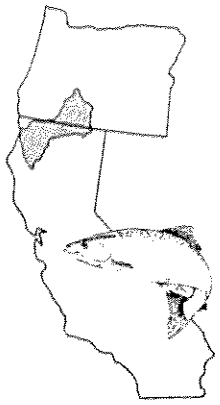

Klamath Fishery Management Council

Working to Restore Anadromous Fish in the Klamath River Basin

P.O. Box 1006, Yreka, California 96097

January 26, 1990

California Commercial Salmon Fishing Industry

California Department of Fish and Game

California Offshore Sport Fishery

Hoopa Valley Business Council

Klamath In-River Sport Fishery

National Marine Fisheries Service

Non-Hoopa Indian Representative

Oregon Commercial Salmon Fishing Industry

Oregon Department of Fish and Wildlife

Pacific Fishery Management Council

U.S. Department of the Interior

Memorandum

TO: Klamath Fishery Management Council

FROM: Ron Iverson Ron Iverson

SUBJECT: Draft minutes of the Management Council meeting held 5-6 February, 1990.

Attached for your review are minutes of the subject meeting held in Brookings, Oregon. Each motion passed, assignment made, or other decision point is marked with a line of asterisks. Included are several handouts provided at the meeting.

Attachments

cc: Interested parties

NOTES ON THE MEETING
OF THE
KLAMATH FISHERY MANAGEMENT COUNCIL
HELD 5-6 FEBRUARY 1990
IN BROOKINGS, OREGON

5 February

The meeting was convened at 9 a.m., with a quorum of the Council present. The following alternates attended: Danny Jordan, for Lyle Marshall; Craig Tuss, for Lisle Reed; and Mel Odemar, for Spike Naylor (see attendance roster, Attachment 1).

Correction and approval of minutes and agenda.

The following additions were requested to the printed agenda (Attachment 2):

- Presentation by Jana Doerr, aide to Congressman DeFazio.
- Discussion of ocean and inriver harvester meetings.
- Administrative discussion.

Minutes of the meeting of 4-5 January 1990 were approved without change.

Report on planning activities of the Klamath River Basin Fisheries Task Force (Bingham).

The Task Force met 30-31 January to review a rough draft of the long-range plan for the Restoration Program. Task Force comments will be provided to the planning team, to be incorporated into a second draft to be presented at the Task Force meeting scheduled for April 18 in Redding. There has been no public review of the draft plan to date. The Restoration Program plan has no harvest management element, as the Task Force is looking to the Klamath Council for planning in that area. A joint meeting to promote consistency between the restoration and harvest management plans may be productive, when the two plans are further developed.

Review of 1989 fisheries (Baracco).

Alan provided a handout on chinook harvests in the Klamath Management Zone (KMZ) (Attachment 3). Highlights of this information included:

- "Rogue Area" fisheries took place within 6 miles of shore in the vicinity of the mouth of Rogue River. "General Area" fisheries took place throughout the KMZ.
- Each of the troll fisheries displayed had a quota, but only the the September Rogue fishery harvested the quota amounts. Unharvested fish

numbers allowed under quotas were rolled into quotas for subsequent fisheries.

- Contribution rate of Klamath chinook varied among these fisheries: 20-23% in Rogue fisheries; 40% in the General Area fishery in June, about 23% in August; Klamath contribution rate to the recreational fishery ranged, over time, about 15-23% -- higher than expected. Eel Area troll fishery caught very few Klamath chinook.

- (Bingham): Suggest you tabulate Klamath contribution rate along with overall chinook catches.

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- All estimates of catch through August are counted toward 1989 quotas and allocations. September/October harvests are rolled over into 1990 accounting, with a reduction for winter mortality to convert the catches to "summer equivalents". About 1600 summer equivalents are carried into 1990 for ocean chinook accounting purposes.

- 1989 chinook harvests were about 1/3 the level of 1988 harvest, in California.

Next, Alan provided estimates of in-river chinook harvests and spawning runs in Klamath basin (Attachment 4). Information provided includes:

- Hatchery returns were adequate...about 21,000 adults.

- Estimated natural spawning was low...about 46,000 adults, mostly in Trinity River.

- Angler and net harvests were below allocations.

- Grilse return of 9700 is quite small.

Reports on harvest monitoring and law enforcement.

California Department of Fish and Game harvest regulation (Brian Replogle).

- Biggest enforcement issue was the very successful KMZ chinook fishery...lots of violations reported.

- State law allows only one daily bag limit of salmon in possession. This is frequently violated...not a very practical regulation. The Department would like to see the possession limit increased.

- Other types of violations:purchase of multiple one-day licenses or multiple punch cards, or punch cards destroyed and replaced; sport anglers operating unlicensed charter boats.

- Commercial troll seasons in KMZ were so brief that little enforcement effort was required. Found some confusion over daily limit requirement.

- o Salmon fishing in-river was mediocre, so not many opportunities to violate limits.

- o CDFG had 18 wardens working the coast, Shelter Cove and north, during the height of fishing, plus some people temporarily moved down from upriver areas. Most effort was dockside, checking bag limit compliance. At its peak, the sport fishery overwhelmed law enforcement, so that only a small portion of anglers were checked. At more normal levels of effort and landing, nearly all anglers were contacted.

- o CDFG had wardens on Klamath River every day during sport fishing, mostly in plainclothes.

- o Wardens do not extend enforcement to fishing camps, unless there is probable cause to suspect a violation. In that case, an angler's camp trailer could be searched.

- o Illegal charter operators were arrested through a covert investigation. Cases were prosecuted but local jury did not convict. Frank Warrens suggested Federal court prosecution for failure to be licensed by the Coast Guard as a passenger vessel.

- o Local county DAs are reluctant to prosecute possession limit violations, saying regulations are confusing. Annual bag limits and possession limits would be helpful. In 1990, ocean anglers will be able to possess 8 fish, so regulations are liberalized.

- o About 300-400 ocean violations were prosecuted. One study says that about 7% of ocean fishing violations are reported.

- o Troll fishery violations included use of illegal hooks, high grading related to the 20 fish daily limit, and swapping fish between boats.

- o Troll - caught subsistence salmon - those taken home for consumption - are accounted for as thoroughly as marketed fish. A transport permit is needed to take fish home from the boat. Covert sales of these fish by trollers tend to be reported by neighbors.

<u>California Department of Fish and Game harvest monitoring</u> (Baracco).

<u>Ocean harvest monitoring</u>.

Alan provided a handout (Attachment 5) describing how ocean salmon catch and coded wire tag (CWT) statistics are estimated for California sport and commercial fisheries. Stratified random sampling of ports north of Santa Barbara yields the estimates. Sampling is stratified by port, time period, weekend/weekday/holiday for sport angling, and day boat/trip boat for troll landings. Sampling fraction goal is 20% of commercial salmon landings, and 20% of salmon anglers. Information collected by observing fish includes

species composition, average weight, CWT data, and skiff harvest numbers. Charter boat harvest and commercial harvest are estimated from logbook records and buyer fish receipts.

The last page of Attachment 5 shows 95% confidence intervals around harvest estimates. The tightest confidence intervals tend to be for time/area cells with large harvests.

Sampling fraction for commercial landings in San Francisco and Monterey tends to be below the 20% goal, on account of poor cooperation from some fish buyers. Numbers of fish observed are adequate for calculating average weight, but bigger samples would be desirable for recovery of CWTs.

In-river harvest monitoring (see Attachments 5.1 and 5.2).

CDFG uses two methods to estimate angler harvest of salmon in Klamath River and tributaries: A random creel census in the estuary and lower river upstream to Johnsons, and a mark/recovery estimate using spaghetti tags implanted at an estuary seining site. Tags have a $10 reward for return. Harvest in the upper Klamath River is estimated by:

> Upper river harvest = upriver tag return/creel census area tag return x creel census area harvest estimate.

Trinity River harvest is estimated by a mark/recapture estimate, with reward tags implanted at the Willow Creek weir.

Ocean harvest monitoring by Oregon Department of Fish and Wildlife (Martin).

Jim distributed Attachment 6, describing a monitoring system similar to that of California in terms of stratification of sampling, and 20% sampling fraction goal. Data is normally compiled weekly, but daily monitoring of landings at key buyer stations is done for fisheries harvesting toward quotas.

In practice, Oregon samples about 43% of sport catch, because of high level of sample stratification. Troll fishery sampling goal is generally met, but was not met at Charleston in 1989 because of heavy landings and related factors.

Oregon tries to sample KMZ fisheries at high rates, because they transpire quickly.

Other Oregon harvest monitoring issues:

- Need to get more accurate information, for interpretation of CWT data, on where fish were caught at sea. Trollers sometimes provide misleading information.
- Regulation of transporting fish in/out of the KMZ could be simplified by moving the north boundary to Humbug Mountain.
- Shaker incidence has increased with expansion of the Coos Bay fishery.

- o Brookings has become the the top Oregon sport angling port.

- o Troll subsistence fish are tracked as in California...no reason to think significant numbers of these fish are unaccounted for.

- o Q: How close are estimates derived from the "soft" data, from key buyers, to estimates from normal sampling?
  A: Pretty close. Most fishery closures in Oregon are based on soft data. (Baracco): California has a similar daily data collection system for quota monitoring...estimates derived are quite close to normal estimates.

Enforcement of ocean harvest regulations in Oregon (Oregon State Policeman).

Sport angling enforcement effort emphasizes Brookings. Oregon saw KMZ sport angling violations similar to those reported by California, plus some violations of the yearly limit. Oregon samples landings in ports, and patrols offshore. There are five enforcement officers on the south coast, covering angling, hunting, and the commercial fishery.

National Marine Fisheries Service law enforcement (Fullerton).

NMFS/Southwest Region had five agents enforcing salmon regulations from Monterey north, in 1989. Most of this effort shifted to undercover observation of high seas gillnetting after July. Citations for violation of Federal or State regulations totalled 79.

Q: Findings on gillnet impacts?
A: Most impact was on northern stocks of salmon. Few steelhead were observed, and no California chinook CWTs were observed.

Regulation and monitoring of harvest by Hoopa Tribe (Jordan).

Danny provided a handout (Attachment 7) summarizing methods of harvest estimate used on the Hoopa Square, estimated harvests for recent years, and statistics on fishing regulation enforcement. The memo of understanding between the Tribe and State for mutual enforcement of regulations has been voided by a State interpretation of their cross-deputization authority. One result is that Tribal agents are unable to cite sport angling violators.

Regulation of harvest by Bureau of Indian Affairs (Leonard Masten).

BIA enforcement effort peaks during the estuary fall chinook fishery (up to 300-400 nets in Area 1) at 10 officers, 3 boats. 40 gillnet violations were cited, 11 during the commercial fishery. Coverage is intense...normally contact every gillnetter every night.

Enforcement coverage is 7 days/week throughout the spring and fall chinook fisheries.

After Area 1 closes, enforcement emphasis moves into Area 2. Harvest effort there is much smaller: 30-40 nets, mostly driftnets.

Most of the 40 cases have been adjudicated. Some severe penalties for off-reservation transport of fish: 100 days in jail, 2 year suspension of fishing rights. There were two cases of illegal transport...to Redding and to Garberville. These were legally-caught fish transported illegally. Transport is permitted only to the permittee's off-reservation residence.

Patrol staffing drops after September. Two agents patrol all winter. Harvest effort is low then...mostly seeking steelhead.

Harvest monitoring by Bureau of Indian Affairs (Del Robinson).

Del distributed a summary of the 1989 commercial gillnet harvest of fall chinook salmon (Attachment 8). Commercial harvest was 27,504 adults. Total harvest of adult fall chinook on the Yurok Reservation was 42,091, against a quota of 42,000.

Net harvest monitoring methods (Craig Tuss).

Craig provided Attachment 9, explaining the net harvest monitoring activity of the Arcata Fisheries Assistance Office in Management Areas I and II of the lower Klamath River. Attachment 10 displays estimates of net harvest and confidence intervals around the estimates. In recent years, the 90% confidence interval around the estimates has been within 3-5% of the estimate. Confidence intervals have tended to become tighter in recent years.
Discussion:

- Q: Can't gillnetters fishing in remote areas conceal their catches?
  A: Yes...monitoring relies on cooperation...but monitoring crews are on the river four nights per week, and they would very likely hear of any substantial unreported catches...not many secrets in the river fishery. Productive fishing sites above the estuary are limited and well-known, and monitoring crews check these areas. Most sites are traditionally fished by certain families...fishing by other people would be quickly noted. Area II has only five road access points, which also limits sites for netting.

- Q: Any monitoring of Karuk fishery? A: (Leaf Hillman), No.

Public comment on harvest monitoring and law enforcement.

- Q: What is the distribution of catch within the river net fishery...do a few people catch most of the fish?
  A: (Del Robinson) See table 4 of Attachment 8. The figures shown may not represent catches of individual netters, as a delivery may be made up of catches of two or three persons.

- Q: Any disincentive for netters to make large catches.
  A: (Robinson) No, large sales are no longer differentially taxed.

- Note that net-caught fish must be fin-clipped to be transported.

- Q: Any monitoring of foreign vessels fishing offshore?
  A: (Fullerton) NMFS monitors joint venture fishing vessels (these are American vessels delivering to foreign processors). Bycatch of salmon in the whiting fishery is about 8,000 per year. Detailed information is available from PFMC.

Council comments on harvest monitoring and law enforcement.

- Each fishery seems to be well-accounted for. Statements to the contrary are based mostly on misinformation. How can we correct this? Responses: We are under scrutiny, so we monitor intensively...rumors of unmonitored harvest will never disappear, but public information will help. Council members should inform their constituents.

- Council should put suspicions about inadequate monitoring behind us, get on to other issues.

- Q: Any monitoring of net harvest in the winter?
  A: (Tuss) We monitor spring and fall chinook fisheries from April to November - along with other species caught during that time. Winter steelhead fishery is not monitored, but we believe catches are small.

- Suggest the Council produce a statement of findings that harvest monitoring efforts are adequate...maybe append the detailed monitoring reports we have received.

Report of the Technical Advisory Team on 1990 fall chinook projections (Baracco).

Alan provided Attachment 11, displaying projections of ocean stock size and allowable harvest levels for Klamath fall chinook. Age 3 cohort is projected to be more abundant than in 1989, but 4s will be only about 1/4th as abundant as last year. Total stock size is expected to be within 10% of last year's postseason estimate. Table 1 of Attachment 11 shows harvest rate combinations that would satisfy the standard of a total harvest rate no greater than 33-34% of 4-year-old fish. For the harvest rate combination chosen last year (.375/.49 ocean/river), both ocean and river harvests of Klamath chinook would be substantially reduced below 1989.

Discussion:

- Klamath Council should provide PFMC with a recommended harvest rate combination by the March PFMC meeting.

- Q: How will we reach this recommendation?
  A: (Fullerton) If we can't agree today, we will meet again for that purpose before the PFMC meeting. The Council will also seek to make a recommendation to PFMC for spawning escapement and allocation of harvest of Klamath spring chinook.

6 February 1990

Proposed fishery management plans for 1990 harvests.

Spring chinook.

Yurok/BIA harvest plan for spring chinook (Attachment 12).

The Yurok/BIA proposal identifies a gillnet fishery for spring chinook, to take place on the Yurok Reservation from 28 May 1990 to 15 July, or until a target harvest of 5,000 adult fish is taken. Netting would be limited to Tuesday through Saturday, noon to midnight. (NOTE: Management specifics of this proposal were later redrafted...see notes on in-river harvester's meeting, 15 February 1990).

Biological overview (Tuss).

Craig referred to Attachment 1 of Attachment 12, which provides information on spring chinook stock status and rationale for a 1990 run size projection. Highlights include:

- Springs enter river February to August, mostly late March to early June; Fish reach Trinity May-July, with most springs passing Junction City weir in June-July. Springs enter Trinity Hatchery in September-October, peaking in late September. Little information is available on timing of natural runs, but the proposed start date (28 May) for a commercial spring chinook net fishery is intended to allow most natural stocks to clear the fishing area before netting starts.

- Escapement goal for Trinity Hatchery is 3,000 adult springs. Escapement goal for natural spawning in Trinity Basin is 6,000 adults. Craig has found no other escapement goals for Klamath basin spring stocks. Given the high in-river mortality of springs, many more than 6,000 adults would have to enter Trinity River to meet the natural spawning population goal.

- Craig's forecast of 1990 spring chinook run size uses a method successfully tested for spring chinook returning to the Skagit River Hatchery in Washington. Poundages of juveniles released in brood years expected to return in 1990 are multiplied by historic recruitment rates, measured as numbers of adults returning to fisheries and the hatchery, per pound of hatchery production. Craig calculated recruitment of hatchery springs by this means, then expanded his forecast to include other major components of the spring chinook run.

- Craig's Table 13 displays a run size projection of about 26,000 adult spring chinook.

- In-river harvest rate is projected to be a relatively low 26%, exclusive of any commercial net harvest, and exclusive of sport harvest in the lower Trinity and Klamath.

- Tables 11 and 12 show that ocean impacts on Klamath springs are considerable. Harvest of 3s is greatest, because 4s leave the ocean after only a few months of vulnerability.

Council comments included:

- Should refine the adult return/production poundage relationship into yearling and smolt poundages, since recruitment rate to adult differs greatly between the two release sizes. Absence of yearling releases from Trinity Hatchery in 1987 may lead to a smaller 1990 run size than Craig's model predicts.

- Q: Are those Trinity natural spawners really hatchery fish?
  A: (Baracco) It appears Trinity spawners are a mix of wild and hatchery fish...impossible to separate. Klamath spring spawners are wild fish...as are springs in the South Fork Trinity.

- Q: Any interchange between Trinity and Salmon River spring stocks?
  A: (Tuss) No, based on CWT recoveries.

- Q: Does timing of the proposed commercial net fishery attempt to avoid natural stocks?
  A: (Morford) There is some evidence that Salmon River springs move through the lower Klamath a little earlier than Trinity springs.
  (Tuss): The Lewiston Trinity flow study crew finds, in snorkel surveys of the Trinity, that many natural spring chinook come into holding pools by early June. Naturals probably enter the estuary in April and May. Subsistence fishing starts in March.

- (Morford): Note the study of California spring chinook being conducted by Peter Moyle, UC Davis (Attachment 13). Upper Sacramento and Klamath stocks are the only significant natural stocks left. We should be concerned about protecting this genetic resource. Hybridization of springs and falls in hatcheries is a concern.

- Tuss projects a return of 5300 adults to Trinity Hatchery, which needs 3,000.
  Q: Given prespawning mortality, is 5300 enough?
  A: (Baracco) Probably. (Tuss): Some of the projected river spawners are fish that would go up the ladder if given a chance....division of escapement into hatchery and natural is not clean.

- Q: Any straying of Klamath springs to Rogue, and vice versa?
  A: (Tuss) See Table 3. Not much straying.

- (Masten): We are still developing our harvest plan for spring chinook, need to discuss it further with Yurok members...we are giving the Council an early look at a review draft, to meet your schedule.

- (Odemar): There are reasons to be conservative in planning a commercial fishery on springs -- Salmon River run may be declining, and absence of 1987 yearling releases may detract from 1990 returns to Trinity Hatchery. River anglers seem to take a pretty constant fraction - 7 or 8% - of the run, so the variable of concern will be the net fishery.

- Q: Ocean sport impacts? A: (Tuss) Most spring CWT returns come from Eureka and Crescent City troll landings in May...not many from ocean sport catch, and not many troll-caught from Fort Bragg or Coos Bay.

- Q: Significant sport catch in the Klamath? A: (Odemar) No.

- Q: Karuk fishery on springs? A: (Hillman) At Ishi Pishi. Catch depends on availability, maybe up to several hundred.

- (Fullerton): We need to examine Craig's projections and determine if existing fisheries are likely to take surplus available for harvest, or whether there is scope for a commercial net fishery.

- Q: Fair to say that ocean fisheries don't impact Klamath springs as much as Klamath falls, and that the KMZ seasons tend to protect springs?
  A: (Baracco) Yes. On the other hand, the Eel special fishery took many spring 3s. I think the big increase in the Trinity spring runs are related to cutbacks in KMZ troll harvest.

- (Martin) Concerned about potential effects of the proposed fishery on the Salmon River natural stock. You are proposing to harvest about 20% of the predicted run, in addition to ongoing subsistence fisheries, and there is no assurance that part of the commercial harvest will not be natural stocks. Further, there is reason to think that Craig overpredicted the return of hatchery fish, by not taking into account the lack of 1987 yearling releases.

- (Masten): The proposed fishery is shaped to minimize catch of natural stocks. As to size of harvest, we are seeking guidance from the Council. Projected spring run size is not very different from 1989 run size, so we assume there will again be a hatchery surplus.

- Subsistence catch of springs went up in 1989. Possible reasons include more abundant fish stocks, and more people gearing up for the fall commercial fishery. Yuroks prefer the spring chinook as a subsistence fish - better quality for canning than fall run.

- (Odemar): The proposed target for commercial net harvest is too large. How about a target of 5,000 adults for the sum of commercial and subsistence harvests? Would increase total net harvest to about 1/4 more than last year.

- (Masten): We are willing to look at commercial harvest targets of less than 5,000...maybe the TAT could look at potential bio-effects of

various harvest levels. If, however, our spring chinook harvest is to be held to about the level of last year for conservation reasons, the same constraint should apply to other user groups.

- (Masten): If our subsistence catch of springs runs above recent average catch rates, we can make inseason adjustments. (Tuss): In-season adjustments would require daily accounting of catches, which we have not done for the spring fishery. This could be done, though. (Baracco): As in ocean fisheries, an unexpectedly high catch rate could be interpreted as excessive harvest, or unforeseen abundance of fish.

