.65		9	12984	463877
6-10	55.0	69.2	51.4	65.1	60.1	60.8	67.3	68.3	75.1	76.7	94.0	3.8	72.7	68.9	53.2	50.9	73.9	42.2	66.7	51.4	71.2	52.9	60.1	46.5	60.73	1.80		10	14191	478068
6-11	56.4	70.5	55.5	65.2	63.7	64.5	71.0	69.4	77.0	76.7	94.0	4.1	75.7	71.3	53.2	56.2	76.3	42.2	67.3	51.4	71.2	56.1	62.9	46.5	62.43	1.70		11	13397	491466
6-12	57.2	72.0	58.3	65.9	67.9	67.1	71.6	71.0	78.2	76.7	94.0	4.3	75.7	73.6	53.6	58.3	76.7	43.1	74.0	51.4	74.0	61.7	62.9	51.5	64.20	1.76	12.05	12	13893	505359
6-13	59.8	73.0	58.6	67.2	69.1	67.7	74.8	71.4	78.8	76.7	94.0	4.3	75.7	73.8	54.9	58.3	77.8	48.8	74.0	55.5	76.0	61.7	62.9	51.5	65.27	1.07		13	8457	513816
6-14	61.8	73.2	60.1	68.0	69.6	70.2	77.7	71.9	81.0	76.7	94.0	4.3	75.7	76.1	69.2	60.1	78.9	48.8	74.0	59.3	78.0	61.7	66.1	51.5	66.54	1.26		14	9954	523770
6-15	61.8	75.9	63.8	68.1	71.9	73.9	77.9	74.0	82.5	76.7	94.0	4.3	76.6	80.1	61.4	63.6	81.9	48.8	77.1	59.3	76.6	66.9	66.1	56.6	68.32	1.79		15	14052	537822
6-16	63.9	80.5	65.8	69.0	73.3	74.7	79.5	75.7	83.7	76.7	94.0	4.3	79.8	82.9	61.9	67.3	82.0	52.7	80.3	59.7	79.6	66.9	66.1	56.6	69.87	1.55		16	12229	550051
6-17	68.3	81.9	66.4	70.5	73.5	76.7	82.5	76.9	84.4	76.7	94.0	4.3	82.6	83.9	61.9	68.2	82.9	58.3	80.3	67.0	79.6	66.9	67.9	56.6	71.34	1.47		17	11554	561605
6-18	71.4	82.1	67.8	70.7	74.7	80.8	84.2	78.2	85.4	76.7	94.0	4.3	83.0	85.0	61.9	69.1	84.3	58.3	80.3	67.0	79.6	69.1	70.0	56.9	72.28	0.94		18	7393	568998
6-19	71.8	83.5	68.7	72.6	76.4	83.4	85.0	79.6	85.4	76.8	94.0	4.3	83.0	85.6	61.9	71.3	85.2	59.0	80.3	67.0	81.6	71.4	70.0	61.4	73.30	1.02	9.10	19	8012	577010
6-20	73.9	84.1	68.8	75.3	77.7	84.1	86.4	80.1	86.4	81.0	94.0	4.3	83.0	85.7	62.6	72.9	86.3	62.5	80.3	69.3	83.0	71.4	70.2	63.8	74.45	1.15		20	9075	586086
6-21	75.9	84.2	69.9	76.4	78.3	86.0	87.4	81.2	87.7	86.0	94.0	4.3	83.0	87.2	64.6	73.4	87.9	64.9	80.3	71.7	83.0	71.4	73.7	63.8	75.68	1.23		21	9647	595732
6-22	76.3	85.4	71.7	76.6	79.4	87.4	87.5	83.1	88.6	88.4	94.0	4.3	83.6	89.2	66.6	74.6	89.4	64.9	83.3	71.7	83.0	76.1	73.7	67.2	76.91	1.24		22	9730	605463
6-23	78.6	86.9	72.6	77.3	81.2	87.4	88.4	84.0	89.6	88.9	94.0	4.3	85.6	89.9	66.7	77.7	89.4	68.2	86.9	72.0	85.8	76.1	73.7	68.9	78.09	1.18		23	9267	614730
6-24	80.8	87.9	72.9	77.8	81.2	87.6	90.1	84.3	90.7	88.9	94.0	4.3	87.5	90.2	67.8	77.7	90.7	73.1	86.9	77.4	85.8	76.1	75.5	68.9	79.08	0.99		24	7787	622516
6-25	83.3	87.9	75.1	77.8	83.1	88.4	92.0	84.9	91.4	88.9	94.0	4.3	88.1	91.0	69.8	78.1	91.7	73.1	86.9	77.4	85.8	77.2	76.7	69.3	79.84	0.76		25	5955	628472
6-26	83.9	89.1	77.3	79.1	84.7	89.1	92.5	85.4	91.8	88.9	94.0	4.3	88.1	91.4	69.8	79.9	92.7	73.5	86.9	77.4	87.3	78.4	76.7	72.5	80.61	0.78	7.32	26	6124	634596
6-27	85.2	90.5	77.7	81.5	85.9	89.2	92.5	85.6	92.3	88.9	94.0	4.3	88.1	91.4	70.5	81.2	92.7	76.0	86.9	78.6	87.9	78.4	76.7	73.5	81.23	0.62		27	4842	639438
6-28	86.6	90.7	78.4	82.5	86.0	90.0	92.5	86.3	93.1	88.9	94.0	4.3	88.1	91.7	72.5	81.4	92.7	77.0	86.9	79.4	87.9	78.4	80.5	73.5	81.81	0.58		28	4571	644009
6-29	87.0	91.5	80.7	82.8	87.2	90.5	92.5	87.2	93.5	88.9	94.0	4.3	88.5	92.5	74.0	82.2	92.7	77.0	88.2	79.4	87.9	81.6	80.5	75.7	82.51	0.70		29	5541	649550
6-30	88.3	92.3	81.6	84.2	87.5	90.6	93.5	87.8	93.8	88.9	94.0	4.3	90.2	93.0	74.7	83.6	92.7	78.9	90.7	79.6	87.9	81.6	80.5	76.5	83.21	0.69		30	5441	654991

-Continued-

Table 18. (Page 2 of 3)

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The table contains Copper River Sockeye Salmon cumulative percentage catch by day, by year.
(Corrected for enhanced production which is removed from the catches in 1985-1992)

Date	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1969-1992 Cumulative	1969-1992 Daily	1969-1992 Weekly	Date	1993 Catch Daily w/o Enh.	1993 Catch Cum. 787200 w/o Enh
7-1	90.2	92.7	81.8	85.9	87.5	91.0	94.9	88.0	94.5	88.9	94.0	4.3	91.2	93.2	75.5	83.9	94.0	80.1	90.7	81.9	87.9	81.6	82.1	76.5	83.84	0.84		7/1	5037	660028
7-2	91.4	92.7	83.0	86.0	87.9	91.6	95.8	88.6	94.6	88.9	94.0	4.3	91.4	93.9	77.7	84.4	94.6	81.1	90.7	81.9	87.9	82.5	83.3	76.7	84.38	0.54		2	4251	664279
7-3	91.6	93.5	84.5	87.3	89.2	92.0	96.1	89.9	94.6	88.9	94.0	4.3	91.5	94.3	78.0	86.0	95.4	81.5	92.3	81.9	89.8	83.7	83.3	80.1	85.16	0.78	4.55	3	6113	670392
7-4	92.7	94.1	84.6	88.6	90.0	92.1	96.1	90.3	94.9	88.9	94.0	4.3	91.5	94.3	78.8	87.4	95.4	83.1	92.3	82.7	90.4	83.7	83.4	80.8	85.60	0.44		4	3481	673872
7-5	93.6	94.1	86.4	89.3	90.4	92.6	96.1	91.5	95.0	88.9	94.0	4.3	91.5	94.9	80.8	87.7	95.4	84.2	92.3	83.7	90.4	83.7	85.5	80.8	86.13	0.53		5	4134	678007
7-6	94.0	94.5	87.8	89.5	91.1	93.0	96.1	92.6	95.2	88.9	94.0	4.3	92.0	95.7	82.0	88.7	95.4	84.2	93.1	83.7	90.4	86.9	85.5	83.2	86.74	0.61		6	4811	682817
7-7	94.7	95.4	88.2	90.4	91.9	93.0	96.8	93.4	95.6	88.9	94.0	4.3	92.7	96.0	82.3	89.8	95.4	85.8	93.9	84.1	90.4	86.9	85.5	85.1	87.27	0.53		7	4197	687015
7-8	95.9	95.5	88.5	91.6	92.1	93.3	97.7	93.7	96.0	88.9	94.0	4.3	93.2	96.1	83.1	90.0	95.4	86.7	93.9	87.0	90.4	86.9	87.2	85.1	87.78	0.50		8	3965	690980
7-9	96.4	95.6	89.5	91.7	92.5	94.1	98.0	94.1	96.3	88.9	94.0	4.3	93.7	96.7	84.1	90.9	95.4	87.4	94.2	87.0	90.4	88.0	89.4	85.3	88.24	0.47		9	3671	694651
7-10	96.5	96.3	89.7	92.3	94.3	94.5	98.0	94.6	96.5	89.8	94.0	4.3	93.7	97.0	84.1	92.3	95.4	87.7	95.7	87.0	92.3	88.0	89.4	87.1	88.77	0.52	3.60	10	4117	698768
7-11	97.0	96.4	89.7	93.4	95.2	94.6	98.0	94.8	96.7	90.5	94.0	4.3	93.7	97.0	85.0	92.7	95.4	88.9	95.7	88.5	93.9	88.0	89.8	88.1	89.22	0.46		11	3597	702365
7-12	97.2	96.4	90.2	93.9	95.4	95.0	98.0	95.2	97.3	90.6	94.0	4.3	93.7	97.0	87.0	92.8	95.4	89.2	95.7	90.4	93.9	88.0	91.8	88.1	89.60	0.38		12	2964	705329
7-13	97.2	96.4	90.8	94.0	95.8	95.5	98.0	95.6	97.4	90.8	94.0	4.3	94.0	97.1	88.0	94.0	95.4	89.2	95.9	90.4	93.9	89.8	92.5	89.2	89.97	0.37		13	2899	708228
7-14	97.6	96.7	91.7	94.5	96.0	95.6	98.0	95.8	97.4	91.6	94.0	4.3	94.4	97.1	88.2	94.7	95.4	90.3	96.0	91.3	93.9	91.2	92.5	90.7	90.38	0.41		14	3235	711462
7-15	98.0	97.0	91.8	95.1	96.0	95.9	98.2	95.9	97.9	92.0	94.0	4.3	95.1	97.1	88.9	94.8	95.4	91.6	96.0	93.2	93.9	91.2	94.1	90.7	90.76	0.38		15	2966	714428
7-16	98.1	97.0	92.7	95.2	96.5	96.5	98.8	96.2	98.2	92.1	94.0	4.3	95.2	97.1	90.1	95.1	95.4	92.2	96.0	93.2	93.9	91.2	94.2	90.8	91.01	0.25		16	1980	716408
7-17	98.2	97.4	93.7	95.9	97.5	97.0	98.9	96.7	98.2	92.8	94.0	4.3	95.6	97.2	90.4	95.6	95.9	92.2	96.5	93.2	95.9	93.2	94.2	91.6	91.49	0.48	2.72	17	3783	720191
7-18	98.5	97.7	93.7	96.5	97.9	97.1	98.9	96.8	98.4	93.5	94.0	4.3	96.0	97.2	90.7	96.5	96.3	93.5	96.5	94.8	97.1	93.2	94.2	92.7	91.92	0.43		18	3399	723590
7-19	98.7	97.8	94.2	96.8	97.9	97.5	98.9	97.0	98.8	93.9	94.0	4.3	96.0	97.4	91.7	96.6	96.8	94.1	96.5	95.7	97.1	93.2	95.9	92.7	92.23	0.31		19	2425	726016
7-20	98.7	98.1	95.2	96.9	98.4	97.8	98.9	97.4	99.0	94.4	94.0	4.3	96.2	97.7	92.7	97.0	96.8	94.1	96.9	95.7	97.1	94.8	97.0	93.9	92.62	0.39		20	3080	729096
7-21	98.9	98.5	95.8	97.1	98.6	97.8	99.0	97.7	99.0	94.9	94.0	25.5	96.7	97.9	92.9	97.5	96.8	94.9	97.6	95.9	97.1	94.8	97.0	96.0	93.82	1.20		21	9484	738580
7-22	99.1	98.6	95.9	97.3	98.6	98.0	99.8	97.9	99.1	94.9	94.0	32.5	97.5	97.9	93.4	97.5	97.0	95.6	97.6	97.6	97.1	94.8	97.4	96.9	94.42	0.60		22	4697	743276
7-23	99.5	98.7	96.4	97.3	98.8	98.4	100.0	98.1	99.1	95.0	94.0	42.9	97.6	98.2	94.0	97.7	97.3	95.6	97.6	97.6	97.1	95.2	97.5	97.3	95.04	0.62		23	4915	748191
7-24	99.5	99.0	96.8	97.5	99.1	98.7	100.0	98.5	99.1	95.3	94.0	43.1	97.9	98.4	94.1	97.9	97.6	95.8	98.2	97.6	97.8	95.9	97.5	98.1	95.31	0.27	3.82	24	2086	750277
7-25	99.5	99.3	96.8	98.1	99.2	98.7	100.0	98.7	99.3	96.0	94.0	63.7	98.0	98.4	94.4	98.3	97.7	96.3	98.2	97.9	98.4	96.0	97.6	98.1	96.37	1.06		25	8347	758624
7-26	99.6	99.3	96.9	98.5	99.3	98.9	100.0	98.7	99.4	96.6	94.0	69.5	98.1	98.6	95.1	98.4	97.8	96.8	98.2	98.3	98.7	96.0	98.6	98.1	96.81	0.44		26	3458	762082
7-27	99.6	99.4	97.3	98.6	99.4	99.2	100.0	98.9	99.4	96.8	94.0	70.8	98.2	98.9	95.5	98.7	98.1	96.8	98.6	98.3	98.7	96.9	99.0	98.5	97.07	0.26		27	2023	764105
7-28	99.6	99.6	97.8	98.8	99.5	99.3	100.0	99.1	99.6	97.1	94.0	72.2	98.5	99.0	95.7	98.9	98.2	97.2	99.1	98.3	98.7	97.0	99.0	98.5	97.28	0.21		28	1664	765769
7-29	99.6	99.6	97.8	99.2	99.5	99.4	100.0	99.1	99.7	97.6	94.0	78.4	98.8	99.0	96.4	98.9	98.4	97.7	99.1	98.7	98.7	96.9	99.3	98.5	97.68	0.41		29	3199	768968
7-30	99.7	99.6	98.2	99.3	99.5	99.5	100.0	99.2	99.7	97.9	94.0	80.0	98.8	99.2	96.8	98.9	98.6	98.0	99.1	98.7	98.7	97.1	99.5	98.6	97.87	0.18		30	1427	770395
7-31	99.7	99.7	98.6	99.3	99.7	99.6	100.0	99.3	99.7	98.2	94.0	80.0	98.9	99.2	97.1	99.1	98.9	98.0	99.2	98.7	99.0	97.7	99.5	98.7	97.99	0.13	2.68	31	1005	771400
8-1	99.8	99.7	98.7	99.6	99.7	99.7	100.0	99.3	99.7	98.7	94.0	85.8	99.1	99.2	97.4	99.3	98.9	98.4	99.2	98.8	99.3	97.7	99.5	98.7	98.34	0.35		8/1	2768	774168
8-2	99.8	99.7	98.9	99.8	99.7	99.7	100.0	99.4	99.8	99.0	94.0	85.8	99.1	99.3	98.1	99.3	99.0	98.5	99.2	99.0	99.3	97.7	99.6	98.7	98.43	0.09		2	698	774866
8-3	99.9	99.8	99.2	99.8	99.8	99.8	100.0	99.5	99.8	99.1	94.0	85.8	99.1	99.5	98.4	99.4	99.2	98.5	99.3	99.0	99.3	98.0	99.7	98.9	98.54	0.10		3	820	775686
8-4	99.9	99.9	99.3	99.9	99.9	99.8	100.0	99.6	99.8	99.4	94.0	85.8	99.2	99.6	98.4	99.5	99.2	98.7	99.5	99.0	99.3	98.6	99.7	99.0	98.63	0.09		4	730	776417
8-5	100.0	99.9	99.4	100.0	99.9	99.9	100.0	99.7	99.9	99.4	94.0	90.8	99.4	99.6	98.6	99.5	99.3	99.0	99.5	99.2	99.3	98.7	99.8	99.0	98.91	0.28		5	2173	778590
8-6	100.0	100.0	99.6	100.0	99.9	99.9	100.0	99.7	99.9	99.4	94.0	90.9	99.4	99.7	98.6	99.6	99.4	99.2	99.5	99.2	99.3	98.9	99.8	99.0	98.98	0.06		6	439	779029
8-7	100.0	100.0	99.8	100.0	99.9	100.0	100.0	99.8	99.9	99.5	95.2	94.6	99.4	99.7	98.6	99.8	99.6	99.3	99.7	99.2	99.5	99.1	99.8	99.4	99.23	0.27	1.24	7	2124	781153
8-8	100.0	100.0	99.8	100.0	100.0	100.0	100.0	99.8	99.9	99.6	96.9	94.6	99.4	99.7	98.6	99.8	99.7	99.3	99.7	99.4	99.7	99.2	99.9	99.4	99.33	0.10		8	805	781958
8-9	100.0	100.0	99.8	100.0	100.0	100.0	100.0	99.8	99.9	99.7	98.2	94.6	99.4	99.8	98.7	99.9	99.7	99.3	99.7	99.5	99.8	99.2	99.9	99.4	99.42	0.09		9	694	782652
8-10	100.0	100.0	99.8	100.0	100.0	100.0	100.0	99.9	99.9	99.7	98.2	94.6	99.5	99.8	98.9	99.9	99.7	99.3	99.7	99.6	99.8	99.2	99.9	99.5	99.45	0.03		10	257	782909
8-11	100.0	100.0	99.9	100.0	100.0	100.0	100.0	99.9	99.9	99.7	98.2	94.8	99.6	99.8	99.2	99.9	99.7	99.4	99.7	99.6	99.8	99.4	99.9	99.6	99.51	0.05		11	426	783335
8-12	100.0	100.0	99.9	100.0	100.0	100.0	100.0	99.9	99.9	99.7	98.2	95.0	99.7	99.8	99.2	99.9	99.7	99.5	99.8	99.6	99.8	99.4	99.9	99.6	99.53	0.02		12	190	783525
8-13	100.0	100.0	99.9	100.0	100.0	100.0	100.0	99.9	99.9	99.7	98.4	96.2	99.7	99.8	99.2	100.0	99.8	99.6	99.8	99.6	99.8	99.5	99.9	99.7	99.61	0.08		13	597	784122
8-14	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.9	99.8	98.9	96.3	99.7	99.8	99.2	100.0	99.9	99.7	99.8	99.6	99.8	99.7	99.9	99.7	99.65	0.04	0.42	14	322	784444
8-15	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.9	99.8	99.0	96.4	99.7	99.8	99.3	100.0	99.9	99.7	99.8	99.7	99.9	99.8	99.9	99.7	99.68	0.03		15	241	784685
8-16	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.8	99.1	96.4	99.7	99.9	99.6	100.0	99.9	99.7	99.8	99.7	100.0	99.8	99.9	99.7	99.70	0.02		16	191	784877
8-17	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.1	96.4	99.8	99.9	99.7	100.0	99.9	99.7	99.9	99.8	100.0	99.8	99.9	99.8	99.72	0.02		17	130	785007
8-18	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.1	96.6	99.8	99.9	99.8	100.0	99.9	99.7	99.9	99.8	100.0	99.8	99.9	99.9	99.75	0.03		18	215	785222
8-19	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.1	96.7	99.8	99.9	99.9	100.0	99.9	99.8	100.0	99.8	100.0	99.8	100.0	99.9	99.76	0.01		19	73	785295
8-20	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.1	96.8	99.8	99.9	99.9	100.0	100.0	99.9	100.0	99.8	100.0	99.8	100.0	99.9	99.78	0.02		20	150	785445
8-21	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.3	97.1	99.8	100.0	99.9	100.0	100.0	99.9	100.0	99.8	100.0	99.9	100.0	99.9	99.80	0.03	0.15	21	214	785659
8-22	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.5	97.1	99.8	100.0	99.9	100.0	100.0	99.9	100.0	99.9	100.0	99.9	100.0	99.9	99.82	0.02		22	129	785789
8-23	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.7	97.1	99.8	100.0	99.9	100.0	100.0	99.9	100.0	99.9	100.0	99.9	100.0	99.9	99.83	0.01		23	85	785874
8-24	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	97.1	99.8	100.0	100.0	100.0	100.0	99.9	100.0	99.9	100.0	99.9	100.0	100.0	99.84	0.01		24	68	785942
8-25	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	97.1	99.8	100.0	100.0	100.0	100.0	100.0	100.0	99.9	100.0	99.9	100.0	100.0	99.84	0.00		25	37	785979
8-26	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	97.1	99.9	100.0	100.0	100.0	100.0	100.0	100.0	99.9	100.0	99.9	100.0	100.0	99.85	0.00		26	27	786006
8-27	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.8	97.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	100.0	99.9	100.0	100.0	99.89	0.04		27	322	786328
8-28	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	97.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	100.0	100.0	100.0	100.0	99.89	0.00	0.09	28	34	786362
8-29	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	97.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	100.0	100.0	100.0	100.0	99.90	0.00		29	27	786389
8-30	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	97.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.90	0.00		30	32	786421
8-31	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	97.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.90	0.00		31	8	786430

-Continued-

Table 18. (Page 3 of 3)

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The table contains Copper River Sockeye Salmon cumulative percentage catch by day,by year.
(Corrected for enhanced production which is removed from the catches in 1985-1992)

Date	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1969-1992 Cumu-lative	Daily	Weekly	Date	1993 Catch Daily w/o Enh.	1993 Catch Cum. 787200 w/o Enh
9-1	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.4	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.97	0.06		9/1	500	786930
9-2	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.9	99.4	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.97	0.00		2	3	786933
9-3	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.4	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.97	0.00		3	6	786939
9-4	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.4	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.97	0.00	0.07	4	6	786946
9-5	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.4	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.97	0.00		5	6	786952
9-6	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.4	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.97	0.00		6	5	786957
9-7	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.4	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.97	0.00		7	3	786959
9-8	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.4	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.97	0.00		8	3	786962
9-9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.7	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.98	0.02		9	120	787082
9-10	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.7	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.99	0.00		10	2	787083
9-11	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.7	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.99	0.00	0.02	11	4	787088
9-12	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.7	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.99	0.00		12	2	787090
9-13	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.7	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.99	0.00		13	2	787091
9-14	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.7	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.99	0.00		14	0	787091
9-15	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.7	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.99	0.00		15	1	787093
9-16	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.00	0.01		16	97	787190
9-17	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.00	0.00		17	1	787191
9-18	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.00	0.00	0.01	18	1	787192
9-19	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.00	0.00		19	0	787192
9-20	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.00	0.00		20	0	787192
9-21	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.00	0.00		21	0	787192
9-22	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.00	0.00		22	4	787196
9-23	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.00	0.00		23	0	787196
9-24	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.00	0.00		24	0	787196
9-25	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.00	0.00	0.00	25	0	787196
9/26	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.00	0.00		26	0	787196
9/27	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.00	0.00		27	0	787196
9/28	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.00	0.00		28	0	787196
9/29	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.00	0.00		29	0	787196
9-30	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.00	0.00	0.00	30	5	787201
																											100			787200

Table 19. Copper River Sonar Escapement by Day, Corrected for Enhanced Production (removed)

File: SonarCWT.wr1 Date: 2/11/93 Disk: CWT

CWT timing data relative to sonar escapement (natural versus enhanced stock) with adjustments to total sonar escapement data by day.

End Part #1 Part #2 File: SONARCWT.WR1 Date: 2/11/93 Disk: CWT

Date	1978	1979	1980	1981	1982	1983	1984	1985	Enhance 85	Natural less 85 Enhance 85	85 W/O Enh.	1986
17-May				5372							0.0	
18-May		381	218	9665							0.0	
19-May		487	167	11409			725		0		0.0	
20-May		847	221	10733			1924		0		0.0	
21-May		1199	88	9729			1986		63		0.0	
22-May		1916	391	7558			5124		63		0.0	
23-May		2901	694	8214		3310	5042		147		0.0	
24-May		3402	494	12986	90	8620	4486		147		0.0	
25-May		2397	713	12818	493	11587	3120		142		0.0	534
26-May	602	4927	1057	6383	1023	10575	4645		161		0.0	1694
27-May	837	8821	2115	2842	12091	8661	5836		240		0.0	2092
28-May	1047	2768	1683	2560	47303	8456	4978	1031	220	811	0.2	3384
29-May	661	3905	1080	2160	19671	6380	7126	417	290	127	0.0	2393
30-May	3241	7482	1903	11822	8781	8296	4961	599	250	349	0.1	3173
31-May	2549	8655	3820	21128	11389	17123	4278	1758	230	1528	0.4	4150
01-Jun	2616	4078	5257	18415	15385	18428	8536	3462	227	3235	0.8	7001
02-Jun	2811	3465	7081	23771	17213	14414	8463	6726	291	6435	1.8	20638
03-Jun	1837	3536	7437	16716	13383	13137	9730	10891	466	10225	2.5	20237
04-Jun	3258	2778	8996	9755	12355	15357	12496	24272	476	23796	6.7	26626
05-Jun	2970	4362	9746	10478	14806	19110	16728	30507	662	29865	7.2	27934
06-Jun	3318	6453	5407	11975	15585	14089	18097	32953	681	32272	7.8	14527
07-Jun	3808	7031	2093	13586	12506	19309	18515	27256	616	26640	6.4	9658
08-Jun	3275	11078	1349	14412	8430	16094	26619	30925	430	30495	7.4	24938
09-Jun	2262	7986	3543	15694	7017	11415	20476	29702	548	29154	7.0	28242
10-Jun	3475	5206	7301	12856	7599	8009	19275	12010	463	11547	2.8	29952
11-Jun	2490	4426	12032	7877	7879	9563	17237	11826	378	11448	2.8	25418
12-Jun	2082	2227	11584	4844	8587	13292	21706	8231	336	7895	1.9	16494
13-Jun	2419	3903	7800	3556	9932	13444	12072	6829	340	6489	1.6	11453
14-Jun	2835	2563	5661	5228	12551	13831	5981	6900	241	6659	1.6	11393
15-Jun	2913	3361	7308	7071	12677	15915	10291	8825	149	8676	2.1	8747
16-Jun	2782	3473	5655	6885	13595	7938	13930	9347	248	9099	2.2	10099
17-Jun	2779	4640	7189	6467	12030	5671	19809	6270	250	6020	1.5	8772
18-Jun	2261	3911	6741	4565	6544	5689	12850	3738	207	3531	0.9	9050
19-Jun	3036	3413	2391	2985	4369	8461	7474	3251	223	3028	0.7	7910
20-Jun	3036	1954	3597	2891	3352	7382	9258	2423	311	2112	0.5	7240
21-Jun	2515	2223	4142	3446	3346	8124	7159	2061	262	1809	0.4	6741
22-Jun	2068	2585	3954	3997	4487	8005	5622	2763	249	2514	0.6	9026
23-Jun	2841	2865	3898	4363	7031	7528	5913	3369	280	3089	0.7	8010
24-Jun	2618	1877	5217	4651	6329	6009	6741	2950	249	2701	0.7	6968
25-Jun	2130	3013	5104	3398	4903	5226	6503	1585	161	1424	0.3	5731
26-Jun	1771	1973	3595	2412	4418	5638	4385	2381	155	2226	0.5	5410
27-Jun	2178	1315	3421	2607	2732	4738	7224	3035	187	2848	0.7	5153
28-Jun	1103	1697	4324	2949	2174	4771	6728	2264	182	2082	0.5	5022
29-Jun	1604	1450	3845	3421	2130	4304	4453	2147	218	1929	0.5	3578
30-Jun	1632	1899	3485	2378	2313	6146	6449	2139	312	1827	0.4	3771
01-Jul	1587	2651	3569	2723	2190	6106	8226	2620	281	2339	0.6	3584
02-Jul	2533	2524	3385	2606	4420	6113	7564	2608	290	2318	0.6	3152
03-Jul	2527	2859	4104	2648	5751	6026	8581	1819	244	1575	0.4	2311
04-Jul	2980	3806	2934	4094	6245	6943	6615	3536	232	3304	0.8	1805
05-Jul	2269	3008	2879	4256	4995	5347	6662	3254	172	3082	0.7	1499
06-Jul	1623	1996	3025	3476	6300	3973	5449	4664	293	4371	1.1	2809
07-Jul	1152	892	3291	3863	8171	4209	4040	3627	232	3395	0.8	2991
08-Jul	831	2091	2995	3774	3990	4080	3906	3893	324	3569	0.9	2860
09-Jul	947	3190	2817	3449	2210	3353	3210	6827	451	6376	1.5	3077
10-Jul	1252	4208	3642	2942	2070	3644	2927	10607	417	10190	2.5	5435
11-Jul	841	3684	5763	2271	1980	4464	3608	5457	380	5077	1.2	5116
12-Jul	341	3282	4788	3468	3420	4541	4280	6329	443	5886	1.4	5042
13-Jul	167	3144	1725	2265	4032	4543	4682	5252	481	4771	1.2	3696
14-Jul	290	4124	1679	2596	4339	5819	8673	6113	319	5794	1.4	3530
15-Jul	276	3535	1743	3691	4714	8496	5521	6024	570	4454	1.1	4699
16-Jul	538	5175	2515	2580	3561	6970	6755	5339	710	4629	1.1	2227
17-Jul	304	3555	3419	780	2925	6327	4955	5960	657	5303	1.3	4108
18-Jul	284	3760	5878	8633	3413	4326	4736	5110	821	4289	1.0	4993
19-Jul	321	3344	5613	20975	4296	3703	3140	4560	846	3715	0.9	6066
20-Jul	238	2716	5060	20611	3920	3988	3389	8178	647	7529	1.8	5997
21-Jul	81	2583	3826	15741	4049	4463	3204	4128	457	3671	0.9	4746
22-Jul	18	2012	3173	6568	3871	4881	3780	3158	671	2487	0.6	3408
23-Jul	15	1915	2143	5787	3099	3603	3205	2870	430	2440	0.6	2909
24-Jul	40	2182	1353	5063	3061	3903	2198	2162	387	1775	0.4	2633
25-Jul	13	1112	1623	3391	3374	4535	1937	2449	424	2025	0.5	2292
26-Jul		771	1258	2493	2596	3839	1887	1974	401	1573	0.4	1799
27-Jul		318	1198	2451	2247	3887	1391	2191	176	2015	0.5	1626
28-Jul		387	898	2785	2375	5234	1004	2839	168	2683	0.6	1797
29-Jul		365	400	3686	1426	4138	891	2813	178	2635	0.6	1563
30-Jul		491	470	3814	983	3612	938	2790	157	2633	0.6	1489
31-Jul		703	353	3802	1178	1835	1093	1848	125	1723	0.4	1259
01-Aug		758	825	3396	511	1912	1047	1070	154	916	0.2	1172
02-Aug		379	1034	2304	942	2211	1088	703	120	583	0.1	1045
03-Aug		227	764	1913	494	2088	1213	600	112	488	0.1	770
04-Aug		286	708	1297	581	2897	1118	600	42	458	0.1	814
05-Aug		173	758	1181	122		1009	400	132	268	0.1	435
06-Aug		103	877	1170			633	300	183	137	0.0	416
07-Aug		76	615					200	163	37	0.0	250
08-Aug			166					200	150	50	0.0	200
09-Aug			239					200	150	50	0.0	200
10-Aug											0.0	
Total	107011	237173	276538	536263	467308	545724	536806	438713		414389		508978

Date	Enhance 86	Natural less 86 Enhanced 86	86 W/O Enh.	1987	Enhance 87	Natural less 87 Enhance 87	87 W/O Enh.	1988	Enhanced 88	Natural less 88 Enhance 88	88 W/O Enh.	1989
17-May			0.0			0	0.0			0	0.0	732
18-May			0.0			0	0.0			0	0.0	3660
19-May	0		0.0		0	0	0.0	313	0	313	0.1	6588
20-May	0		0.0	167	0	167	0.0	877	0	877	0.2	6935
21-May	82		0.0	36	97	0	0.0	1440	115	1326	0.3	4834
22-May	82		0.0	482	97	385	0.1	2256	115	2141	0.5	4030
23-May	192		0.0	1732	228	1504	0.3	5078	272	4806	1.1	6472
24-May	192		0.0	2040	228	1812	0.4	11033	272	10761	2.4	7448
25-May	185	349	0.1	4283	219	4044	0.9	9979	261	9718	2.2	4658
26-May	211	1483	0.3	7115	249	6866	1.5	8946	297	8649	1.9	8318
27-May	314	1778	0.4	12176	372	11804	2.6	13247	443	12804	2.9	13143
28-May	287	3097	0.6	16392	339	16053	3.6	14201	405	13796	3.1	13880
29-May	379	2014	0.4	14486	448	14037	3.1	10022	535	9487	2.1	10677
30-May	327	2846	0.6	18196	386	17810	4.0	6806	461	6345	1.4	5375
31-May	301	3849	0.8	18540	356	18184	4.1	7586	425	7161	1.6	7316
01-Jun	296	6705	1.4	16395	351	16044	3.6	5205	419	4786	1.1	7041
02-Jun	380	20258	4.3	14386	450	13936	3.1	3558	537	3021	0.7	5234
03-Jun	608	19629	4.1	17666	720	16946	3.8	4626	859	3767	0.8	6867
04-Jun	621	26005	5.5	14632	735	13897	3.1	7877	877	7000	1.6	8556
05-Jun	851	27083	5.7	10962	1007	9955	2.2	8755	1203	5552	1.2	7612
06-Jun	889	13638	2.9	4322	1052	3270	0.7	8895	1256	7639	1.7	7719
07-Jun	804	8854	1.9	5755	951	4804	1.1	9096	1135	7961	1.8	12693
08-Jun	562	24376	5.1	6366	665	5701	1.3	11322	794	10528	2.4	14585
09-Jun	715	27527	5.8	7922	846	7076	1.6	14641	1010	13631	3.1	9440
10-Jun	604	29348	6.2	11553	715	10838	2.4	15216	853	14363	3.2	12126
11-Jun	494	24924	5.2	11194	585	10609	2.4	16255	698	15557	3.5	9663
12-Jun	439	16055	3.4	6506	519	5987	1.3	14959	620	14339	3.2	8266
13-Jun	444	11009	2.3	4053	526	3527	0.8	10751	627	10124	2.3	10826
14-Jun	316	11078	2.3	8053	372	7681	1.7	9382	444	8938	2.0	13548
15-Jun	195	8552	1.8	5486	231	5254	1.2	9910	276	9634	2.2	9922
16-Jun	324	9775	2.1	5516	384	5132	1.2	6484	456	6028	1.4	8889
17-Jun	326	8446	1.8	5406	386	5020	1.1	4910	461	4449	1.0	10020
18-Jun	270	8780	1.8	4815	320	4495	1.0	6469	381	6088	1.4	11131
19-Jun	291	7619	1.6	3983	345	3638	0.8	7855	412	7443	1.7	8345
20-Jun	406	6834	1.4	3933	481	3452	0.8	7952	574	7378	1.7	7576
21-Jun	329	6412	1.3	3924	390	3534	0.8	5770	465	5305	1.2	7169
22-Jun	325	8701	1.8	6379	385	5994	1.3	6985	459	6526	1.5	8868
23-Jun	365	7645	1.6	10111	432	9679	2.2	7699	516	7183	1.6	6860
24-Jun	325	6643	1.4	15708	385	15323	3.4	5582	460	5122	1.1	3927
25-Jun	210	5521	1.2	16517	249	16268	3.6	5597	297	5300	1.2	2996
26-Jun	202	5208	1.1	12500	239	12261	2.7	6378	285	6093	1.4	3428
27-Jun	244	4909	1.0	7010	289	6721	1.5	6559	345	6214	1.4	3240
28-Jun	238	4784	1.0	5644	282	5362	1.2	6259	336	5923	1.3	6302
29-Jun	285	3293	0.7	6836	337	6499	1.5	8220	403	7817	1.8	8490
30-Jun	408	3363	0.7	4636	483	4153	0.9	6497	576	5921	1.3	7354
01-Jul	367	3217	0.7	2012	434	1578	0.4	5602	518	5084	1.1	7930
02-Jul	379	2773	0.6	3406	448	2958	0.7	4680	535	4145	0.9	5296
03-Jul	318	1993	0.4	4096	377	3719	0.8	4222	450	3772	0.8	4976
04-Jul	302	1503	0.3	7100	358	6742	1.5	3532	427	3105	0.7	7369
05-Jul	224	1275	0.3	4351	265	4086	0.9	3304	316	2988	0.7	10739
06-Jul	382	2427	0.5	3393	452	2941	0.7	3610	539	2971	0.7	10024
07-Jul	303	2688	0.6	5617	358	5259	1.2	4324	428	3896	0.9	10236
08-Jul	423	2437	0.5	6616	501	6115	1.4	8499	598	7901	1.8	11113
09-Jul	588	2489	0.5	6352	696	5656	1.3	5187	831	4336	1.0	10761
10-Jul	544	4891	1.0	8585	644	7941	1.8	6347	768	5579	1.3	9506
11-Jul	496	4619	1.0	5322	587	4735	1.1	7620	700	6920	1.6	8453
12-Jul	578	4464	0.9	5757	684	5073	1.1	7081	817	7064	1.6	11963
13-Jul	629	3067	0.6	6583	744	5839	1.3	7087	888	6199	1.4	9329
14-Jul	416	3114	0.7	6439	493	5946	1.3	7012	588	6424	1.4	10270
15-Jul	744	3955	0.8	5722	881	4841	1.1	6924	1052	5872	1.3	12283
16-Jul	927	1300	0.3	6259	1097	5162	1.2	5457	1309	4148	0.9	10897
17-Jul	858	3250	0.7	4467	1015	3452	0.8	4877	1211	3666	0.8	8903
18-Jul	1072	3921	0.8	4620	1269	3351	0.8	3857	1514	2343	0.5	11811
19-Jul	1103	4963	1.0	4127	1306	2821	0.6	4583	1559	3024	0.7	10567
20-Jul	845	5152	1.1	3634	1000	2634	0.6	4483	1193	3290	0.7	10189
21-Jul	596	4150	0.9	2441	705	1736	0.4	3964	842	3122	0.7	8639
22-Jul	876	2532	0.5	1273	1037	236	0.1	2797	1238	1559	0.3	8908
23-Jul	561	2348	0.5	1002	664	338	0.1	3429	792	2637	0.6	8103
24-Jul	505	2128	0.4	625	598	27	0.0	3900	713	3187	0.7	6250
25-Jul	554	1738	0.4	2014	656	1358	0.3	4023	783	3240	0.7	5303
26-Jul	523	1276	0.3	368	619	-251	-0.1	4142	739	3403	0.8	5706
27-Jul	229	1397	0.3	626	271	355	0.1	3920	324	3596	0.8	5699
28-Jul	203	1594	0.3	2494	241	2253	0.5	3452	287	3165	0.7	4926
29-Jul	232	1331	0.3	2341	275	2066	0.5	3476	328	3148	0.7	4150
30-Jul	205	1284	0.3	2075	243	1832	0.4	2423	290	2133	0.5	2591
31-Jul	164	1095	0.2	2226	194	2032	0.5	1920	231	1689	0.4	1551
01-Aug	201	971	0.2	2726	237	2489	0.6	1438	283	1155	0.3	2299
02-Aug	157	888	0.2	1299	186	1113	0.2	1098	222	876	0.2	1744
03-Aug	146	624	0.1	1702	173	1529	0.3	900	206	694	0.2	1500
04-Aug	55	759	0.2	1499	65	1434	0.3	800	77	723	0.2	1300
05-Aug	172	263	0.1	518	204	314	0.1	700	243	457	0.1	1100
06-Aug	213	203	0.0	400	252	148	0.0	600	301	299	0.1	900
07-Aug	213	37	0.0	400	252	148	0.0	500	301	199	0.0	700
08-Aug	195	5	0.0	300	231	69	0.0	400	276	124	0.0	500
09-Aug	195	5	0.0	300	231	69	0.0	300	276	24	0.0	400
10-Aug			0.0				0.0				0.0	300
11-Aug												200
12-Aug												100
13-Aug												50
14-Aug												50
15-Aug												50
16-Aug												25
17-Aug												25
Total		478514		484878		445873		492598		445987		607869

Date	En-hanced 89	Natural less Enhance 89	89 W/O Enh.	1990	En-hance 1990	Natural less Enhance 1990	1990 W/O Enhance %	1991	En-hance 1991	Natural less Enhance 1991	1991 W/O Enhance %
17-May		732	0.1				0.0				0.0
18-May		3660	0.7				0.0				0.0
19-May	0	6588	1.2		0		0.0		0		0.0
20-May	0	6935	1.3		0		0.0		0		0.0
21-May	126	4708	0.9	1121	140	981	0.2	1087	139	948	0.2
22-May	221	3809	0.7	4843	245	4598	0.9	1717	244	1473	0.3
23-May	455	6017	1.1	7177	505	6672	1.3	3161	502	2659	0.5
24-May	455	6993	1.3	11923	505	11418	2.3	2465	502	1963	0.4
25-May	915	3743	0.7	14333	1014	13319	2.7	3046	1008	2038	0.4
26-May	1897	6421	1.2	11337	2103	9234	1.8	3274	2090	1184	0.2
27-May	1962	11181	2.1	12060	2175	9885	2.0	3893	2162	1731	0.4
28-May	1857	12023	2.3	7434	2059	5375	1.1	3389	2046	1343	0.3
29-May	2573	8104	1.5	9176	2853	6323	1.3	3933	2835	1098	0.2
30-May	2276	3099	0.6	9541	2524	7017	1.4	4417	2509	1908	0.4
31-May	1294	6022	1.1	10343	1435	8908	1.8	9362	1456	7906	1.8
01-Jun	1381	5660	1.1	10026	1531	8495	1.7	16833	1561	15202	3.1
02-Jun	1853	3381	0.6	9909	2054	7855	1.6	21151	2071	19080	3.9
03-Jun	1724	5143	1.0	8576	1912	6664	1.3	17808	1963	15845	3.2
04-Jun	1489	7066	1.3	7572	1651	5921	1.2	14557	1703	12854	2.6
05-Jun	2196	5316	1.0	10173	2435	7738	1.5	18673	2454	16219	3.3
06-Jun	2257	5462	1.0	10410	2503	7907	1.6	11688	2521	9167	1.9
07-Jun	1783	10910	2.1	11137	1978	9159	1.8	8440	2085	6355	1.3
08-Jun	1316	13249	2.5	7637	1459	6178	1.2	9471	1536	7935	1.6
09-Jun	1583	7857	1.5	9905	1755	8150	1.6	11665	1830	9835	2.0
10-Jun	1060	11066	2.1	11660	1175	10485	2.1	8565	1320	7245	1.5
11-Jun	794	8869	1.7	16181	880	15301	3.1	8104	1094	7010	1.4
12-Jun	839	7417	1.4	23029	930	22099	4.6	12688	1058	11630	2.4
13-Jun	912	9714	1.8	24448	1011	23437	4.7	9066	1139	7927	1.6
14-Jun	682	12866	2.4	14302	756	13546	2.7	9236	971	8265	1.7
15-Jun	497	9425	1.8	8390	551	7839	1.6	14967	701	14266	2.9
16-Jun	697	8192	1.5	10112	773	9339	1.9	14367	854	13513	2.7
17-Jun	570	9450	1.8	12695	632	12063	2.4	10129	715	9414	1.9
18-Jun	417	10714	2.0	8052	463	7589	1.5	11051	573	10478	2.1
19-Jun	479	7866	1.5	9763	532	9231	1.8	12921	555	12366	2.5
20-Jun	657	6918	1.3	9315	729	8586	1.7	14146	751	13395	2.7
21-Jun	538	6631	1.2	10292	597	9695	1.9	8750	620	8130	1.7
22-Jun	557	8311	1.6	10157	617	9540	1.9	7830	640	7190	1.5
23-Jun	770	5080	1.0	10166	854	9312	1.9	6358	849	5509	1.1
24-Jun	679	3248	0.6	9340	753	8587	1.7	5963	749	5214	1.1
25-Jun	502	2494	0.5	10010	556	9454	1.9	7660	553	7107	1.4
26-Jun	733	2693	0.5	6312	813	5999	1.2	9600	808	8602	1.8
27-Jun	855	2385	0.4	9234	948	8286	1.7	10355	942	9413	1.9
28-Jun	694	5608	1.1	6881	769	6112	1.2	10810	795	10015	2.0
29-Jun	838	5652	1.1	4499	930	3569	0.7	10439	954	9485	1.9
30-Jun	1337	6017	1.1	3975	1482	2493	0.5	9113	1503	7610	1.5
01-Jul	1028	6902	1.3	4323	1140	3183	0.6	7303	1163	6140	1.2
02-Jul	966	4330	0.8	5067	1071	3996	0.8	5109	1094	4015	0.8
03-Jul	1218	3758	0.7	4882	1351	3331	0.7	6335	1343	4992	1.0
04-Jul	1215	6154	1.2	5665	1347	4318	0.9	6680	1339	5341	1.1
05-Jul	785	9954	1.9	7998	870	7128	1.4	5845	865	4980	1.0
06-Jul	1029	8995	1.7	7749	1141	6608	1.3	6213	1134	5079	1.0
07-Jul	907	9329	1.8	5700	1005	4695	0.9	6222	999	5223	1.1
08-Jul	746	10367	2.0	5192	828	4364	0.9	7069	823	6246	1.3
09-Jul	909	9852	1.9	6153	1008	5145	0.8	6453	1126	5327	1.1
10-Jul	1301	8205	1.5	6620	1443	5177	1.0	4610	1558	3052	0.6
11-Jul	1371	7082	1.3	5402	1520	3882	0.8	4477	1634	2843	0.6
12-Jul	1498	10465	2.0	9338	1661	7677	1.5	4818	1828	2990	0.6
13-Jul	1578	7753	1.5	11132	1748	9384	1.9	3969	1913	2056	0.4
14-Jul	1248	9022	1.7	8206	1384	6822	1.4	7498	1451	6047	1.2
15-Jul	1295	10988	2.1	8309	1436	6873	1.4	7550	1502	6048	1.2
16-Jul	1433	9464	1.8	6093	1589	4504	0.9	9671	1838	7833	1.6
17-Jul	1883	7020	1.3	6259	2088	4171	0.8	9668	2282	7386	1.5
18-Jul	2373	9438	1.8	5726	2632	3094	0.6	7340	2822	4518	0.9
19-Jul	2422	8145	1.5	5975	2686	3289	0.7	7513	2970	4543	0.9
20-Jul	2022	8147	1.5	4315	2242	2073	0.4	10681	2600	8081	1.6
21-Jul	1638	7001	1.3	2534	1816	718	0.1	10268	1993	8275	1.7
22-Jul	1514	7394	1.4	2157	1678	779	0.2	9702	1856	7846	1.6
23-Jul	867	7236	1.4	3901	961	2940	0.6	9017	1337	7680	1.6
24-Jul	1027	5223	1.0	2883	1139	1744	0.3	4245	1397	2848	0.6
25-Jul	1165	4138	0.8	2050	1292	758	0.2	3066	1478	1588	0.3
26-Jul	1117	4589	0.9	2257	1238	1019	0.2	4422	1456	2966	0.6
27-Jul	663	5036	0.9	2885	735	2150	0.4	3884	1020	2864	0.6
28-Jul	623	4303	0.8	1934	691	1243	0.2	4793	782	4011	0.8
29-Jul	421	3729	0.7	2808	466	2342	0.5	5354	559	4795	1.0
30-Jul	317	2274	0.4	2462	351	2111	0.4	4711	466	4245	0.9
31-Jul	253	1298	0.2	2550	281	2269	0.5	2901	364	2537	0.5
01-Aug	310	1989	0.4	3839	344	3495	0.7	2500	363	2137	0.4
02-Aug	243	1501	0.3	5249	269	4980	1.0	2000	289	1711	0.3
03-Aug	225	1275	0.2	3500	250	3250	0.6	1700	270	1430	0.3
04-Aug	84	1216	0.2	2500	94	2406	0.5	1400	93	1307	0.3
05-Aug	266	834	0.2	2000	295	1705	0.3	1100	293	807	0.2
06-Aug	329	571	0.1	1500	365	1135	0.2	900	389	511	0.1
07-Aug	358	342	0.1	1000	397	603	0.1	800	420	380	0.1
08-Aug	387	113	0.0	500	429	71	0.0	700	453	247	0.1
09-Aug	387	13	0.0	500	429	71	0.0	600	453	147	0.0
10-Aug	205	95	0.0	400	228	172	0.0	500	284	216	0.0
11-Aug	85	115	0.0	300	94	206	0.0	400	128	274	0.1
12-Aug	57	43	0.0	200	63	137	0.0	300	94	206	0.0
13-Aug	22	28	0.0	100	24	76	0.0	200	85	115	0.0
14-Aug	22	28	0.0	50	24	26	0.0	100	85	15	0.0
15-Aug	22	28	0.0	50	24	26	0.0	75	53	22	0.0
16-Aug	22	3	0.0	50	24	26	0.0	75	53	22	0.0
17-Aug	22	3	0.0	50	24	26	0.0	75	53	22	0.0
Total	84593	530476		594559	93800	500759		592860	100200	492660	