- (Wilkinson): Would like to see more specifics on how natural stocks would be protected. Would you consider changing timing of subsistence fishery to protect natural stocks?
  (Masten): Not part of our proposal for 1990, but we would consider in the future. Subsistence fishery for spring chinook is quite variable, as it depends on river flow. We commit to managing our subsistence fisheries responsibly...will not let harvest run away.

- The harvest plan should address effects on anglers related to reduced opportunity to catch spring chinook on account of increased net harvest.

- Wonder if there is more information on natural stocks that Craig has not considered...for example, data on the Wooley Creek stock.

(Fullerton): I see spring chinook as a stock to be managed as fully as are fall chinook, with the same level of Klamath Council involvement. Since the stock is harvested in the ocean, PFMC should also include it in their management. We have asked Craig to augment his run size projection, to consider the yearling hatchery release issue , and to confirm that the proposed 5,000 fish harvest can be supported. Assessment of impacts of the proposed fishery on natural stocks should be refined - including more information on the effectiveness of the 28 May start date - as should socioeconomic impact analysis. These comments notwithstanding, the stock evaluation/run size forecast is a good piece of work: congratulations, Craig.

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Hoopa Tribe spring chinook fisheries, 1990.

(Jordan): Our spring chinook fishery will concentrate on the Trinity Hatchery stock. We won't be able to draft specific regulations until we get more information on projected spring flows. We will provide the Klamath Council with a framework harvest plan at the next meeting.

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Karuk spring chinook fishery.

(Odemar): CDFG has no data on Karuk subsistence catch, and no plans to acquire any.

(Fullerton): As Klamath Council chair, I request that a Karuk subsistence harvest plan and impact analysis be brought before the Council for review.
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River sport fishery for spring chinook.

(Odemar): We have no plans to change spring chinook sport harvest regulations. Any proposed changes would be needed in time for the March meeting of the Fish and Game Commission.

(Masten): Concerned about poaching of spring chinook holding in pools...CDFG regulation of this needs to improve.

Update on pending legislation (Janna Doerr).

Magnuson Act amendments passed House this morning, sent to Senate. They include language about banning high seas driftnetting worldwide. Biggest controversy is whether to include albacore in the fisheries requiring management plans.

Congressman DeFazio has introduced a separate bill banning import of fishery products from nations conducting high seas driftnetting. This bill would be dropped if driftnetting language survives in Magnuson amendments.

Comments:

- Concern about Commerce cutting funding of management councils.
- Concern about marine mining.

Proposed fishery management plans for fall chinook harvest.

Alan Baracco provided the Council with the following estimates of Klamath chinook harvests in various ocean fisheries:

Area	Chinook Harvest	Klamath Contribution
North Oregon	104,000	2,200 = 2%
Coos Bay	232,700	37,300 = 16%
KMZ troll	38,900	10,900 = 28%
KMZ sport	71,910	17,400 = 24%
Fort Bragg	144,600	26,900 = 19%
S. Calif.	356,400	13,300 = 4%

1989 inriver harvest is estimated at 55,400, or 45% of an estimated inriver run of 122,500.

Comments on this information:

- Klamath contribution rate in the KMZ sport catch is much higher than the 15-18% of recent years. One possible cause: KMZ sport catch is usually distributed about equally between Oregon and California ports. In 1989, most of the catch was in California, in July...possibly getting more Klamath chinook as they approached the river.

- Q: How do 1989 Klamath impacts compare with recent years?
  A: (Baracco) TAT is examining, breaking catch data into time/area cells. Ocean harvest rate was estimated at 44%, compared with a KFMC/PFMC goal of 37%. River harvest rate was 45%, against a goal of 49%. Most of the excess ocean harvest could be attributed to the unexpectedly high total catch and Klamath impact of the KMZ sport fishery. The Klamath model predicted a KMZ sport harvest of 26,000. If that prediction had been met, the ocean Klamath harvest rate would have been very close to target.

- Q: It appears the big escapements of recent years did not give us a big return in 1989. Is the TAT able to control for ocean survival to give managers an indication of what optimum smolt production from Klamath basin may be?
  A: (Baracco) TAT told the Council that at least two complete brood cycles from high escapements would be needed to estimate optimum escapement under harvest rate management. It appears we will have three high escapement brood cycles: 1986-88. Returns from these broods are not complete.

- (Bingham): Glad to hear we will have sufficient data soon from high escapements. The Council and Tech Team need to increase communication with people working on the Klamath Restoration Program, to insure that needed data is gathered on these chinook cohorts. For example, perhaps we should examine density-dependent limiting factors in the estuary. We need better coordination at the technical level.

(Baracco): Attachment 11 shows that the Klamath fall chinook stock is expected to be rather small in 1990. Sacramento and Rogue ocean stock sizes are also expected to be down from recent levels. Methodology for projections is unchanged from recent years: Age 3 cohort is projected from the regression of postseason estimates of 3s on river returns of age 2 grilse of the same cohort; age 4 cohort is predicted from regression of ocean stock size of 4s on river returns of 3s. Table 1 of Attachment 11 shows allowable harvest rate combinations to meet the escapement objective of 33-34% of 4s, which is based on estimated capacity of natural stocks to support harvest. If the Council agrees to last year's harvest sharing formula of .375/.49 ocean/river, spawning escapement is estimated at 67,000 adults. Stock size projection report has been sent to PFMC Salmon Technical Team. They may make some changes.

Comments on harvest sharing model results for 1990:

- Q: Will all harvest combinations shown comply with PFMC Amendment 9?
  A: (Baracco) Yes.

- Q: In Table 1, why does spawning escapement increase as the ocean harvest share increases?
  A: (Baracco) At high ocean harvest rates, a greater escapement is needed to insure an escapement rate of 33-34% of each cohort...because of higher mortality of shakers and 3s than at lower ocean harvest rates.

- Q: If we applied last season's contribution rates to 1990 stock projections, what harvest rate would we get?
  A: (Baracco) About what was observed last year, since stock size is similar. Our projection for the KMZ sport catch will be much lower than last year's actual, because the model will average several year's data.

Ocean fall chinook sport harvest plans (Odemar).

Ocean harvesters' meeting will be scheduled to develop a proposal for the KMZ sport salmon fishery. See Attachment 14, describing the Fish and Game Commission procedure for setting KMZ sport regulations. Action would be taken after PFMC completes its recommendations for 1990 ocean salmon regulations. Part IV of Attachment 14 indicates some possible regulatory changes. The Commission will be expecting recommendations from the Klamath Council (via PFMC) on ocean sport regulations, and on inriver sport regulations. If the Klamath Council can reach agreement on recommendations for inriver and ocean regulations, CDFG will present, to the Commission, the Klamath Council recommendation as the Department's preferred alternative.
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Comments:

- Q: At their 1 March meeting, will the Commission indicate which regulatory options they are moving toward, and can we comment on those?
  A: (Odemar) Yes. The Department develops alternatives, and we will try to anticipate the wishes of the Klamath Council.

Ocean troll fall chinook harvest plans (Bingham).

Trollers don't yet have a proposal, because we don't have an impact analysis for the various harvest rate combinations provided to us by the Tech Team. 1989 was a bad year for us so we are not ready to agree to last year's ocean harvest rate target...but I am ready to negotiate to get the minimum needs of the commercial fishery met.

(Fullerton): You don't have to commit to an allocation today...just tell us your concerns and constraints.

(Bingham): Here are some concerns:

- o Insufficient, unfairly constrained troll fishery in the KMZ.
- o Impacts, on Fort Bragg and Coos Bay fisheries, of trying to provide a troll fishery in the KMZ.
- o Need to maximize access to harvest of other stocks...Rogue was overescaped in 1987 and 88...could have provided a Brookings fishery.
- o Need to focus on special fisheries that will get the Klamath contribution rate down.
- o Need something other than the two-week closures we had at Fort Bragg and Coos Bay...these harmed our market share...volume market is lost to Norwegian farmed fish...we are left with a high-quality market but we must still guarantee supply to brokers.
- o Twenty-fish daily limit was impractical...let's substitute something else - maybe a trip limit. Daily limit promotes high-grading...and daily bar crossings were a hazard for Eureka trip boats.
- o Potential of a second consecutive poor year puts survival of many trollers in doubt.

(Fullerton): Jim Martin, tell us about Oregon concerns for 1990 ocean troll fisheries.

(Martin):

- o Concerned about size and Klamath impact of the KMZ sport fishery...let's look at ways to dampen it while maintaining benefits to KMZ ports...maybe shift some sport catch to coho...
- o Need better communication between Oregon and California ocean interests...don't want to see a separate Oregon coalition like we had at PFMC last year.
- o Concerned about movement of trip boats into KMZ. We tried to set that troll fishery aside for local day boats in 1989, but it didn't work. Maybe trip limits would be effective.
- o Concerned about effects of long closures in Fort Bragg and Coos Bay zones...but let's not go back to ineffective dampeners like 3 days on/4 days off. Maybe a redline/greenline management would work.
- o Would like Klamath Council to reach agreement on an ocean harvest rate target for Klamath chinook, accepting that all three major chinook stocks will be down this year. Let's avoid eye gouging at PFMC.

Yurok/BIA subsistence and commercial net harvest plans (Masten).

Fall chinook fisheries planned on the Yurok Reservation are summarized in Attachment 15. We expect a drastic reduction in our commercial harvest, even if harvest rate combinations of the five-year agreement are adhered to. I am contacting Yurok members to discuss how to absorb the economic cost of this reduced fishery. We will seek to increase net harvest of coho to partly offset loss of fall chinook. I'm not prepared, today, to negotiate any harvest sharing that deviates from the five-year agreement.

The principal commercial fishery change we are considering for 1990 is a late fishery targeting the Trinity Hatchery stock, with an expectation of some coho catch.

(Fullerton): Mr. Overberg's letter (Attachment 15) implies that more detailed information will be provided on fall chinook net fisheries. Sue, we would like that information by our next meeting.

****

Comments:

(Odemar): In-river anglers are concerned about the daytime net fishing proposed for September/October...hope this doesn't unduly restrict angling.

Hoopa fall chinook harvest plan (Jordan).

We assume the five-year agreement signed in 1987 is still in effect...and our 1990 harvest plan will be based on that agreement. We foresee a small harvest, maybe one night of fishing per week. We will consider new harvest methods to gain access to other fish species.

Oregon fall chinook ocean harvest plans (Wilkinson).

Will defer on listing concerns of Oregon ocean sport anglers, as we need to coordinate some more with constituents. Our concerns for the troll fishery include:

- Socioeconomic impacts of harvest rate management are excessive.
- Two-week block closures are onerous.
- We would like to see the KMZ boundary repositioned from Port Orford to Humbug Mountain.
- Would like to make boundary changes to provide for a special Rogue fishery, as was done last year.

Other discussion of fall chinook fishery considerations:

- Any hope of using catch/unit effort to make midseason adjustments, in case abundance is not as low as predicted?

Discussion of next meeting.

(Fullerton): To abide by Amendment 9, we must stay within a 33-34% escapement rate...but it appears trollers are not ready to accept this today, so we are at an impasse. Let's consider another meeting.

The Council decided to meet 1-2 March, at a location in the KMZ area, convening at 9 a.m.
****

Fullerton will not be able to attend.

A subsequent Council meeting will be held in the Eureka area 31 March - 1 April, just prior to the Eureka PFMC meeting. Meeting to convene at 9 a.m.
****

In-river and ocean harvester's meetings will be held 15 and 16 February, respectively, in the KMZ area.
****

A meeting to continue work on the long-range harvest management plan will convene at 8 a.m. 17 May, continuing through 18 May, in La Jolla.
****

Technical Advisory Team assignments.

(Baracco): Believe I heard a request to model ocean fishing seasons before the Council negotiates a harvest allocation. Season modeling can't be done that soon...I expect the Salmon Technical Team will do this, in time for the April PFMC meeting...so please don't make this a prerequisite for your negotiations.

(Bingham): I don't expect complete season modeling but we need a projection of Klamath impacts by time/area cell, so we have an idea of the impacts of alternatives we are considering.

(Baracco): By mid-February, the Klamath model will be updated with 1989 postseason statistics, and 1990 Klamath impacts will be projected by ocean time/area cell.
****

(Hayden): Concerned we won't have adequate contribution rate information to allow us to develop a recommended sport season in the KMZ...not enough time to digest time/area impact information before our ocean harvester's meeting.

(Masten): We want to pursue getting access to surplus hatchery stocks. I would like Tech Team help in getting necessary information to do this.

(Fullerton): Tech Team is assigned to help you on this.
****

Acquiring harvest management data.

(Fullerton): Let's talk about how to identify our information needs to the Klamath Task Force, in order to get needed funding. New fish stocks are being brought into the management forum - coho and spring chinook, for example - without sufficient data. I intend to discuss this issue with Task Force chairman Bill Shake...and intend to start attending Task Force meetings.
****

(Martin): How about a coordination subcommittee from each advisory committee, reporting back to parent groups. We need to let the Task Force know our views on prioritizing actions... which escapements we see needing protection, for example. One immediate information need: how to separate true natural stocks from hatchery fish spawning in Trinity River.

Public comment.

Q: (Leaf Hillman) Regarding Fullerton's request to review the Karuk fishery, where will data come from?
A: (Fullerton) Regardless of quality of past data, the Klamath Act requires us to review Klamath fisheries. Information should be acquired in the future, either by the Karuk Tribe or State of California, since this is a State-managed fishery.

(Yurok member): With a reduced fall run, we need to harvest springs and coho, and we can't deviate from the five-year agreement.

(Troller): How about identifying a minimum "viable" KMZ troll fishery. If that minimum could not be provided, KMZ troll fishery would not be conducted.
(Fullerton): The Magnuson Act calls for promoting fisheries in local areas. Transfers of harvest to other areas is to be done only with strong justification.

(Charterboat operator): 1989 was a good season for KMZ charter operators, but 1988 was too restrictive, given the large run size. We need more time on the water.

(Martin): We just heard a complaint about sport harvest in the KMZ, yet that harvest has increased greatly in recent years. Harvester group leaders need to help their constituents form realistic expectations...otherwise, expectations seem to float upward, without limit.

(Yurok member): A target of 4,000 for the spring chinook net harvest - commercial and subsistence combined - was mentioned as an option. That target is too low.

(Gold Beach port commissioner): Our port could benefit if regulations permitted troll deliveries into KMZ ports when the KMZ is closed. This is allowed in California.

(Troller): Wonder if joint venture boats are overfishing hake that provide forage for salmon.

(Fullerton): It appears hake are being fished as heavily as stocks can sustain.

(Troller): Late Eel fishery helped us in 1989...hope it can be repeated. I oppose the 12 mile closure around the Klamath mouth, and the Punta Gorda to Horse Mountain closure.
(Baracco): Rationale for the closure at the south KMZ boundary is to discourage trip boats from entering the KMZ. (Martin): Rationale for the Klamath mouth closure is to keep fisheries out of an area with a high Klamath contribution rate...to stretch Klamath fish as far as possible.

Written public comments are appended as Attachments 16-23.

Other business.

(Bostwick): The in-river sport anglers lack a representative on the Tech Team. I nominate Jim Waldvogel, Sea Grant agent in Crescent City. Nomination is accepted by consensus.
****

Adjourned.

ATTACHMENT 1

KLAMATH FISHERY MANAGEMENT COUNCIL

Attendance Roster, February 5-6, 1990 meeting in Brookings, Oregon.

Management Council Members

Nat Bingham	California Commercial Salmon Fishing Industry
Virginia Bostwick	Klamath In-River Sport Fishery
E. C. Fullerton (Chair)	National Marine Fisheries Service
Danny Jordan for C.L. Marshall	Hoopa Valley Business Council
James Martin	Oregon Department of Fish & Wildlife
Susan Masten	Non-Hoopa Indians Residing in Klamath Area
Mel Odemar for A.E. Naylor	California Department of Fish & Game
Craig Tuss for J. Lyle Reed	U.S. Department of the Interior
Frank Warrens	Pacific Fishery Management Council
Keith Wilkinson	Oregon Commercial Salmon Fishing Industry

Others Attending

Alan Baracco	California Dept of Fish & Game
Amber Behary	Self
Skip and Judith Behary	F/V XANADV
Janice M. Bowen	Self
Janet S. Butrich	Elk Valley Ranchero, Yurok
Russ Crabtree	The Port of Brookings Harbor
Ralph Daisy	Self
Carol Davis	Self
Don DeVol	
Robert Dobrec	Self
Jana Doerr	Congressman DeFajio
Gene and Connie Elmer	Brookings Commercial Fisher Folks
John Fraser	F/V N Jord
Thomas Fraser	F/V N Jord
George Gates	Self
Lucie Giampaoli	LWV
Peter Giampaoli	Public
Albert Gray, Sr	Self
Leaf Hillman	Karuk Tribe
Tim Harkins	Trinidad FMA
Frank Hostler	Yurok
Jim Irwin	F/V Gary
Noreen Jane	Yurok
Jim Johnson	Oregon Salmon Com.
Sam L. Jones, Jr.	Transition Team
Tom Jones	UAC-NCC
Jim Kochsritz	Self
Chuck Lane	U.S. Fish & Wildlife Service

Troy Laws	ODFW, Gold Beach
Bill Leavitt	MLCFA
Gary Lewis	Brookings Chamber of Commerce Fisheries Cmte
Tom Loynes	ODFW, Gold Beach
Norman McLemore	BIA
Pete McHenry	Self
Randy Mattz	Yurok
Mike Morford	United Anglers of California
Charles O'Leary	OSCF STEP
David O'Neill	Bosco Tribe
Karole Overburg	Bureau of Indian Affairs
Harry Payne	Self
Dennis Pecaut	UAC-NCC
Ronnie Pierce	Yurok Transition Team
Crew Raeup	Public
Jim Reiff	PCFFA
Del Robinson	Bureau of Indian Affairs
Mollie Ruud	Pequa
Jim Seger	PFMC
Clay Speaker	Del Nort Fishermans Assn.
H.A. StClair	F/V Shirley A
Howard Teague	The Port of Gold Beach
Craig Tuss	Fish & Wildlife Service
Jim Waldvogel	U.C. Sea Grant
Bill Warner	Oregon Southcoast Fishermen
Jim Walters	UAC-NCC
Jim Welter	OSCF STEP
John Wilson	Oregon Troller
Lee Wilson	Del Norte Fishermens Mkting Assoc.
Barbara Witmore	Christians in the Salmon Fleet

ATTACHMENT 2

KLAMATH FISHERY MANAGEMENT COUNCIL

MEETING AGENDA

BROOKINGS, OREGON

February 5, 1990

1:00 p.m. Call to order. Correction and approval of minutes and agenda.

1:10 Report on planning activities of the Klamath River Basin Fisheries Task Force (Bingham).

1:30 Review of 1989 fisheries.

Technical Advisory Team report on 1989 fisheries (including late fisheries) and fall chinook spawning escapement estimates (Baracco).

2:00 Reports on harvest monitoring and law enforcement, 1989.

California Department of Fish and Game

Oregon Department of Fish and Wildlife

National Marine Fisheries Service

Hoopa Tribe

3:00 Break

3:15 Reconvene. Reports on harvest monitoring and law enforcement (continued).

Bureau of Indian Affairs

Fish and Wildlife Service

4:00 Council discussion of harvest monitoring and law enforcement.

4:30 Public comment on harvest monitoring and law enforcement.

5:00 Adjourn.

6 February 1990

8:00 Reconvene. Consideration of 1990 fisheries. Discussion of goals for Klamath Council involvement in 1990 harvest management (Fullerton).

8:30 Report of the Technical Advisory Team on 1990 fall chinook fisheries (Baracco).

1990 fall chinook ocean stock size projections.

Allowable harvest rate combinations.

9:30 Break.

9:45 Reconvene. Proposed fishery management plans for 1990 fall chinook harvest.

Ocean sport

Ocean troll

In-river sport

In-river subsistence and commercial

11:00 Council discussion of harvest proposals, negotiation of harvest allocation, and assignments to Technical Team.

12:00 Lunch.

1:15 Reconvene. Council discussion of 1990 fall chinook harvest (continued).

2:30 Break.

2:45 Reconvene. Proposed fishery harvest plans for 1990 spring chinook harvest.

Ocean

In-river

3:30 Council discussion of spring chinook harvest plans.

4:00 Other fishery harvest plans proposed for 1990.

4:30 Public comment.

5:00 Discussion of next meeting.

5:15 Adjourn.

KMZ Chinook Catches--1989

	Calif.	Oregon	Total
KMZ-Commercial			
MAY (Rogue Area)	392	4,643	5,035
JUN (General Area)	14,261	1,893	16,154
AUG (General Area)	2,633	3,850	6,483
SEP (Rogue Area)	1,945	6,427	8,372
SEP/OCT (Eel Area)	2,863	26	2,889
Total Commercial	22,094	16,839	38,933
KMZ-Recreational	50,632	21,257	71,889

KMZ Recreational Chinook Catch by Month and Port

Month	Eureka	Crescent City	Brookings 1/	Total
MAY	1,717	405	397	2,519
JUN	7,728	3,618	3,632	14,978
JUL	12,398	17,963	9,370	39,731
AUG	3,443	3,227	6,757	13,427
SEP	81	52	1,101	1,234
Total	25,367	25,265	21,257	71,889

1/ Monthly estimate may overlap into previous or following month by up to three days.