Date	1992	En-hance 1992	Natural less Enhance 1992	1992 W/O Enhance %	With Enhanced 1978-92 Average	Without Enhanced 1978-92 Average	With Enhance Average Daily Percent	Without Enhanced Average Daily Percent	Date
17-May		0	0	0.00	407	436	0.09%	0.10%	17-May
18-May		0	0	0.00	928	995	0.20%	0.23%	18-May
19-May		0	0	0.00	1313	1408	0.28%	0.33%	19-May
20-May		0	0	0.00	1447	1550	0.31%	0.36%	20-May
21-May		0	0	0.00	1435	1497	0.31%	0.35%	21-May
22-May		0	0	0.00	1888	1957	0.40%	0.46%	22-May
23-May	33	32	1	0.00	2781	2837	0.59%	0.66%	23-May
24-May	33	32	1	0.00	4335	4502	0.92%	1.05%	24-May
25-May	33	32	1	0.00	4531	4598	0.96%	1.07%	25-May
26-May	55	55	0	0.00	4657	4496	0.99%	1.05%	26-May
27-May	1226	55	1171	0.21	6469	6313	1.38%	1.47%	27-May
28-May	1431	22	1409	0.25	8663	8665	1.84%	2.02%	28-May
29-May	2362	88	2274	0.41	6297	5870	1.34%	1.37%	29-May
30-May	5736	199	5537	0.99	6688	6132	1.42%	1.43%	30-May
31-May	7931	178	7755	1.38	9048	8736	1.92%	2.03%	31-May
01-Jun	6610	249	6361	1.13	9666	9494	2.06%	2.21%	01-Jun
02-Jun	7919	296	7633	1.36	11116	10799	2.36%	2.51%	02-Jun
03-Jun	11535	220	11315	2.02	10919	10265	2.32%	2.39%	03-Jun
04-Jun	7921	110	7811	1.39	11800	11538	2.51%	2.69%	04-Jun
05-Jun	9295	256	9039	1.61	13333	12850	2.84%	2.99%	05-Jun
06-Jun	14552	183	14369	2.56	11998	11018	2.55%	2.57%	06-Jun
07-Jun	16734	146	16588	2.96	11841	10824	2.52%	2.52%	07-Jun
08-Jun	17729	146	17583	3.13	13614	12837	2.90%	2.99%	08-Jun
09-Jun	20719	146	20573	3.67	13375	12258	2.84%	2.85%	09-Jun
10-Jun	23430	0	23430	4.18	12549	11329	2.67%	2.64%	10-Jun
11-Jun	18591	0	18591	3.31	11916	11087	2.53%	2.58%	11-Jun
12-Jun	14096	21	14075	2.51	11299	10760	2.40%	2.51%	12-Jun
13-Jun	18257	21	18236	3.25	9894	8939	2.10%	2.08%	13-Jun
14-Jun	20456	21	20435	3.64	9456	8399	2.01%	1.96%	14-Jun
15-Jun	23957	21	23936	4.27	9982	8798	2.12%	2.05%	15-Jun
16-Jun	13914	97	13817	2.46	8866	8238	1.89%	1.92%	16-Jun
17-Jun	14509	76	14433	2.57	8753	8103	1.86%	1.89%	17-Jun
18-Jun	14893	76	14817	2.64	7461	6731	1.58%	1.57%	18-Jun
19-Jun	12324	118	12206	2.18	6432	5808	1.37%	1.35%	19-Jun
20-Jun	19480	118	19362	3.45	6902	5725	1.47%	1.33%	20-Jun
21-Jun	16882	43	16839	3.00	6170	5176	1.31%	1.21%	21-Jun
22-Jun	9452	43	9409	1.68	6137	5670	1.31%	1.32%	22-Jun
23-Jun	7234	71	7163	1.28	6216	5852	1.32%	1.36%	23-Jun
24-Jun	6319	99	6220	1.11	6013	5734	1.28%	1.34%	24-Jun
25-Jun	6675	99	6576	1.17	5803	5560	1.23%	1.29%	25-Jun
26-Jun	7180	122	7058	1.26	5185	4812	1.10%	1.12%	26-Jun
27-Jun	6266	214	6052	1.08	4998	4635	1.06%	1.08%	27-Jun
28-Jun	8064	165	7899	1.41	5001	4545	1.06%	1.06%	28-Jun
29-Jun	9258	114	9144	1.63	4846	4246	1.03%	0.99%	29-Jun
30-Jun	7416	263	7153	1.27	4612	3976	0.98%	0.93%	30-Jun
01-Jul	7120	298	6822	1.22	4502	3963	0.96%	0.92%	01-Jul
02-Jul	5591	207	5384	0.96	4268	3832	0.91%	0.89%	02-Jul
03-Jul	4641	298	4343	0.77	4385	3967	0.93%	0.92%	03-Jul
04-Jul	5413	334	5079	0.91	4908	4499	1.04%	1.05%	04-Jul
05-Jul	4424	186	4238	0.76	4722	4493	1.00%	1.05%	05-Jul
06-Jul	6987	128	6859	1.22	4748	4231	1.01%	0.99%	06-Jul
07-Jul	7361	267	7094	1.26	4648	4150	0.99%	0.97%	07-Jul
08-Jul	5758	230	5528	0.99	4844	4476	1.03%	1.04%	08-Jul
09-Jul	11937	194	11743	2.09	4994	4097	1.06%	0.96%	09-Jul
10-Jul	9139	408	8731	1.56	5436	4694	1.16%	1.09%	10-Jul
11-Jul	8380	878	7502	1.34	4865	4126	1.03%	0.96%	11-Jul
12-Jul	7959	738	7221	1.29	5545	4836	1.18%	1.13%	12-Jul
13-Jul	6741	684	6057	1.08	4970	4273	1.06%	1.00%	13-Jul
14-Jul	8574	1830	6744	1.20	5537	4899	1.18%	1.14%	14-Jul
15-Jul	8971	3242	5729	1.02	5697	4929	1.21%	1.15%	15-Jul
16-Jul	7683	2772	4911	0.88	5448	4652	1.16%	1.08%	16-Jul
17-Jul	6718	3147	3571	0.64	4882	4037	1.04%	0.94%	17-Jul
18-Jul	8807	3971	4836	0.86	5553	4427	1.18%	1.03%	18-Jul
19-Jul	8615	2825	5790	1.03	6227	5135	1.32%	1.20%	19-Jul
20-Jul	7102	1199	5903	1.05	6292	5480	1.34%	1.28%	20-Jul
21-Jul	4898	2335	2563	0.46	5038	4473	1.07%	1.04%	21-Jul
22-Jul	4612	3837	775	0.14	4041	3367	0.86%	0.78%	22-Jul
23-Jul	5426	3013	2413	0.43	3762	3242	0.80%	0.75%	23-Jul
24-Jul	3821	3100	721	0.13	2965	2481	0.63%	0.58%	24-Jul
25-Jul	3584	3226	358	0.06	2718	2202	0.58%	0.51%	25-Jul
26-Jul	3412	2188	1224	0.22	2448	1944	0.52%	0.45%	26-Jul
27-Jul	3619	321	3298	0.59	2383	2060	0.51%	0.48%	27-Jul
28-Jul	3205	351	2854	0.51	2528	2267	0.54%	0.53%	28-Jul
29-Jul	3954	265	3689	0.66	2491	2211	0.53%	0.51%	29-Jul
30-Jul	3872	138	3734	0.67	2173	1907	0.46%	0.44%	30-Jul
31-Jul	3855	619	3236	0.58	1805	1543	0.38%	0.36%	31-Jul
01-Aug	2200	1036	1134	0.20	1713	1543	0.36%	0.36%	01-Aug
02-Aug	2200	1043	1157	0.21	1553	1401	0.33%	0.33%	02-Aug
03-Aug	2200	1444	756	0.13	1305	1142	0.28%	0.27%	03-Aug
04-Aug	2200	1840	360	0.06	1193	1085	0.25%	0.25%	04-Aug
05-Aug	2000	1525	475	0.08	786	584	0.16%	0.13%	05-Aug
06-Aug	1500	1069	431	0.08	613	408	0.13%	0.09%	06-Aug
07-Aug	1500	1067	433	0.08	403	174	0.09%	0.04%	07-Aug
08-Aug	1000	672	328	0.06	264	80	0.06%	0.01%	08-Aug
09-Aug	500	276	224	0.04	218	44	0.05%	0.01%	09-Aug
10-Aug	200	11	189	0.03	93	34	0.02%	0.01%	10-Aug
11-Aug	100	17	83	0.01	67	43	0.01%	0.01%	11-Aug
12-Aug	100	11	89	0.02	47	28	0.01%	0.01%	12-Aug
13-Aug	50	5	45	0.01	27	16	0.01%	0.00%	13-Aug
14-Aug	50	15	35	0.01	17	5	0.00%	0.00%	14-Aug
15-Aug	50	15	35	0.01	15	5	0.00%	0.00%	15-Aug
16-Aug	50	10	40	0.01	13	4	0.00%	0.00%	16-Aug
17-Aug	50	13	37	0.01	13	4	0.00%	0.00%	17-Aug
	50	13	37	0.01					
	25	3	22	0.00					
Total	818731	57599	561132	100	470142	429481	100	100	

Table 20. Copper River Personal Use and Subsistence Sockeye Catch by Day Summary

File: PUSUCATS.wr1 Date: 2/10/93 Disk: PD Page 1 of 2. Sockeye Salmon

This file contains Copper River Personal Use and Subsistence Catch by day.

Personal Use Sockeye

Date	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	Average	Cum. Average	Cum. Percent
June 1	1421	2304	1922	3034	3	15	10	0	27	1209	1062	20	919	918.92	1.9
2	610	2358	2286	5467	76	32	6	9	1044	1344	559	0	1149	2068.2	4.2
3	1019	1157	1872	2340	16	39	3	877	2780	883	14	1	917	2984.9	6.0
4	677	1955	2381	17	15	34	0	3108	1748	6	0	0	828	3813.3	7.7
5	1058	3294	2341	38	30	0	1318	2167	47	0	27	552	906	4719.3	9.5
6	1896	1887	2217	160	35	1068	4478	37	26	95	404	1487	1149	5868.5	11.9
7	1102	1129	1661	21	20	3738	3208	2	4	573	1735	755	1162	7030.8	14.2
8	1010	1190	1800	730	1013	1768	45	1	332	1517	5189	18	1218	8248.6	16.7
9	327	849	2198	5778	564	94	8	146	1729	2177	1278	0	1262	9510.9	19.2
10	822	1339	3727	2136	45	0	36	577	3264	1039	62	71	1093	10604	21.4
11	934	2065	4014	77	0	36	80	710	2014	102	552	494	925	11529	23.3
12	968	1921	3179	2	0	104	1677	311	17	617	904	1100	900	12429	25.1
13	1275	1848	2223	0	78	2,278	3247	6	352	1066	1720	1556	1306	13735	27.8
14	781	1104	1871	15	1031	6,497	2587	15	323	1269	1750	667	1493	15227	30.8
15	354	1392	1817	1108	4457	2944	114	140	597	1651	3020	63	1471	16699	33.8
16	423	1020	1291	4266	3980	147	0	339	798	3399	1196	490	1446	18144	36.7
17	197	738	1878	761	683	0	1	943	1126	1504	321	911	755	18899	38.2
18	180	1669	2830	9	6	18	253	1976	1329	255	516	1219	855	19754	39.9
19	185	1453	1338	13	44	34	841	700	200	571	435	1608	618	20373	41.2
20	573	877	868	380	889	951	1546	17	500	818	945	3630	983	21356	43.2
21	380	565	364	598	1640	2097	1577	28	435	1656	1252	1362	996	22352	45.2
22	245	726	517	863	2506	1974	35	483	658	1171	1097	1102	948	23300	47.1
23	195	618	373	855	1680	27	15	1043	716	3024	354	1209	842	24142	48.8
24	95	377	559	155	536	0	176	1396	692	1222	50	1332	549	24691	49.9
25	93	914	890	7	31	450	629	2680	168	580	246	2294	732	25423	51.4
26	141	895	258	127	180	988	767	1243	68	672	845	3920	850	26273	53.1
27	258	512	192	113	294	1477	1196	231	367	855	811	4544	904	27178	54.9
28	244	270	380	528	381	1728	919	0	567	784	1433	1979	766	27944	56.5
29	76	73	238	965	937	930	9	523	469	1000	1592	1127	662	28605	57.8
30	162	102	241	1711	423	23	15	715	667	1619	1064	1451	683	29288	59.2
July 1	117	156	389	342	70	72	133	663	877	368	699	1533	452	29740	60.1
2	122	387	848	107	33	103	250	447	579	301	803	1376	430	30169	61.0
3	331	808	1020	315	38	190	256	380	397	329	737	1460	522	30691	62.1
4	369	893	538	586	44	665	625	236	319	635	1235	1019	595	31286	63.3
5	341	382	175	593	15	478	320	76	200	258	1276	455	381	31667	64.0
6	336	259	192	834	88	144	29	105	509	933	2463	886	565	32232	65.2
7	176	220	267	1284	20	78	21	223	500	1162	1614	784	529	32761	66.2
8	71	278	390	577	78	74	243	233	767	304	1526	997	462	33223	67.2
9	138	105	387	91	107	185	470	613	716	268	774	1362	435	33657	68.1
10	190	217	457	131	164	188	665	567	127	629	1442	1957	561	34218	69.2
11	143	76	88	367	101	417	1430	397	251	930	1509	2941	721	34939	70.6
12	53	61	310	286	226	1,140	806	484	110	1028	2469	1256	686	35625	72.0
13	37	129	378	895	261	538	618	384	46	1376	3252	1100	751	36376	73.5
14	82	129	374	955	149	243	498	680	181	1226	2807	1452	731	37107	75.0
15	90	260	517	552	138	259	338	622	316	674	1932	1362	588	37696	76.2
16	12	193	643	262	130	286	399	597	422	698	1052	1578	523	38218	77.3
17	20	253	324	191	115	393	516	380	277	414	868	2406	513	38731	78.3
18	64	160	95	84	211	276	1457	146	756	551	990	4616	784	39515	79.9
19	39	112	92	142	273	189	497	78	455	809	1366	2155	517	40033	80.9
20	32	77	179	377	449	88	233	63	1138	409	2338	127	459	40492	81.9
21	46	128	127	839	359	99	390	195	562	358	1076	28	351	40842	82.6
22	76	157	120	190	109	6	278	251	1220	443	749	27	302	41144	83.2
23	144	193	152	42	70	106	99	327	658	199	569	1778	362	41506	83.9
24	191	200	113	178	144	16	96	310	566	114	300	1700	329	41835	84.6
25	111	62	112	99	164	55	348	278	984	189	632	2641	473	42308	85.5
26	42	23	80	118	447	167	247	205	749	192	837	1018	344	42652	86.2
27	31	161	16	69	375	130	102	141	572	573	1210	52	286	42938	86.8
28	66	90	64	36	424	156	17	192	925	994	1156	73	349	43287	87.5
29	26	115	45	57	270	208	65	830	1665	964	11	0	355	43642	88.2
30	133	43	69	50	66	59	65	1202	744	349	0	930	309	43951	88.9
31	93	35	26	25	22	121	77	417	309	520	0	1410	255	44206	89.4

Subsistence Sockeye

Date	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	Average	Cum. Average	Cum. Percent
June 1	No	312	625	103	12	180	50	89	102	696	147	356	243	242.91	0.9
2	Date	866	368	368	88	85	176	212	267	211	62	47	250	492.91	1.8
3		1091	232	121	13	22	180	287	225	116	182	112	235	727.55	2.6
4		861	241	334	62	88	346	100	195	264	208	22	247	974.91	3.5
5		727	1072	318	153	55	213	274	344	294	483	311	386	1360.7	4.9
6		690	923	291	64	153	245	202	386	413	250	202	347	1707.9	6.1
7		739	697	335	64	273	186	207	221	246	259	302	321	2028.7	7.3
8		781	819	62	324	123	531	232	424	316	838	138	417	2445.8	8.6
9		554	602	299	150	220	556	392	283	771	738	181	431	2877.3	10.3
10		848	1399	726	494	147	534	478	860	1600	1198	634	793	3669.8	13.2
11		828	518	303	265	342	216	325	201	546	641	261	388	4055.8	14.6
12		971	902	496	468	356	394	232	298	949	563	379	548	4602	16.5
13		382	1066	245	607	312	281	356	806	715	626	800	543	5145.3	18.5
14		577	458	288	536	760	715	316	549	587	539	508	528	5673.7	20.4
15		1534	1434	1200	626	881	1138	598	1076	1245	1493	1312	1140	6813.3	24.5	15 6/15
16		581	511	462	517	865	473	84	236	573	1034	229	506	7319.2	26.3	16
17		595	417	451	328	610	244	309	486	721	584	397	466	7784.8	28.0	17
18		451	593	452	80	201	388	432	310	598	1010	246	433	8217.6	29.5	18
19		606	423	329	756	423	503	249	408	477	445	306	448	8665.4	31.1	19
20		775	617	1122	547	1297	590	393	680	1443	933	1117	865	9530.3	34.2	20
21		772	647	543	205	314	401	424	475	469	1018	284	505	10035	36.1	21
22		671	691	453	538	438	511	250	361	683	604	310	501	10536	37.9	22
23		1096	238	418	486	582	290	305	114	529	365	455	443	10979	39.5	23
24		276	424	290	323	574	104	275	220	435	211	74	291	11271	40.5	24
25		739	1287	331	350	232	412	402	283	654	364	627	516	11787	42.4	25
26		361	199	490	304	448	359	209	301	286	570	581	373	12161	43.7	26
27		579	432	393	494	425	131	613	206	462	275	843	441	12602	45.3	27
28		354	455	215	450	457	98	484	344	512	264	930	415	13017	46.8	28
29		418	285	475	389	284	124	326	227	413	406	502	350	13367	48.0	29
30		86	242	933	1028	953	1207	260	955	1416	133	1698	810	14177	50.9	30
July 1		263	244	242	319	166	32	236	237	420	548	814	320	14497	52.1	July 1 7/1
2		312	234	129	52	398	205	317	525	448	271	855	341	14837	53.3	2
3		483	290	100	359	451	282	409	209	210	385	872	368	15206	54.6	3
4		638	237	524	169	273	140	243	288	274	198	1400	397	15602	56.1	4
5		601	435	259	365	281	380	354	295	302	615	692	416	16019	57.6	5
6		422	557	212	197	159	81	310	285	311	317	631	317	16335	58.7	6
7		296	832	365	215	344	499	74	311	332	445	489	383	16718	60.1	7
8		333	569	493	119	431	426	145	278	49	584	256	335	17053	61.3	8
9		102	270	184	190	354	261	218	92	146	401	418	240	17292	62.1	9
10		522	578	481	286	302	393	181	491	570	452	974	475	17768	63.8	10
11		281	564	317	310	175	278	82	206	169	431	573	308	18076	64.9	11
12		177	618	245	291	205	548	35	310	293	418	835	361	18437	66.2	12
13		224	530	139	191	286	247	111	163	235	392	301	256	18693	67.2	13
14		192	329	252	245	422	350	144	318	242	584	669	341	19034	68.4	14
15		505	603	465	185	977	1466	220	632	772	1111	1618	778	19812	71.2	15 7/15
16		135	356	177	336	92	344	126	196	215	444	237	242	20053	72.1	16
17		210	205	184	227	507	291	157	275	286	564	317	293	20346	73.1	17
18		56	279	187	379	208	271	323	278	533	359	647	320	20666	74.3	18
19		171	180	37	247	196	229	156	254	299	511	535	256	20922	75.2	19
20		521	245	175	308	327	575	313	524	368	806	411	416	21338	76.7	20
21		254	55	278	322	241	194	345	316	476	278	570	303	21641	77.8	21
22		361	398	228	160	102	370	62	472	139	169	139	236	21877	78.6	22
23		164	109	194	245	90	120	393	113	61	544	136	196	22073	79.3	23
24		195	48	169	171	149	197	58	297	54	248	734	211	22284	80.1	24
25		312	115	82	322	108	328	261	545	61	274	486	263	22547	81.0	25
26		108	59	41	117	129	78	209	388	69	531	365	190	22738	81.7	26
27		113	171	186	98	397	332	203	339	48	244	344	225	22963	82.5	27
28		53	159	40	530	82	219	319	198	197	296	828	266	23228	83.5	28
29		136	199	26	138	110	139	242	237	57	423	494	200	23428	84.2	29
30		50	78	102	116	81	132	491	439	498	410	393	254	23682	85.1	30
31		70	27	64	178	148	98	118	384	177	264	490	183	23865	85.8	31

-Continued-

PERSONAL USE

Date	1982-3	1984-89	1990-92
June 1 6/1	2113	515	764
2	2322	1106	634
3	1515	1009	299
4	2188	820	2
5	2818	600	193
6	2052	967	862
7	1395	1166	1021
8	1495	648	2241
9	1524	1387	1152
10	2533	1010	391
11	3050	486	383
12	2550	352	874
13	2036	994	1454
14	1488	1745	1229
15	1605	1560	1678
16	1156	1588	1895
17	1307	586	912
18	2250	599	663
19	1396	305	871
20	772	714	1798
21	465	1063	1423
22	622	1086	1123
23	496	723	1529
24	468	493	868
25	802	661	1040
26	627	562	1812
27	352	613	2070
28	315	687	1399
29	156	639	1240
30	172	592	1378
July 1 7/1	273	360	867
2	618	253	760
3	914	263	842
4	716	409	963
5	279	280	863
6	226	285	1427
7	244	354	1187
8	334	329	942
9	246	364	801
10	337	307	1343
11	82	494	1793
12	186	509	1584
13	254	457	1909
14	252	451	1828
15	389	371	1323
16	416	349	1109
17	289	312	1229
18	128	488	2052
19	102	272	1443
20	128	391	958
21	128	407	487
22	139	342	406
23	173	217	849
24	157	222	705
25	87	321	1154
26	52	322	682
27	89	232	612
28	77	292	741
29	80	516	325
30	56	384	426
31	31	162	643

Table 20. (Page 2 of 2)

File: PUSUCATS.wr1 Date: 2/10/93 Disk: PD Page 2 of 2. Sockeye Salmon

This file contains Copper River Personal Use and Subsistence Catch by day.