KRTAT--January, 1990

Klamath River Basin Fall Chinook Salmon
In-river Run Estimates

1978-1989

Source: CDFG, Klamath-Trinity Project
January 1990

Klamath River Basin Fall Chinook Spawner Escapement, In-river Harvest and Run-size Estimates, 1978-1989 a/

	1978			1979			1980		
	Grilse	Adults	Totals	Grilse	Adults	Totals	Grilse	Adults	Totals
SPAWNER ESCAPEMENT									
HATCHERY									
Iron Gate Hatchery	915	6,925	7,840	257	2,301	2,558	451	2,412	2,863
Trinity River Hatchery	1,325	6,034	7,359	964	1,335	2,299	2,256	4,099	6,355
Subtotals	2,240	12,959	15,199	1,221	3,636	4,857	2,707	6,511	9,218
NATURAL									
Trinity River basin (above Willow Creek, excluding TRH)	4,712	31,052	35,764	3,936	8,028	11,964	16,837	7,700	24,537
Salmon River basin	1,400	2,600	4,000	150	1,000	1,150	200	800	1,000
Scott River basin	1,909	3,423	5,332	428	3,396	3,824	2,245	2,032	4,277
Shasta River basin	6,707	12,024	18,731	1,040	7,111	8,151	4,334	3,762	8,096
Bogus Creek basin	651	4,928	5,579	494	5,444	5,938	1,749	3,321	5,070
Main stem Klamath River (excluding Iron Gate Hatchery)	300	1,700	2,000	466	4,190	4,656	867	2,468	3,335
Misc. Klamath tributaries (above Indian Reservations)	735	2,765	3,500	147	1,068	1,215	500	1,000	1,500
Indian Reservation tributaries	b/	b/	b/	100 c/	400 c/	500 c/	250 c/	400 c/	650 c/
Subtotals	16,414	58,492	74,906	6,761	30,637	37,398	26,982	21,483	48,465
TOTAL SPAWNER ESCAPEMENT	18,654	71,451	90,105	7,982	34,273	42,255	29,689	27,994	57,683
ANGLER HARVEST				**IN-RIVER HARVEST**					
Klamath River below Highway 101 bridge	122	854	976	216	484	700	835 d/	727 d/	1,562 d/
Trinity River basin above Willow Creek	e/	e/	e/	765	1,157	1,922	2,456	998	3,454
Balance of Klamath system	1,960	840	2,800	1,200	500	1,700	2,600 d/	2,771 d/	5,371 d/
Subtotals	2,082	1,694	3,776	2,181	2,141	4,322	5,891	4,496 d/	10,387
INDIAN NET HARVEST f/									
Klamath River below Highway 101 bridge	-	-	-	-	-	-	495	9,605	10,100
Klamath River - 101 to Trinity mouth	-	-	-	-	-	-	272	1,528	1,800
Trinity River	-	-	-	-	-	-	220	880	1,100
Subtotals	1,800	18,200	20,000	1,350	13,650	15,000	987	12,013	13,000
TOTAL IN-RIVER HARVEST	3,882	19,894	23,776	3,531	15,791	19,322	6,878 d/	16,509 d/	23,387 d/
IN-RIVER RUN									
TOTAL IN-RIVER RUN	22,536	91,345	113,881	11,513	50,064	61,577	36,567 d/	44,503 d/	81,070 d/

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Klam[redacted]ver Basin Fall Chinook Spawner Escapement, In-river Harve[redacted] Run-size Estimates, 1978-1989 a/ (continued)

	1981			1982			1983		
	Grilse	Adults	Totals	Grilse	Adults	Totals	Grilse	Adults	Totals
SPAWNER ESCAPEMENT									
HATCHERY									
Iron Gate Hatchery	540	2,055	2,595	1,833	8,353	10,186	514	8,371	8,885
Trinity River Hatchery	1,004	2,370	3,374	4,235	2,058	6,293	271	5,494	5,765
Subtotals	1,544	4,425	5,969	6,068	10,411	16,479	785	13,865	14,650
NATURAL									
Trinity River basin (above Willow Creek, excluding TRH)	5,906	15,340	21,246	8,149	9,274	17,423	853	17,284	18,137
Salmon River basin	450	750	1,200	300	1,000	1,300	75	1,200	1,275
Scott River basin	3,409	3,147	6,556	4,350	5,826	10,176	170	3,398	3,568
Shasta River basin	4,330	7,890	12,220	1,922	6,533	8,455	753	3,119	3,872
Bogus Creek basin	912	2,730	3,642	2,325	4,818	7,143	335	2,713	3,048
Main stem Klamath River (excluding Iron Gate Hatchery)	1,000	3,000	4,000	1,000	3,000	4,000	200	1,800	2,000
Misc. Klamath tributaries (above Indian Reservations)	500	1,000	1,500	600	1,500	2,100	140	1,270	1,410
Indian Reservation tributaries	b/	b/	b/	b/	b/	b/	b/	b/	b/
Subtotals	16,507	33,857	50,364	18,646	31,951	50,597	2,526	30,784	33,310
TOTAL SPAWNER ESCAPEMENT	18,051	38,282	56,333	24,714	42,362	67,076	3,311	44,649	47,960
IN-RIVER HARVEST									
ANGLER HARVEST									
Klamath River below Highway 101 bridge	536	1,714	2,250	1,252	3,539	4,791	60	750	810
Trinity River basin above Willow Creek	1,456	3,174	4,630	2,554	2,321	4,875	116	2,360	2,476
Balance of Klamath system	5,260	1,095	6,355	8,678	2,479	11,157	175	1,125	1,300
Subtotals	7,252	5,983	13,235	12,484	8,339	20,823	351	4,235	4,586
INDIAN NET HARVEST c/									
Klamath River below Highway 101 bridge	912	23,097	24,009	290	4,547	4,837	12	800	812
Klamath River - 101 to Trinity mouth	1,104	8,405	9,509	1,195	8,424	9,619	121	5,700	5,821
Trinity River	449	1,531	1,980	314	1,511	1,825	30	1,390	1,420
Subtotals	2,465	33,033	35,498	1,799	14,482	16,281	163	7,890	8,053
TOTAL IN-RIVER HARVEST	9,717	39,016	48,733	14,283	22,821	37,104	514	12,125	12,639
IN-RIVER RUN									
TOTAL IN-RIVER RUN	27,768	77,298	105,066	38,997	65,183	104,180	3,825	56,774	60,599

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Klamath River Basin Fall Chinook Spawner Escapement, In-river Harvest and Run-size Estimates, 1978-1989 a/ (continued)

	1984			1985			1986		
	Grilse	Adults	Totals	Grilse	Adults	Totals	Grilse	Adults	Totals
SPAWNER ESCAPEMENT									
HATCHERY									
Iron Gate Hatchery	764	5,330	6,094	2,159	19,951	22,110	1,461	17,096	18,557
Trinity River Hatchery	766	2,166	2,932	18,166	2,583	20,749	3,609	15,795	19,404
Subtotals	1,530	7,496	9,026	20,325	22,534	42,859	5,070	32,891	37,961
NATURAL									
Trinity River basin (above Willow Creek, excluding TRH)	3,416	5,654	9,070	29,454	9,217	38,671	20,459	92,548	113,007
Salmon River basin	216 g/	1,226 g/	1,442 g/	905	2,259	3,164	949	2,716	3,665
Scott River basin	358	1,443	1,801	1,357	3,051	4,408	4,865	3,176	8,041
Shasta River basin	480	2,362	2,842	2,227	2,897	5,124	683	3,274	3,957
Bogus Creek basin	465	3,039	3,504	1,156	3,491	4,647	1,184	6,124	7,308
Main stem Klamath River (excluding Iron Gate Hatchery)	200	1,350	1,550	156	468	624	196	603	799
Misc. Klamath tributaries (above Indian Reservations)	150	990	1,140	646	4,214	4,860	606	4,919	5,525
Indian Reservation tributaries	b/	b/	b/	50 h/	80 h/	130 h/	b/	b/	
Subtotals	5,285	16,064	21,349	35,951	25,677	61,628	28,942	113,360	142,302
TOTAL SPAWNER ESCAPEMENT	6,815	23,560	30,375	56,276	48,211	104,487	34,012	146,251	180,263
IN-RIVER HARVEST									
ANGLER HARVEST									
Klamath River below Highway 101 bridge	175	548	723	1,479	2,427 i/	3,906	704	4,610	3,160
Trinity River basin above Willow Creek	393	736	1,129	5,442	154 i/	5,596	3,438	9,034	15,477
Balance of Klamath system	384	2,056	2,440	4,274	1,001 i/	5,275	5,266	10,541	11,798
Subtotals	952	3,340	4,292	11,195	3,582 i/	14,777	9,408	24,185 d/	30,435
INDIAN NET HARVEST e/									
Klamath River below Highway 101 bridge	132	11,878	12,010	132	5,700	5,832	191	15,286	15,477
Klamath River - 101 to Trinity mouth	183	5,622	5,805	476	3,925	4,401	377	5,033	5,410
Trinity River	140	1,170	1,310	947 j/	1,941 j/	2,888 j/	286	4,808	5,094
Subtotals	455	18,670	19,125	1,555	11,566	13,121	854	25,127	25,981
TOTAL IN-RIVER HARVEST	1,407	22,010	23,417	12,750	15,148	27,898	10,262	49,312	56,416
IN-RIVER RUN									
TOTAL IN-RIVER RUN	8,222	45,570	53,792	69,026	63,359	132,385	44,274	195,563	236,679

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Klam[redacted]ver Basin Fall Chinook Spawner Escapement, In-river Harve[redacted] Run-size Estimates, 1978-1989 a/ (continued)

	1987			1988			1989		
	Grilse	Adults	Totals	Grilse	Adults	Totals	Grilse	Adults	Totals
SPAWNER ESCAPEMENT									
HATCHERY									
Iron Gate Hatchery	1,825	15,189	17,014	609	16,106	16,715	831	10,859	11,690
Trinity River Hatchery	2,453	13,934	16,387	4,752	17,352	22,104	319	10,437	10,756
Subtotals	4,278	29,123	33,401	5,361	33,458	38,819	1,150	21,296	22,446
NATURAL									
Trinity River basin (above Willow Creek, excluding TRH)	5,949	71,920	77,869	10,626	44,616	55,242	2,685	30,100	32,785
Salmon River basin	118	3,832	3,950	327	3,273	3,600	612	3,478	4,090
Scott River basin	797	7,769	8,566	473	4,727	5,200	1,527	4,360	5,887
Shasta River basin	398	4,299	4,697	256	2,586	2,842	31	1,554	1,585
Bogus Creek basin	1,208	9,748	10,956	225	16,215	16,440	288	2,385	2,673
Main stem Klamath River (excluding Iron Gate Hatchery)	65	863	928	164	2,982	3,146	192	1,033	1,225
Misc. Klamath tributaries (above Indian Reservations)	237	3,286	3,523	418	4,167	4,585	208	2,575	2,783
Indian Reservation tributaries	b/	b/	b/	55 k/	320 k/	375 k/	27 h/	298 h/	325 h/
Subtotals	8,772	101,717	110,489	12,544	78,886	91,430	5,570	45,783	51,353
TOTAL SPAWNER ESCAPEMENT	13,050	130,840	143,890	17,905	112,344	130,249	6,720	67,079	73,799
IN-RIVER HARVEST									
ANGLER HARVEST									
Klamath River below Highway 101 bridge	146	2,455	2,601	124	3,367	3,491	141	1,596	1,737
Trinity River basin above Willow Creek	923	9,433	10,356	2,735	9,341	12,076	158	2,134	2,292
Balance of Klamath system	4,367	8,281	12,648	2,552	9,495	12,047	2,487	6,101	8,588
Subtotals	5,436	20,169	25,605	5,411	22,203	27,614	2,786	9,831	12,617
INDIAN NET HARVEST f/									
Klamath River below Highway 101 bridge	36	39,978	40,014	138	36,914	37,052	0	37,130	37,130
Klamath River - 101 to Trinity mouth	117	8,136	8,253	173	9,667	9,840	120	4,961	5,081
Trinity River	262	4,982	5,244	267	5,070	5,337	71	3,474	3,545
Subtotals	415	53,096	53,511	578	51,651	52,229	191	45,565	45,756
TOTAL IN-RIVER HARVEST	5,851	73,265	79,116	5,989	73,854	79,843	2,977	55,396	58,373
IN-RIVER RUN									
TOTAL IN-RIVER RUN	18,901	204,105	223,006	**23,894**	**186,198**	210,092	**9,697**	**122,475**	132,172

(continued on next page)

Klamath River Basin Fall Chinook Spawner Escapement, In-river Harvest and Run-size Estimates, 1978-1989 a/ (continued)

1/ Prepared December 11, 1989. All figures are California Department of Fish and Game counts/estimates unless otherwise indicated. All figures for Iron Gate and Trinity River hatcheries represent counts of fish entering those facilities. All spawner escapement figures for the Shasta River basin for 1978-1987, plus those for the Bogus Creek basin for 1980-1989 are based on counts made at counting stations located near the mouths of those streams. All remaining spawner escapements and all harvest figures are estimates developed from data obtained through ongoing field investigations in the Klamath-Trinity system. Figures for years through 1988 are final; 1989 figures are preliminary, subject to revision.

b/ Figure not available.

c/ U.S. Fish and Wildlife Service (USFWS) estimate.

d/ Figure shown here differs from previously published table prepared December 10, 1984; previous figure incorrect.

e/ In 1978, the Klamath River system sport salmon fishing season was closed August 25. There was essentially no sport harvest of fall chinook in the Trinity River basin in 1978.

f/ USFWS estimates for years through 1982; 1983 through 1989 estimates jointly made by USFWS and Hoopa Valley Business Council Fisheries Department (HVBCFD).

g/ U.S. Forest Service estimate.

h/ HVBCFD estimate. Estimate for streams in Hoopa Valley Indian Reservation only.

i/ In 1985, the Klamath River system sport salmon fishing season was closed to the taking of all salmon below the U.S. Highway 101 bridge from September 9 through December 31; the Klamath from the U.S. Highway 101 bridge to Iron Gate Dam and the Trinity River from its mouth to Lewiston Dam were closed to the taking of salmon 22 inches and longer from September 23 through December 31, 1985.

j/ Estimates for Hoopa Valley Indian Reservation portion of catch (=947 grilse and 1,941 adults) are of catch occurring during open fishing periods only.

k/ Estimates jointly made by USFWS and HVBCFD.

SUMMARY OF METHODS USED TO ESTIMATE THE CALIFORNIA OCEAN SALMON CATCH AND THE CODED-WIRE TAG CONTRIBUTION FOR 1989

1. OVERVIEW

California ocean salmon harvest and coded-wire tag catch statistics for 1989 were extrapolated from data obtained by fishery sampling programs, in combination with data taken from records that California Department of Fish and Game requires commercial salmon buyers and commercial charterboat operators to maintain. California's ocean fishery sampling programs are designed to sample at least 20% of the salmon (chinook and coho) landed in the ocean commercial (troll) and recreational (charterboat and skiff) fisheries. Commercial salmon buyers are required to complete California Fish and Game market receipts for all deliveries of salmon that they buy. Charterboat operators are required to maintain Calfornia Fish and Game logbook records for all fishing trips.

2. AREA AND TIME STRATIFICATIONS

The five major ports sampled for the ocean troll fishery were Crescent City, Eureka, Fort Bragg, San Francisco, and Monterey (Figure 1). In some cases, the major ports may consist of several small adjacent sub-ports. Sampling was carried out the entire season at all five ports.

The same basic five port design was used to sample the recreational skiff and charterboat fisheries. However, major ports may contain several smaller subport strata. Subports are areas within major ports where anglers may come ashore, but which are small enough to allow the sampler to interview all private skiff fishermen that land within that area on a sample day. The major skiff strata in Eureka, for example, include Trinidad Bay (2 subport strata) and Humboldt Bay (2 subport strata). The charterboat sample areas included all docks in a port area where landings occurred. Sampling was also carried out the entire season at all five ports for the charterboat and skiff fisheries.

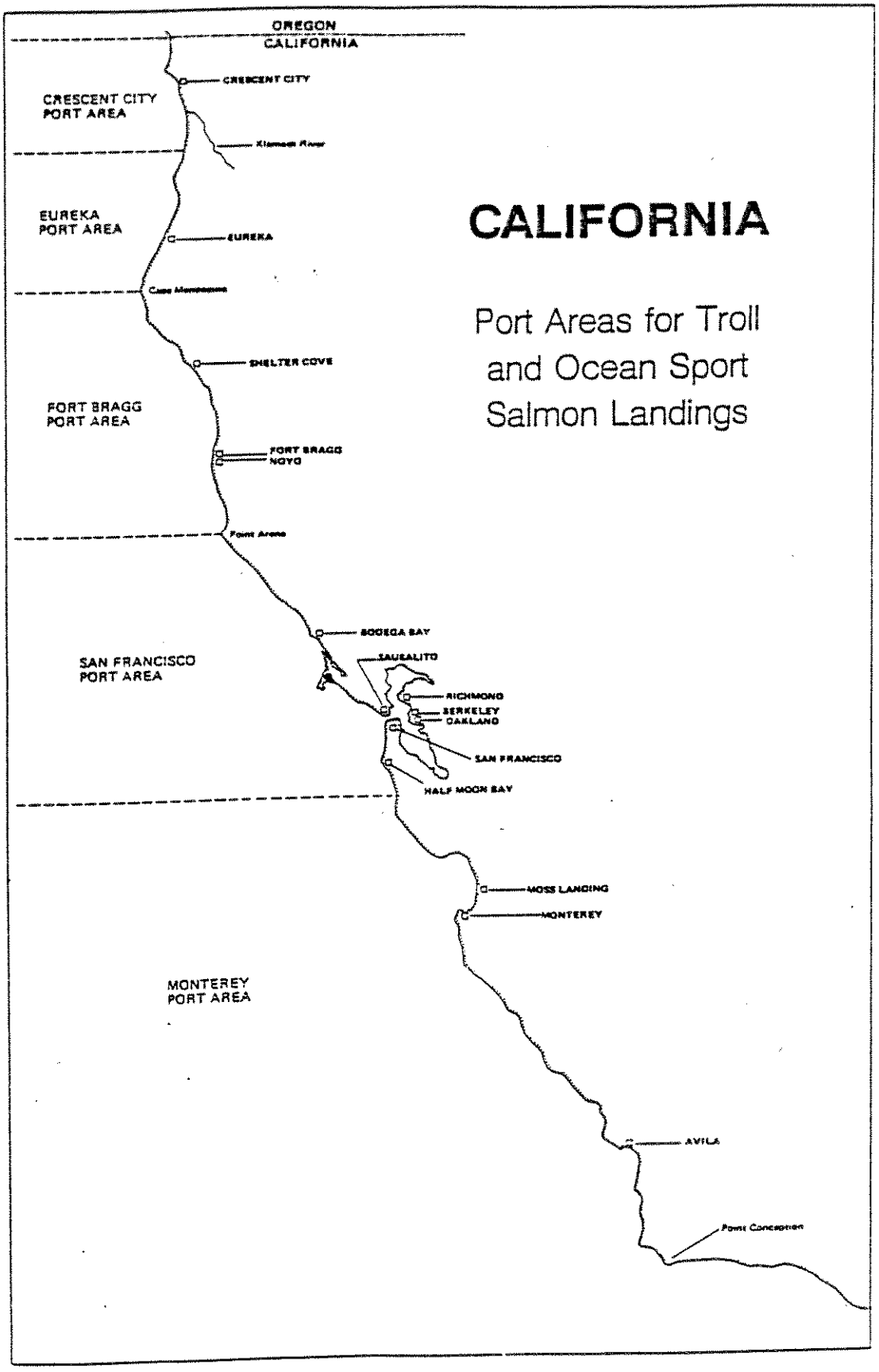
Semi-monthly time periods were the basic time strata used to sample all fisheries. The periods were from the 1st to the 15th and 16th to the end of the month. In addition, recreational sampling was also stratified by weekend day, or holiday, and weekday.

3. FISHERY SAMPLING PROGRAMS

a. OCEAN COMMERCIAL (TROLL) FISHERY

Field samplers were assigned to the 5 major port areas and instructed to sample commercial salmon buying stations on a random basis, bearing in mind that they must sample boats returning from multi-day trips and those that have fished only one day. The sample unit was a landing of salmon by a commercial troller and from each boat the sampler had to obtain a complete sample (see

FIGURE 1: Port Management and Catch Reporting Areas for California's Commercial Troll and Ocean Recreational Fisheries.



all fish) for the sample to be valid. Work hours for samplers were scheduled to coincide with those hours when most commercial salmon trollers make landings.

b. OCEAN RECREATIONAL (CHARTERBOAT AND SKIFF) FISHERY

Field samplers were assigned to pre-selected sub-ports chosen on a random basis and stratified by weekend, or holiday, and weekday. They were instructed to interivew all recreational skiff fishermen who landed within their assigned sample area, and to keep a tally of boats they missed.

Charter boats were sampled whenever they were observed landing.

4. INFORMATION COLLECTED

a. FIELD SAMPLERS

1) Total number of fish by species in sample (boat or subport).
2) Total pounds of fish by species in sample (commercial fishery).
3) Number of fish in sample with adipose fin clips.
4) Number of days fished (commercial fishery).
5) Ocean catch area (commercial fishery).
6) Number of anglers (recreational fishery).

b. USER GROUP RECORDS

1) Total number of salmon caught (charterboat fishery).
2) Total number of anglers fishing (charterboat fishery).
3) Total pounds of salmon landed by species (commercial fishery).