Personal Use Sockeye

Date	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	Average	Cum. Average	Cum. Percent
Aug. 1	179	20	49	43	24	142	213	391	259	900	38	1517	315	44520	90.0
2	65	18	89	108	47	274	312	110	146	246	603	642	222	44742	90.5
3	14	82	46	33	72	151	85	387	295	919	1413	15	293	45034	91.1
4	89	131	100	49	67	47	98	464	636	1522	193	0	283	45317	91.6
5	63	175	22	85	53	98	138	812	946	967	29	0	282	45600	92.2
6	16	131	23	11	21	83	282	629	879	226	30	429	230	45830	92.7
7	10	112	44	9	47	37	176	276	540	576	0	672	208	46038	93.1
8	15	143	90	7	16	107	37	130	434	698	3	1023	225	46263	93.5
9	6	103	116	40	20	99	212	155	168	496	620	505	212	46475	94.0
10	37	124	58	0	140	56	98	269	565	1096	992	5	287	46762	94.5
11	27	243	73	6	75	15	130	323	599	556	389	5	203	46965	95.0
12	64	100	38	14	75	27	147	183	824	519	20	0	168	47133	95.3
13	50	30	79	81	0	0	44	536	401	13	15	465	143	47275	95.6
14	42	122	56	69	10	74	72	468	160	0	12	722	151	47426	95.9
15	77	62	33	57	16	69	204	184	292	73	62	1326	205	47631	96.3
16	20	10	67	2	12	101	63	72	268	73	411	247	112	47743	96.5
17	48	66	59	45	10	78	37	130	450	72	254	1	104	47847	96.7
18	53	87	55	68	34	19	138	67	424	213	111	15	107	47954	97.0
19	77	13	98	45	48	0	137	66	713	194	0	44	120	48074	97.2
20	101	56	136	5	85	60	118	134	309	107	6	73	99	48173	97.4
21	97	78	83	4	51	24	61	8	185	129	19	170	76	48248	97.6
22	42	83	28	28	39	43	173	40	424	187	10	223	110	48358	97.8
23	0	20	52	20	24	44	56	59	129	265	363	67	92	48450	98.0
24	7	30	23	66	34	26	132	49	203	203	409	0	99	48549	98.2
25	28	21	55	26	8	1	40	74	272	677	103	80	115	48664	98.4
26	23	94	24	0	51	41	0	13	344	184	0	0	65	48728	98.5
27	1	112	30	0	69	5	34	9	228	96	0	59	54	48782	98.6
28	1	88	35	2	19	6	81	23	77	51	0	162	45	48827	98.7
29	0	16	55	18	6	30	3	12	163	100	7	131	45	48873	98.8
30	52	27	92	8	11	41	13	51	165	218	111	65	71	48944	99.0
31	24	6	44	27	9	23	2	19	132	201	305	4	66	49010	99.1
Sept 1	30	6	30	45	51	15	0	10	132	263	174	16	64	49074	99.2
2	10	4	105	25	6	11	0	43	251	336	86	6	74	49148	99.4
3	17	21	117	16	0	11	21	42	111	73	68	41	45	49193	99.5
4	68	81	97	0	19	0	23	32	19	22	52	75	41	49233	99.5
5	15	29	53	0	3	11	11	2	29	45	25	62	24	49257	99.6
6	0	5	0	0	3	5	6	2	25	58	63	78	20	49278	99.6
7	2	0	7	2	12	3	6	2	1	82	98	41	21	49299	99.7
8	35	0	15	39	3	0	0	15	22	64	61	0	21	49320	99.7
9	14	10	32	4	0	3	0	35	20	1	17	1	11	49332	99.7
10	0	7	52	12	1	2	4	28	20	3	17	1	12	49344	99.8
11	10	15	96	22	0	6	5	14	10	0	2	17	16	49360	99.8
12	10	13	22	0	4	2	6	1	6	12	6	9	8	49368	99.8
13	10	5	14	0	12	3	0	1	19	25	37	1	11	49378	99.8
14	20	0	0	0	24	1	0	5	22	23	68	0	14	49392	99.9
15	10	0	11	0	0	0	0	1	48	53	22	6	13	49405	99.9
16	0	0	0	0	0	5	3	2	21	0	6	0	3	49408	99.9
17	0	0	2	1	0	1	6	0	16	1	16	0	4	49411	99.9
18	0	0	0	0	0	0	55	0	0	1	9	3	6	49417	99.9
19	3	0	0	2	0	0	2	0	0	3	8	2	2	49419	99.9
20	0	0	2	0	0	0	0	0	0	30	12	0	4	49422	99.9
21	10	0	0	0	2	0	0	0	73	1	89	0	15	49437	100.0
22	0	11	7	0	15	0	0	0	11	0	35	3	7	49444	100.0
23	0	0	0	7	0	0	0	0	0	20	0	2	2	49446	100.0
24	0	0	0	0	0	0	0	0	0	2	4	0	1	49447	100.0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	49447	100.0
26	0	0	0	0	0	0	0	10	0	0	4	0	1	49448	100.0
27	0	0	5	0	0	0	0	0	0	3	10	0	2	49449	100.0
28	0	0	5	0	0	0	0	0	0	1	9	7	2	49451	100.0
29	0	0	15	0	0	0	0	0	0	0	24	0	3	49454	100.0
30	0	13	0	0	0	2	0	0	40	1	0	0	5	49459	100.0
Total	24996	47688	60411	46063	30086	40510	41856	40521	55494	65783	77466	84479	51279	49459	
Permits (Returned)	2378	4788	6023	4898	3660	3868	3803	3698	4334	5420	5964	6160			

Subsistence Sockeye

Date	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	Average	Cum. Average	Cum. Percent
Aug. 1	179	75	76	196	174	177	251	112	14	188	160	146	24011	86.3
2	52	15	58	182	140	159	36	99	95	284	351	134	24145	86.8
3	82	134	92	136	83	197	346	132	45	189	321	160	24304	87.3
4	225	6	90	7	118	173	209	152	134	345	401	169	24473	87.9
5	5	130	57	114	296	58	157	345	214	589	473	222	24695	88.7
6	193	28	35	95	26	32	13	72	85	315	272	106	24801	89.1
7	390	12	55	127	10	104	41	178	63	154	348	135	24936	89.6
8	24	32	65	331	92	112	131	132	116	301	680	183	25119	90.3
9	41	66	27	229	81	67	117	233	20	219	357	132	25252	90.7
10	252	53	98	484	213	214	333	306	135	586	409	278	25530	91.7
11	401	32	137	111	67	230	153	241	152	260	138	175	25705	92.4
12	124	37	54	110	110	111	414	63	124	466	143	160	25864	92.9
13	105	11	14	76	103	96	136	88	86	139	157	92	25956	93.3
14	80	70	33	428	226	140	62	254	71	232	317	174	26130	93.9
15	35	83	17	178	94	199	280	340	97	254	585	197	26327	94.6
16	0	29	31	53	65	17	95	272	116	88	628	127	26453	95.1
17	100	56	81	52	40	14	151	398	50	222	186	123	26576	95.5
18	173	78	84	0	42	18	55	350	180	276	250	137	26713	96.0
19	78	0	11	50	8	47	105	111	0	97	230	67	26780	96.2
20	105	20	2	151	114	118	121	131	251	285	349	150	26930	96.8
21	50	5	20	83	18	66	53	49	49	79	170	58	26988	97.0
22	7	94	32	4	142	10	46	314	7	0	107	69	27058	97.2
23	33	54	17	239	39	70	35	71	210	62	77	82	27140	97.5
24	25	0	21	82	39	79	148	15	16	205	88	65	27205	97.8
25	41	4	47	74	187	260	16	31	90	12	186	86	27291	98.1
26	39	0	12	0	72	34	20	2	21	68	91	33	27324	98.2
27	60	0	0	0	7	480	80	8	9	36	81	69	27393	98.4
28	4	26	58	10	0	0	19	113	37	4	41	28	27422	98.5
29	89	0	75	35	63	144	82	5	21	21	117	59	27481	98.7
30	7	16	35	9	14	8	58	224	45	65	181	60	27541	99.0
31	7	0	5	0	6	0	14	19	76	12	154	27	27568	99.1
Sept 1	0	7	0	13	0	28	17	0	0	97	17	16	27584	99.1
2	0	0	0	0	43	0	10	0	0	0	25	7	27591	99.1
3	0	87	0	0	32	3	0	0	1	0	22	13	27604	99.2
4	5	22	0	0	8	4	0	0	0	0	69	10	27614	99.2
5	0	0	0	0	11	2	0	20	102	55	63	23	27637	99.3
6	23	0	0	8	0	13	0	38	28	0	34	13	27650	99.4
7	6	0	0	6	17	0	0	29	32	57	14	15	27665	99.4
8	0	3	0	0	3	0	0	9	28	35	47	11	27676	99.4
9	0	20	16	4	0	0	0	0	40	0	28	10	27686	99.5
10	0	0	2	0	0	9	0	120	29	0	11	16	27702	99.5
11	1	0	3	131	46	0	0	2	0	0	1	17	27718	99.6
12	0	0	9	0	0	0	0	4	7	0	6	2	27721	99.6
13	0	0	0	0	0	0	0	5	0	0	12	2	27722	99.6
14	0	0	0	0	3	0	0	0	0	0	25	3	27725	99.6
15	35	15	0	35	8	24	89	30	2	0	35	25	27750	99.7
16	0	0	0	0	20	0	0	0	0	0	8	3	27752	99.7
17	0	65	0	0	24	0	5	0	0	0	0	9	27761	99.7
18	0	0	18	0	0	0	19	1	0	0	0	3	27764	99.8
19	0	0	0	11	0	0	0	24	0	0	0	3	27767	99.8
20	0	0	0	15	0	0	43	11	0	0	2	6	27774	99.8
21	0	0	118	0	0	0	8	0	0	0	1	12	27785	99.8
22	0	0	0	0	0	0	6	0	0	0	0	1	27786	99.8
23	0	0	0	1	0	6	0	0	0	15	34	5	27791	99.9
24	0	0	1	0	0	3	36	5	29	0	0	7	27798	99.9
25	9	0	0	0	0	0	5	0	0	2	0	1	27799	99.9
26	0	0	0	0	0	6	0	0	0	0	0	1	27800	99.9
27	0	0	0	205	0	0	7	0	0	0	0	19	27819	100.0
28	0	0	0	0	0	0	0	2	0	0	0	0	27819	100.0
29	0	0	0	0	10	0	5	0	0	0	0	1	27820	100.0
30	0	0	0	0	0	3	0	38	69	0	0	10	27830	100.0
Total	33048	31758	22983	24168	25191	29603	22183	28705	31937	38225	41199	29636	27830		
	560	564	316	357	359	261	254	358	380	629	586				

PERSONAL USE

Date	1982-3	1984-89	1990-92
Aug. 1 8/1	35	179	818
2	54	166	497
3	64	171	782
4	116	227	572
5	99	355	332
6	77	318	228
7	78	181	416
8	117	122	575
9	110	116	540
10	91	188	698
11	158	191	317
12	69	212	180
13	55	177	164
14	89	142	245
15 8/15	48	137	487
16	39	86	244
17	63	125	109
18	71	125	113
19	56	168	79
20	96	119	62
21	81	56	106
22	56	125	140
23	36	55	232
24	27	85	204
25	38	70	287
26	59	75	61
27	71	58	52
28	62	35	71
29	36	39	79
30	60	48	131
31	25	35	170
Sept 1 9/1	18	42	151
2	55	56	143
3	69	34	61
4	89	16	50
5	41	9	44
6	3	7	66
7	4	4	74
8	8	13	42
9	21	10	6
10	30	11	7
11	56	10	6
12	18	3	9
13	10	6	21
14	0	9	30
15 9/15	6	8	27
16	0	5	2
17	1	4	6
18	0	9	4
19	0	1	4
20	1	0	14
21	0	13	30
22	9	4	13
23	0	1	7
24	0	0	2
25	0	0	0
26	0	2	1
27	3	0	4
28	3	0	6
29	8	0	8
30 9/30	7	7	0
Total			

Table 21. Copper River Personal Use and Subsistence Chinook Catch by Day Summary

File: PUSUCAIK.wr1 Date: 2/10/93 Disk: PD Chinook Salmon

This file contains Copper River Personal Use and Subsistence Catch by day.

Personal Use Chinook

Date	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	Average	Cum. Average	Cum. Percent
June 1	47	14	139	118	1	0	0	0	0	79	124	1	44	43.6	1.8
2	32	42	187	202	1	4	0	1	59	113	92	0	61	104.7	4.3
3	45	15	109	88	0	1	1	94	164	55	0	0	48	152.3	6.3
4	51	23	141	1	1	1	0	250	103	0	0	0	48	199.9	8.2
5	28	54	120	0	4	0	92	294	3	0	2	68	56	256.2	10.5
6	64	33	190	10	1	36	397	1	5	4	48	228	86	339.8	14.0
7	65	33	166	0	0	170	227	0	0	28	143	67	75	414.7	17.0
8	51	23	118	30	15	79	7	4	13	102	483	1	77	491.8	20.2
9	25	19	109	239	14	2	0	6	86	218	153	0	73	564.3	23.2
10	44	34	273	89	0	0	1	103	263	103	0	1	76	640.3	26.3
11	63	91	256	2	0	2	1	174	164	6	16	35	68	707.8	29.1
12	45	60	227	0	0	5	124	108	3	25	55	170	69	776.3	31.9
13	69	41	139	0	2	172	266	0	19	37	99	290	95	870.8	35.8
14	63	56	138	0	41	331	263	1	18	55	181	161	109	979.8	40.3
15	38	62	190	61	210	181	11	28	43	98	380	0	109	1088.3	44.7
16	44	41	109	123	177	10	0	31	84	313	117	36	90	1178.7	48.4
17	22	29	109	31	53	0	0	97	93	118	27	81	55	1233.7	50.7
18	16	84	175	2	2	2	6	281	78	20	42	100	67	1301.0	53.4
19	26	59	93	0	5	1	66	143	9	33	26	167	52	1353.3	55.6
20	28	67	40	35	37	92	184	1	31	33	88	331	81	1433.9	58.9
21	29	33	34	49	94	188	164	2	22	65	141	79	75	1508.9	62.0
22	14	48	32	44	108	165	0	37	38	58	152	39	61	1570.2	64.5
23	17	32	31	55	83	1	0	65	56	195	21	70	52	1622.3	66.7
24	5	18	45	7	19	0	21	106	69	42	7	37	31	1653.7	67.9
25	11	72	66	0	1	13	56	160	16	18	19	56	40	1693.5	69.6
26	12	46	27	5	17	36	51	84	7	17	77	132	43	1736.1	71.3
27	18	40	22	1	25	57	107	12	23	37	39	117	42	1777.6	73.0
28	25	17	36	22	12	116	73	0	33	36	64	51	40	1818.0	74.7
29	6	6	14	47	45	62	2	31	22	36	149	24	37	1855.0	76.2
30	22	8	14	66	30	2	5	45	45	110	91	42	40	1895.0	77.9
July 1	9	9	18	13	4	2	13	44	43	32	33	41	22	1916.8	78.7
2	9	16	66	2	1	5	15	44	45	15	40	44	25	1942.0	79.8
3	28	41	67	11	5	18	32	48	34	21	38	66	34	1976.1	81.2
4	26	54	64	17	3	50	45	21	20	24	80	69	40	2015.6	82.8
5	13	21	13	18	8	54	24	12	15	7	71	20	23	2038.6	83.8
6	19	16	6	14	11	20	5	7	28	43	139	17	27	2065.7	84.9
7	11	10	15	21	1	7	4	11	24	58	62	14	20	2085.5	85.7
8	5	11	31	12	4	6	19	17	42	14	64	20	20	2105.1	86.5
9	6	9	32	6	23	7	34	44	48	9	41	40	25	2130.0	87.5
10	14	25	32	1	9	11	67	30	6	14	58	67	28	2157.8	88.7
11	7	4	14	9	10	42	73	14	4	16	39	95	27	2185.1	89.8
12	1	3	8	2	20	90	28	21	4	26	83	24	26	2210.9	90.8
13	0	8	18	25	16	45	15	15	3	52	75	23	25	2235.6	91.8
14	6	2	22	24	11	7	21	20	16	39	51	24	20	2255.8	92.7
15	4	7	25	18	3	23	24	29	40	9	38	17	20	2275.6	93.5
16	0	5	16	4	2	14	19	21	48	12	12	27	15	2290.6	94.1
17	1	3	13	7	4	7	15	16	15	11	21	59	14	2304.9	94.7
18	3	10	1	4	4	12	38	7	8	5	13	63	14	2318.9	95.3
19	1	2	1	4	8	5	14	2	4	7	18	14	7	2325.4	95.5
20	6	2	7	10	9	9	14	2	23	9	43	4	12	2336.9	96.0
21	4	3	3	6	10	3	6	3	7	7	15	0	6	2342.5	96.2
22	3	4	3	7	1	0	3	4	28	7	6	0	6	2348.0	96.5
23	3	8	7	1	1	5	3	15	5	4	13	6	6	2353.9	96.7
24	5	2	3	3	2	1	1	20	3	5	12	7	5	2359.3	96.9
25	2	2	5	0	3	1	2	7	13	5	4	15	5	2364.2	97.1
26	1	0	3	0	13	12	5	3	2	2	4	9	5	2368.7	97.3
27	0	5	0	1	3	5	0	3	10	3	15	4	4	2372.8	97.5
28	1	2	2	1	5	7	0	5	4	10	11	7	5	2377.3	97.7
29	0	2	2	1	2	3	0	9	9	13	0	0	3	2380.8	97.8
30	6	3	0	2	0	3	0	6	3	8	0	2	3	2383.5	97.9
31	0	1	3	0	0	5	0	1	2	3	0	7	2	2385.3	98.0
Aug. 1	1	0	0	1	0	2	3	2	0	3	0	5	1	2386.8	98.1
2	0	0	5	0	1	3	1	5	2	0	1	13	3	2389.3	98.2
3	1	1	1	1	2	4	1	6	5	6	6	0	3	2392.2	98.3
4	0	3	0	0	0	0	0	8	0	11	0	0	2	2394.0	98.4
5	0	2	1	0	0	1	4	2	4	2	1	0	1	2395.4	98.4
6	0	1	2	0	0	0	0	1	1	4	0	0	1	2396.2	98.4
7	0	1	2	0	1	0	1	1	1	7	0	3	1	2397.6	98.5
8	2	0	0	0	0	3	2	0	0	1	1	0	1	2398.3	98.5
9	1	0	0	0	0	1	0	0	0	1	1	0	0	2398.7	98.5
10	0	0	1	0	5	1	0	1	0	0	3	1	1	2399.7	98.6
11	0	0	0	1	0	0	0	0	3	4	1	0	1	2400.4	99.5
12	1	1	0	2	0	0	17	1	2	5	0	0	2	2402.8	98.7
13	0	0	1	14	0	0	1	3	0	0	0	2	2	2404.6	98.8
14	0	11	5	0	0	1	1	2	0	0	0	2	2	2406.4	98.9
15	0	0	1	0	0	2	0	1	0	1	0	16	2	2408.2	98.9
16	0	0	2	0	0	0	2	0	0	0	2	6	1	2409.2	99.0
17	0	0	6	0	0	2	0	0	6	1	0	0	1	2410.4	99.0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	2410.4	99.0
19	0	0	0	0	1	0	0	1	0	0	0	0	0	2410.6	99.0
20	0	0	2	0	0	0	1	1	0	2	0	1	1	2411.2	99.1
21	0	0	2	0	0	0	0	0	0	1	0	19	2	2413.0	99.1
22	0	2	0	0	2	1	0	1	1	0	0	2	1	2413.7	99.2
23	0	0	0	1	1	2	0	6	0	0	2	5	1	2415.2	99.2
24	1	0	0	0	0	0	1	1	0	0	0	0	0	2415.4	99.2
25	0	0	1	0	0	0	0	1	2	0	0	1	0	2415.8	99.3
26	1	0	12	0	0	0	0	3	0	1	0	0	1	2417.3	99.3
27	0	2	0	0	0	1	0	0	0	0	0	0	0	2417.5	99.3
28	0	0	0	0	0	4	0	1	0	0	0	1	1	2418.0	99.3
29	0	1	0	0	0	0	0	0	3	0	0	1	0	2418.4	99.4
30	0	0	1	0	0	0	0	0	0	0	0	0	0	2418.5	99.4
31	6	6	5	0	0	0	0	0	0	0	1	1	2	2420.1	99.4
Sept 1	1	0	2	0	0	0	0	0	0	0	0	0	0	2420.3	99.4
2	0	0	5	0	0	0	0	0	3	0	0	2	1	2421.2	99.5
3	0	0	3	0	0	3	0	3	0	0	0	25	3	2424.0	99.6
4	0	2	6	0	0	0	14	5	0	0	0	0	2	2426.2	99.7
5	0	0	3	0	0	0	4	0	0	0	0	0	1	2426.8	99.7
6	0	0	0	0	0	0	1	0	0	0	0	0	0	2426.9	99.7
7	0	0	0	0	0	0	0	1	0	0	2	26	2	2429.3	99.8
8	0	0	0	0	4	0	0	0	0	0	0	0	0	2429.7	99.8
9	0	0	0	0	0	0	0	9	0	0	0	0	1	2430.4	99.8
10	1	0	0	0	1	0	0	4	0	0	0	0	1	2430.8	99.9
11	0	0	0	0	0	0	0	0	0	0	0	0	0	2430.8	99.9
12	0	2	0	0	0	3	5	0	0	0	0	0	1	2431.7	99.9
13	0	0	0	0	0	4	0	0	0	0	0	0	0	2432.1	99.9
14	0	0	0	0	0	0	0	0	0	0	1	0	0	2432.2	99.9
15	0	0	0	0	0	0	0	3	3	0	0	0	1	2432.7	99.9
16	0	0	0	0	0	0	0	0	0	0	0	0	0	2432.7	99.9
17	0	0	0	0	0	0	3	0	0	0	0	0	0	2432.9	100.0
18	0	0	0	0	0	0	0	0	0	0	0	3	0	2433.2	100.0
19	0	2	0	0	0	0	0	0	0	0	0	0	0	2433.3	100.0
20	1	0	0	0	0	0	0	0	0	0	0	0	0	2433.4	100.0
21	0	0	0	0	0	0	0	0	0	0	0	0	0	2433.4	100.0
22	0	0	3	0	0	0	0	0	0	0	1	0	0	2433.7	100.0
23	0	0	0	0	0	0	0	0	0	0	0	0	0	2433.7	100.0
24	0	0	0	0	0	0	0	0	0	0	0	0	0	2433.7	100.0
25	0	0	0	0	0	0	0	0	0	0	0	0	0	2433.7	100.0
26	0	0	0	0	0	0	0	0	0	0	0	0	0	2433.7	100.0
27	0	0	0	0	0	0	0	0	0	0	1	0	0	2433.8	100.0
28	1	0	0	0	0	0	0	0	0	0	0	0	0	2433.9	100.0
29	0	0	0	0	0	0	0	0	0	0	0	0	0	2433.9	100.0
30	0	2	0	0	0	0	0	0	0	0	0	0	0	2434.1	100.0
Total	1236	1529	3921	1592	1212	2247	2727	2723	2160	2694	3947	3322	2434	2434.1	100.0