5. ESTIMATION PROCEDURES

a. COMMERCIAL FISHERY

Numbers of salmon landed by the commercial fishery within time and port stratum and by species were estimated by dividing the pounds of salmon sold to commercial salmon buyers and reported on pink tickets, by species average weights obtained from sample data. The estimation equation is shown below. Keep in mind that pounds and numbers are by species.

$$\text{tot. no. salmon} = \frac{\text{\# of salmon landed}}{\left(\frac{\text{\# of salmon sampled}}{\text{no. of salmon sampled}}\right)}$$

b) RECREATIONAL FISHERY

Numbers of salmon landed by the recreational skiff fishery within time and port stratum and by species were estimated from field sample data. The estimation equation is show below.

$$\text{total number salmon} = \frac{\text{no. sampled fish}}{1} \times \frac{\text{no. possible fishing days}}{\text{no. sampled days}} \times \frac{\text{no. subports}}{\text{no. subports sampled}}$$

Numbers of salmon landed by the charterboat fishery are obtained from the logbooks that charterboat operators are required to maintain. Species composition of the numbers of salmon reported on logbooks is determined with the use of field sample data.

c) CODED-WIRE TAGS

The contribution of coded-wire tagged (CWT) groups of fish to the commercial and recreational fisheries was estimated by deriving an expansion factor from sample and user group data for time and area stratum and multiplying CWT's sampled by the expansion factor. The equations for expanding CWT recovered in the commercial and recreational fisheries are shown below.

estimated CWT = expansion factor X sampled CWT

Where:

$$\text{expansion factor} = \frac{\text{no. of landed salmon}}{\text{no. of sampled salmon}} \times \left(\frac{\text{no. adipose clips processed}}{\text{no. adipose clips observed}}\right)$$

6. ESTIMATED SALMON LANDINGS AND SAMPLE DATA FOR 1989

An estimated 520,814 chinook salmon and 41,291 coho salmon were landed by commercial fishermen in 1989 (Table 1). Recreational fishermen landed 179,251 chinook salmon and 47,272 coho salmon in 1989 (Table 2).

Field samplers observed 81,835 (16%) chinook salmon and 8,843 (21%) coho salmon landed in the commercial fishery in 1989. In the recreational fishery, field samplers observed 42,334 (24%) chinook salmon and 14,249 (30%) coho salmon landed in 1989.

CWT observations totaled 3,431 in the commercial fishery and 2,301 in the recreational fishery.

TABLE 1: Salmon Catch and Sample Statistics for the California Commercial Fishery of 1989 by Major Port and Half Month Period

MAJOR PORT: Crescent City

period	chinook landed	chinook sample	chinook % sampled	coho landed	coho sample	coho % sampled
May 1-15	386	76	20	0	0	0
May 16-31	6	0	0	0	0	0
June 1-15	4,589	1,687	37	6,176	1,026	17
June 16-30	187	0	0	29	0	0
July 1-15	377	0	0	24	0	0
July 16-31	0	0	0	0	0	0
Aug 1-15	96	0	0	11	0	0
Aug 16-31	1,312	775	59	0	0	0
Sept 1-15	1,964	161	8	0	0	0
Sept 16-30	252	0	0	11	0	0
TOTAL	9,149	2,699	30	6,251	1,026	16

MAJOR PORT: Eureka

period	chinook landed	chinook sample	chinook % sampled	coho landed	coho sample	coho % sampled
May 1-15	49	0	0	0	0	0
May 16-31	45	0	0	0	0	0
June 1-15	10,004	4,350	43	2,371	964	41
June 16-30	423	0	0	66	0	0
July 1-15	3,570	0	0	977	0	0
July 16-31	6	0	0	11	0	0
Aug 1-15	3,055	0	0	706	0	0
Aug 16-31	1,536	495	32	75	0	0
Sept 1-15	481	1	0	179	1	1
Sept 16-30	1,799	811	45	168	46	27
Oct 1-15	661	177	27	203	6	3
Oct 16-31	81	0	0	13	0	0
TOTAL	21,511	5,834	27	4,770	1,017	21

MAJOR PORT: Fort Bragg

period	chinook landed	chinook sample	chinook % sampled	coho landed	coho sample	coho % sampled
May 1-15	6,232	4,021	65	0	0	0
May 16-31	1,095	251	23	0	0	0
June 1-15	8,354	3,481	42	1,484	541	36
June 16-30	11,062	2,712	25	1,821	474	26
July 1-15	48,922	13,961	29	11,430	2,831	25
July 16-31	9,758	3,125	32	1,085	355	33
Aug 1-15	35,625	8,742	25	6,296	1,482	24
Aug 16-31	6,416	2,197	34	982	304	31
Sept 1-15	2,539	545	21	249	32	13
Sept 16-30	2,742	1,130	41	31	19	61
Oct 1-15	25	0	0	0	0	0
TOTAL	133,771	40,165	30	23,379	6,038	26

MAJOR PORT: San Francisco

period	chinook landed	chinook sample	chinook % sampled	coho landed	coho sample	coho % sampled
May 1-15	39,942	4,306	11	0	0	0
May 16-31	30,497	1,982	6	0	0	0
June 1-15	38,898	1,302	3	1,501	62	4
June 16-30	37,633	1,185	3	2,113	14	1
July 1-15	17,922	3,206	18	1,716	53	3
July 16-31	6,874	493	7	375	19	5
Aug 1-15	10,662	795	7	482	17	4
Aug 16-31	9,003	378	4	101	0	0
Sept 1-15	5,688	203	4	66	0	0
Sept 16-30	2,915	2	0	45	0	0
Oct 1-15	216	0	0	3	0	0
TOTAL	250,032	13,852	6	6,403	165	3

MAJOR PORT: Monterey

period	chinook landed	chinook sample	chinook % sampled	coho landed	coho sample	coho % sampled
May 1-15	35,114	4,306	12	0	0	0
May 16-31	11,580	1,982	17	0	0	0
June 1-15	12,999	1,302	10	128	62	48
June 16-30	11,942	1,185	10	90	14	16
July 1-15	14,750	3,206	22	73	53	73
July 16-31	7,486	493	7	90	19	21
Aug 1-15	6,977	795	11	93	17	18
Aug 16-31	3,107	378	12	5	0	0
Sept 1-15	2,088	203	10	11	0	0
Sept 16-30	212	2	1	0	0	0
Oct 1-15	95	0	0	0	0	0
TOTAL	108,351	13,852	13	489	165	34

TABLE 2: Salmon Catch and Sample Statistics for the California Recreational Fishery of 1989 by Major Port and Half Month Period

MAJOR PORT: CRESCENT CITY

PERIOD	CHINOOK ESTIMATE	CHINOOK SAMPLE	% SAMPLE CHINOOK	COHO ESTIMATE	COHO SAMPLE	% SAMPLE COHO
MAY 1-15	58	11	19	23	5	22
MAY 16-31	347	182	52	22	9	41
JUN 1-15	2,161	367	17	2,772	483	17
JUN 16-30	1,457	309	21	2,081	512	25
JUL 1-15	7,014	1,824	26	7,125	1,807	25
JUL 16-31	10,949	2,386	22	4,542	976	21
AUG 1-15	3,115	966	31	1,688	525	31
AUG 16-31	112	14	13	147	20	14
SEPT 1-15	44	12	27	39	10	26
SEPT 16-30	8	1	13	30	4	13
TOTAL	25,265	6,072	24	18,469	4,351	24

MAJOR PORT: EUREKA/TRINIDAD

PERIOD	CHINOOK ESTIMATE	CHINOOK SAMPLE	% SAMPLE CHINOOK	COHO ESTIMATE	COHO SAMPLE	% SAMPLE COHO
MAY 1-15	444	70	16	211	42	20
MAY 16-31	1,273	670	53	1,119	624	56
JUN 1-15	3,529	823	23	1,844	531	29
JUN 16-30	4,199	1,622	39	5,405	2,482	46
JUL 1-15	7,849	2,126	27	9,142	2,910	32
JUL 16-31	4,549	1,230	27	3,908	1,086	28
AUG 1-15	3,266	725	22	3,023	760	25
AUG 16-31	177	12	7	418	43	10
SEPT 1-15	81	20	25	24	9	38
SEPT 16-30	0	0	0	0	0	0
TOTAL	25,367	7,298	29	25,094	8,487	34

MAJOR PORT: FORT BRAGG

PERIOD	CHINOOK ESTIMATE	CHINOOK SAMPLE	% SAMPLE CHINOOK	COHO ESTIMATE	COHO SAMPLE	% SAMPLE COHO
MAY 1-15	0	0	0	0	0	0
MAY 16-31	101	60	59	11	7	64
JUN 1-15	443	87	20	151	33	22
JUN 16-30	1,803	719	40	747	272	36
JUL 1-15	916	280	31	796	468	59
JUL 16-31	1,553	740	48	773	357	46
AUG 1-15	553	193	35	258	90	35
AUG 16-31	40	16	40	26	12	46
SEPT 1-15	24	13	54	64	5	8
SEPT 16-30	1	1	100	0	0	0
TOTAL	5,434	2,109	39	2,826	1,244	44

MAJOR PORT: SAN FRANCISCO

PERIOD	CHINOOK ESTIMATE	CHINOOK SAMPLE	% SAMPLE CHINOOK	COHO ESTIMATE	COHO SAMPLE	% SAMPLE COHO
FEB 16-28	7,284	1,288	18	0	0	0
MAR 1-15	3,183	452	14	0	0	0
MAR 16-31	4,954	855	17	0	0	0
APR 1=15	11,957	1,580	13	0	0	0
APR 16-30	7,926	752	9	111	11	10
MAY 1-15	2,096	96	5	40	1	3
MAY 16-31	2,643	532	20	155	33	21
JUN 1-15	5,881	1,181	20	187	33	18
JUN 16-30	4,203	1,194	28	170	42	25
JUL 1-15	5,559	2,337	42	17	6	35
JUL 16-31	4,224	1,362	32	20	5	25
AUG 1-15	6,045	1,703	28	67	20	30
AUG 16-31	4,188	1,223	29	2	1	50
SEPT 1-15	6,820	1,609	24	4	1	25
SEPT 16-30	4,484	1,116	25	0	0	0
OCT 1-15	2,295	342	15	0	0	0
OCT 16-31	1,216	76	6	0	0	0
NOV 1-15	2,094	260	12	0	0	0
TOTAL	87,052	17,958	21	773	153	20

MAJOR PORT: MONTEREY

PERIOD	CHINOOK ESTIMATE	CHINOOK SAMPLE	% SAMPLE CHINOOK	COHO ESTIMATE	COHO SAMPLE	% SAMPLE COHO
FEB 16-28	620	178	29	0	0	0
MAR 1-15	337	171	51	0	0	0
MAR 16-31	4,091	1,351	33	0	0	0
APR 1=15	6,990	2,150	31	0	0	0
APR 16-30	14,950	3,969	27	0	0	0
MAY 1-15	1,058	23	2	0	0	0
MAY 16-31	241	15	6	0	0	0
JUN 1-15	579	29	5	0	0	0
JUN 16-30	1,324	92	7	84	8	10
JUL 1-15	1,631	175	11	0	0	0
JUL 16-31	3,030	502	17	9	2	22
AUG 1-15	1,123	203	18	13	3	23
AUG 16-31	152	36	24	4	1	25
SEPT 1-15	7	3	43	0	0	0
SEPT 16-30	0	0	0	0	0	0
OCT 1-15	0	0	0	0	0	0
OCT 16-31	0	0	0	0	0	0
NOV 1-15	0	0	0	0	0	0
TOTAL	36,133	8,897	25	110	14	13

SALMON LANDINGS ESTIMATES AND 95% CONFIDENCE INTERVAL ESTIMATES FOR CRESCENT CITY AND EUREKA/TRINIDAD PORT AREAS BY MONTH AND SEASON FOR 1989 1/

Port	May	Jun	Jul	Aug	Sep	Season
CRESCENT CITY						
Est. No. chinook	405	3,618	17,963	3,227	52	25,265
95% C.I. (+ or -)	170	1,481	3,597	813	14	3,803
Est. No. coho	45	4,853	11,667	1,835	69	18,469
95% C.I. (+ or -)	12	2,633	2,504	438	29	3,495
EUREKA/TRINIDAD						
Est. No. chinook	1,717	7,728	12,398	3,443	81	25,367
95% C.I. (+ or -)	403	1,216	1,135	583	77	1,763
Est. No. coho	1,330	7,249	13,050	3,441	24	25,094
95% C.I. (+ or -)	436	1,246	1,892	1,064	10	2,548

1/ The method used for estimating landings and calculating the confidence interval about the estimate for Northcoast ocean recreational private skiff salmon fisheries is presented in the paper listed below. Since this paper was written in 1977, the number of subports at some major port areas has chnaged, but the methods remain essentially the same.

Lesh, E.W. 1977. A stratified random sampling program used to estimate landings in the northern California ocean skiff recreational fishery. Calif. Dep. Fish and Game, Anad. Fish. Br. Admin. Rep. 77-1. 9 p.

KLAMATH RIVER PROJECT
SUMMARY OF METHODS USED TO ESTIMATE THE SPORT HARVEST OF FALL CHINOOK SALMON IN THE KLAMATH RIVER

Angler harvest of fall chinook salmon from the Klamath River estimated from the Klamath River is estimated by a creel census and a tagging study.

I. CREEL CENSUS

A. General Procedures:

A creel census is used to estimate the angler catch of fall chinook salmon from the mouth of the Klamath River to Johnson's Resort near Weitchpec. The census is conducted between July 15 and October 15 each year and begins when angler activity is apparent in the area and terminates when angling effort ceases. The census is systematically designed to typically sample three to four days per Julian week and attempts to estimate total use and harvest within ±20% at the 95% confidence level. On any sample day creel sample locations are manned throughout the fishing day to account for the entire catch and effort at that location for that day. Anglers are interviewed as they leave the area and the following information recorded:

1. Complete or incomplete fishing trip for this time period.

2. Hours spent fishing to the nearest half hour.

3. First three digits of zip code to determine general area of residence.

4. Any fish caught and kept are identified to species, measured to the nearest cm fork length, and fin clips, project tags, and unusual conditions noted.

5. Heads and scale samples are taken from salmon with adipose fins missing.

Angling effort in the lower river is divided between shore and boat anglers and each group is censused separately.

B. Shore Anglers

1. Mouth: Virtually all of the effort occurs on the south spit. Essentially 100% of the angler effort is sampled on each sample day.

2. Waukel Riffle: Sample the heaviest used side and make four use counts per sample day on the opposite side. Assume catch-per-unit-of-effort the same on both sides.

3. Terwer Riffle: Complete effort sampled each sample day.

4. Blake's Riffle: Complete effort sampled each sample day (except in 1989 when use counts were made).

5. Riffles above Blake's: Blue Creek, Ah Pah Creek, and Bear Riffle are estimated to account for less than 1% of the shore effort.

C. Boat Anglers

1. Effort originates from 12 boat docks and one public ramp.

2. Two to six docks and the ramps are sampled on each sample day.

3. Essentially 100% of the angling effort is accounted for at each site sampled on sample days.

D. Estimation of Total Catch and Statistical Procedures

1. Each parameter (catch and effort is estimated for each Julian Week and at each sample location by calculating the daily mean for the parameter and multiplying it by the number of fishing days in the period:

$$\frac{\text{Sum of samples}}{\text{Number of days sampled}} \times \text{Day in period}$$

2. Season total estimates are derived by summing up the weekly totals.

F. Expansion of incomplete census areas

1. Waukel Creek Riffle: The total catch during the sample day at Waukel Riffle is estimated by multiplying the number of angler hours on both sides by the catch-per-hour on the heaviest-use side as determined from the creel census:

$$\text{Total angler hours} = \frac{\text{Sampled hours}}{\text{Sample trip}} \times (\text{Sample trips} \div \text{trips on opposite sides})$$

$$\text{Total catch} = \frac{\text{Sample catch}}{\text{Sample hours}} \times \text{Total angler hours}$$

2. Estuary Boat Anglers: Because we are unable to census all the boat docks, an expansion factor is used to determine the number of boat anglers on a sample day. Assuming the proportion of boats actively fishing is the same for all docks a boat sample ratio is calculated by:

$$\text{Ratio} = \frac{\text{Total boats at sample docks}}{\text{Total boats at all docks}}$$

Total boats at all docks is determined by actual counts or obtained from boat dock operators.

Total boat catch is then determined by the total sample estimate by the ratio:

$$\text{Total boat catch} = \frac{\text{Total sample catch}}{\text{Ratio sampled}}$$

II. TAGGING STUDY

A. Angler harvest of fall chinook salmon from the Klamath River above Johnson's Resort is estimated from angler returns of $10 reward tags.

1. Tagging Procedures: Chinook salmon are captured for tagging by U.S. Fish and Wildlife Service seining operations conducted in the estuary near

the mouth and by Department of Fish and Game seining operations just below the Highway 101 bridge.

2. Recovery Procedures:

a) A $10 reward is offered for the return of any tag regardless of the method of recovery.

b) Commendation cards that give a brief history of the tagged fish and the reasons for the tagging program are sent to each person returning a tag.

c) A follow-up contact with the angler is made to determine the method, date, and area of catch if necessary.

3. Estimation Procedure:

The catch of chinook salmon above Johnson's Resort is estimated from the ratio of tags recovered in the census area from the Highway 101 bridge to Johnson's to the catch in that area compared to the tags recovered from Johnson's to Iron gAte Dam as follows:

$$\frac{\text{101-Johnson's tag returns}}{\text{101-Johnson's catch}} \times \frac{\text{Johnson's-IGH tag returns}}{X}$$

where x = estimated catch.

In 1989 we tagged 1,179 chinook and have received eight back from the census area and one from the uncensused area. In 1988 we tagged 1,635 chinook and recovered 18 from the census area and 12 from the uncensused area (these data are preliminary and subject to revision).

TABLE 1. The 1989 Salmon Catch and Sample Statistics for the Sport Harvest on the Klamath River from the Mouth to Johnson's Resort [1/]

	Shore			Boat			Total		
Week	Landed	Sampled	Percent sampled	Landed	Sampled	Percent sampled	Landed	Sampled	Percent sampled
31	11	3	27	23	3	13	34	6	18
32	4	1	25	76	13	17	80	14	18
33	30	13	43	106	29	27	136	42	31
34	48	11	23	264	115	44	312	126	40
35	330	55	17	719	193	27	1,049	248	24
36	325	97	30	619	199	32	944	296	31
37	753	248	33	1,181	398	34	1,934	646	33
38	288	89	31	874	355	41	1,162	444	38
39	160	32	20	492	210	43	652	242	37
40	28	5	18	275	118	43	303	123	41
41	3	1	33	74	30	41	77	31	40
Totals	1,980	555	28	4,703	1,663	35	6,683	2,218	33

[1/] Preliminary data and subject to revision.

TABLE 2. Summary of Salmon Catch and Sample Statistics for the Klamath River Sport Harvest for the Years 1984-1989

Year	Chinook Harvested		Number	Percent Sampled	
	Census Area	Total	sampled	Census Area	Total
1984	1,383	3,163	323	23	10
1985	6,767	9,181	2,280	34	25
1986	8,138	14,958	2,763	34	18
1987	11,299	15,249	3,937	35	26
1988	10,850	15,538	3,574	33	23
1989 [a/]	6,683	14,958	2,218	33	15

[a/] Preliminary data and subject to revision.

Trinity River Project

Methodologies Used to Generate

Angler Harvest Estimates of

Fall Chinook in the

Trinity River Basin

Upstream migrating anadromous salmonids are trapped, tagged, and released from a weir in the main stem Trinity River located approximately two miles upstream of Willow Creek (Rm 26). All salmonids captured at the weir are identified to species, measured to the nearest cm FL, and examined for hook and gill-net scars, hatchery marks and tags, and tagged with serially-numbered FT-4 spaghetti tags. Up to 500 fall chinook are tagged with $10 reward tags to determine angler-harvest rates. Remaining fish are tagged with non-reward tags. All fall chinook salmon are also given a secondary mark (fin-clip or operculum punch) to determine tag shedding rates. All fish are released at the capture site immediately after processing.

Weekly surveys are conducted to about four miles upstream of the weir site to look for tagging mortalities. Fish recovered during these surveys are examined as at the weir.

To determine the number of effectively tagged reward and non-reward tagged fish, we make corrections for tag mortalities recovered during the river surveys, tags of dead fish returned by anglers, tagged fish recovered downstream of the tagging site, and tag shedding. Tag shedding rates are determined by examining all salmon that enter Trinity River Hatchery for Project tags and the secondary mark applied at the weir.

We assume (1) the fish trapped and released from the weir are a random sample representative of the population, (2) tagged and untagged fish are equally vulnerable to recapture (angling and entering the hatchery), (3) all Project tags and secondary marks are recognized upon recovery, and (4) tagged and untagged fish are randomly mixed.

The Trinity River basin fall chinook angler-harvest estimate is determine from reward tags applied at Willow Creek and returned by anglers.

The reward tags returned by anglers are a binomial distribution with the number of effectively tagged fish released as the sample size. We strive for 95% confidence limits of no greater than $\pm 5.0\%$ from the point estimate. If the 95% con-

fidence limits of either the stratified grilse and adult estimates exceed ±5.0%, we use the unstratified sample to narrow the confidence limits.

The respective point estimates of the grilse and adults harvest rates are multiplied by the respective point estimates of the grilse and adult fall chinook run-size estimates upstream of Willow Creek to determine the total number of fall chinook harvested.