Subsistence Chinook

Date	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	Average	Cum. Average	Cum. Average	
June 1	6	22	2	1	0	3	1	2	14	12	24	8	7.9	1.1	June 1
2	6	28	7	1	2	5	27	5	3	8	4	9	16.6	2.3	2
3	4	16	6	0	1	15	14	4	0	14	8	7	24.1	3.3	3
4	8	10	10	1	5	13	13	6	18	31	1	11	34.6	4.7	4
5	3	44	8	0	3	14	6	17	16	23	1	12	46.9	6.4	5
6	3	33	4	0	11	13	7	10	22	17	19	13	59.5	8.1	6
7	10	21	4	0	7	8	9	9	7	27	18	11	70.5	9.6	7
8	13	17	7	2	1	23	15	4	8	72	21	17	87.1	11.9	8
9	7	11	4	2	4	6	16	13	9	25	30	11	98.5	13.4	9
10	8	40	24	7	15	15	21	17	50	22	66	26	124.5	16.9	10
11	5	11	11	5	17	12	12	14	9	53	27	16	140.5	19.1	11
12	28	28	8	5	6	26	4	5	17	22	25	16	156.3	21.3	12
13	13	16	6	8	8	6	31	8	29	23	27	16	172.2	23.4	13
14	10	8	8	8	27	9	19	5	7	22	16	13	184.8	25.2	14
15	19	81	40	28	16	33	29	19	19	53	64	36	221.3	30.1	15
16	16	29	12	7	10	11	4	8	13	52	19	16	237.7	32.4	16
17	27	14	11	6	25	15	10	15	15	22	38	18	255.7	34.8	17
18	13	34	3	2	5	19	20	9	5	39	22	16	271.3	36.9	18
19	7	34	5	23	8	16	4	14	21	21	26	16	287.5	39.1	19
20	11	31	27	17	44	16	15	29	18	41	65	29	316.0	43.0	20
21	16	43	7	5	14	5	24	13	12	37	28	19	334.5	45.6	21
22	6	20	4	37	12	14	13	9	5	45	21	17	351.5	47.9	22
23	6	8	2	9	15	6	22	0	6	34	37	13	364.6	49.7	23
24	7	23	3	7	21	6	17	7	7	21	5	11	375.9	51.2	24
25	37	41	7	5	14	7	17	24	5	36	39	21	397.0	54.1	25
26	12	20	2	0	21	9	10	9	6	43	42	16	412.8	56.2	26
27	11	19	6	11	16	1	23	16	4	31	76	19	432.1	58.8	27
28	9	22	3	11	3	8	17	12	19	9	34	13	445.6	60.7	28
29	5	15	8	14	6	4	11	18	4	31	18	12	457.6	62.3	29
30	6	11	22	9	27	16	9	25	48	7	71	23	480.5	65.4	30
July 1	6	12	4	3	11	0	3	10	10	12	22	8	488.9	66.6	July 1
2	13	6	1	1	6	8	12	41	7	7	38	13	501.6	68.3	2
3	4	12	5	7	4	3	4	27	5	15	12	9	510.6	69.5	3
4	13	10	3	6	7	5	11	19	21	3	31	12	522.3	71.1	4
5	11	7	0	20	2	9	12	5	6	12	7	8	530.5	72.2	5
6	2	13	3	9	1	1	7	14	5	13	8	7	537.5	73.2	6
7	5	20	4	9	5	40	5	14	11	7	11	12	549.4	74.8	7
8	4	5	2	3	18	12	7	20	4	28	7	10	559.4	76.2	8
9	5	11	1	5	13	9	11	16	10	9	3	8	567.8	77.3	9
10	31	9	16	7	7	7	7	18	11	16	7	12	580.2	79.0	10
11	5	11	5	14	2	7	6	3	4	10	18	8	587.9	80.1	11
12	0	24	2	4	5	11	3	13	6	12	19	9	596.9	81.3	12
13	2	11	1	12	5	4	3	7	1	11	16	7	603.5	82.2	13
14	3	8	4	5	4	11	3	21	2	13	15	8	611.6	83.3	14
15	5	23	10	12	8	22	13	16	10	27	62	19	630.5	85.9	15
16	0	1	5	13	1	17	6	19	1	28	3	9	639.0	87.0	16
17	3	2	3	15	8	3	6	9	0	8	2	5	644.4	87.7	17
18	1	2	4	6	14	2	11	5	6	5	9	6	650.3	88.5	18
19	11	3	1	8	0	4	8	7	0	5	14	6	656.8	89.3	19
20	4	14	6	8	3	3	13	6	5	7	9	7	662.9	90.3	20
21	17	0	4	2	11	5	21	12	13	1	15	9	672.1	91.5	21
22	4	1	6	1	2	5	0	15	1	9	0	4	676.1	92.1	22
23	0	1	2	7	1	0	12	1	1	5	1	3	678.9	92.4	23
24	0	1	3	2	10	0	0	6	4	1	4	3	681.7	92.8	24
25	0	3	0	0	1	4	15	4	0	5	9	4	685.5	93.3	25
26	1	2	4	2	3	2	5	3	1	9	4	3	688.7	93.8	26
27	2	1	3	1	9	6	1	4	1	19	8	5	693.7	94.5	27
28	0	0	0	4	3	9	3	0	6	6	15	4	697.9	95.0	28
29	2	1	0	7	0	5	4	1	1	0	11	3	700.8	95.4	29
30	0	0	3	1	0	1	0	11	18	2	2	3	704.3	95.9	30
31	0	0	3	1	2	2	2	13	0	1	0	2	706.5	96.2	31
Aug. 1	0	0	5	1	1	1	1	2	0	0	0	1	707.5	96.3	Aug. 1
2	0	0	0	2	4	1	5	1	0	2	2	2	709.0	96.5	2
3	0	0	0	6	0	0	2	3	0	2	1	1	710.3	96.7	3
4	0	0	0	1	2	3	1	0	0	0	1	1	711.0	96.8	4
5	2	0	0	1	0	1	1	3	7	2	0	2	712.5	97.0	5
6	0	0	0	1	0	0	0	0	5	0	3	1	713.4	97.1	6
7	2	0	0	2	0	0	0	3	0	0	1	1	714.1	97.2	7
8	0	0	0	4	1	1	0	0	0	3	1	1	715.0	97.4	8
9	0	0	0	0	1	3	3	4	0	3	1	1	716.4	97.5	9
10	0	0	3	0	12	2	1	0	5	3	0	2	718.7	97.9	10
11	0	0	8	0	1	2	0	5	0	0	0	1	720.2	98.1	11
12	0	0	0	0	0	0	7	1	0	0	11	2	721.9	98.3	12
13	0	0	0	0	0	0	2	0	0	0	1	0	722.2	98.3	13
14	0	0	6	0	2	1	0	6	0	0	3	2	723.8	98.6	14
15	0	0	0	0	1	0	1	0	0	0	3	0	724.3	98.6	15
16	0	0	0	2	5	0	0	0	0	0	6	1	725.5	98.8	16
17	0	3	6	0	6	0	0	0	0	0	0	1	726.8	99.0	17
18	0	0	3	0	0	1	0	0	0	2	2	1	727.5	99.1	18
19	2	1	0	1	2	0	0	0	0	0	0	1	728.1	99.1	19
20	0	0	0	0	4	1	4	0	1	0	0	1	729.0	99.3	20
21	0	0	0	0	0	0	0	1	0	0	0	0	729.1	99.3	21
22	0	0	0	0	3	0	4	0	0	0	1	1	729.8	99.4	22
23	0	0	0	0	0	0	0	5	0	0	2	1	730.5	99.5	23
24	0	0	0	1	11	0	2	0	0	0	0	1	731.7	99.6	24
25	0	0	1	0	0	0	0	0	0	0	5	1	732.3	99.7	25
26	1	0	3	0	0	0	0	0	0	0	0	0	732.8	99.8	26
27	0	0	0	0	0	0	0	0	0	0	0	0	732.6	99.8	27
28	0	0	0	0	0	0	0	2	0	0	0	0	732.8	99.8	28
29	2	0	0	0	0	0	0	0	0	0	0	0	733.0	99.8	29
30	0	0	1	0	1	0	0	4	0	0	0	1	733.5	99.9	30
31	0	0	0	0	0	0	0	0	0	0	1	0	733.6	99.9	31
Sept 1	0	0	0	2	0	0	0	0	0	0	0	0	733.8	99.9	Sept 1
2	0	0	0	0	0	0	0	0	0	0	0	0	733.8	99.9	2
3	0	0	0	0	0	0	0	0	0	0	0	0	733.8	99.9	3
4	0	0	0	0	0	0	0	0	0	0	0	0	733.8	99.9	4
5	0	2	0	0	0	0	0	0	0	0	0	0	734.0	100.0	5
6	0	0	0	0	0	0	0	0	0	0	0	0	734.0	100.0	6
7	0	0	0	0	0	0	0	0	0	0	0	0	734.0	100.0	7
8	0	0	0	0	0	0	0	0	0	0	0	0	734.0	100.0	8
9	0	0	0	0	0	0	0	0	0	0	0	0	734.0	100.0	9
10	0	0	0	0	0	0	0	0	0	0	1	0	734.1	100.0	10
11	0	0	0	0	0	0	0	0	0	0	0	0	734.1	100.0	11
12	0	0	0	0	0	0	0	0	0	0	0	0	734.1	100.0	12
13	0	0	0	0	0	0	0	0	0	0	0	0	734.1	100.0	13
14	0	0	0	0	0	0	0	0	0	0	0	0	734.1	100.0	14
15	0	0	0	0	0	0	1	0	0	0	0	0	734.2	100.0	15
16	0	0	0	0	0	0	0	0	0	0	0	0	734.2	100.0	16
17	0	0	0	0	0	0	0	0	0	0	0	0	734.2	100.0	17
18	0	0	0	0	0	0	0	0	0	0	0	0	734.2	100.0	18
19	0	0	0	0	0	0	0	0	0	0	0	0	734.2	100.0	19
20	0	0	0	0	0	0	0	0	0	0	0	0	734.2	100.0	20
21	0	0	0	0	0	0	0	0	0	0	0	0	734.2	100.0	21
22	0	0	0	0	0	0	0	0	0	0	0	0	734.2	100.0	22
23	0	0	0	0	0	0	0	0	0	0	0	0	734.2	100.0	23
24	0	0	0	0	0	0	0	0	0	0	0	0	734.2	100.0	24
25	0	0	0	0	0	0	0	0	0	0	0	0	734.2	100.0	25
26	0	0	0	0	0	0	0	0	0	0	0	0	734.2	100.0	26
27	0	0	0	2	0	0	0	0	0	0	0	0	734.4	100.0	27
28	0	0	0	0	0	0	0	0	0	0	0	0	734.4	100.0	28
29	0	0	0	0	0	0	0	0	0	0	0	0	734.4	100.0	29
30	0	0	0	0	0	0	0	0	0	0	0	0	734.4	100.0	30
Total	495	970	415	452	586	587	689	744	604	1216	1320	734	734.36	100.0	Total

Table 22. Anticipated Daily, Period and Weekly Commercial Sockeye Salmon Catches, Copper River, 1993

File: CRSMGT93.wr1 Date: 2/25/93 Disk: SF

1993 Sockeye Management Data, Copper River Commercial Fishery
These data corrected for enhanced stock timing and contribution.
(Weekly totals shown on Saturdays, semi-weekly on Wednesdays and Saturdays)

SOCKEYE		DAILY		CUMULATIVE		WEEKLY	SEMI-WEEKLY		ACTUALS	
Stat. Week	Date	Expect Percent	Expect Number	Expect Percent	Expect Number	Expect Number	Expect Number	Date	Daily Catch	Cumluative Catch
20	May 10	0.00	0	0.0	0			May 10		
"	11	0.00	0	0.0	0			11		
"	12	0.04	334	0.0	334		334	12		
"	13	0.17	1565	0.2	1899			13		
"	14	0.17	1562	0.4	3461			14		
"	15	0.52	4803	0.9	8264	8264	7930	15		
21	16	0.77	7129	1.7	15393			16		
"	17	0.72	6600	2.4	21993			17		
"	18	0.95	8770	3.3	30763			18		
"	19	2.25	20723	5.6	51486		43222	19		
"	20	2.16	19840	7.8	71326			20		
"	21	1.86	17127	9.6	88452			21		
"	22	2.46	22646	12.1	111098	102834	59612	22		
22	23	2.15	19735	14.2	130833			23		
"	24	2.31	21231	16.5	152064			24		
"	25	3.48	32015	20.0	184078			25		
"	26	3.14	28934	23.2	213012		101914	26		
"	27	2.03	18635	25.2	231647			27		
"	28	2.58	23702	27.8	255349			28		
"	29	3.97	36561	31.7	291910	180812	78898	29		
23	30	2.76	25418	34.5	317328			30		
"	31	2.24	20653	36.7	337981			31		
"	June 1	2.23	20480	39.0	358462			June 1		
"	2	2.36	21732	41.3	380193		88283	2		
"	3	2.19	20118	43.5	400311			3		
"	4	1.75	16115	45.3	416425			4		
"	5	1.75	16064	47.0	432489	140579	52296	5		
24	6	1.25	11529	48.3	444018			6		
"	7	1.61	14841	49.9	458859			7		
"	8	1.65	15188	51.5	474046			8		
"	9	1.44	13288	53.0	487334		54845	9		
"	10	1.59	14590	54.6	501925			10		
"	11	1.51	13862	56.1	515787			11		
"	12	1.55	14295	57.6	530082	97593	42747	12		
25	13	0.97	8927	58.6	539009			13		
"	14	1.14	10524	59.7	549533			14		
"	15	1.57	14470	61.3	564003			15		
"	16	1.36	12553	62.7	576556		46475	16		
"	17	1.31	12040	64.0	588596			17		
"	18	0.87	7982	64.8	596578			18		
"	19	0.93	8530	65.8	605108	75027	28552	19		
26	20	1.05	9702	66.8	614810			20		
"	21	1.16	10663	68.0	625473			21		
"	22	1.15	10544	69.1	636016			22		
"	23	1.08	9950	70.2	645966		40858	23		
"	24	0.93	8589	71.1	654555			24		
"	25	0.76	7009	71.9	661564			25		
"	26	0.74	6824	72.7	668388	63280	22422	26		
27	27	0.62	5672	73.3	674060			27		
"	28	0.60	5511	73.9	679571			28		
"	29	0.70	6396	74.6	685967			29		
"	30	0.67	6157	75.2	692124		23736	30		
"	July 1	0.65	5961	75.9	698085			July 1		
"	2	0.60	5479	76.5	703564			2		
"	3	0.79	7258	77.3	710822	42434	18697	3		
28	4	0.51	4666	77.8	715488			4		
"	5	0.65	5953	78.4	721441			5		
"	6	0.74	6797	79.2	728238			6		
"	7	0.66	6078	79.8	734316		23494	7		
"	8	0.66	6059	80.5	740375			8		
"	9	0.84	7726	81.3	748101			9		
"	10	1.07	9811	82.4	757912	47090	23595	10		
29	11	0.98	8970	83.4	766882			11		
"	12	1.07	9815	84.4	776697			12		
"	13	1.05	9684	85.5	786380			13		
"	14	0.88	8069	86.4	794449		36538	14		
"	15	0.59	5406	86.9	799855			15		
"	16	0.89	8180	87.8	808036			16		
"	17	0.97	8950	88.8	816985	59074	22536	17		
30	18	0.91	8369	89.7	825354			16		
"	19	0.81	7454	90.5	832809			19		
"	20	0.88	8139	91.4	840947			20		
"	21	1.17	10776	92.6	851724		34738	21		
"	22	0.58	5342	93.2	857066			22		
"	23	0.60	5560	93.8	862626			23		
"	24	0.27	2523	94.0	865149	48163	13425	24		
31	25	0.94	8661	95.0	873810			25		
"	26	0.49	4465	95.5	878275			26		
"	27	0.40	3718	95.9	881993			27		
"	28	0.46	4188	96.3	886181		21032	28		
"	29	0.62	5739	96.9	891920			29		
"	30	0.52	4754	97.5	896674			30		
"	31	0.39	3554	97.9	900228	35079	14047	31		

-Continued-

Table 22. (Page 2 of 2)

File: CRSMGT93.wr1 Date: 2/26/93 Disk: SF Page 2 of 2.

1993 Sockeye Management Data, Copper River Commercial Fishery
These data corrected for enhanced stock timing and contribution.
(Weekly totals shown on Saturdays, semi-weekly on Wednesdays and Saturdays)

SOCKEYE		DAILY		CUMULATIVE		WEEKLY	SEMI-WEEKLY		ACTUALS	
Stat. Week	Date	Expect Percent	Expect Number	Expect Percent	Expect Number	Expect Number	Expect Number	Date	Daily Catch	Cumluative Catch
32	Aug. 1	0.49	4495	98.3	904723			Aug. 1		
"	2	0.17	1562	98.5	906285			2		
"	3	0.18	1676	98.7	907961			3		
"	4	0.09	787	98.8	908748		8520	4		
"	5	0.24	2237	99.0	910985			5		
"	6	0.05	487	99.1	911472			6		
"	7	0.24	2165	99.3	913637	13409	4889	7		
33	8	0.09	851	99.4	914489			8		
"	9	0.08	715	99.5	915203			9		
"	10	0.03	270	99.5	915473			10		
"	11	0.05	444	99.6	915917		2280	11		
"	12	0.02	208	99.6	916125			12		
"	13	0.07	602	99.6	916727			13		
"	14	0.04	327	99.7	917054	3416	1136	14		
34	15	0.03	246	99.7	917299			15		
"	16	0.02	191	99.7	917491			16		
"	17	0.01	130	99.7	917621			17		
"	18	0.02	215	99.8	917836		782	18		
"	19	0.02	157	99.8	917993			19		
"	20	0.02	150	99.8	918143			20		
"	21	0.02	214	99.8	918357	1304	522	21		
35	22	0.01	129	99.8	918487			22		
"	23	0.02	157	99.9	918644			23		
"	24	0.02	157	99.9	918802			24		
"	25	0.01	79	99.9	918881		523	25		
"	26	0.01	79	99.9	918959			26		
"	27	0.01	79	99.9	919038			27		
"	28	0.01	79	99.9	919117	759	236	28		
36	29	0.01	79	99.9	919195			29		
"	30	0.01	79	99.9	919274			30		
"	31	0.01	79	99.9	919353			31		
"	Sept. 1	0.01	79	99.9	919432		315	Sept. 1		
"	2	0.01	79	99.9	919510			2		
"	3	0.01	79	100.0	919589			3		
"	4	0.01	79	100.0	919668	551	236	4		
37	5	0.01	79	100.0	919747			5		
"	6	0.01	79	100.0	919825			6		
"	7	0.01	75	100.0	919900			7		
"	8	0.01	50	100.0	919950		282	8		
"	9	0.01	50	100.0	920000			9		
"	10	0.00		100.0	920000			10		
"	11	0.00	0	100.0	920000	332	50	11		
38	12	0.00		100.0	920000			12		
"	13	0.00		100.0	920000			13		
"	14	0.00		100.0	920000			14		
"	15	0.00		100.0	920000		0	15		
"	16	0.00		100.0	920000			16		
"	17	0.00		100.0	920000			17		
"	18	0.00		100.0	920000	0	0	18		
39	19	0.00		100.0	920000			19		
"	20	0.00		100.0	920000			20		
"	21	0.00		100.0	920000			21		
"	22	0.00		100.0	920000		0	22		
"	23	0.00		100.0	920000			23		
"	24	0.00		100.0	920000			24		
"	25	0.00		100.0	920000	0	0	25		
40	26	0.00		100.0	920000			26		
"	27	0.00		100.0	920000			27		
"	28	0.00		100.0	920000			28		
"	29	0.00		100.0	920000	0	0	29		
"	30	0.00		100.0	920000	0	0	30		
		100.00				920000	920000			
			920000		920000					

Table 23. Anticipated Daily Miles Lake Daily & Weekly Sonar Counts, Copper River, 1993

File: CRSON93.wr1 Date: 2/25/93 Disk: SF

1993 Salmon Management Data, Copper River Sonar Operations
(These data corrected for enhanced and upriver dipnet catch components)

Date:	Stat. Week	DAILY Daily Percent	DAILY Daily Count	DAILY Actual Count	CUMULATIVE Cum. Percent	CUMULATIVE Cum. Count	CUMULATIVE Cum. Actual	Cumulative Difference	WEEKLY	(in feet) RIVER LEVEL	RIVER LEVEL AVE.	Actual 1993 Water Level in Meters	Average River Level in Meters
17-May	21	0.02	107		0.02	107				0	129.92		39.60
18-May	"	0.18	931		0.20	1038				0	129.53		39.48
19-May	"	0.25	1307		0.45	2345				0	129.86		39.52
20-May	"	0.29	1514		0.75	3858				0	129.11		39.35
21-May	"	0.32	1657		1.07	5515				0	129.11		39.35
22-May	"	0.35	1793		1.42	7308			7308	0	130.02		39.63
23-May	22	0.53	2740		1.95	10048				0	130.24		39.70
24-May	"	0.68	3513		2.63	13561				0	130.09		39.65
25-May	"	0.94	4825		3.58	18386				0	130.21		39.69
26-May	"	1.00	5143		4.58	23529				0	130.40		39.75
27-May	"	1.04	5363		5.60	28892				0	130.66		39.82
28-May	"	1.29	6663		6.89	35555				0	130.65		39.82
29-May	"	1.64	8459		8.53	44015			36707	0	130.96		39.92
30-May	23	1.31	6784		9.84	50799				0	131.11		39.96
31-May	"	1.48	7660		11.33	58459				0	131.69		40.14
01-Jun	"	1.84	9490		13.17	67949				0	131.99		40.23
02-Jun	"	1.90	9792		15.07	77741				0	131.77		40.16
03-Jun	"	2.04	10515		17.10	88255				0	131.89		40.20
04-Jun	"	1.99	10265		19.09	98520				0	131.96		40.22
05-Jun	"	2.23	11506		21.32	110027			66012	0	132.20		40.30
06-Jun	24	2.46	12718		23.79	122745				0	132.43		40.36
07-Jun	"	2.25	11591		26.03	134336				0	132.68		40.44
08-Jun	"	2.17	11208		28.21	145544				0	133.00		40.54
09-Jun	"	2.46	12702		30.67	158247				0	133.55		40.71
10-Jun	"	2.32	11963		32.99	170210				0	133.06		40.56
11-Jun	"	2.26	11666		35.25	181875				0	133.55		40.71
12-Jun	"	2.19	11276		37.43	193151			63125	0	133.55		40.71
13-Jun	25	2.05	10601		39.49	203752				0	133.78		40.78
14-Jun	"	1.83	9464		41.32	213216				0	134.13		40.88
15-Jun	"	1.73	8915		43.05	222131				0	133.90		40.81
16-Jun	"	1.80	9277		44.85	231408				0	134.82		41.09
17-Jun	"	1.58	8171		46.43	239579				0	134.36		40.95
18-Jun	"	1.57	8094		48.00	247673				0	134.30		40.94
19-Jun	"	1.37	7060		49.37	254734			61562	0	134.71		41.06
20-Jun	26	1.26	6480		50.62	261213				0	134.08		40.87
21-Jun	"	1.28	6597		51.90	267810				0	134.08		40.87
22-Jun	"	1.19	6151		53.09	273962				0	134.31		40.94
23-Jun	"	1.19	6129		54.28	280091				0	135.28		41.23
24-Jun	"	1.23	6354		55.51	286445				0	134.73		41.06
25-Jun	"	1.21	6249		56.72	292694				0	135.37		41.26
26-Jun	"	1.22	6312		57.95	299006			44272	0	134.57		41.02
27-Jun	27	1.14	5894		59.09	304899				0	135.20		41.21
28-Jun	"	1.13	5847		60.22	310746				0	134.78		41.08
29-Jun	"	1.12	5769		61.34	316515				0	135.68		41.36
30-Jun	"	1.13	5817		62.47	322332				0	135.43		41.28
01-Jul	"	1.03	5337		63.50	327669				0	136.04		41.46
02-Jul	"	1.01	5231		64.52	332900				0	137.51		41.91
03-Jul	"	1.02	5261		65.54	338162			39156	0	138.03		42.07
04-Jul	28	1.08	5452		66.59	343614				0	137.07		41.78
05-Jul	"	1.07	5545		67.67	349158				0	138.15		42.11
06-Jul	"	1.03	5296		68.69	354454				0	138.19		42.12
07-Jul	"	0.96	4938		69.65	359393				0	137.21		41.82
08-Jul	"	0.89	4598		70.54	363990				0	137.96		42.05
09-Jul	"	0.91	4705		71.45	368695				0	137.49		41.91
10-Jul	"	0.96	4958		72.41	373653			35491	0	137.28		41.84
11-Jul	29	1.10	5659		73.51	379312				0	136.30		41.54
12-Jul	"	0.98	5082		74.50	384394				0	137.17		41.81
13-Jul	"	1.04	5351		75.53	389745				0	137.23		41.83
14-Jul	"	0.99	5083		76.52	394828				0	137.10		41.79
15-Jul	"	1.10	5689		77.62	400517				0	136.98		41.72
16-Jul	"	1.08	5568		78.70	406085				0	135.97		41.44
17-Jul	"	1.08	5595		79.78	411680			38027	0	136.43		41.58
18-Jul	30	1.25	6445		81.03	418125				0	135.59		41.33
19-Jul	"	1.54	7938		82.57	426063				0	136.48		41.60
20-Jul	"	1.57	8125		84.14	434188				0	135.85		41.41
21-Jul	"	1.78	9206		85.93	443393				0	136.89		41.72
22-Jul	"	1.60	8240		87.53	451633				0	137.73		41.98
23-Jul	"	1.17	6029		88.69	457662				0	136.70		41.67
24-Jul	"	0.85	4386		89.54	462048			50369	0	136.55		41.62
25-Jul	31	1.23	6372		90.78	468420				0	135.90		41.42
26-Jul	"	1.06	5464		91.84	473884				0	136.34		41.56
27-Jul	"	0.99	5110		92.83	478994				0	136.12		41.49
28-Jul	"	1.01	5228		93.84	484222				0	135.89		41.42
29-Jul	"	1.03	5329		94.87	489551				0	136.65		41.65
30-Jul	"	0.54	2763		95.41	492315				0	136.70		41.67
31-Jul	"	0.41	2130		95.82	494444			32396	0	136.72		41.67
01-Aug	32	0.36	1863		96.18	496307				0	135.52		41.31
02-Aug	"	0.32	1631		96.50	497939				0	134.54		41.01
03-Aug	"	0.27	1412		96.77	499350				0	130.56		39.79
04-Aug	"	0.31	1591		97.08	500941				0	131.21		39.99
05-Aug	"	0.38	1974		97.46	502915				0	132.23		40.30
06-Aug	"	0.43	2195		97.89	505110				0	128.00		39.01
07-Aug	"	0.41	2128		98.30	507238			12794	0	128.00		39.01
08-Aug	33	0.49	2508		98.79	509746				0	128.00		39.01
09-Aug	"	0.38	1952		99.17	511697							
10-Aug	"	0.27	1373		99.43	513070							
11-Aug	"	0.15	762		99.58	513831							
12-Aug	"	0.13	693		99.71	514524							
13-Aug	"	0.03	131		99.74	514655							
14-Aug	"	0.02	112		99.76	514767			7529				
15-Aug	34	0.02	119		99.78	514886							
16-Aug	"	0.02	129		99.81	515015							
17-Aug	"	0.03	154		99.84	515169							
18-Aug	"	0.02	125		99.86	515294							
19-Aug	"	0.02	110		99.88	515404							
20-Aug	"	0.02	105		99.90	515509							
21-Aug	"	0.02	87		99.92	515596			829				
22-Aug	35	0.01	56		99.93	515652							
23-Aug	"	0.01	50		99.94	515702							
24-Aug	"	0.01	57		99.95	515759							
25-Aug	"	0.01	35		99.96	515794							
26-Aug	"	0.01	27		99.97	515821							
27-Aug	"	0.00	15		99.97	515836							
28-Aug	"	0.00	8		99.97	515844			248				
29-Aug	36	0.00	18		99.97	515862							
30-Aug	"	0.00	18		99.98	515880							
31-Aug	"	0.00	15		99.98	515895							
1-Sept	"	0.00	18		99.98	515913							
2-Sept	"	0.00	12		99.99	515924							
3-Sept	"	0.00	9		99.99	515933							
4-Sept	"	0.00	7		99.99	515940			96				
5-Sept	37	0.00	11		99.99	515951							
6-Sept	"	0.00	11		99.99	515962							
7-Sept	"	0.00	11		99.99	515974							
8-Sept	"	0.00	13		100.00	515987							
9-Sept	"	0.00	9		100.00	515995							
10-Sept	"	0.00	4		100.00	516000			60				
		100	516000						516000				

Assumes subsistence catch of 45,000
Assumes personal use catch of 60,000

Table 24. Copper River Chinook Salmon Catch by Day Summary

File: CRKBYDAY.wr1 *Date: 1/8/93* *Disk: KA* *Page 1 of 2.*

The file contains Copper River drift gill net catch by day for chinook salmon (kings) in areas 212-10,20 and 30 combined.

Date	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	Average	Cum.Cat.	Cum. Per.	Date	1993 Expected Catch
May 10																					0	0			0	0	0.0	May 10	0
11																					0	0			0	0	0.0	11	0
12																		2583			0	0			108	108	0.4	12	103
13																	2852	462	3360		0	0			278	386	1.4	13	369
14																5869	725		907		0	2038			397	783	2.8	14	749
15		626	9				4			2113						3028					2779	946		5468	624	1407	5.0	15	1346
16	88	391					139	67		1642					4371		2463			5736	1353	0	1142		725	2132	7.5	16	2039
17	63		1				19	478		661			7	108	6185		747			1105	0	423	7287		712	2844	10.0	17	2720
18		927						723		149	43		4302	164					4277		797	3092	0		603	3447	12.2	18	3297
19	571	840					243	133	1381	3103		1933	2751					3833	1524		2096	0	0	4723	964	4410	15.6	19	4219
20	523	196				962	271	20	3363	1485				946			2959	3121			0	0	4621		769	5180	18.3	20	4955
21	97	397	3			913	260	886	465					3745		6670	877		791		0	1890	2031		793	5973	21.1	21	5713
22	120	1407				370	168	553	4	3402				959		4594		1949	3047		2187	1009	0	8361	1172	7145	25.2	22	6834
23	1294	183				384	944	30	1971	2181				14	8022		2365	4934		3853	665	0	155		1125	8269	29.2	23	7910
24	329					1117	301	2623	1175	149	1331			15	7163		4111			1769	0	0	4425		1021	9291	32.8	24	8887
25	1	1336				485		2123	684		7876		2640	4988					1963		438	2064	0	5473	1253	10544	37.2	25	10085
26	1247	1565				7	1225	1317	292	3	1448		2990	3904				4601	1370	533	3460	0	0	2046	1084	11627	41.0	26	11122
27	224	620				1033	1228	681	1690			1835	5	37		3734	5245	2636		3228	1078	0	2037		1055	12682	44.8	27	12131
28	480	191		2	3072	965	149	2850	701	79	4082			317		3618	1844		700	1618	0	1160	0	924	948	13630	48.1	28	13037
29	205	1291		2001	2759	642	582	626	35	4575	2380			4875					3351		2836	1908	0	5831	1412	15042	53.1	29	14388
30	818	575		2259	1208	63	1595	108	1325	1553	505	1290			7723		1643			2717	2264	0	0		1069	16111	56.9	30	15411
31	49		209	1211	704	1236	119	3310	1519	868			582	415	4857		1969			2008	0	199	4306		982	17093	60.3	31	16350
June 1		1316	457	427	1456	659		2230	595	333			1838	4173					2413		641	1913	0	3055	898	17989	63.5	June 1	17207
2	1137	1453	568	1677	109	3	1591	994	335	3057			1296					4918	2204	585	1688	0	0		901	18889	66.7	2	18068
3	874	235	761	753		1828	1176	130	1166	1381		1652	154	520			3906	2066	1315	1639	0	0	1767		888	19778	69.8	3	18918
4	204	338	3707		1830	1399	646	2506	398					2699			364		354		0	1381	990		701	20478	72.3	4	19588
5	70	1135	2014	1841	1009	185	249	1223	12			1121		1060		422			2874		2309	757	0		678	21157	74.7	5	20237
6	950	189		2837	746	639	1680	7	637					91	5852	4083	927		987		720	0	127		853	22010	77.7	6	21053
7	350		2916	1956	179	1531	492	1509	924					3044	3008		2445				0	0	2021		849	22859	80.7	7	21865
8		586	988	375	1465	333		1327	556				1131	3133	1136				3167		254	0	0	1729	674	23533	83.1	8	22510
9	747	611	144	1880	898		951	568	29				767	908		523		2355	1286	170	1396	0	0		551	24084	85.0	9	23037
10	613	464	454	229	2	729	1463	282	471				755	98		1755	1939	908		2040	0	0	965		549	24633	86.9	10	23562
11	254	74	1186		983	589	156	1064	239			605	4	3603		1213	600		329		0	1018	629		523	25156	88.8	11	24062
12	111	533	144	1430	909	381	187	125						435	899			212	1452		1109	549	0	902	391	25546	90.2	12	24436
13	555	61		1160	126	106	892		291					6	1631		652	1314		874	588	0	0		344	25890	91.4	13	24765
14	111	2	402	173	178	711	292	562	431					2257	556	922	1121			640	0	64	538		373	26264	92.7	14	25122
15		664	649	67	741	252	5	670	156				291	1318	220	706	426		777		165	472	0	341	330	26594	93.9	15	25438
16	274	333	246	662	102		557	224	42				310	637		260		1041	556	139	896	0	0		262	26855	94.8	16	25688
17	364	72	37	398		410	631	34	226				54	117			366	1096		1134	0	0	321		219	27075	95.6	17	25898
18	105	1	379		293	359	252	507	60					898		334	396				0	206	329	3	172	27246	96.2	18	26062
19	10	140	128	248	284	68	10	137		14				237		320	97	157			393	165	0	363	115	27362	96.6	19	26172
20	298	18		256	214	71	409	43	131	1493				3	178	98	187	440		303	176	0	32	151	188	27549	97.2	20	26352
21	100		350	79	2	175	74	144	147	670				638	200	12	354	307		164	0	35	437		162	27711	97.8	21	26507
22	1	117	247	17	227	39	3	173	58	57			86	355		210	141		738		10	153	0	123	115	27826	98.2	22	26617
23	186	116	38	81	109		149	63					58	32	14	116		329	521	17	236	0	0	72	89	27915	98.5	23	26702
24	135	34	31	18		32	242	41	60				54	24	159		219	369		265	0	0	139		76	27991	98.8	24	26774
25	67	1	165		83	80	113	89	37				12	162	30	99	116				0	48	77	11	50	28041	99.0	25	26822
26		107	44	45	80	43		26						30		73	76	53			114	36	0	96	34	28075	99.1	26	26855
27	100	31	2	59	32	9		8	23						62	4		233		36	36	0	3	27	28	28103	99.2	27	26881
28	31		33	3	5	46		47	19				2	53	38	1		81		27	0	2	132		22	28124	99.3	28	26902
29		21	53	5	58	14		32	8				17	90	9	67			273		0	52	0	31	30	28155	99.4	29	26931
30	37	17	12	27	1		58	32	6				11		8	24		129	165	8	0	15	0	4	23	28178	99.5	30	26953
July 1	170	1		8		17	39		5				15	6	36		80	50		40	0	0	66		22	28200	99.5	July 1	26974
2	15	10	15		18	27	21	28	4				3	47	10	27	29	59	2		0	8	45	0	15	28215	99.6	2	26989
3		15	6	10	16	2		19						6		28	11	31	122		27	10	0	8	13	28228	99.6	3	27001
4	22	2		12	6				2						17	26		54		9	10	0	1	2	7	28235	99.7	4	27008
5	9		29	6		11		15	2					14	16	2		54		11	0	1	43		9	28244	99.7	5	27016
6		15	18	1	10	2		19	8				3	23	7	17			30		0	20	0	9	8	28252	99.7	6	27024
7	7	26		2	4		19	6					1	4	2	9		39	16	0	0	10	0	3	6	28258	99.7	7	27029
8	4	2	1	5		8	24	1	2				4		17			19		10	0	0	18		5	28263	99.8	8	27034
9			7		3	6	8	11	5					26	1	9		28	7		0	6	38	0	6	28269	99.8	9	27040
10		1	3	4	5	3		3		15				2		10		5	44		11	1	0	13	5	28274	99.8	10	27045
11	2	2		2	1			5		3					9	1		23		3	41	0	1	5	4	28278	99.8	11	27049
12	1		1	1		4		2	4	1					12			5		3	0	0	4		2	28280	99.8	12	27050
13			3		3			8					3		9	13			1		0	12	11	5	3	28282	99.8	13	27053
14		29	10	7				4		4			6			3		16	6	3	0	7	0	3	4	28287	99.8	14	27057
15		1		1		4			3	3			3		13			21		6	0	0	6		3	28289	99.9	15	27060

-Continued-

Table 24. (Page 2 of 2)

File: CRKBYDAY.wr1 Date: 1/8/93 Disk: KA Page 1 of 2.

The file contains Copper River drift gill net catch by day for chinook salmon (kings) in areas 212-10,20 and 30 combined.

Date	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	Average	Cum.Cat.	Cum. Per.	Date	1993 Expected Catch
16	1		4		1	2	1		1					4	2	4		11	0		0	4	9	1	2	28291	99.9	16	27061
17			2	3	2	2		4		10			3			3	11	1	4		15	6	0	1	3	28294	99.9	17	27064
18				3	4				2				2		3	2	12	19		1	53	0	0	8	5	28298	99.9	18	27068
19			1			3		2	3						2		5	9		4	0	1	9		2	28300	99.9	19	27070
20			3	1	3			1	2	2				5	5	5			3		0	3	8	1	2	28302	99.9	20	27072
21			1	1								5	3			1		14	7	0	0	3	0	3	2	28303	99.9	21	27073
22	1					1	1			1		3	1		2		6	7		7	0	0	1	2	1	28305	99.9	22	27074
23	1						5		1					2					0		0	0	0	0	0	28305	99.9	23	27075
24				1		1		1		2			2	1		2	3	2	2		2	0	0	0	1	28306	99.9	24	27075
25				2						4		8			2	3	5	3		5	5	0	0		2	28307	99.9	25	27077
26						1		2	1	2				2			4	5		1	0	0	0		1	28308	99.9	26	27078
27			1			3	1	2	1				2	4	2	6	1		4		0	0	0	2	1	28309	99.9	27	27079
28		1		2						7			1					5	2	1	0	0	0	0	1	28310	99.9	28	27080
29									1	3					3		6	8		4	0	0	3	0	1	28311	99.9	29	27081
30						2		2								1	5	4	1		0	1	0	0	1	28312	99.9	30	27081
31										18			2			3	2		0		1	0	0	0	1	28313	99.9	31	27082
Aug. 1				1					1	3			2			1		4		1	0	0	0	0	1	28314	99.9	Aug. 1	27083
2						3									1		2			4	0	0	0		0	28314	99.9	2	27083
3			1					2					1	1		1	1		1		0	1	0	1	0	28314	99.9	3	27084
4										1			1	2					0	0	0	1	0	0	0	28315	99.9	4	27084
5				1					1								3	4		2	0	0	1		1	28315	99.9	5	27084
6									1					4		4	2	9	0		0	0	3	0	1	28316	99.9	6	27085
7		1			1						1	1				4		1	5		3	0	0	1	1	28317	99.9	7	27086
8										1	2			12		3				3	3	0	0		1	28318	100.0	8	27087
9					2			9						4		2				1	3	0	2		1	28319	100.0	9	27088
10					1			1	1					2					1	1	0	0	0	1	0	28319	100.0	10	27088
11			1											1				2	6		0	2	0	0	1	28320	100.0	11	27089
12												1					2	7	2		0	0	0		1	28320	100.0	12	27089
13											2					5		4	0		0	0	0	0	0	28321	100.0	13	27090
14		2								2						2	2	1			0	4	0	0	1	28321	100.0	14	27090
15		1							1	1					1	2	3			3	3	1	0		1	28322	100.0	15	27091
16								1	4	1				5	2					1	0	0	0		1	28322	100.0	16	27091
17		2						1						1	1				5	0	0	0	0	2	1	28323	100.0	17	27092
18		1			1			1	1					4				4	9	1	0	0	0	0	1	28324	100.0	18	27093
19		2											1	2			4	3	5		0	0	1		1	28325	100.0	19	27093
20											4					1		4	2		0	1	0	1	1	28325	100.0	20	27094
21					1					3	2			12			1	3			1	0	3	2	1	28326	100.0	21	27095
22									2	1					2					1	1	1	0		0	28327	100.0	22	27095
23			1							4	2			2						2	0	0	0		0	28327	100.0	23	27096
24														1	2				1	2	0	0	0	1	0	28327	100.0	24	27096
25								1											8	0	0	0	0	1	0	28328	100.0	25	27096
26	1																1	1	3		0	0	0	0	0	28328	100.0	26	27097
27					1																0	1	0		0	28328	100.0	27	27097
28		1	1							1								2			0	1	0		0	28328	100.0	28	27097
29									1							1				0	0	1	0		0	28328	100.0	29	27097
30																				1	0	0	0		0	28328	100.0	30	27097
31														55						0	0	0	0	0	2	28331	100.0	31	27099
Sept 1								1												0	0	0	0	0	0	28331	100.0	Sept 1	27099
2		1						1													0	0	2	0	0	28331	100.0	2	27100
3		1																			0	0	0	0	0	28331	100.0	3	27100
4																					0	0	0	0	0	28331	100.0	4	27100
5																				0	0	0	0		0	28331	100.0	5	27100
6										1										1	0	0	0		0	28331	100.0	6	27100
7		1																		1	0	0	0	0	0	28331	100.0	7	27100
8																				0	0	0	0	0	0	28331	100.0	8	27100
9		1																			0	0	0	0	0	28331	100.0	9	27100
10		1																			0	0	1	0	0	28331	100.0	10	27100
11																					0	0	0	0	0	28331	100.0	11	27100
12																				0	0	0	0		0	28331	100.0	12	27100
13								1												0	0	0	0		0	28331	100.0	13	27100
14																					0	0	0	0	0	28331	100.0	14	27100
15	1																				0	0	0	0	0	28331	100.0	15	27100
16		1																			0	0	0	0	0	28331	100.0	16	27100
																							0		0				
Total	15997	21305	18457	24222	21920	20944	21619	33455	23699	31040	19657	10434	22157	49344	54483	40940	44318	42654	42988	32729	32852	23692	36778	39810	28331	28331			27100

Table 25. Anticipated Daily, Period and Weekly Commercial Chinook Salmon Catches, Copper River, 1993

File: CRKMGT93.wr1 Date: 2/24/93 Disk: SF Page 1 of 2.

1993 Chinook Management Data, Copper River Commercial Fishery
(Weekly totals shown on Saturdays, semi-weekly on Wednesdays and Saturdays)

CHINOOK		DAILY		CUMULATIVE		WEEKLY	SEMI-WEEKLY		ACTUALS	
Stat. Week	Date	Expect Percent	Expect Number	Expect Percent	Expect Number	Expect Number	Expect Number	Date	Actual Number	Actual Cum.
20	May 10	0.00	0	0.0	0			May 10		
"	11	0.00	0	0.0	0			11		
"	12	0.38	103	0.4	103		103	12		
"	13	0.98	266	1.4	369			13		
"	14	1.40	380	2.8	749			14		
"	15	2.20	597	5.0	1346	1346	1243	15		
21	16	2.56	693	7.5	2039			16	5468	5418
"	17	2.51	681	10.0	2720			17		5418
"	18	2.13	577	12.2	3297			18		5418
"	19	3.40	922	15.6	4219		2873	19	4723	10141
"	20	2.72	736	18.3	4955			20		10141
"	21	2.80	758	21.1	5713			21		10141
"	22	4.14	1121	25.2	6834	5488	2615	22	8361	18502
22	23	3.97	1076	29.2	7910			23		18502
"	24	3.60	977	32.8	8887			24		18502
"	25	4.42	1198	37.2	10085			25		18502
"	26	3.82	1037	41.0	11122		4288	26	7519	26021
"	27	3.72	1009	44.8	12131			27		26021
"	28	3.35	907	48.1	13037			28		26021
"	29	4.99	1351	53.1	14388	7554	3267	29	6755	32776
23	30	3.77	1022	56.9	15411			30		32776
"	31	3.47	939	60.3	16350			31		32776
"	June 1	3.16	857	63.5	17207			June 1	3055	35831
"	2	3.18	861	66.7	18068		3680	2		35831
"	3	3.14	850	69.8	18918			3		35831
"	4	2.47	670	72.3	19588			4		35831
"	5	2.39	649	74.7	20237	5849	2169	5		35831
24	6	3.01	816	77.7	21053			6		35831
"	7	3.00	812	80.7	21865			7		35831
"	8	2.38	645	83.1	22510			8	1737	37568
"	9	1.95	527	85.0	23037		2800	9		37568
"	10	1.94	525	86.9	23562			10		37568
"	11	1.85	500	88.8	24062			11		37568
"	12	1.38	374	90.2	24436	4199	1399	12	902	38470
25	13	1.21	329	91.4	24765			13		38470
"	14	1.32	357	92.7	25122			14		38470
"	15	1.16	316	93.9	25438			15	341	38811
"	16	0.92	250	94.8	25688		1252	16		38811
"	17	0.77	210	95.6	25898			17		38811
"	18	0.61	164	96.2	26062			18		38811
"	19	0.41	110	96.6	26172	1736	484	19	517	39328
26	20	0.66	179	97.2	26352			20		39328
"	21	0.57	155	97.8	26507			21		39328
"	22	0.41	110	98.2	26617			22		39328
"	23	0.31	85	98.5	26702		529	23	195	39523
"	24	0.27	73	98.8	26774			24		39523
"	25	0.18	47	99.0	26822			25		39523
"	26	0.12	33	99.1	26855	682	153	26	134	39657
27	27	0.10	27	99.2	26881			27		39657
"	28	0.08	21	99.3	26902			28		39657
"	29	0.11	29	99.4	26931			29		39657
"	30	0.08	22	99.5	26953		98	30	35	39692
"	July 1	0.08	21	99.5	26974			July 1		39692
"	2	0.05	15	99.6	26989			2		39692
"	3	0.05	12	99.6	27001	147	48	3	9	39701
28	4	0.02	6	99.7	27008			4		39701
"	5	0.03	8	99.7	27016			5		39701
"	6	0.03	7	99.7	27024			6	12	39713
"	7	0.02	6	99.7	27029		28	7		39713
"	8	0.02	5	99.8	27034			8		39713
"	9	0.02	6	99.8	27040			9		39713
"	10	0.02	5	99.8	27045	44	16	10	22	39735
29	11	0.01	4	99.8	27049			11		39735
"	12	0.01	2	99.8	27050			12		39735
"	13	0.01	3	99.8	27053			13	5	39740
"	14	0.01	4	99.8	27057		12	14		39740
"	15	0.01	2	99.9	27060			15		39740

-Continued-

Table 25. (Page 2 of 2)

File: CRKMGT93.wr1 Date: 2/24/93 Disk: SF Page 2 of 2.