Estimates of the numbers of fall chinook passing into the Trinity upstream of Willow Creek are developed using the equation:

$$N = \frac{(M+1)\ (C+1)}{(R+1)} \quad \text{where}$$

N = estimated run-size, M = number of fish effectively tagged, C = number of fish examined at Trinity River Hatchery and R = number of tags recovered in the hatchery sample. We strive for 95% confidence limits of ±10% surrounding the point estimate. The same conditions and assumptions apply to the run-size estimate as for the harvest-rate estimate.

All figures used in the following example for 1988 are considered preliminary and subject to revision.

In 1988, we applied 377 reward tags to fall chinook at Willow Creek, of which 187 were grilse (≤56 cm FL) and 190 were adults (Table 1).

Table 1. Numbers of $10 Reward Tags Applied and Returned by Anglers, Trinity River Basin Upstream of Willow Creek, 1988-89 Season.

	Tags applied	Tag mortality	Tag shedding	Effectively tagged	Returned by anglers	Percent returns	95% Confidence interval
Grilse	187	1	0	186	28	15.1	11.1-19.1
Adults	190	7	1	182	24	13.1	9.7-17.2
TOTALS	377	8	1	368	52	14.1	12.7-15.4

One chinook of 639 tagged/marked chinook that entered Trinity River Hatchery had a shed tag for a shedding rate of 0.16%. Applying this to the number of fish with a reward tag, 377, we estimate one fish had shed a reward tag. Also, eight reward-tagged fish were recovered dead leaving an effectively-tagged total of 368 (Table 1).

In 1988, approximately 15% of the grilse and 13% of the adult chinook were harvested, both within the 95% confidence limits of ±5.0% (Table 1).

The fall chinook salmon non-stratified run-size estimate was determine with the numbers of grilse and adults comprising the run based on the respective proportions of grilse and adults comprising those trapped at the Willow Creek Weir (Table 2).

Table 2. Fall Chinook Salmon Run-Size Estimates, Trinity River Upstream of Willow Creek, 1988-89 Season.

Size class	Number Effectively tagged	Number exam. for tags	Number tags recovered	Run-size estimte	Confidence limits a/ 1-p=0.95
Grilse (<56cm FL)	540	4,752	121	18,113	
Adults	2,048	17,352	518	71,309	
TOTAL	2,588	22,104	639	89,422	82,761-96,616

a/ Poisson approximation.

The total point estimates of the harvest of grilse and adult fall chinook in 1988 is therefore:

Grilse	15.1%	X	18,113	=	2,735
Adults	13.1%	X	71,309	=	9,341
TOTAL					12,076

Bill Heubach
Assoc. Fishery Biologist

BH/cw

OREGON DEPARTMENT OF FISH AND WILDLIFE
OCEAN SALMON MANAGEMENT PROGRAM

OCEAN SAMPLING PROGRAM

COASTWIDE SUMMARY

1. Oregon samples 12 ports along the Oregon Coast from Astoria to Brookings (see Figure 1). Additional landing locations (eg: Seaside/Gearheart, Cannon Beach) are sampled as needed.

2. Sampling program currently evaluates all ocean chinook, coho, pink, chum, and sockeye landings made in the commercial troll and recreational fisheries from May 1 - November 30 each year, with the most intense sampling occurring from May through September.

3. The OSM Program coordinates the ocean sampling program from the Marine Region office at Newport, Oregon.

4. For the 1989 ocean salmon season, the OSMP placed a total of 31 seasonal port samplers (20 recreational and 11 troll) in 12 ports. These field staff were supervised by 3 permanent staff (Project Leader, and two coastal crew chiefs; the assistant project leader position was filled following the season). Three data entry seasonals were hired to enter collected field data, inseason, at the Newport office.

5. We spend an estimated $250,000 to $300,000 - about 30% of OSMP budget directly on ocean harvest data collection and inseason fishery management/quota monitoring as required by the PFMC and the state of Oregon.

6. Management of ocean recreational and commercial fisheries for both coho and chinook requires numerous area and time specific management strategies and quotas that must be monitored to meet established PFMC/Oregon goals and provide for escapement of critical natural stocks to coastal streams.

7. To ensure timely inseason monitoring of these quotas, the OSMP conducts an inseason "Key Buyer" program in the commercial troll fisheries each year. This program, conducted since 1983, canvases about 40-50 of the "Key" coastal salmon buyers for landing information on a daily basis during critical troll seasons and quotas. These buyers are responsible for about 90-95% of total salmon landings. The various port troll samplers are a vital link in contacting buyers for information.

8. For the ocean recreational fishery, the OSMP gathers continuous daily/weekly angler effort and catch data at the various ports to provide weekly catch estimates in order to monitor recreational quotas.

9. The ocean sampling program has developed a widely stratified sampling plan in order to adequately sample various components of the troll and recreational fisheries, be statistically meaningful, and reduce bias. For example:

   a) levels of general stratification are: species, port, fishery, stat week, and species.

b) in Rec fishery: Also stratify by charter vs private boats, weekend vs weekday
c) in Troll fishery: Also stratify by fish grade, trip type (day vs trip boats), and area of catch within port

10. Overall, samplers are responsible for:
a. selecting boats to sample
b. assessing recreational and commercial effort
c. interviewing fishermen for area and catch data
d. sampling the landed catch for biological and coded wire tag information
e. collecting "Key Buyer" information
f. assisting in collection of information from special studies (eg: Genetic Stock Identification, at-sea observer programs, and economic studies).

11. It is the goal of the ODFW ocean sampling program to maintain a sampling rate of at least 20% for each catch week in each sampled port for both the troll and sport fisheries. Coastal sampling rates for the 1987-1989 seasons were 32%, 30%, and 22% in the troll fishery; and 44%, 43%, and 43%, in the recreational fishery.

SAMPLING IN COOS BAY AND KMZ

1. We maintain commercial troll sampling in the ports of Charleston, Port Orford, and Brookings; with additional sampling in the ports of Bandon and Gold Beach as necessary. The following seasonal 4 positions were filled in 1989:

Charleston -- May 1-October 31
Charleston -- July 1-September 8
Port Orford -- May 1-November 30
Brookings -- May 1-September 30 (recreational position that assisted with troll sampling while KMZ fisheries were in progress)
Bandon -- spot check sampling by crew chief
Gold Beach -- sampling by crew chief and roving sampler during subarea fisheries, and as needed

2. We maintain recreational sampling in the ports of Charleston, and Brookings. The following 5 seasonal positions were filled in 1989:

Charleston (2) -- May 1-September 4
Brookings (1) -- May 1-September 30 (also worked the troll fishery)
Brookings (1) -- June 12-September 15
Brookings (1) -- May 9-September 30
Gold Beach -- sampling by crew chief and roving sampler on a periodic basis

3. Sampling rates by port and fishery for the years 1987-89 are listed below:

	1987		1988		1989	
Port	Sport	Troll	Sport	Troll	Sport	Troll
Charleston	54%	20%	46%	27%	49%	14%
Port Orford	NA	66%	NA	61%	NA	64%
Gold Beach	64%	NA	0%	NA	0%	NA
Brookings	57%	40%	51%	70%	50%	61%
Statewide	44%	32%	43%	30%	43%	22%

4. In 1989, we sampled 39,502 recreational vessel trips.

5. In 1989, we sampled 7,009 troll salmon trips in Oregon ports. The ports of Florence, Winchester Bay, Coos Bay, and Port Orford comprised 60% of all landings sampled. Charleston alone made up 30% of the sampled trips.

CONCERNS/PROBLEMS IN COOS BAY/KMZ SAMPLING- 1989

1. Low commercial sampling rates at Charleston (especially in May) are a major concern. The low sampling rates were due to a number of factors:
   a. High effort shifts into the Coos Bay area when fisheries in California and Washington did not produce well.
   b. Landings at Charleston in May were approximately double 1988 catches for the same time period.
   c. The samplers in 1989 had a difficult time adjusting their schedules to optimize the sampling of the trip boat segment of the fleet.
   d. In 1989, the catch was distributed more evenly among the many local fish plants than had previously occurred (several of these buyers have only started handling salmon in the last couple of years). This change in landing patterns has complicated consistent sampling coverage, and lowered our sampling efficiency.
   e. Sampler time in the last couple of seasons has been directed away from sampling to comply with requirements of "Key" buyer program, in order to manage quota fisheries.

2. Low quota and high effort fisheries have developed in the KMZ in recent years. Key buyer data collection, required high sampling rates for some fisheries, and other projects have stretched our commercial samplers to their limits at times, and often limit the samplers ability to maintain an adequate sampling level.

3. Recreational sampling at Gold Beach was suspended in 1988 and 1989 due to budgetary constraints. Although Gold Beach is typically a minor contributor, it is within a critical management area, and it is our intent to resume sampling there in 1990.

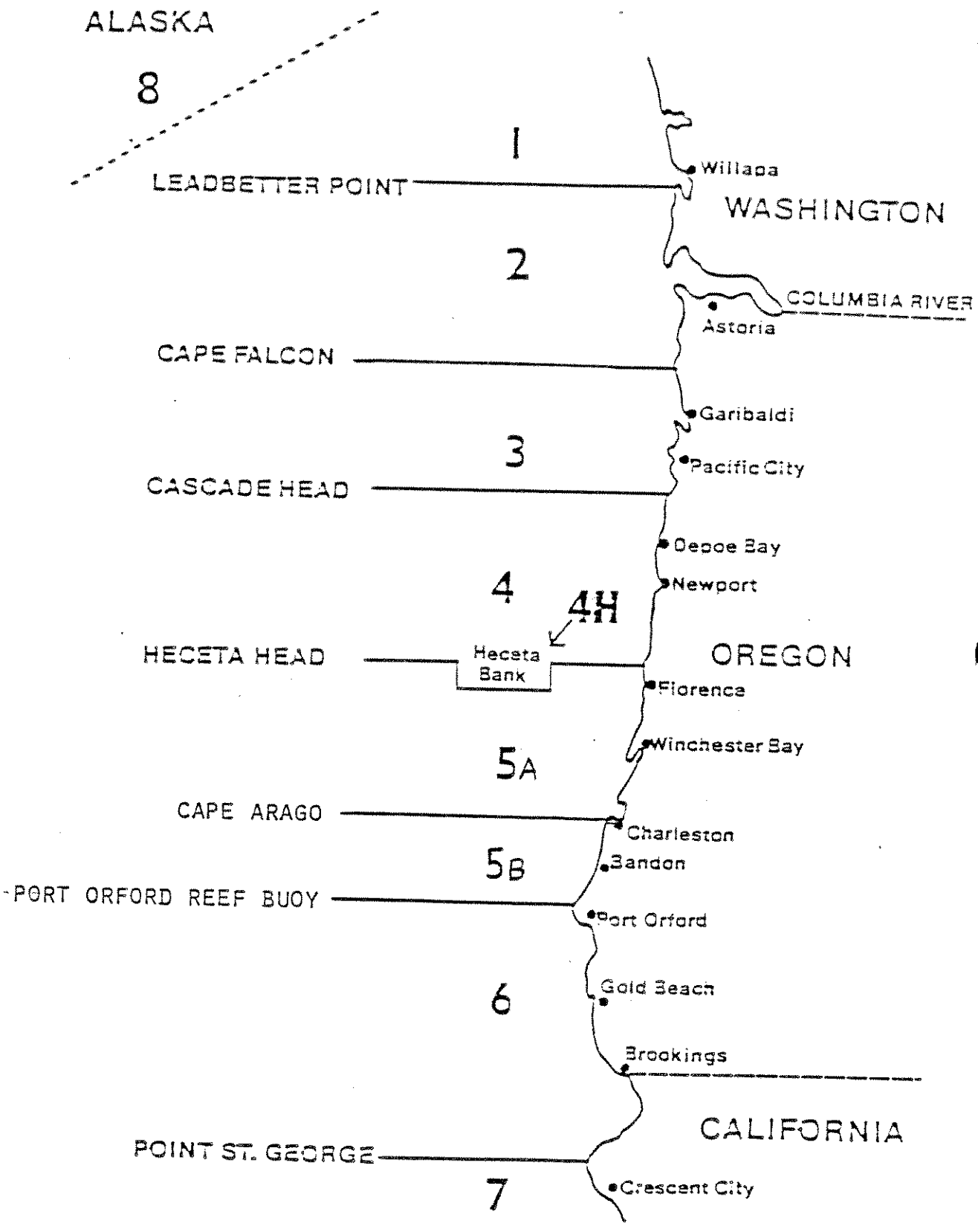


Figure 1. Ocean Catch Areas

ATTACHMENT 7

DEPARTMENT OF PUBLIC SAFETY AND EMERGENCY SERVICES

Hoopa Valley Business Council

P.O. Box 1341 • Hoopa, CA 95546 • (916) 625-4202

D.W. McAllister, Sr.
Director

MEMORANDUM

DATE: 02/01/90

TO: Daniel Jordan, Administrative Aide

FROM: William Gray, Sgt. Safety Officer

RE: 1989 FISHING VIOLATIONS ON THE HOOPA INDIAN RESERVATION

Danny;

The following is the fishing regulation enforcement by Tribal Officers for 1989, these include Tribal Violations; Cites and Warnings. State Fish & Game; Cites and Warnings.

CASE:	VIOLATION TYPE:	REGULATION/VIOLATION:	COURT ASSIGNED:
89-032C	State Fish & Game	Fishing without a license.	K-T. Justice Court
89-114C	State Fish & Game.	Fishing without a license.	K-T. Justice Court
89-189C	State Fish & Game.	Fishing without a license.	N/A **Warning**
89-199C	State Fish & Game	Fishing without a license.	K-T. Justice Court
89-497C	State Fish & Game .	Fishing without a license	K-T. Justice Court
89-613C	Tribal Fishing Ord.	Net Violation/Non-Hoopa Tribal Member	Tribal Court
89-687C	Tribal Fishing Ord.	I.D. Number Violations	Tribal Court
89-688C	Tribal Fishing Ord.	I.D. & Misappropration of I.D. Numbers	Tribal Court
91-037C	State Fish & Game	Fishing without a license.	K-T. Justice Court
91-145C	Tribal Fishing Ord.	Over 2/3's of the River	N/A **Warning**
91-146C	Tribal Fishing Ord.	Impeding Traffic & over 2/3's of River.	Tribal Court
91-150C	Tribal Fishing Ord.	Non-Tribal Member/Pole Fishing	Tribal Court

5 State Violations - Non Tribal Members
1 State Violation - Indian
5 Tribal Violations- Tribal Member
2 Tribal Violations- Non Tribal Members, Indian
1 Tribal Violation - Tribal Members

Total River patrol hours for 1989 is 1,760.25

HOOPA TRIBAL FISHERIES PURPOSE AND ROLE

INTRODUCTION

The Hoopa Tribal Fisheries Department, a division of the Hoopa Valley Business Council, is responsible for coordinating all fisheries management and fish habitat management activities that occur on the Hoopa Valley Reservation, California. The reservation encompasses the lower 26 km of the Trinity River, the largest tributary of the Klamath River (figure 1). The Trinity River has historically supported large runs of chinook salmon (Oncorhynchus tshawytscha) and steelhead trout (Oncorhynchus mykiss). The annual harvest of these and other anadromous fish species has been a mainstay of the Hupa culture for generations. The Tribe currently employs gillnets and other gear to harvest chinook and coho salmon (Oncorhynchus kisutch), steelhead trout, green sturgeon (Acipenser medirostris) and pacific lamprey (Lampetra tridentata) for subsistence and religious purposes. Concern over declines in the salmon and steelhead populations in the Klamath basin and in Reservation tributaries led to the formation of the Tribal Fisheries Department in 1981. The Department is responsible for coordinating tribal involvement in all aspects of Klamath basin fish management, including working toward the rebuilding of depleted anadromous fish stocks, thereby improving tribal fishing opportunities. The department carries out activities in five major program areas: net harvest monitoring, juvenile salmonid surveys, spawning ground surveys, fish management and right protection, and operation of hatchery/rearing program.

1. Net Harvest Monitoring - Harvest data is collected and analyzed from the Tribal gillnet fishery.

2. Juvenile Salmonid Surveys - Downstream migrant juvenile chinook salmon are collected by trap and electroshocker to determine the more productive chinook streams on the reservation and to monitor changes in production.

3. Spawning Ground Surveys - Reservation tributaries are surveyed to estimate spawning populations of fall chinook salmon.

4. Fishery Management and Rights Protection - The Department provides technical expertise and representation for the Tribal Council on all matters pertaining to regional management of Klamath River basin salmonid stocks.

5. Hatchery Program - Salmon and/or steelhead are reared for outplanting in reservation streams.

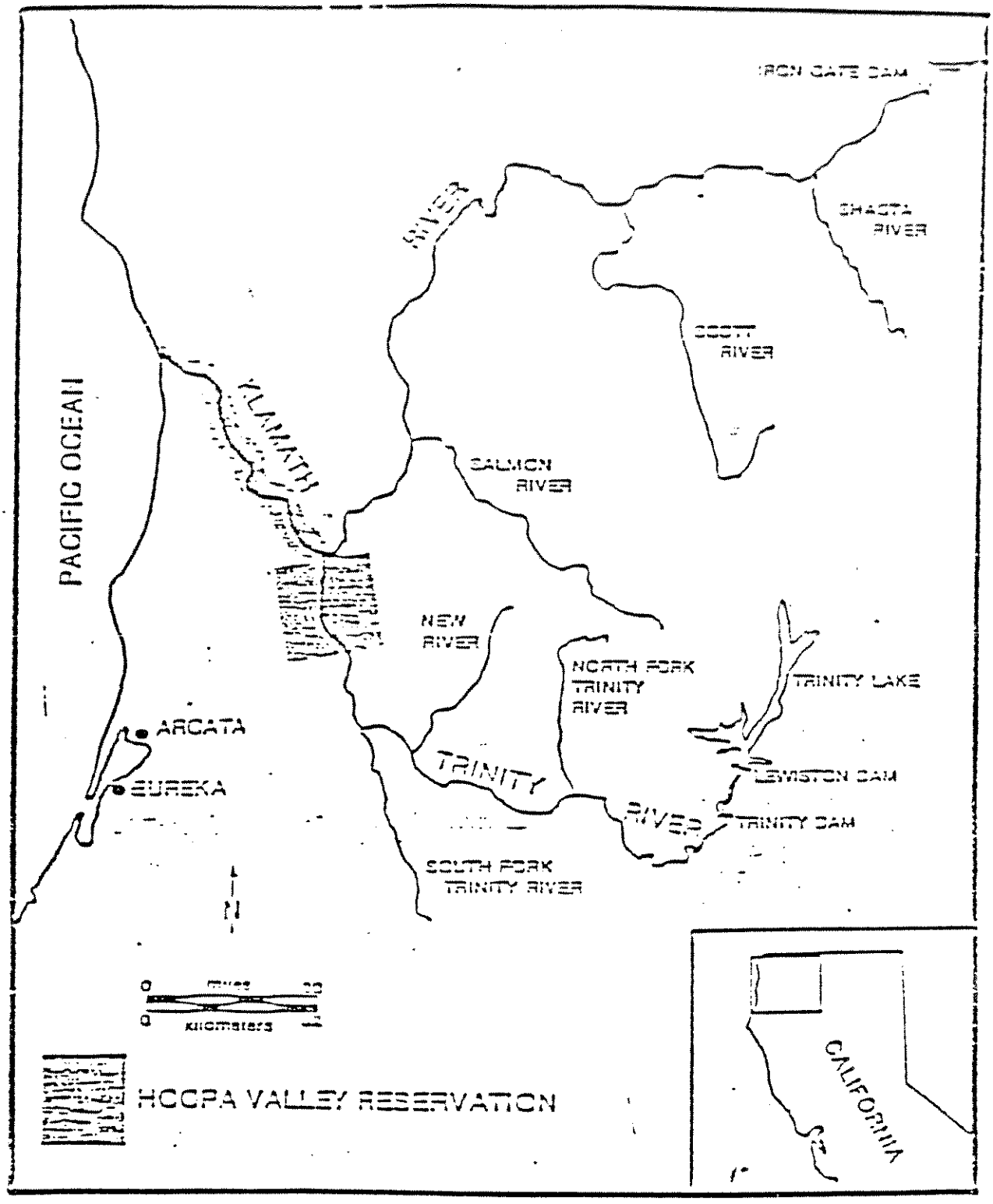


FIGURE 1. The Klamath River basin and Hoopa Valley Reservation.

NET HARVEST MONITORING PROGRAM

A. Introduction

The primary objective of the net harvest monitoring program is to obtain estimates of the total harvest of anadromous fish taken in the gillnet fishery on the Hoopa Valley Reservation. The species of primary concern are chinook and coho salmon, steelhead trout, and green sturgeon.

Net harvest sampling includes length frequency of the catch and sampling for marked, tagged, or clipped fish in the catch. The tags or marks recovered give significant information about run timing, migration rates, survival and contribution rates of various tag groups to the gillnet fishery. Ad-clipped information is provided to various management agency responsible for management of fall chinook salmon.

Harvest estimates for fall chinook salmon are provided weekly to Bureau of Indian Affairs (BIA) throughout the fall harvest period. In 1989, tribal fishing regulations pertained to subsistence fishing only. The fishery was open 7 days per week throughout the spring and fall. In coordination with BIA, strict adherence to preseason allocation of fall chinook salmon is maintained. A summary of anadromous fish harvested on the Hoopa Valley Reservation in 1989 and the previous three years appear in table 1.

B. Methods

Net harvest data is collected primarily by direct sampling of the catch of individual fishers on a daily basis in the summer and fall seasons and on an intermittent basis during the spring. Fish that are sampled are measured (cm./fork length) and inspected for a variety of tags and fin-clips. Whenever possible, the noses are collected from adipose-clipped/ coded-wire-tagged (hereafter referred to as Ad-CWT) salmon for dissection and identification. Additional catch data is collected through reports of other reliable contacts in the fishing community.

Fishing effort is also recorded (1 "contact" = one net set for one night). Data is tabulated by species and date. A subjective estimate of the "percent coverage" of catch monitoring efforts is made daily and used to expand daily catch and effort estimates to account for regular fishers that could not be contacted. "Percent coverage" estimates are re-evaluated on a periodic basis as "additional" fishers are eventually contacted. Data collected is divided into two groups for primary analysis, data based on direct sampling and data based on reliable but unverified accounts of fish caught. The two groups are classified as "mark-sampled" (MS) and "reliable unseen" (RU) respectively. Data analysis is also stratified by time period using calendar months in spring and summer, and semimonthly in the fall. In

interpreting RU data, it is assumed that tribal fishers can differentiate between salmon and steelhead reliably, but not between chinook and coho salmon. The relative proportions of coho and chinook salmon observed in the MS data during the fall periods is used to estimate species composition of the RU data. Both types of data are expanded by daily "percent coverage" estimates and summed by time period, then rounded off to the nearest whole number. During time periods when spring and fall chinook runs overlap the separate catch estimates are based on analysis of coded-wire-tags and ad-clip rates observed in the catch. In some years a nadir in the curve of catch per unit effort is used to separate spring and fall chinook salmon. The total harvest of spring and fall chinook, and coho salmon are further broken down into grilse and adults for each time period based on length frequency data.

Coded-wire-tag recoveries are expanded using the following formula:

$$\text{Single Tag Expansion Factor} = \frac{\text{Total estimated catch}}{\text{Number of fish sampled for marks}} \times \frac{\text{Number of ad-clipped fish observed}}{\text{Number of heads recovered}} \times \frac{\text{Number of heads with tags}}{\text{Number of tags decoded}}$$

Total catch of fall chinook and total fishing effort are estimated for an index period each year to allow comparison between years. The index period used is September 1 through October 8th of each year. This period is chosen to minimize the effect of variation in run timing on index period catch and effort estimates.

Table 1. Total estimated harvest by fish stock from the Trinity River gillnet fishery for the years 1987-89.

Stock	1989			1988			1987		
	Jack	Adult	Total	Jack	Adult	Total	Jack	Adult	Total
Green Sturgeon	-	-	30	-	-	20	-	-	29
Spring Chinook	20	1,978	1,998	84	2,727	2,811	128	4,146	4,274
Fall Chinook	71	3,474	3,545	267	5,070	5,337	262	4,982	5,244
Coho Salmon	10	477	487	34	210	244	5	508	513
Steelhead Trout 1/	-	148	148	-	-	44	-	-	107

1/ Estimates are for April through November 15th each year.

Hoopa Valley Business Council

P.O. Box 1348 ● Hoopa, California 95546 ● (916) 625-4211

Dale Risling
Chairman

HOOPA VALLEY TRIBE
Regular meetings on 1st & 3rd Thursdays of each Month

February 2, 1990

Mr Karole Overberg, Superintendent
BIA Northern California Agency
P.O. Box 494879
Redding, California 96049

Dear Mr. Overberg:

This letter is to inform you of the Hoopa Tribe's intent to conduct commercial fishing operations during the 1990 fishing season for Spring Chinook, Fall Chinook and Coho Salmon. These fishing operations will be conducted in accordance with the 1987 Harvest Sharing Agreement and our prior harvest sharing agreement with the Yurok fishery.

While we have yet to develop specific management plans, each of the fisheries will be conducted under separate management plans and Tribal harvest regulations. An important emphasis for each plan will be to begin collecting data on alternative harvest methods for each stock. We are especially interested in the possibility of developing non-fatal, selective harvest methods that can be targeted toward hatchery and other stocks, thereby reducing impacts on natural escapement. We believe that by exploring various types of harvest methods we can create additional opportunities and benefits for harvest groups and will protect fishery resource as well.

As far as markets are concerned, the Tribe has developed processing and marketing options that address problems facing Hoopa fishery sales in the local fresh fish markets and that will avoid potential conflicts with State laws that apply to buyers within the boundaries of California.

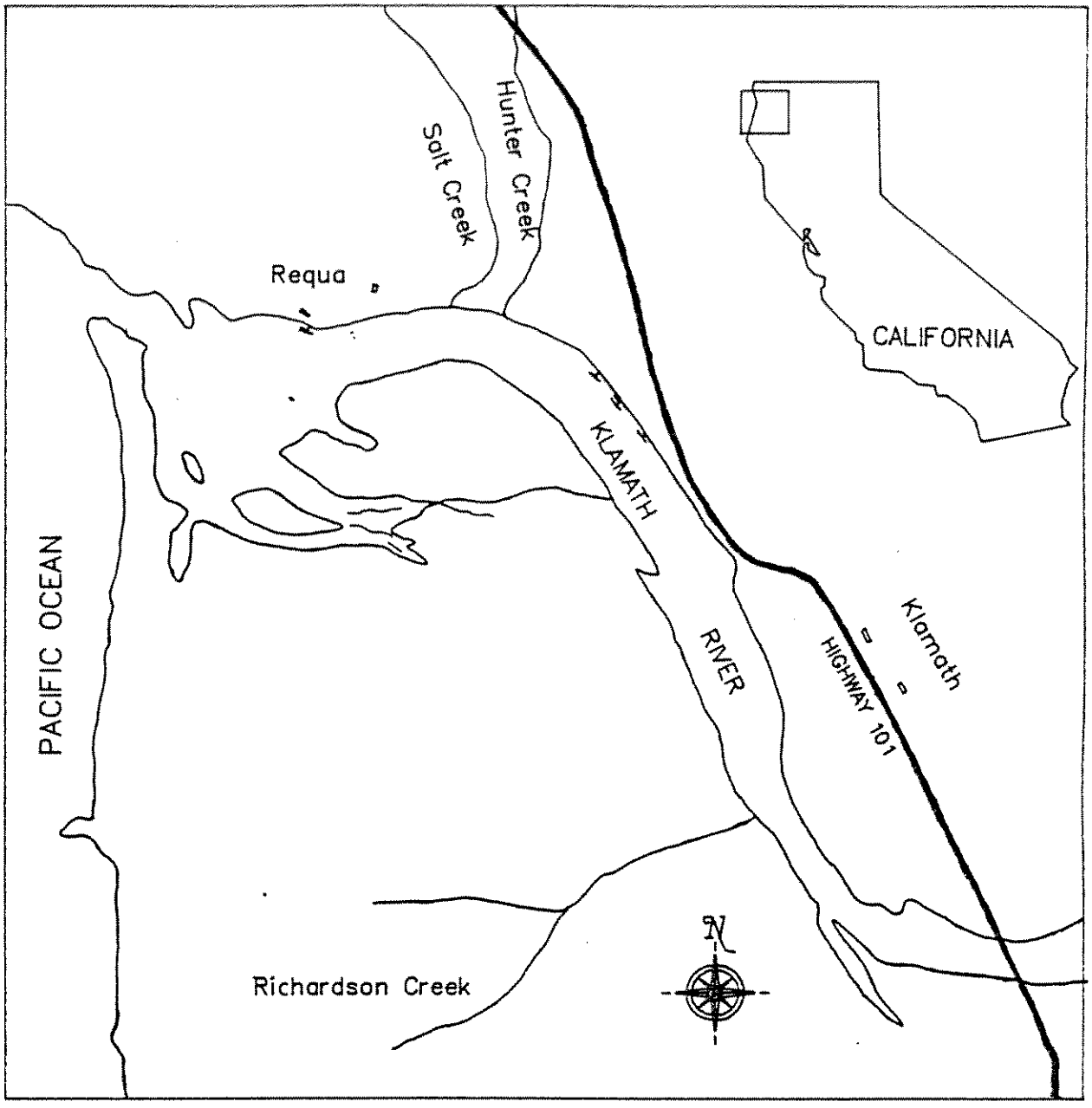
In respecting the position of the KFMC of recommending on fishery management seasons, we envision that our draft management plans will be completed sometime before their March meeting. We expect that prior to completion of our management plans and seasonal regulations, the Tribe and Bureau will have some opportunities to coordinate our respective fishery plans and their impacts, and to discuss cooperative enforcement agreements.

We would like to note that since the State of California has chosen to withdraw from the cooperative fisheries law enforcement agreement with the Hoopa Tribe, the Tribal Council sees no need for sharing our enforcement plans with the State. Furthermore, until the State resolves its internal legal problems, the Tribe and Hoopa Reservation will not be bound by any agreements made between the Bureau and State to which the Tribe is not a party. Although this issue has lingered for several months thus far, it is our hope that the State can resolve this matter early enough so as not to burden down any cooperative management schemes that could be developed for the upcoming fishing season.

If you have any questions regarding our plans for the 1990 fishing season, please do not hesitate to contact me.

Sincerely,

Dale Risling, Chairman



KLAMATH RIVER FISHERIES ASSESSMENT PROGRAM

REPORT ON THE 1989 COMMERCIAL FALL CHINOOK SALMON INDIAN GILL NET FISHERY ON THE KLAMATH RIVER

FEBRUARY 1990

FISHERIES ASSISTANCE OFFICE
ARCATA, CALIFORNIA
WESTERN REGION

SUMMARY OF 1989 COMMERCIAL FALL CHINOOK SALMON INDIAN GILL NET FISHERY ON THE KLAMATH RIVER

David Wills

U.S. Fish and Wildlife Service
Fisheries Assistance Office
Arcata, California

FEBRUARY 1990

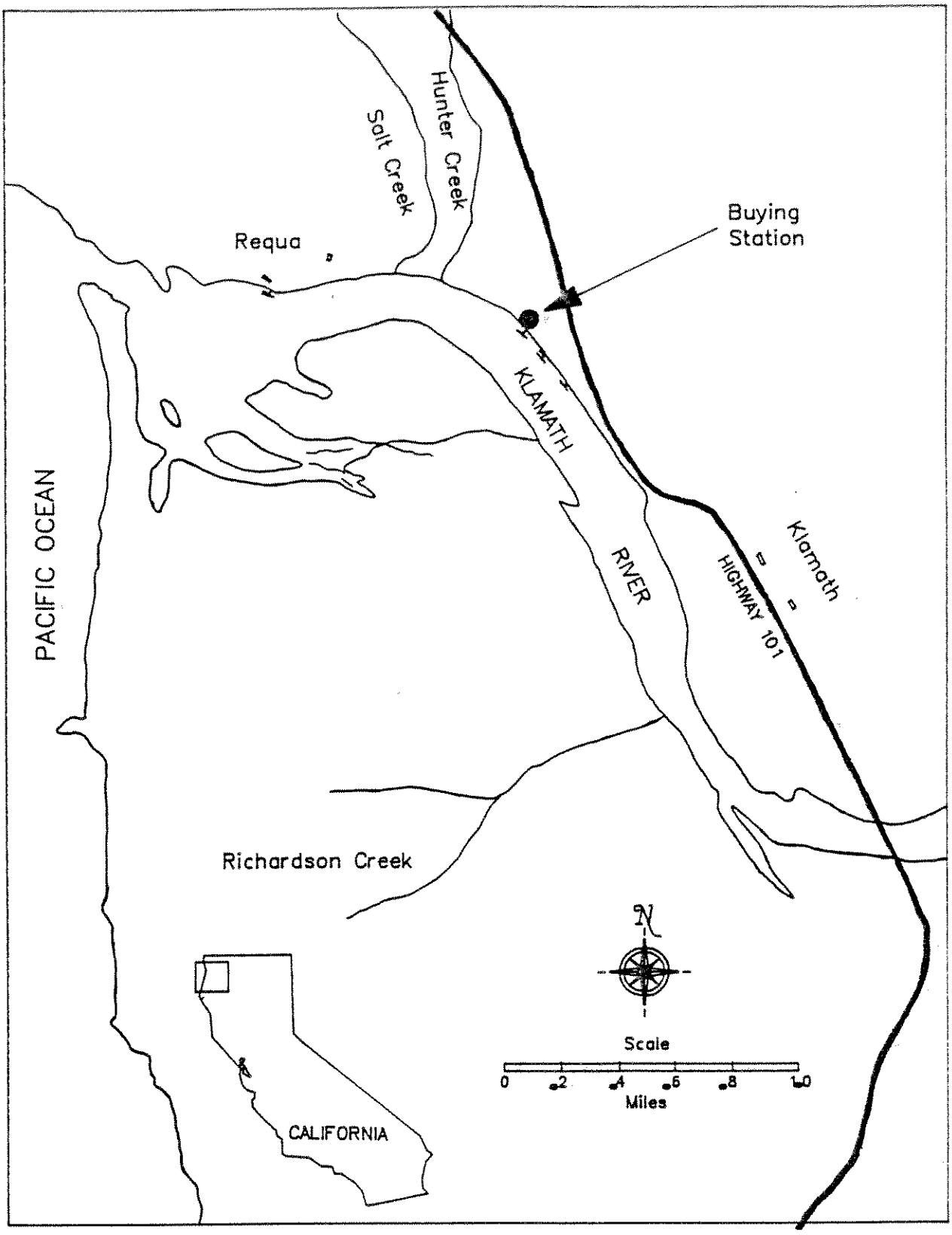


Figure 1. Estuary area of the Klamath River: site of the 1989 fall chinook commercial gill net fishery.

be used by the Yurok Tribal Council to benefit programs on the Yurok Indian Reservation. This year the Tribal resource share had no sliding scale tied to the total numbers of salmon landed by individual fishers, as was done in 1987 and 1988.

FISHERY RESULTS

A total of 27,504 fall chinook salmon were sold at the buying station. The total weight was 423,757 pounds. The total value was $851,751.57. Of this amount $682,248.77 was paid directly to the fishers and $169,502.80 was deposited into the Tribal trust account. During the 16 nights of fishing a total of 3007 deliveries were made by 508 individual fishers. The commercial fishery data is summarized in Table 1.

The average number of deliveries per night was 188, with an actual range of 86 to 298. The total number of salmon sold nightly ranged from 301 to 5269 for an average of 1719 salmon per night. Based on all salmon delivered, the average weight per salmon was 15.4 pounds. This was slightly higher than 1988's average of 15 pounds. The nightly average weight (Table 1) varied from 15.0 to 16.0 pounds. Salmon for the first 8 nights of the fishery were only slightly larger than those from the last 8 nights, 15.5 and 15.3 pounds, respectively.

TABLE 1.- Summary of data from the 1989 fall chinook commercial gill net fishery in the Klamath River estuary.

Date	Peak # Nets	# Deliveries	Largest Single Delivery	Total Sold	Total Wt(lbs)	$ Value	% Total by #	Avg lbs. per Fish
Aug 9	206	151	94	1,199	18,718	37,623.18	4.4	15.6
Aug 10	250	119	19	484	7,501	15,077.01	1.8	15.5
Aug 11	271	131	16	574	8,944	17,977.44	2.1	15.6
Aug 12	243	155	37	876	13,333	26,799.33	3.2	15.2
Aug 13	250	208	55	2,307	36,911	74,191.11	8.4	16.0
Aug 16	397	258	79	4,125	63,255	127,142.55	15.0	15.3
Aug 17	384	173	44	1,065	16,005	32,170.05	3.9	15.0
Aug 18	261	164	20	801	12,529	25,183.29	2.9	15.6
Aug 19	251	86	19	301	4,711	9,469.11	1.1	15.7
Aug 20	206	160	47	1,475	22,697	45,620.97	5.4	15.4
Aug 23	367	264	44	2,262	34,384	69,111.84	8.2	15.2
Aug 24	336	176	26	941	14,826	29,800.26	3.4	15.8
Aug 25	270	200	42	1,357	20,767	41,741.67	4.9	15.3
Aug 26	330	226	54	2,046	31,368	63,049.68	7.4	15.3
Aug 27	389	238	44	2,422	37,770	75,917.70	8.8	15.6
Aug 30	406	298	122	5,269	80,038	160,876.38	19.1	15.2
	Totals	3007		27,504	423,757	851,751.57	100.0	15.4

The average number of salmon delivered per fisher for the season was 54, compared to 43 salmon for each of 602 fishers in 1988 and 66 salmon for each of 440 fishers in 1987. The 1989 delivery rate equates to an average earning of $1343 per fisher. Despite the higher average number of salmon delivered this year, the average earnings is down from 1988's figure of $1605. This can be attributed to the lower price per pound in 1989 caused by a market wide abundance of salmon. Table 2 summarizes the numbers of fishers partaking in the fishery and the number of salmon sold for the three commercial seasons. The lower number of fishers (compared to 1988) is most likely due to the exclusion of members of the Hoopa Tribe from the fishery.

TABLE 2.- Total number of fishers and the salmon sold for the 1987-1989 commercial fall chinook gill net fishery on the Klamath River.

Year	# Fishers	# Salmon Sold	Total Pounds	$ Per lb~	Total Value
1987	440	29,040	373,434	1.75 - 2.50	$936,024*
1988	602	25,782	386,740	3.116	$1,205,082
1989	508	27,504	423,757	2.01	$851,752

~ Three weight grade prices in 1987. One price for all in 1988 & 1989.
* Total value includes sale of 10,560 pounds of roe.

The data on the salmon sold, based on the number of nights each fisher made deliveries, is summarized in Table 3. Figure 2 shows the number of individual fishers and the number of nights on which they made deliveries. A slightly larger percentage of the fishers ,18.3%, made deliveries on only one night in 1989, versus 15% in 1988. Out of 508 individual fishers, only 3 made deliveries on all 16 nights. This is the same number of fishers making deliveries on each of the 18 nights in 1988's commercial fishery. Overall, the delivery pattern of 1989 is very much the same as for 1988, with 71% of the fishers making deliveries on only 1 to 7 nights in each year.

In Table 4, the total number and total pounds of salmon sold by individual fishers are listed in 20-fish increments. The actual range of salmon sold was 1 (by 13 fishers) to 479 (1 fisher). This range and the number of fishers is graphically represented in Figure 3. A total of 191 fishers (37.6%) sold from 1 to 20 salmon. Their catch represents 5.9% of the total. In contrast, the top 9% of fishers, 51 individuals by numbers sold, accounted for 35.8% of the total sold. Over 50% of the total was sold by the top 93 (18.1%) fishers.

TABLE 3.- Summary of salmon sold by total nights of deliveries by fishers during the 1989 commercial fall chinook gill net fishery on the Klamath River.

# Nights of Deliveries	Total # Fishers	% Total Fishers	Total # Sold	% Total Sold	Total Pounds	% Total Pounds
1	93	18.3	777	2.8	11,543	2.7
2	70	13.8	962	3.5	14,869	3.5
3	46	9.1	1,127	4.1	16,992	4.0
4	40	7.9	1,358	4.9	20,608	4.9
5	41	8.1	1,969	7.2	30,464	7.2
6	31	6.1	1,884	6.8	29,054	6.9
7	39	7.7	2,425	8.8	36,908	8.7
8	26	5.1	2,142	7.8	33,058	7.8
9	24	4.7	2,261	8.2	35,347	8.3
10	22	4.3	1,963	7.1	29,959	7.1
11	24	4.7	2,339	8.5	36,346	8.6
12	12	2.4	1,655	6.0	25,347	6.0
13	13	2.6	2,020	7.3	31,447	7.4
14	16	3.1	2,472	9.0	38,178	9.0
15	8	1.6	1,253	4.6	19,465	4.6
16	3	0.6	897	3.3	14,172	3.3
Total	508	100.0	27,504	100.0	423,757	100.0

TABLE 4.- Summary of salmon sold by individual fishers during the 1989 fall chinook gill net fishery on the Klamath River.