1993 Chinook Management Data, Copper River Commercial Fishery
(Weekly totals shown on Saturdays, semi-weekly on Wednesdays and Saturdays)

CHINOOK		DAILY		CUMULATIVE		WEEKLY	SEMI-WEEKLY		ACTUALS	
Stat. Week	Date	Expect Percent	Expect Number	Expect Percent	Expect Number	Expect Number	Expect Number	Date	Actual Number	Actual Cum.
"	16	0.01	2	99.9	27061			16		39740
"	17	0.01	3	99.9	27064	19	7	17	7	39747
30	18	0.02	4	99.9	27068			18		39747
"	19	0.01	2	99.9	27070			19		39747
"	20	0.01	2	99.9	27072			20		39747
"	21	0.01	2	99.9	27073		9	21		39747
"	22	0.00	1	99.9	27074			22	25	39772
"	23	0.00	0	99.9	27075			23		39772
"	24	0.00	1	99.9	27075	12	2	24		39772
31	25	0.01	1	99.9	27077			25		39772
"	26	0.00	1	99.9	27078			26		39772
"	27	0.00	1	99.9	27079			27		39772
"	28	0.00	1	99.9	27080		4	28	2	39774
"	29	0.00	1	99.9	27081			29		39774
"	30	0.00	1	99.9	27081			30		39774
"	31	0.00	1	99.9	27082	7	3	31	0	39774
32	Aug. 1	0.00	1	99.9	27083			Aug. 1		39774
"	2	0.00	0	99.9	27083			2		39774
"	3	0.00	0	99.9	27084			3		39774
"	4	0.00	0	99.9	27084		2	4		39774
"	5	0.00	0	99.9	27084			5		39774
"	6	0.00	1	99.9	27085			6		39774
"	7	0.00	1	99.9	27086	4	2	7		39774
33	8	0.00	1	100.0	27087			8		39774
"	9	0.00	1	100.0	27088			9		39774
"	10	0.00	0	100.0	27088			10		39774
"	11	0.00	0	100.0	27089		3	11		39774
"	12	0.00	0	100.0	27089			12		39774
"	13	0.00	0	100.0	27090			13		39774
"	14	0.00	1	100.0	27090	4	1	14		39774
34	15	0.00	1	100.0	27091			15		39774
"	16	0.00	1	100.0	27091			16		39774
"	17	0.00	0	100.0	27092			17		39774
"	18	0.00	1	100.0	27093		3	18		39774
"	19	0.00	1	100.0	27093			19		39774
"	20	0.00	1	100.0	27094			20		39774
"	21	0.00	1	100.0	27095	5	2	21		39774
35	22	0.00	0	100.0	27095			22		39774
"	23	0.00	0	100.0	27096			23		39774
"	24	0.00	0	100.0	27096			24		39774
"	25	0.00	0	100.0	27096		1	25		39774
"	26	0.00	0	100.0	27097			26		39774
"	27	0.00	0	100.0	27097			27		39774
"	28	0.00	0	100.0	27097	2	1	28		39774
36	29	0.00	0	100.0	27097			29		39774
"	30	0.00	0	100.0	27097			30		39774
"	31	0.01	2	100.0	27099			31		39774
"	Sept. 1	0.00	0	100.0	27099		2	Sept. 1		39774
"	2	0.00	0	100.0	27100			2		39774
"	3	0.00	0	100.0	27100			3		39774
"	4	0.00	0	100.0	27100	3	0	4		39774
37	5	0.00	0	100.0	27100			5		39774
"	6	0.00	0	100.0	27100			6		39774
"	7	0.00	0	100.0	27100			7		39774
"	8	0.00	0	100.0	27100		0	8		39774
"	9	0.00	0	100.0	27100			9		39774
"	10	0.00	0	100.0	27100			10		39774
"	11	0.00	0	100.0	27100	0	0	11		39774
38	12	0.00	0	100.0	27100			12		39774
"	13	0.00	0	100.0	27100			13		39774
"	14	0.00	0	100.0	27100			14		39774
"	15	0.00	0	100.0	27100			15		39774
"	16	0.00	0	100.0	27100			16		39774
"	17	0.00	0	100.0	27100			17		39774
"	18	0.00	0	100.0	27100	0	0	18		39774
39	19	0.00	0	100.0	27100			19		39774
"	20	0.00	0	100.0	27100			20		39774
"	21	0.00	0	100.0	27100			21		39774
"	22	0.00	0	100.0	27100			22		39774
"	23	0.00	0	100.0	27100			23		39774
"	24	0.00	0	100.0	27100			24		39774
"	25	0.00	0	100.0	27100	0	0	25		39774
40	26	0.00	0	100.0	27100			26		39774
"	27	0.00	0	100.0	27100			27		39774
"	28	0.00	0	100.0	27100			28		39774
"	29	0.00	0	100.0	27100			29		39774
"	30	0.00	0	100.0	27100	0	0	30		39774
		100.00	27100			27100	27100			
					27100					

APPENDIX

MEMORANDUM
Dept. of Fish and Game

STATE OF ALASKA
Sport Fish Division - RTS

To: Ken Roberson
Gulkana Manager
FRED - Glennallen

Date: November 3, 1992

From: James J. Hasbrouck JJH
Biometrician
Sport Fish RTS - Anchorage

RE: Copper River sockeye forecast

Enclosed is a summary of analyses conducted to predict sockeye salmon returns to the Copper River. As we previously discussed, this represents only a portion of the entire process of forecasting returns to the River. I used number of spawners to model: 1) number of returning sockeye, 2) number of returning sockeye per spawner, and 3) number of returning sockeye per [spawner]^2.

I initially fit a nonparametric smoothed curve to each relationship and then conducted an analysis to determine if a transformation of each response variable provided an adequate model. Next I examined diagnostics and residuals to see if the model was appropriate, an extremely important exercise in forecasting salmon returns (H. Geiger, ADFG Division of Comm. Fish., pers. comm.).

Number of returning sockeye required no transformation. The number of spawning sockeye has a significant linear relationship with number of returning sockeye, but the low R^2 and residual diagnostics indicated this model was likely not a good predictor. Number of returning fish per spawner was adequately fit by 3 power transformations, including the Ricker curve, but again these models may not be adequate prediction tools. Although number of returning sockeye per [spawner]^2 seemed a rather strange response variable, a natural log transformation provided a fairly good fit of the model:

$$Ln\left[\frac{Return}{Spawner^2}\right] = 3.5752 - 0.000003661(Number\ of\ Spawners).$$

These results represent a cursory, preliminary examination of the data. I hope this analysis provides you with some insights and a good basis for future attempts in modeling returns to the Copper River. If you have any questions please call me at 267-2124. Good luck!

cc w/o attachments: Tim McDaniel
Linda Brannian

cc w/ attachments: Hal Geiger

You sent data collected since 1966 on number of sockeye salmon spawning in the Copper River and the subsequent number of returns. You mentioned that a large proportion of the sockeye return as 5 year olds; other age groups compose only a small portion of the return during any year. Specifically, you requested I fit a model to the relationships of return (RET), return/spawner (RPS), and return/spawner^2 (RPSS) as a function of the number of spawners. For clarity RPSS was multiplied by 10^6.

Exploratory data analysis using loess, a nonparametric smoothing technique, indicated RET increased roughly linearly with increasing number of spawners except for a "blip" between 250-400K spawners (Fig. 1). Both RPS (Fig. 2) and RPSS (Fig. 3) appeared to be a declining power function, again except for a "blip" between 250-400K spawners. Therefore, modeling RPS and RPSS may require transforming these variables to fit assumptions of a normal theory regression approach.

The next step was determining if any transformation of the response variables provided models which adequately fit the data. This involved applying a family of Box-Cox power transformations (Neter et al. 1990:149) for each relationship to see which transformation minimized the error sum of squares. This analysis indicated that RET needed no transformation (Table 1; $\lambda = 1$). RPS and RPSS may be modeled using 3 different transformations including a natural log transformation ($\lambda = 0$). Note the log transformation of RPS leads to the standard Ricker model.

I performed the various transformations to each of the response variables and examined model diagnostics. These diagnostics assess how adequately the model fits the data and meets assumptions (e.g., residuals normally distributed with constant variance, no trends in the residuals, etc.). Diagnostics may show potential trends or influential data points, both of which may require closer scrutiny. Diagnostics of RET showed: 1) A low R^2 (= 0.25) such that, although number of spawners explains a significant amount of variation in RET, there is still much unexplained variation. This leaves much room for error in using such a model as a prediction tool. 2) The residuals did not have a constant variance and seemed to be autocorrelated (Fig. 4). The low R^2 and autocorrelated residuals (Fig. 5) with a nonconstant variance were also apparent for the ln(RPS) model. The model of ln(RPSS) was highly significant and had a "good" $R^2 = 0.75$. Residual plots basically looked OK but the residuals still did not have a constant variance and appeared to be autocorrelated, especially after 1970 (Fig. 6). The natural log transformation appeared better than the inverse square root transformation because the latter also suffered from non-normally distributed residuals.

Based on results of the power transformation analysis and examination of model diagnostics, the "best" model for each response variable was:

$$RET = 648{,}809 + 1.319(SPAWNERS), \qquad (1)$$

$$Ln(RPS) = 1.5767 - 0.000001211(SPAWNERS), \quad (2)$$

and

$$Ln(RPSS) = 3.5752 - 0.000003661(SPAWNERS). \quad (3)$$

Each model was graphed along with the 95% prediction interval. The vertical dashed line at the estimated number of spawners in 1987 shows the predicted RET (Fig. 7), RPS (Fig. 8), and RPSS (Fig. 9) from this brood year.

These results make me question whether Copper River sockeye returns can be adequately predicted using a linear model. Although loess smoothing indicated the number of spawners may be linearly related to each of the response variables examined, further analyses found spawners did not provide an adequate predictive linear model for either RET or RPS. The high significance and large R^2 of the RPSS model may be a spurious result because number of spawners is incorporated in both the independent and response variables. There also appears to be a high degree of autocorrelation, which is perhaps not surprising. Future efforts may wish to explore nonlinear, time series or generalized additive models to forecast sockeye returns.

Literature Cited:

Neter, J., W. Wasserman, and M. H. Kutner. 1990. Applied linear statistical models. 3rd ed. Irwin Publ., Homewood, IL.

Table 1. Error sum of squares from Box-Cox transformations of 3 dependent variables as a function of number of spawners for modeling Copper River sockeye returns.

	Dependent variable		
Lambda[a]	Return[b]	Return/Spawner	Return/(Spawner^2)
-3.0		115.71	2621.99
-2.5		72.60	1260.01
-2.0		48.13	629.32
-1.5		34.16	331.64
-1.0		26.37	**192.01**
-0.5	4.10	**22.51**	**136.57**
0.0	3.48	**21.56**	**148.08**
0.5	**3.18**	**23.31**	276.24
1.0	**3.13**	28.38	759.97
1.5	**3.29**	38.50	2569.95
2.0	3.68	57.29	9761.47
2.5	4.34	92.02	39963.63
3.0	5.35	157.30	

[a] Value of Box-Cox power transformation parameter.

[b] Error sum of squares values are X 10^{12}.

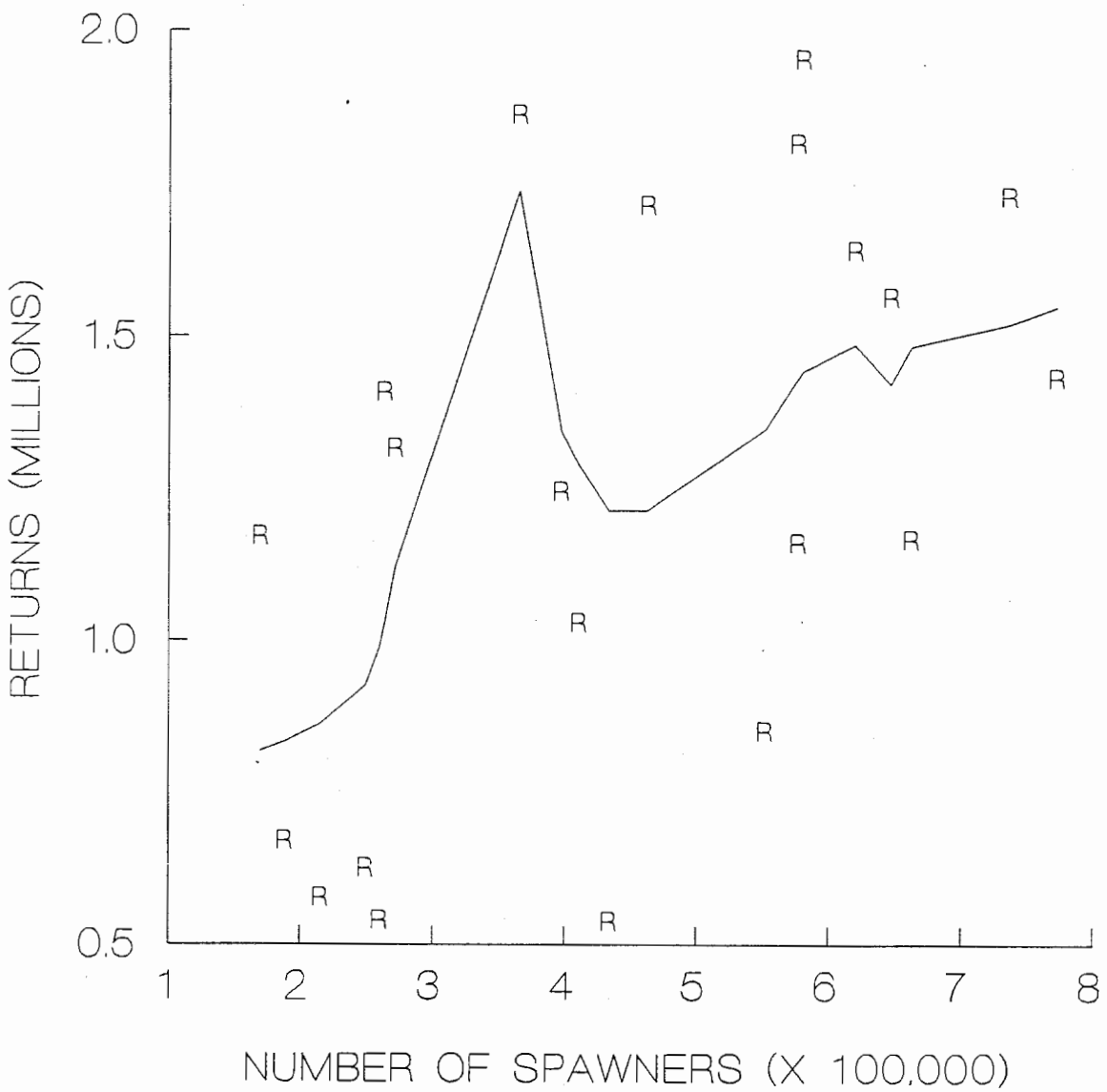

Fig. 1. Loess (F = 0.4) smooth relating number of returning sockeye salmon to the Copper River and number of spawning salmon.

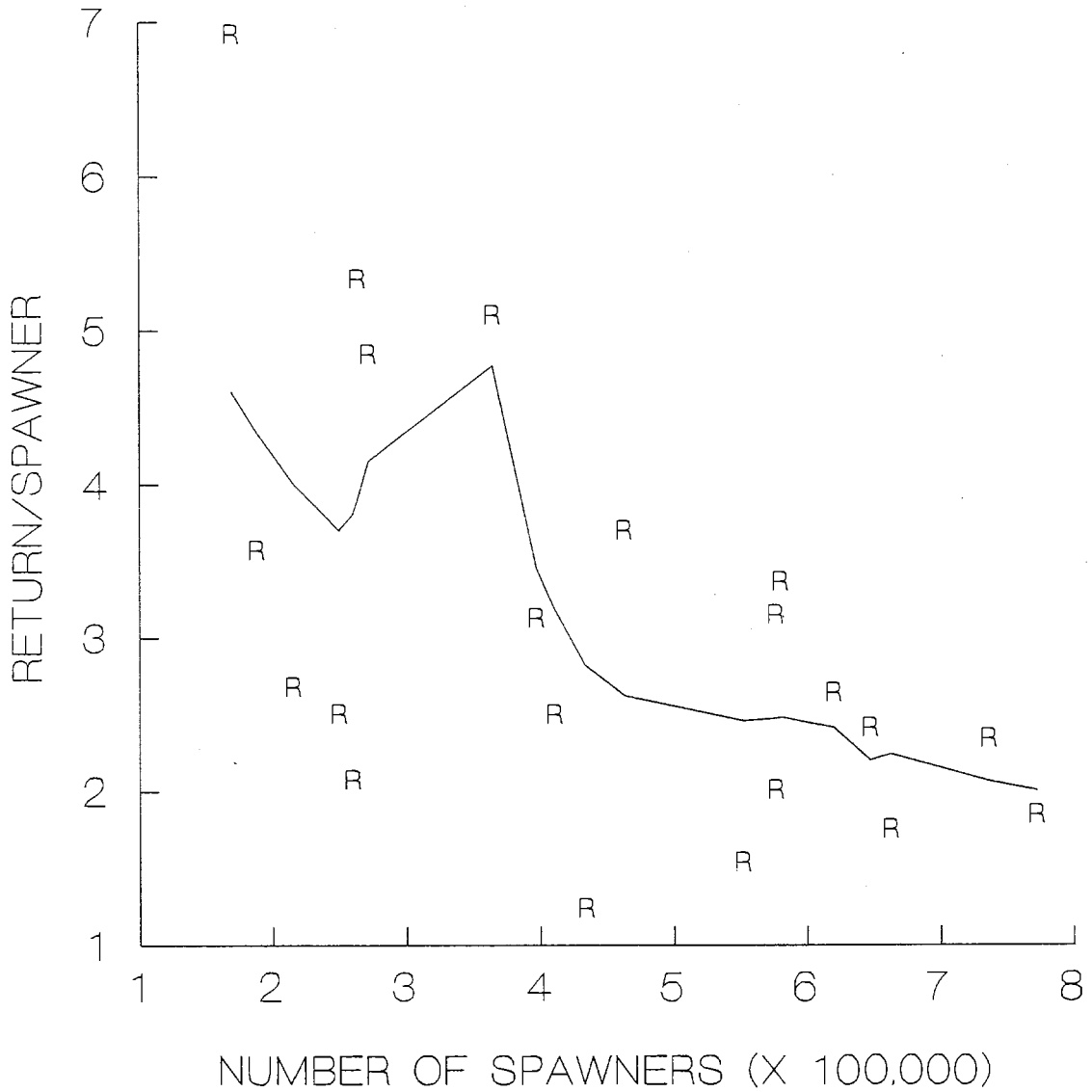

Fig. 2. Loess (F = 0.4) smooth relating number of returning sockeye salmon per spawner to the Copper River and number of spawning salmon.

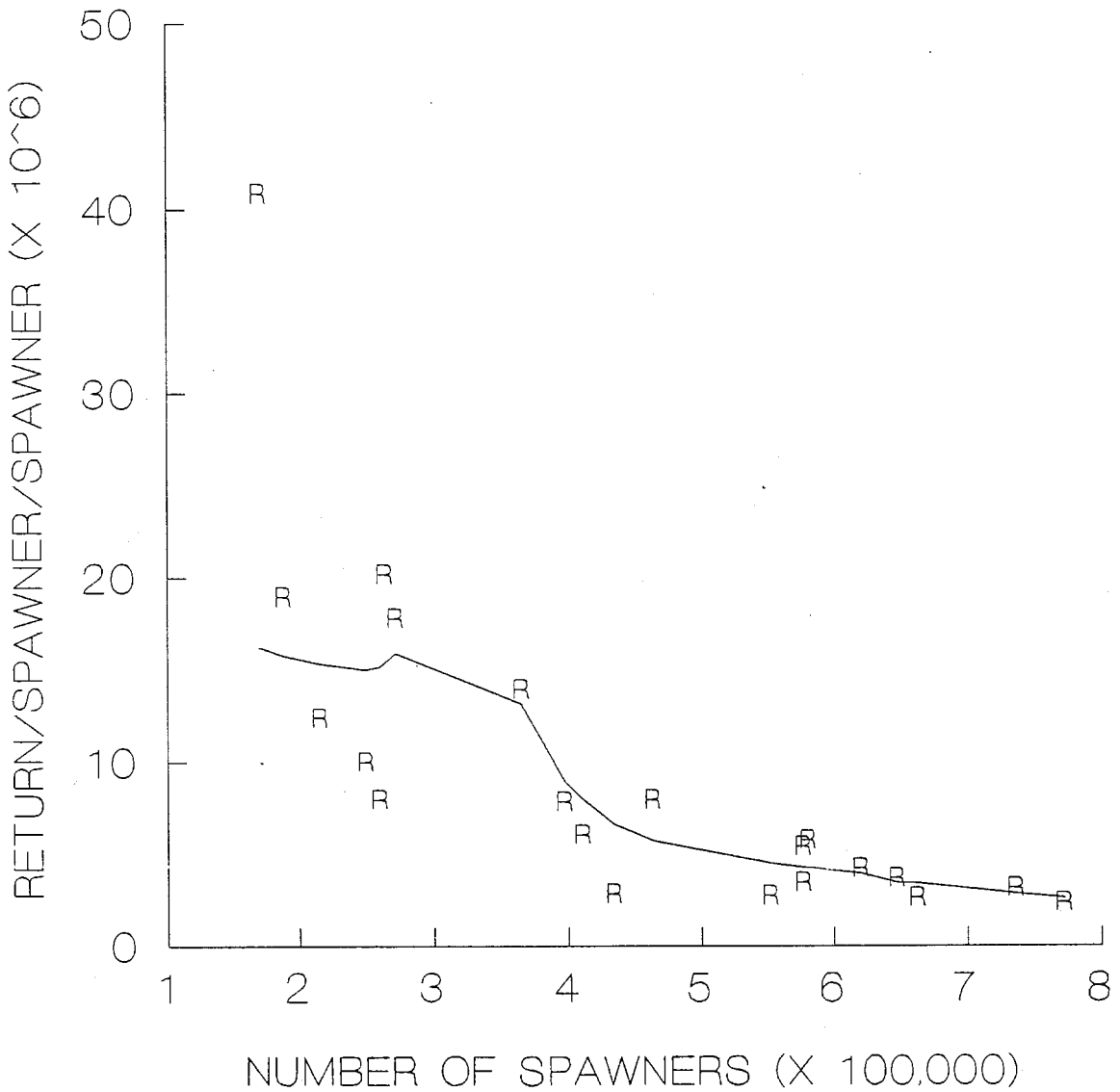

Fig. 3. Loess (F = 0.4) smooth relating number of returning sockeye salmon per spawner per spawner to the Copper River and number of spawning salmon.

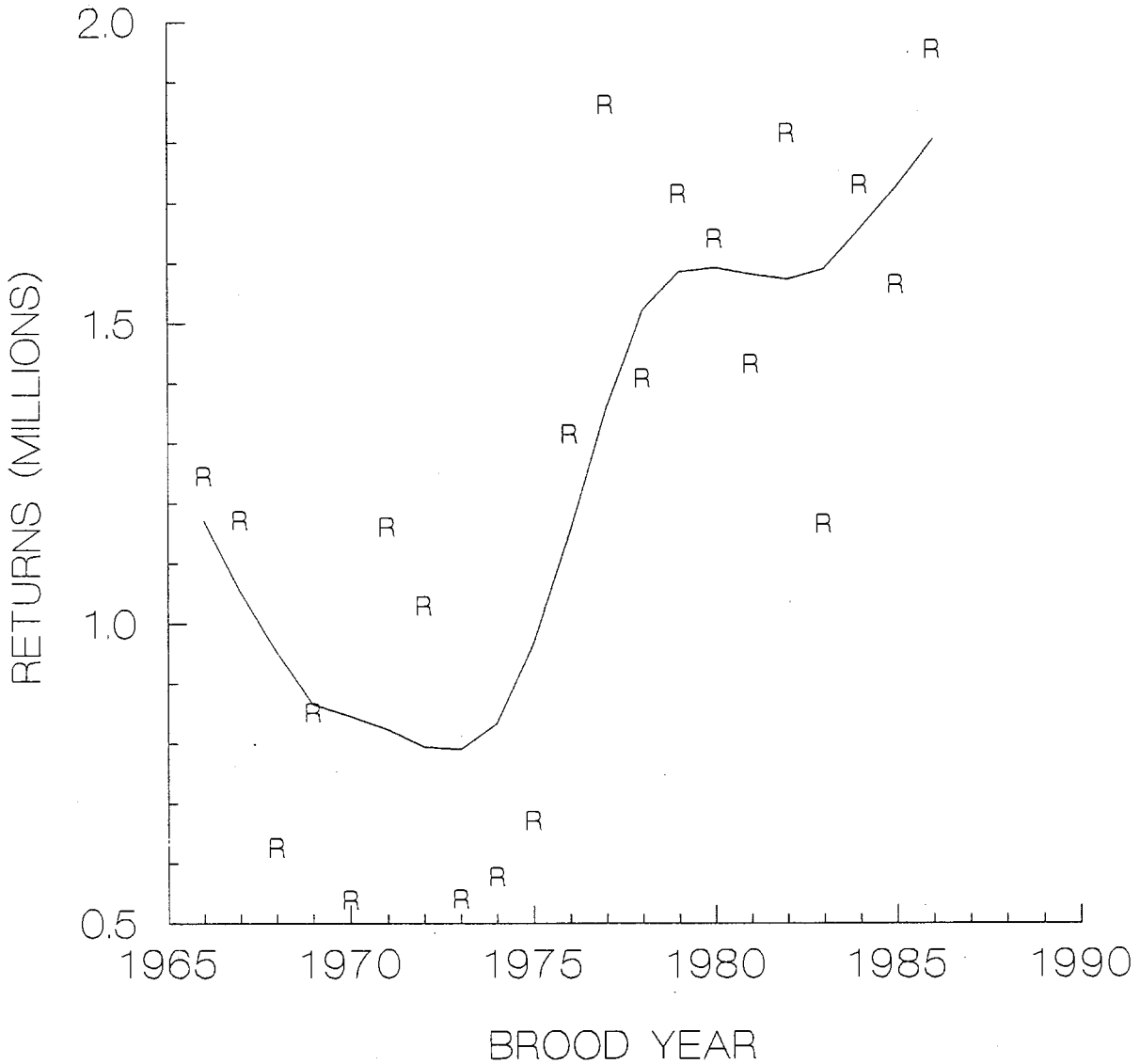

Fig. 4. Loess (F = 0.4) smooth relating number of returning sockeye salmon to the Copper River and brood year.

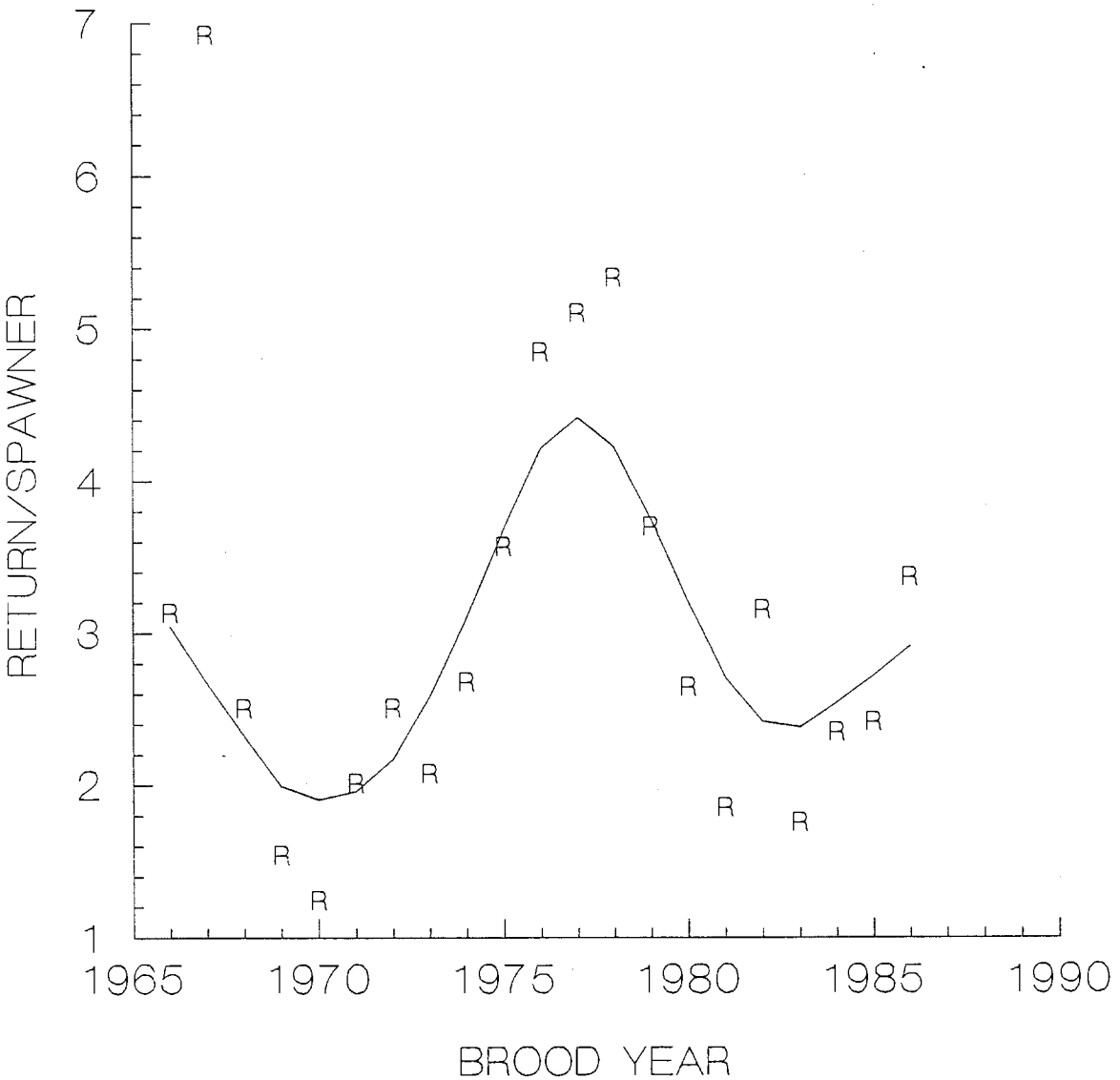

Fig. 5. Loess (F = 0.4) smooth relating number of returning sockeye salmon per spawner to the Copper River and brood year.

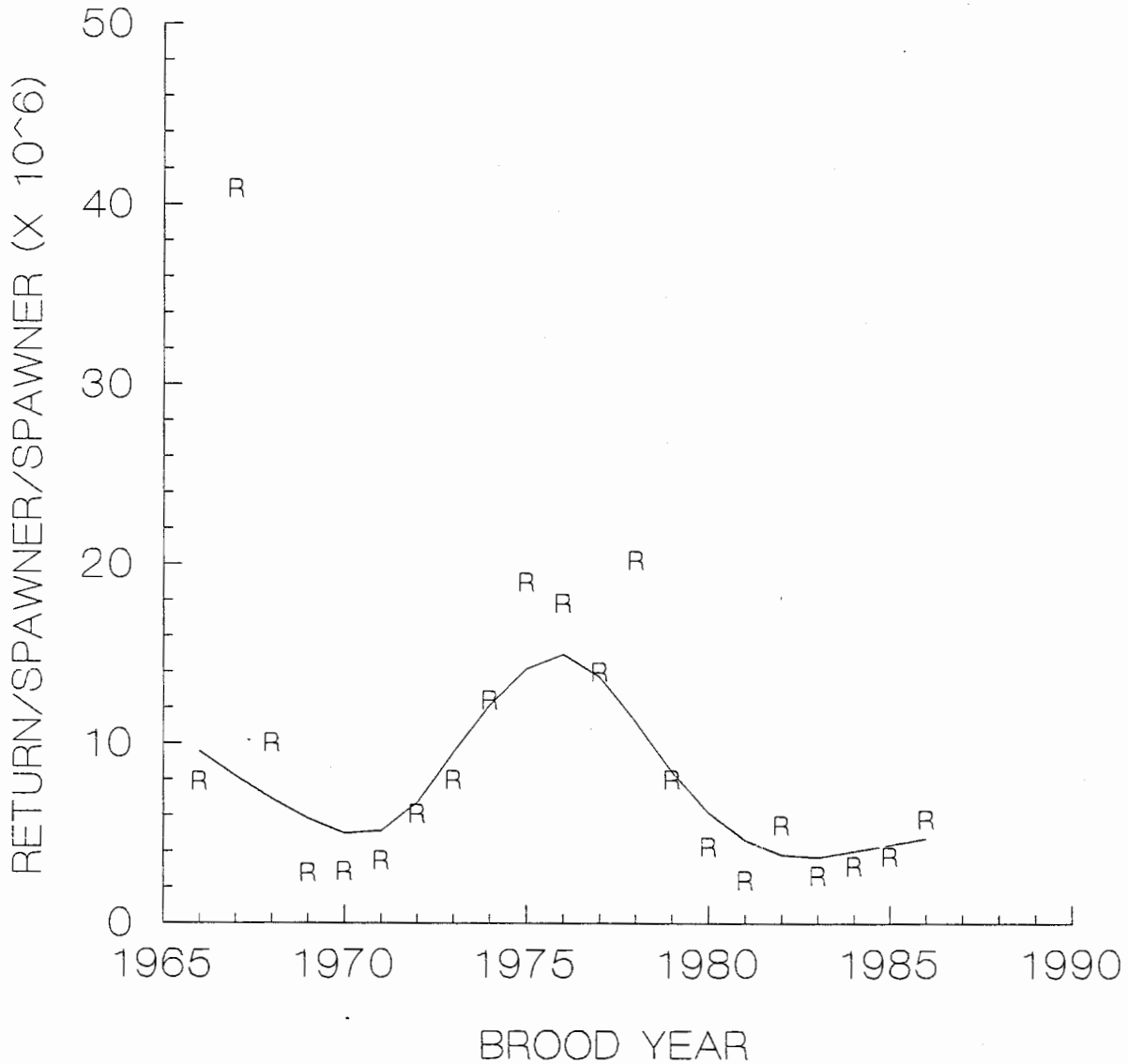

Fig. 6. Loess (F = 0.4) smooth relating number of returning sockeye salmon per spawner per spawner to the Copper River and brood year.

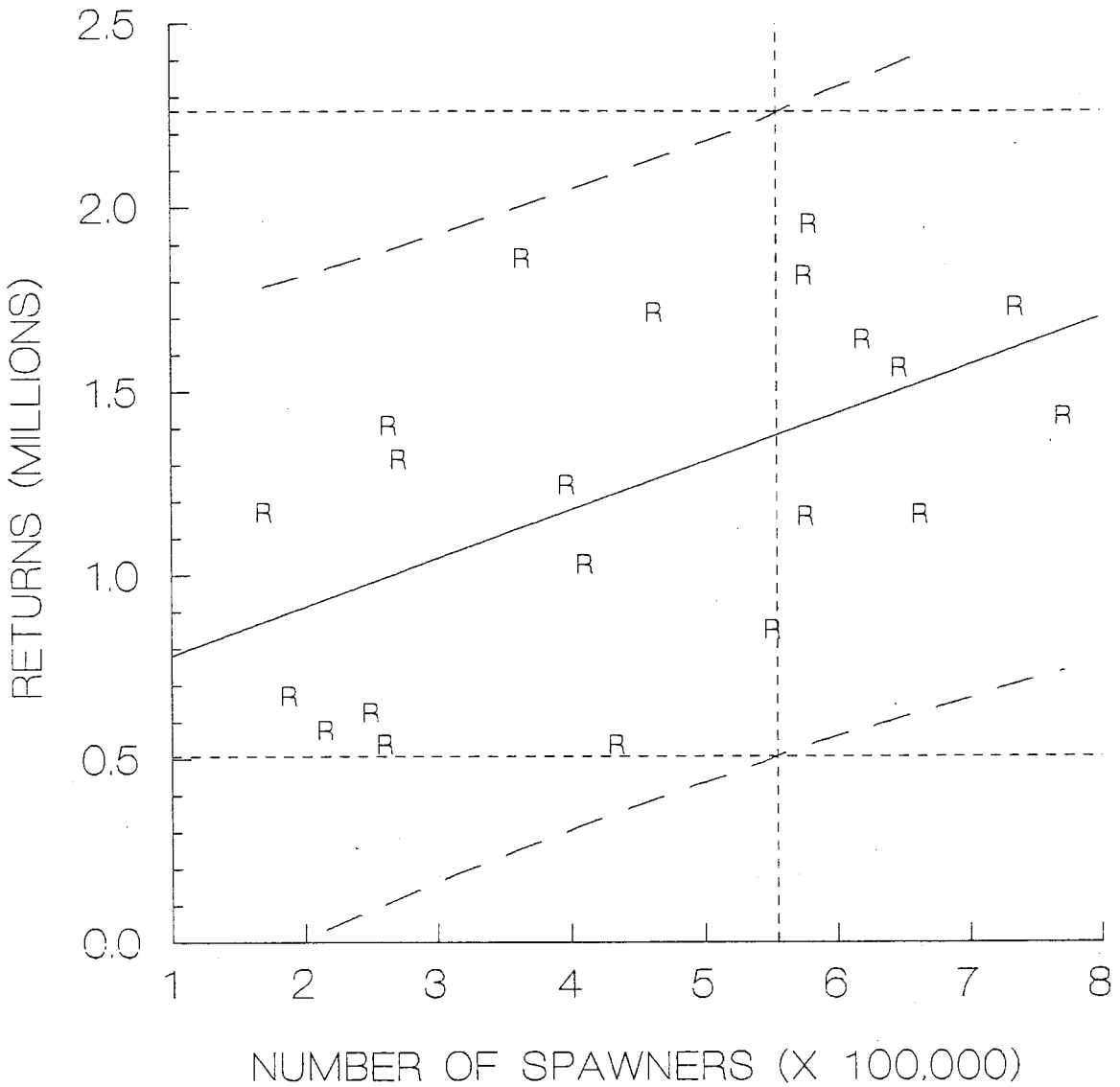

Fig. 7. Linear model with 95% prediction intervals relating number of returning sockeye salmon to the Copper River and number of spawners. Vertical dashed line represents estimated number of spawners in 1987.

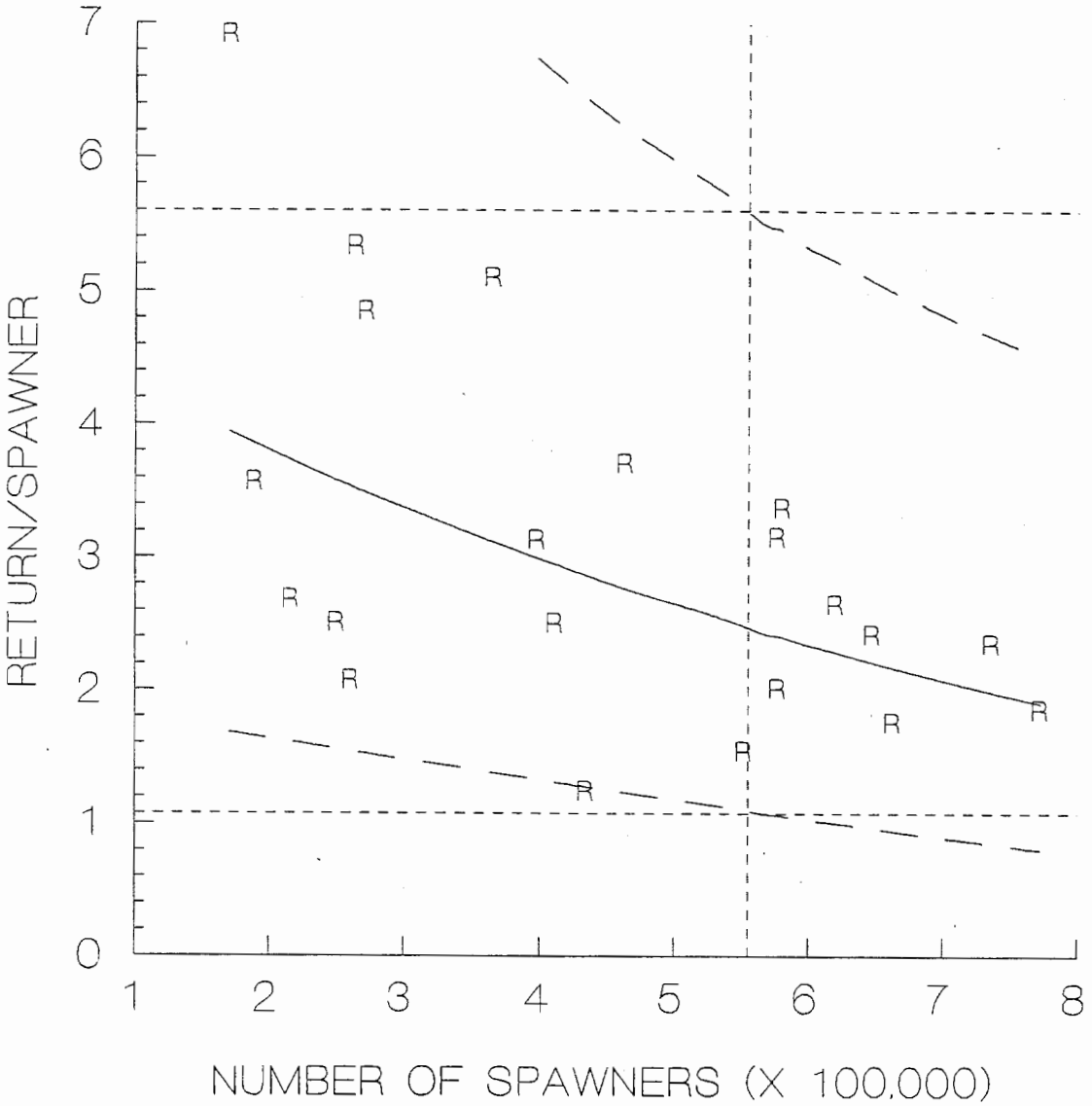

Fig. 8. Linear model with 95% prediction intervals relating number of returning sockeye salmon per spawner to the Copper River and number of spawners. Vertical dashed line represents estimated number of spawners in 1987.

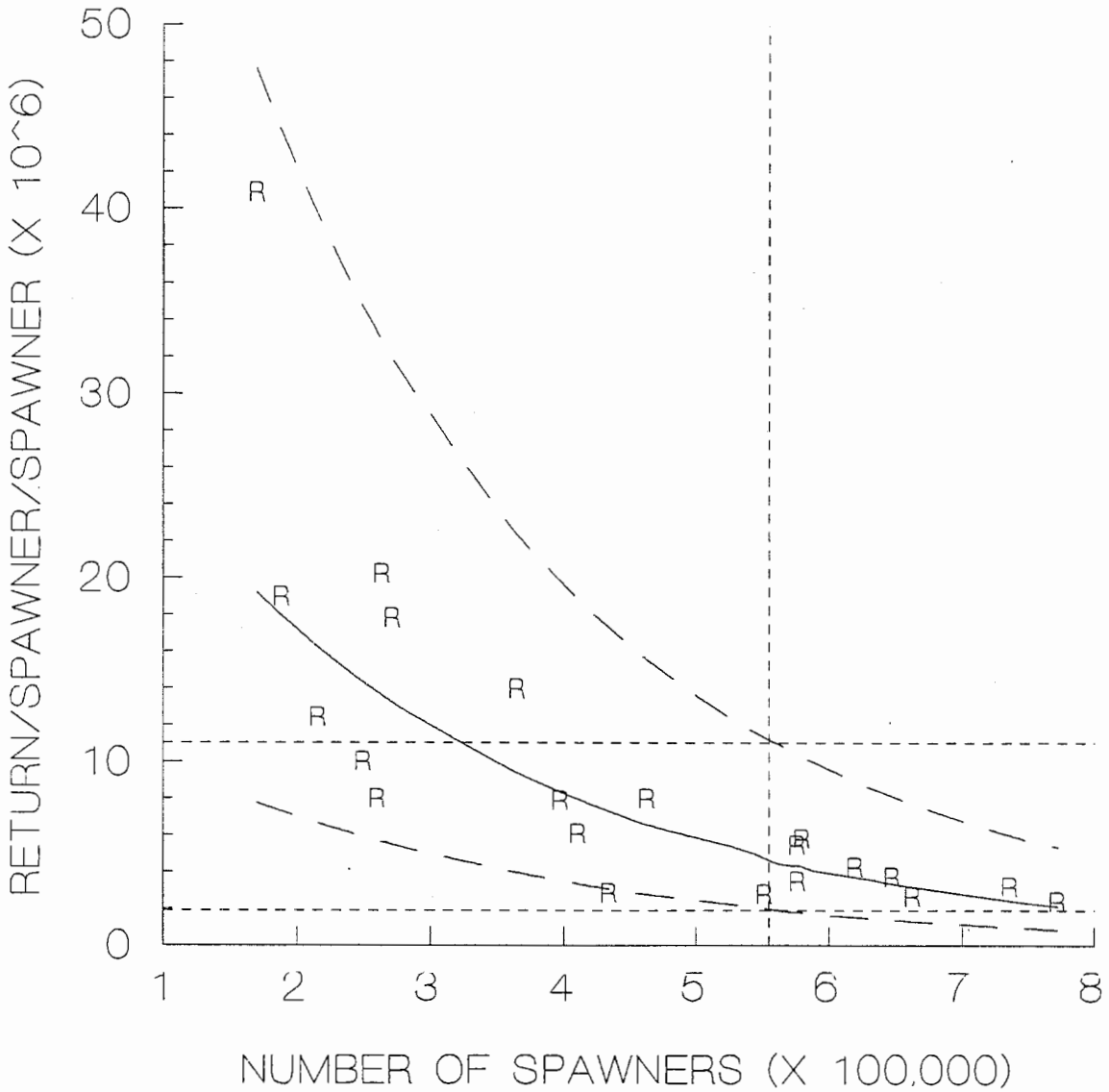

Fig. 9. Linear model with 95% prediction intervals relating number of returning sockeye salmon per spawner per spawner to the Copper River and number of spawners. Vertical dashed line represents estimated number of spawners in 1987.