# Salmon Sold	# Fishers	% Total Fishers	Total # Sold	% Total Sold	Total Pounds	% Total Pounds
1 - 20	191	37.6	1,610	5.9	24,241	5.7
21 - 40	90	17.7	2,676	9.7	40,849	9.6
41 - 60	62	12.2	3,128	11.4	47,464	11.2
61 - 80	46	9.1	3,216	11.7	49,775	11.7
81 - 100	27	5.3	2,360	8.6	36,667	8.7
101 - 120	19	3.7	2,114	7.7	32,602	7.7
121 - 140	22	4.3	2,846	10.3	43,378	10.2
141 - 160	20	3.9	2,986	10.9	45,911	10.8
161 - 180	8	1.6	1,368	5.0	21,013	5.0
181 - 200	9	1.8	1,703	6.2	26,626	6.3
201 - 220	6	1.2	1,264	4.6	19,621	4.6
221 - 240	1	0.2	225	0.8	3,384	0.8
241 - 260	5	1.0	1,263	4.6	19,888	4.7
261 - 280	1	0.2	271	1.0	4,449	1.0
281 - 460	0	0.0	0	0.0	0	0.0
461 - 480	1	0.2	479	1.7	7,889	1.9
Totals	508	100.0	27,504	100.0	423,757	100.0

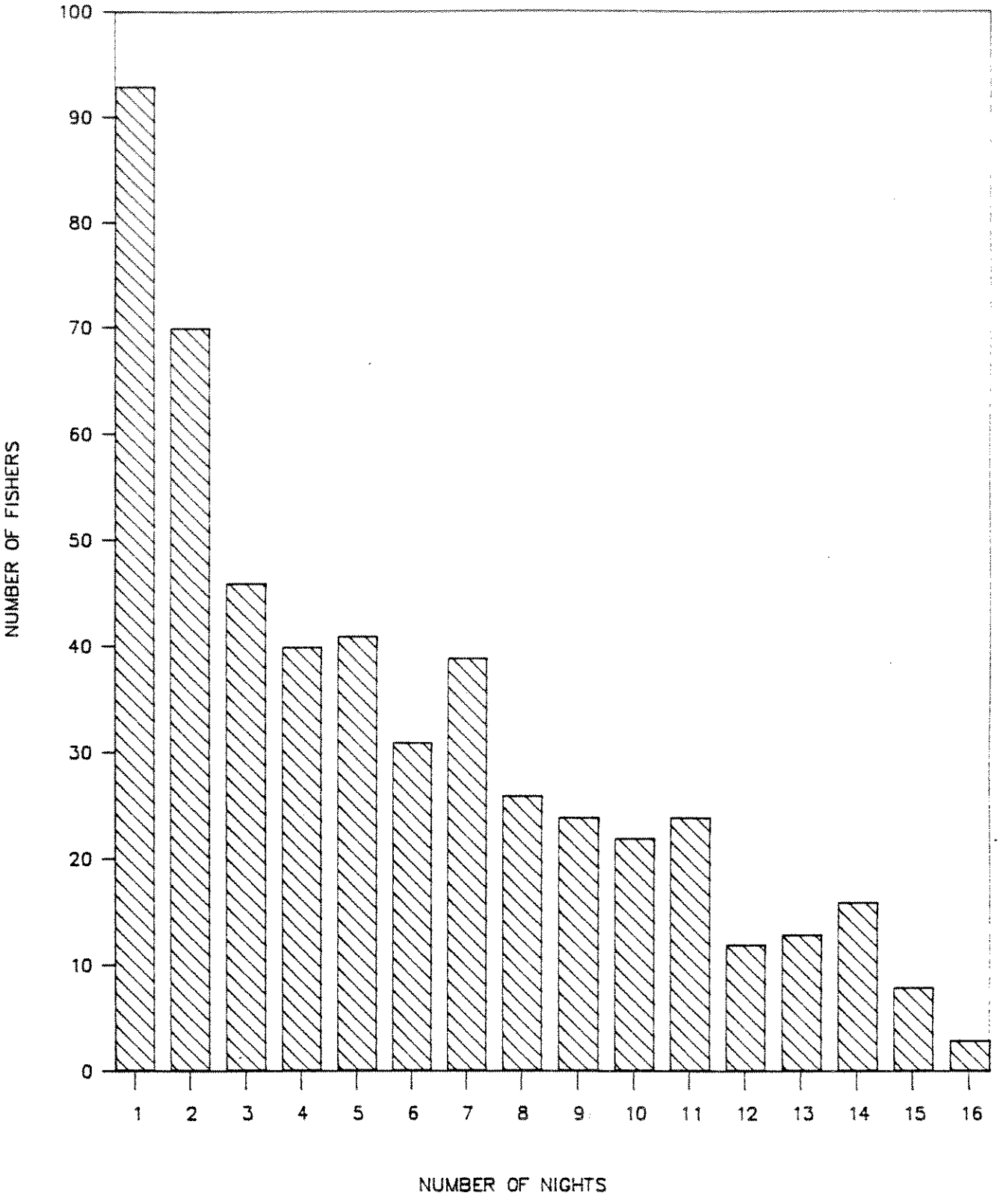


Figure 2. Total number of fishers grouped by the total number of nights on which each fisher made deliveries during the 1989 commercial fall chinook gill net fishery on the Klamath River.

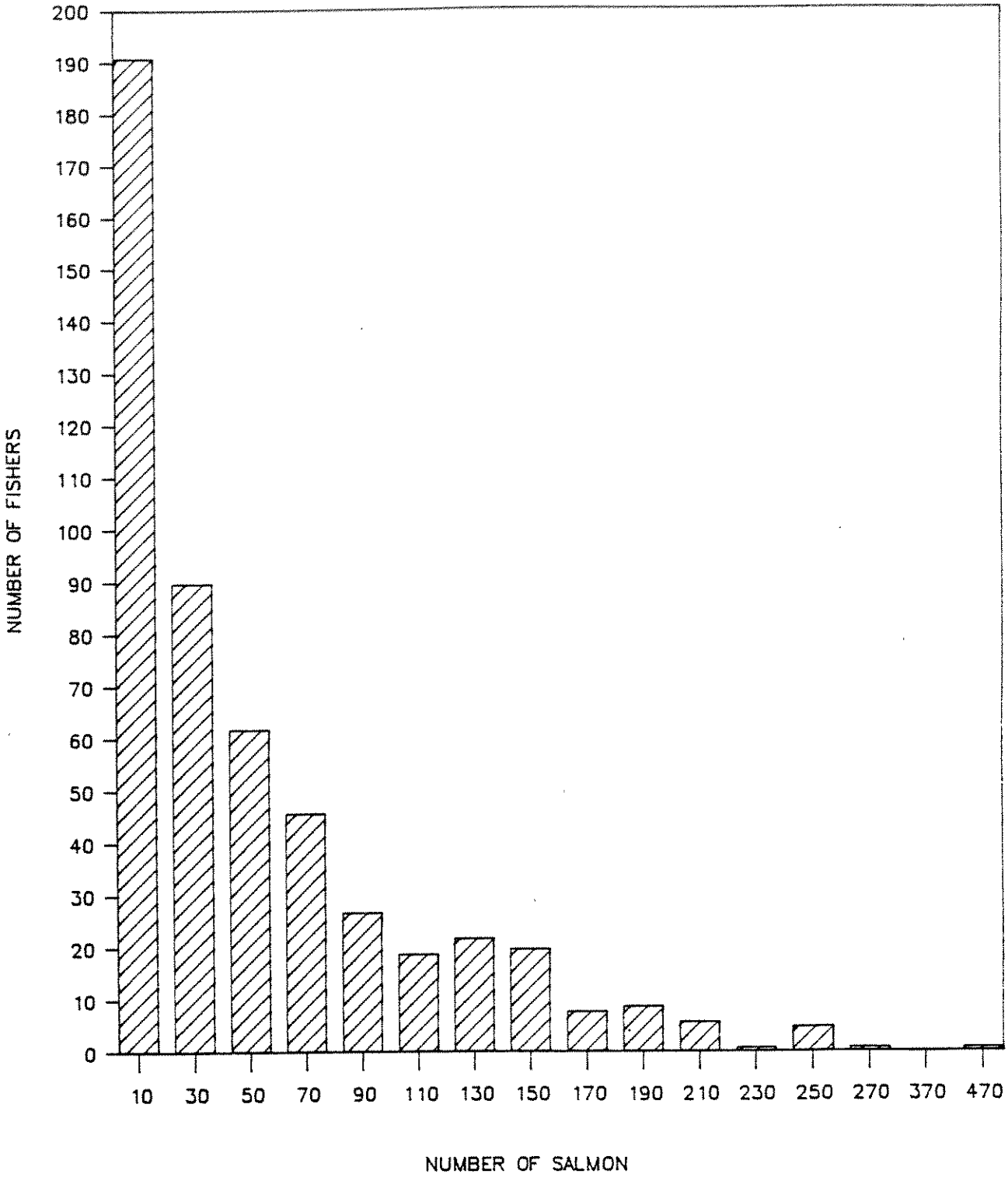


Figure 3. Distribution of harvest for the 1989 fall chinook commercial gill net fishery. Midpoints denoted.

DEMOGRAPHICS

Based on the mailing addresses given at the buying station, fishers from four states and 33 cities participated in the 1989 commercial fishery. The list of cities and corresponding numbers of fishers are in Table 5. For comparative purposes, classifying the counties of Del Norte, Humboldt, and Trinity as local, as done in the past, 490 fishers, or 96.5% of the total participants, were local. Eighteen fishers, 3.5% of the total, came from outside the area. This number is down from 5.5% in 1988. Table 6 compares the participation of local fishers versus non-local fishers for the three commercial seasons. The non-local participants accounted for 915 salmon sold, 3.3% of the total. This is only slightly down from last season's total of 971, 3.8% of the total.

TABLE 5.- Distribution of participating fishers by state and city from the 1989 commercial fall chinook gill net fishery on the Klamath River.

CALIFORNIA	# Fishers	CALIFORNIA	# Fishers	OREGON	# Fishers
* Klamath	119	* Salyer	3	Brookings	2
* Hoopa	94	* Willow Creek	3	Mrytle Point	2
* Crescent City	86	Redding	2	Cave Junction	1
* Eureka	62	* Fortuna	1	Halsey	1
* Trinidad	25	* Loleta	1	Port Orford	1
* Smith River	22	* Samoa	1		
* McKinleyville	18	Weaverville	1	WASHINGTON	
* Arcata	16	Ukiah	1	Morton	1
* Fort Dick	12	Susanville	1	Rochester	1
* Orick	12	San Francisco	1	Woodland	1
* Blue Lake	7	Martinez	1		
* Orleans	4			NEVADA	
* Bayside	4			Dresslerville	1

California - 24 cities/497 fishers
Oregon - 5 cities/7 fishers
Washington - 3 cities/3 fishers
Nevada - 1 city/1 fisher
* Cities in Del Norte, Humboldt, and Trinity Counties.

TABLE 6.- Summary of fisher participation for the 1987 - 1989 commercial fall chinook gill net fishery on the Klamath River based on zipcode of residence.

Year	Total # Fishers	# Local *	% Total	% Fish Sold	# Not Local	% Total	% Fish Sold
1987	440	408	92.7	92.0	32	7.3	8.0
1988	602	569	94.5	96.2	33	5.5	3.8
1989	508	490	96.4	96.7	18	3.5	3.3

*Local means a fisher's mailing address was within Del Norte, Humboldt, or Trinity County.

BIOLOGICAL INFORMATION

During the commercial season U.S. Fish and Wildlife Service (Service) personnel monitoring the fishery sampled fish at the buying station and on the river in the estuary area. A random sample of salmon was made each night of the fishery at the buying station. A total of 1010 salmon, 3.7%, were measured for fork length and had scales collected for age analysis. Of this number, 46 scales (4.5%) were unreadable. The age composition of the sampled fish are listed in Table 7. Based on this sampling, 14% of the commercial catch were age 3, 82% were age 4, and 4% were age 5. There were no age 2 salmon as fish under 26 inches total length (66 cm) were not bought.

TABLE 7.- Age composition of salmon randomly sampled at the buying station during the 1989 commercial fall chinook gill net fishery on the Klamath River.

Age	n	% Total	$\bar{X}$ (cm)	S.D. (cm)
2	0	0.0	-	-
3	131	13.6	71.2	4.62
4	790	82.0	79.1	5.14
5	43	4.4	85.5	6.20
Total	964			

The age composition of this harvest shows the selectivity of the commercial fishery towards the larger and older salmon. Data from the Service beach seining operation show the age composition of the fall chinook run to be 4.8% age 2, 38.6% age 3, 53.3% age 4, and 3.3% age 5.

A sample of 319 salmon were measured for length and weight during the fishery and were used to calculate a log-log length-weight regression for the commercial fishery (Figure 4). The formula that describes this relationship is: log(weight) = -4.55 + 2.85 x log(fork length), r^2=0.84. The mean length and weight was 81.9 cm and 8.1 kg, respectively. The mean lengths and mean weights from the 1988 and 1987 commercial fisheries were, respectively, 78.7 cm and 7.3 kg, and 78.9 cm and 7.0 kg.

Service personnel examined 20,525 salmon, 74.6% of the total harvest, at the buying station for adipose clips. These clipped salmon contain coded-wire tags (CWT's) in their snouts, implanted at the hatchery of their origin. The observed ad-clip rate was 8.1%. A total of 1,658 ad-clipped chinook snouts were collected by Service personnel during the 1989 cmooercial fishery. The summary of the CWT contributions are published in the Service annual reports. The observed ad-clip rate for the 1988 was 6.1%, based on a sample size of 15,923 (61.8% of the harvest). The 1987 ad-clip rate was 7.4%, based on a sample size of 28,755 (99.1% of the harvest).

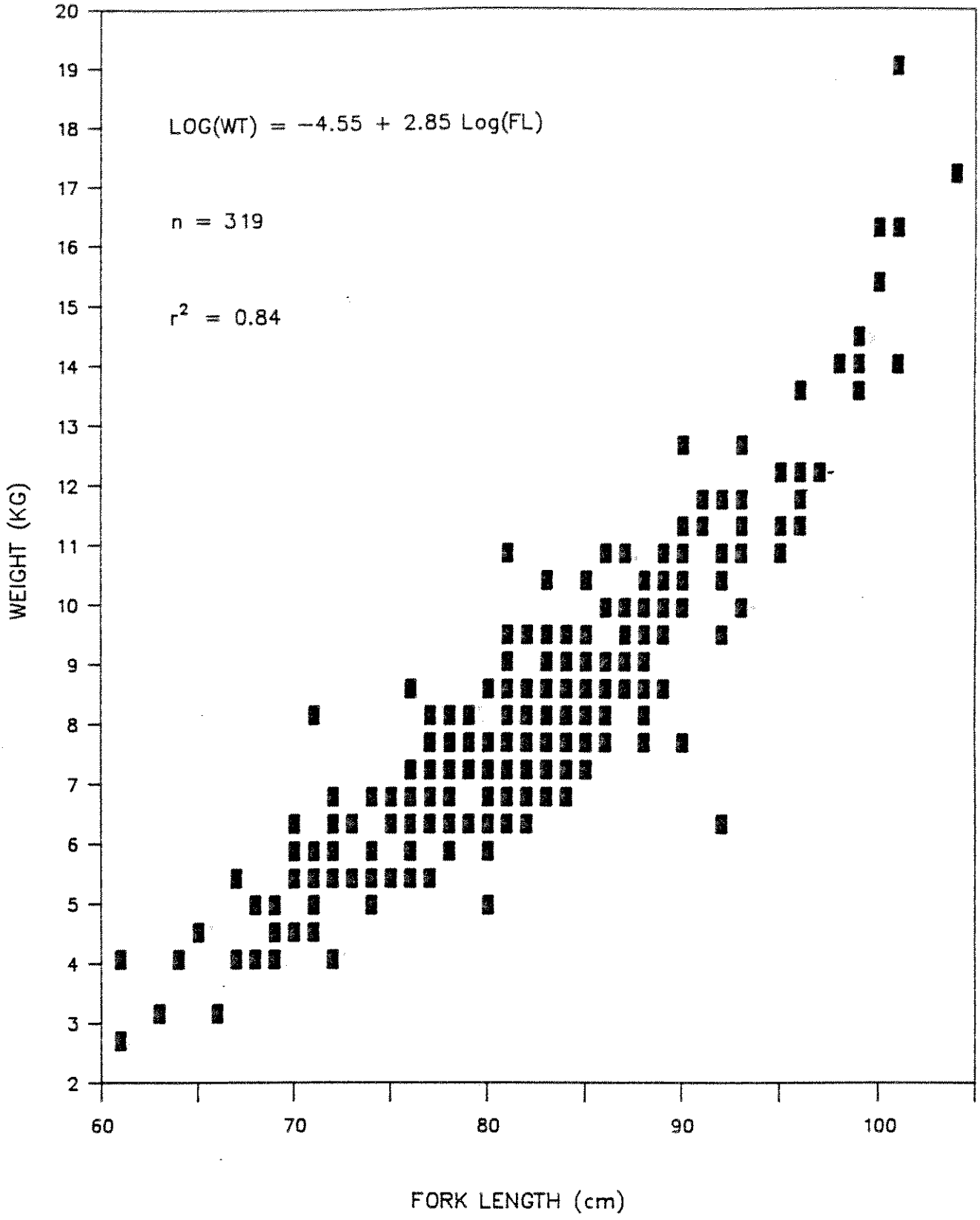


Figure 4. Length – weight relationship of commercially caught fall chinook salmon from the 1989 gill net fishery on the Klamath River.

PURPOSE AND ROLE OF USFWS

INTRODUCTION

The goal of FAO-Arcata is to provide technical assistance and fishery expertise by conducting various specialized field programs which address specific problems as they are identified; while at the same time reserving the ability to conduct longer term monitoring programs such as are reported here.

The course of the Klamath River Fisheries Assessment Program, and the role of FAO-Arcata in addressing resource-related issues involving the Klamath River basin, evolved in response to Departmental direction through Memoranda of Agreement, the Critical Issues Management System, and the FWS Management By Objectives program. Further direction has been received through a Statement of Responsibilities and Role of the Fishery Resources Program. The BIA planning processes involving fisheries resources of the YIR and HVR, continues to greatly influence program direction. Recently the passage of P.L. 98-541, the Trinity River Basin Fish and Wildlife Management Program, on October 24, 1984 and P.L. 99-552, the Klamath River Fish and Wildlife Restoration Act, on October 27, 1986, are exerting an influence on program direction with proposed fishery work scheduled to be initiated in 1988 and 1989.

PROGRAM PLANNING

The Klamath River Fisheries Assessment Program will continue to focus on five of these stocks: fall chinook salmon, spring chinook salmon, fall steelhead trout, coho salmon and green sturgeon, which have been recognized as fitting the criteria of being depressed stocks, largely of natural origin, with high value to fisheries and good restoration potential.

For the priority species, FAO-Arcata programs will continue to center on: (1) collection of necessary baseline information on population characteristics, (2) monitoring of annual adult spawning migrations and juvenile populations, (3) monitoring of in-river net harvest levels and (4) analysis and presentation of information in a timely manner to those agencies responsible for managing this resource and (5) providing technical assistance to the Klamath River Salmon Management Council and Pacific Fisheries Management Council. FAO-Arcata programs will be conducted to the extent possible in cooperation with those of other agencies involved with the Klamath River fishery resource.

The Klamath River Fisheries Assessment Program was initiated through the FWS in 1977 at the request of the BIA in order to provide data necessary for management of the Klamath River fishery resource, in context of the expanding in-river net fishery. The FWS was selected for program initiation because of recognized expertise in fisheries management, there being no such capacity within the BIA or local Indian groups at that time. At such time as fisheries expertise is developed among local Indians, part or all of existing FAO-Arcata programs will be transferred to these groups. Such transfer of programs began with the

establishment in 1981 of the HVBC, Fisheries Department. Former FAO-Arcata programs operating on the Trinity River under Memorandum of Agreement with the BIA have been entirely transferred to the HVBC. Specific directions anticipated for FAO-Arcata field activities in the near future are as follows:

(1) Beach Seining Operations need to be continued on a yearly basis. Primary emphasis will remain with fall chinook. FAO-Arcata beach seining operations currently provide the only available estimates of Klamath River fall chinook population age composition. Such data have proven useful in generating annual ocean stock size projections for use in fisheries management. The beach seining and harvest monitoring programs together provide two key interactive components of the Klamath River basin anadromous fisheries database. This database is used by the PFMC to assist in the management of the ocean fisheries and provides insight assessing the spawning escapement annually. Both programs need to be viewed as on-going monitoring programs to be continued indefinitely and not as baseline studies which will soon reach a point where necessary input has been supplied.

(2) Harvest Monitoring Operations provide the only presently available estimates of Indian gill net harvest of spring and fall chinook, coho, steelhead and sturgeon from the Klamath River within the YIR. This estimate is provided to the CDFG to assist in estimating the annual Klamath River run size. This estimate provides a view of the contribution made by the Klamath stocks to the various fisheries and the spawning escapement. Collection of this critical information will continue. Research into data on size selectivity was incorporated into this program in 1987 with the funding of a three year study through BIA. Research into the relationship between net harvest and river flow models to predict net harvest and escapement associated with specific management options and other management- oriented aspects of the fishery should continue. Collection of a variety of baseline biological data from the net harvest will continue. Recoveries of coded-wire tags through monitoring of the net fishery is important to management of the fisheries and of hatchery stocks within the basin and will continue.

(3) Juvenile Chinook Salmon Production Monitoring was initiated in the spring of 1988 to provide abundance indices of juvenile chinook salmon from the two major subbasins (upper Klamath and Trinity Rivers above Weitchpec). Such data will provide key information on production of hatchery and natural stocks in the basin; assist the management agencies in predicting year class strength at the juvenile stage; and assist in evaluating the restorations efforts under P.L. 98-541 and 99-552.

(4) Tributary Habitat Evaluation was initiated in the fall of 1988 on Blue Creek (a tributary to the lower Klamath River) and on New river (a tributary to the lower Trinity River). These evaluations provide needed information about basin restoration and whether restoration efforts should be directed toward these streams, and if so then how and where restoration should be directed.

(5) Technical Assistance was provided to the Department of Interior, Pacific Fisheries Management Council, Klamath River Salmon Management Council and Bureau of Indian Affairs on matters concerning Klamath River salmon management and Federal fisheries issues in Northern California. This assistance requires the melding of information collected by the field programs with data collected by other agencies into a comprehensive package useable for management. The need for this assistance will be ongoing.

Program planning, direction and coordination will remain essential and on-going parts of FAO-Arcata activities. Program coordination and information dissemination to other groups and agencies involved with the Klamath-Trinity basin fishery resource are recognized as high priorities. Frequent meetings will continue to be held with biologists representing the Bureau of Indian Affairs, California Department of Fish and Game, U.S. Forest Service, Hoopa Valley Business Council, Oregon Department of Fish and Wildlife, National Marine Fisheries Service and other groups. Coordination with the Trinity River program under P.L. 98-541 and the Klamath River Restoration Act under P.L. 99- 552 is essential. Such activities are crucial to the effective provision of fisheries assistance.

NET HARVEST MONITORING PROGRAM

INTRODUCTION

Hoopa, Karok and Yurok Indian people living along the Klamath and Trinity Rivers have traditionally fished for salmon, steelhead, sturgeon and other species using a variety of fishing gear including weirs, dip nets, spears and gill nets. Historically, salmon consumption by these people exceeded 907,000 kg (2 million pounds) annually.

Regulations governing recent Indian fishing on the YIR and HVR were first published by the DOI in 1977 and FAO-Arcata biologists began monitoring net harvest levels on the Reservation in 1978, with efforts focused on fall chinook salmon. Further progress was made in ascertaining net harvest levels with the establishment of a net harvest monitoring station in the lower Klamath River in 1980. Net harvest monitoring operations were expanded up river beginning in 1981 for complete coverage of the net fishery. Since 1983, FAO-Arcata biologists have focused monitoring efforts solely on the YIR, operating three monitoring stations based near Requa, Omagar Creek and Johnson. Responsibility for monitoring net harvest levels on the HVR was taken over by the HVBC Fisheries Department in 1983.

Beginning in 1984, FAO-Arcata biologists employed a stratified random sampling methodology to assess fall season net harvest levels for chinook salmon, coho salmon, steelhead trout and sturgeon on the Klamath River portion of the HVR in an attempt to improve the accuracy and gauge the precision of the harvest estimates. The techniques employed during former seasons yielded point estimates without associated measures of variance. Although they are considered reasonably reliable and accurate, no quantifiable measure of precision can be calculated for estimates made prior to 1984.

Allocation between the various user groups of the Klamath River fall chinook resource (ocean commercial, ocean sport, river sport and Indian gill net) was agreed upon in 1986. This allocation allowed harvest of the chinook resource and yet provided for the rebuilding of the chinook population. Toward this goal, the DOI enacted regulations designed to meet the harvest quota established by the allocation agreement for the Indian gill net fishery.

METHODS

Net harvest monitoring data were collected and compiled from three contiguous areas (Estuary, Middle Klamath and Upper Klamath) of the YIR in 1989. The Estuary Area was defined as the lower 6 km of the river from the mouth to the crossing of the U.S. Highway 101 bridge. The Middle Klamath comprised the next 27 km of river from the crossing of the Highway 101 bridge to Surpur Creek, 33 km upstream from the mouth. The Upper Klamath Area included the next 37 km stretch of river from Surpur Creek to Weitchpec. During the 1989 fall chinook fishery, DOI regulations divided the reservation into three management zones that differ from the above areas. These zones, coupled with time closures were designed to allow equitable distribution of harvest throughout the YIR and yet to allow fishing through the fall chinook season. Area I included the portion of Klamath River from the mouth to the U.S. Highway 101 bridge (River km 6). Area II began at the crossing of the U.S. Highway 101 bridge and continued upriver to the confluence of the Trinity River (River km 70). Area III consisted of the HVR. FAO-Arcata biologists monitored the harvest in Management Areas I and II while the HVBC Fisheries Department was responsible for estimating the harvest in Management Area III.

Fall Fishery

The design employed by FAO-Arcata biologists to estimate harvest in 1989 involved a stratified random sampling technique with an optimum allocation of sampling effort based on the available data and associated variances. The actual estimate is comprised of two parts: an estimate or count of total effort and an estimate of average catch per net for each area and net type. Each part of the estimate has an associated variance estimate. These variances are combined to give an estimated daily variance. The daily estimates of catch and variance are expanded to total estimates of catch and variance by area, net type and time period, usually semi-monthly. Following are the methodologies utilized for monitoring fall chinook harvest in each area and for subsequent data analyses.

Estuary Area

Under pre-season DOI regulations, the Estuary (DOI Management Area I) was open to gill net fishing from Monday at 1700 to the following Monday at 0900, until August 7, after which the Estuary was open to gill net fishing from 1900 to 0700 Wednesday through Saturday. The Estuary Area was closed September 2 after the attainment of its harvest quota. The Estuary Area was monitored every day it was open from June 13 to September 2 by a field crew composed of one biologist and one Indian technician. Two crews monitored the Estuary Area during the fall commercial season.

Total net counts were conducted every 2 hours when the Estuary was open to fishing. Indian fishers were interviewed to obtain information on the number of each fish species caught, the number of nets fished and the number of hours that were fished. From this information, harvest and variance estimates were generated. During the commercial fishery, a total harvest estimate was calculated on a weekly basis and the number of chinook sold during that week was subtracted from the total harvest estimate to derive the subsistence harvest estimate.

When possible, harvested fish were measured to the nearest centimeter fork length, examined for tags and fin-clips, and inspected for seal or otter- bite damage. Snouts were removed from adipose fin clipped salmonids for subsequent CWT recovery and identification. A subsample of fall chinook harvested in the Estuary Area were weighed to the nearest pound and these weights were converted to kilograms.

The commercial fishery buying station located near Klamath was monitored from August 9 to August 30. To optimize the nightly sampling effort, the buying station was monitored during the first 6 hours the fishery was open since the majority of the landings occurred during this time. All sampled chinook were examined for ad-clips and the snouts were removed from ad-clipped salmon. Approximately 20% of the examined chinook salmon were randomly sampled for fork length, finclip and age (scale) data.

Middle Klamath Area

One field crew consisting of one biologist and one Indian technician, working from a camp near Omagar Creek, monitored the Middle Klamath Area. Under pre-season DOI regulations the Middle Klamath Area is part of Management Area II and was open for fishing under pre-season DOI regulations six days per week, beginning Tuesday at 0900 and continuing until the following Monday at 0900 from August 1 to September 30. The fishery was monitored 4 to 5 days per week from August 3 to October 15. To monitor the set net fishery, a total net count was conducted by boat after dark over the entire section of river. At dawn, the crew contacted Indian fishers and sampled the set net harvest.

To monitor the drift net fishery, total net counts were conducted by boat between 2000 hours and 0100 hours when drift netting typically occurs. The harvest was sampled either that evening or the following morning. Interviews with drift and set net fishers were conducted in a like manner to those in the Estuary Area.

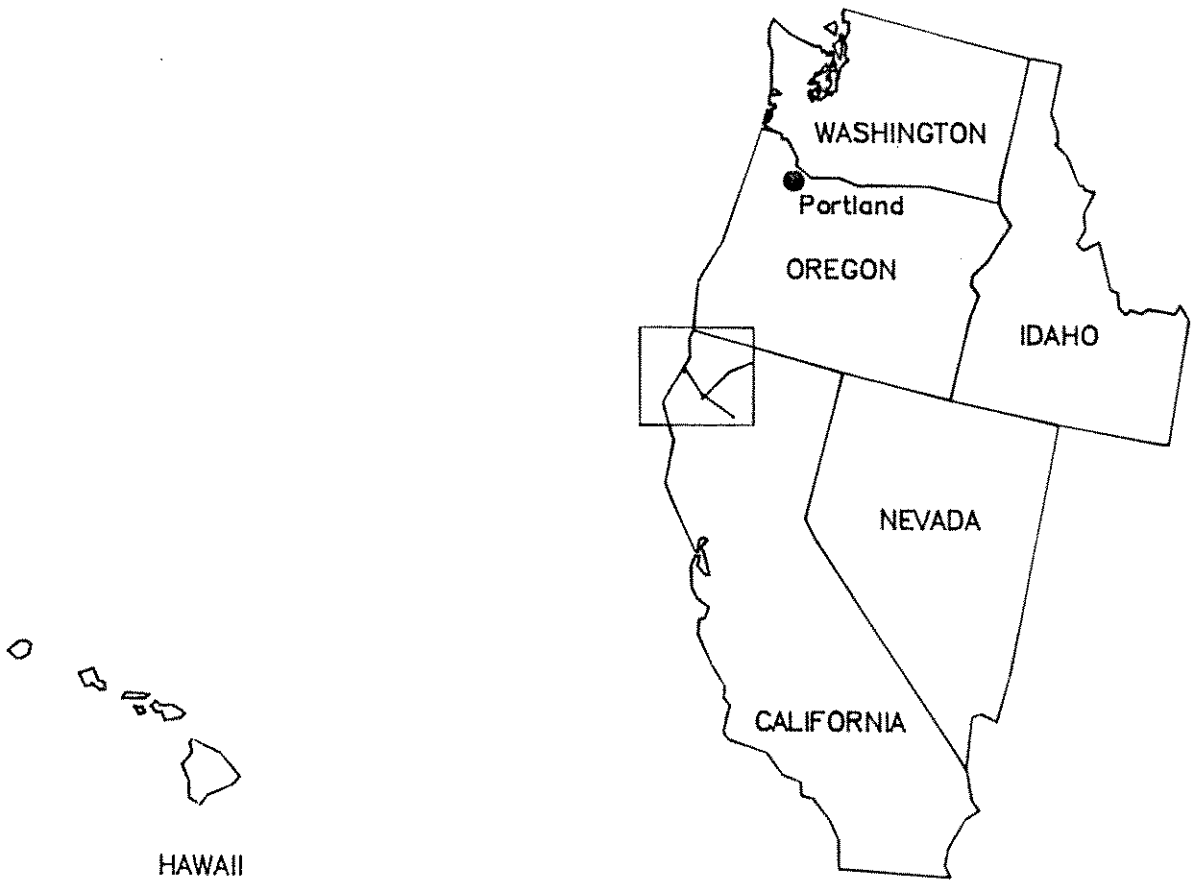
Upper Klamath Area

One field crew, consisting of one biologist and one Indian technician working out of a camp at Johnson, monitored the Upper Klamath Area. Under DOI regulations, the Upper Klamath Area was included in Management Area II and as such was open during the same period as the Middle Klamath Area. The crew monitored the fishery 4 to 5 days per week from August 1 to October 22. The sampling methodologies for set and drift net fisheries were the same as in the Middle Klamath Area.

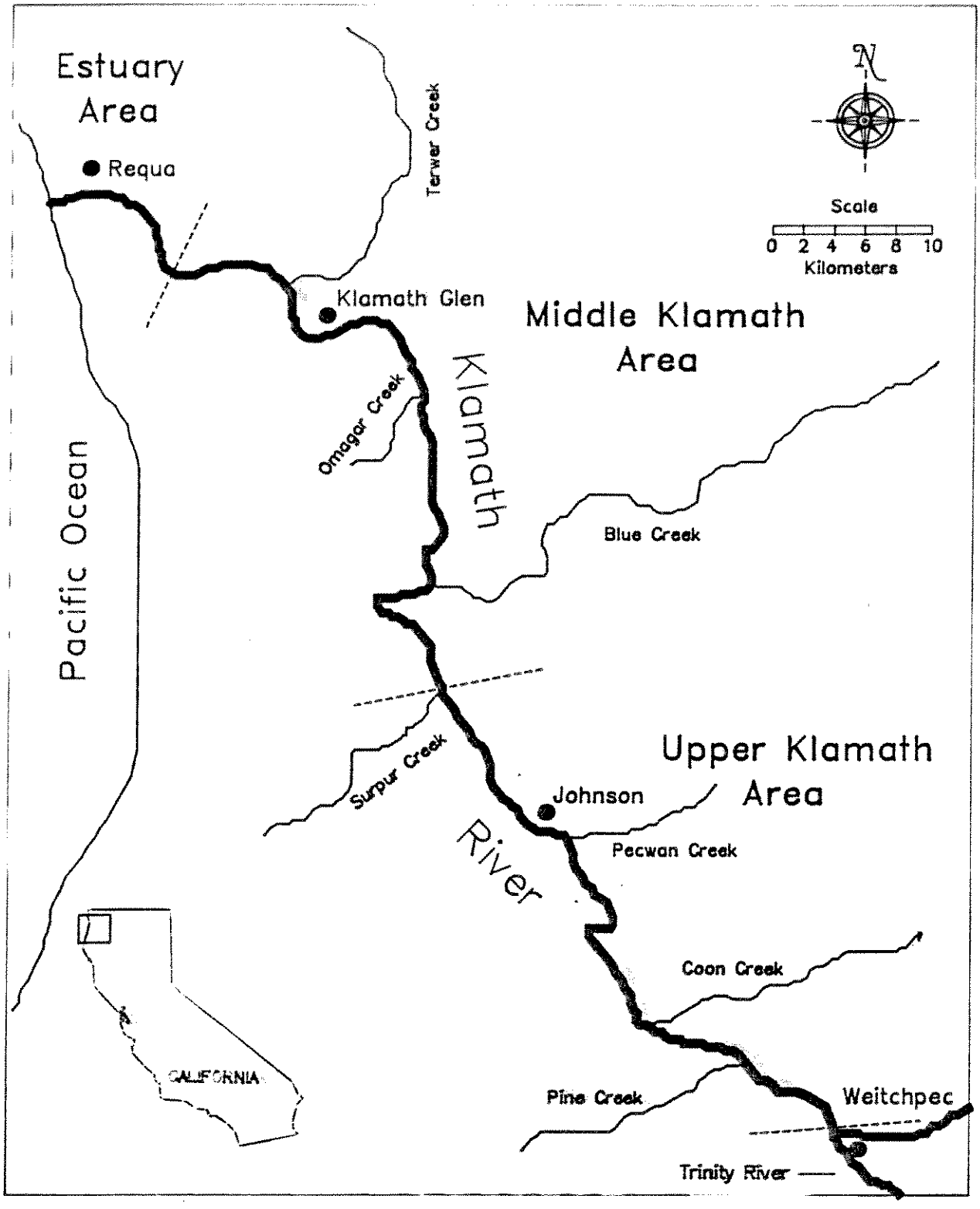
Reporting Information

Harvest estimates are provided to BIA each Tuesday from approximately July 20 until October 20 each year. Estimates are made for the estuary, Middle Klamath and Upper Klamath areas. Final season estimates are provided to BIA, CDFG and the PFMC in early December of each year.

Annual reports describing the results of work conducted by FAO-Arcata during its beach seine operations and net harvest monitoring efforts are prepared and sent out for BIA review each June. The reviewed report is then sent out to agencies and interested members of the public in July of each year.



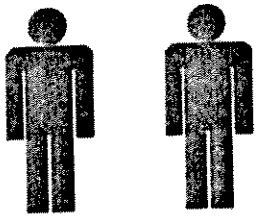
Western Region of the U. S. Fish and Wildlife Service

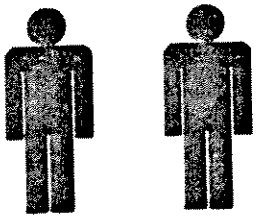


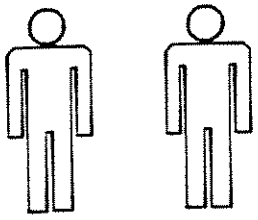
Map of Net Harvest Monitoring Areas on Lower Klamath River in 1989.

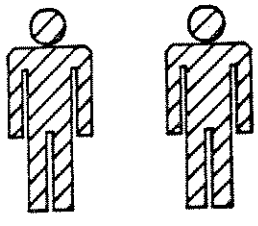
Estuary Area

Monitoring Effort









Results

Estimated harvest—

37,130

# of chinook seen—

22,072 (59.5%)

# of chinook sampled—

21,391

# of Ad-clips seen—

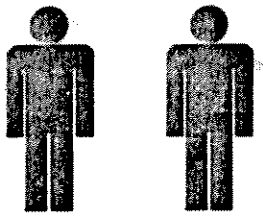
1,710 (8.0%)

# of Ad-clips recovered—

1,682

Middle Klamath Area

Monitoring Effort



Results

Estimated harvest—

3,173

# of chinook seen—

1,101 (34.7%)

# of chinook sampled—

1,089

# of Ad—clips seen—

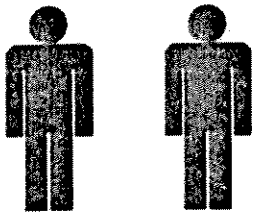
63 (6.0%)

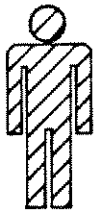
# of Ad—clips recovered—

54

Upper Klamath area

Monitoring Effort





Results

Estimated harvest—

1,908

# of chinook seen—

684 (35.9%)

# of chinook sampled—

670

# of Ad—clips seen—

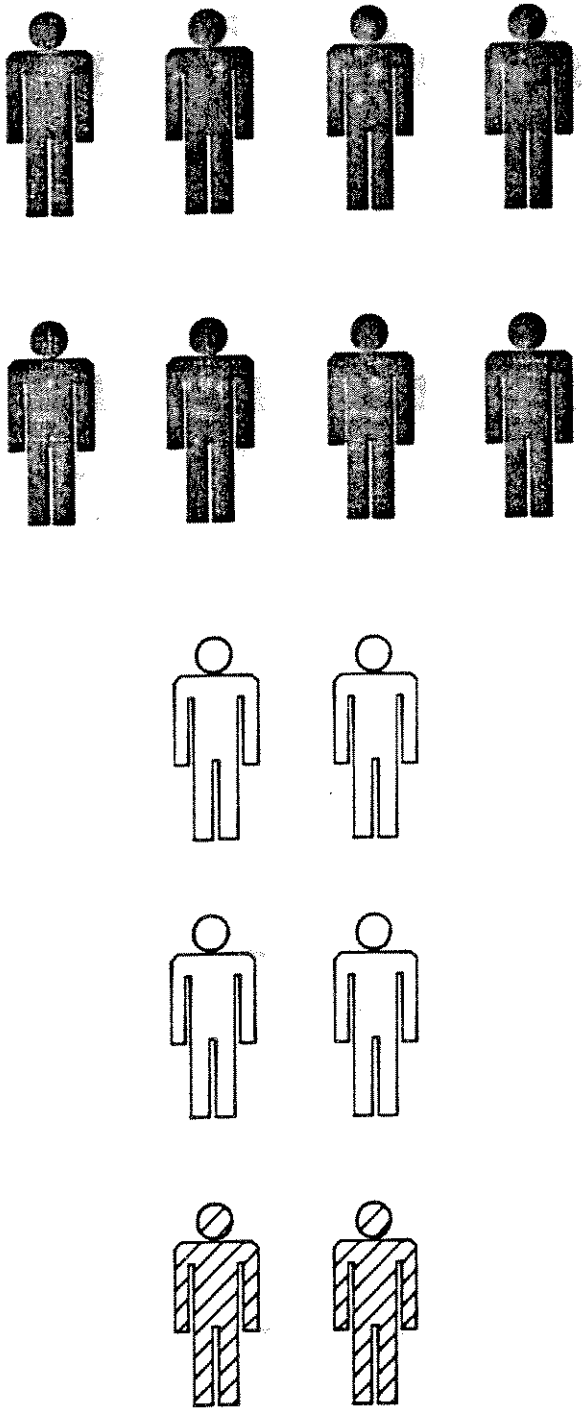
49 (7.0%)

# of Ad—clips recovered—

47

ALL AREAS

Monitoring Effort



Results

Estimated harvest—
42,211

# of chinook seen—
23,857 (56.5%)

# of chinook sampled—
23,150

# of Ad-clips seen—
1,822 (7.9%)

# of Ad-clips recovered—
1,783

# of unseen chinook—
1,913

Estimated Harvest and Confidence Intervals

Year	Harvest estimate	Accounted For	95% C.I.	C.I. %
1984	17,815	8,176	1,268	7.1
1985	10,233	5,686	1,029	10.1
1986	20,887	9,660	2,603	5.1
1987	48,267	21,467	2,117	5.4
1988	46,892	24,648	2,117	4.5
1989	42,211	23,857	1,253	3.0

Confidence Interval is the range of values between which the true value would fall, in this case, 95 per cent of the time. This is a way of expressing the precision of the estimate.

Ocean Stock Size Estimates and Allowable Harvest Levels for Klamath River Fall Chinook, 1990 Season a/

by

Klamath River Technical Advisory Team

SUMMARY

Ocean stock size estimates for Klamath River fall chinook salmon are 239,500 and 40,100 ages 3 and 4 fish, respectively. The age 3 projection is 6 percent higher than the comparative 1989 preseason estimate (225,300). The age 4 projection is 23 percent of the comparative 1989 preseason estimate (172,400). Under the current Pacific Fishery Management Council (PFMC) Framework Plan (Amendment 9) 33 to 34 percent of each cohort is allowed to escape the fisheries to spawn, with the remainder available for harvest. Combinations of inriver and ocean harvest rates that provide the Framework Plan escapement rate, together with numbers of fish available for harvest in 1990 are contained in Table 1. The number of spawners using natural areas is projected to be above the escapement floor for the stock of 35,000 adult fish. Ocean fishing regulations for 1990 are not addressed in this report.

a/ Prepared January 24, 1990.

TABLE 1.
HARVEST SHARING MODEL RESULTS == 1990 SEASON

ALLOWABLE HARVEST RATE COMBINATIONS	ALLOWABLE 1990 CATCHES		ADULT ESCAPEMENT
	OCEAN	RIVER	
0.47/0.33	117000	18000	69000
0.46/0.35	114500	20000	69000
0.45/0.37	112000	21000	68000
0.435/0.39	108300	23000	68000
0.42/0.42	104500	25000	68000
0.41/0.44	102100	27000	67000
0.40/0.45	100000	28000	67000
0.39/0.46	97000	29000	68000
0.38/0.48	95000	30000	67000
0.375/0.49	93000	31000	67000
0.35/0.52	87000	34000	66000
0.335/0.56	83000	37000	65000
0.30/0.60	75000	42000	64000

INTRODUCTION

This report presents ocean stock size estimates and allowable harvest levels for Klamath River fall-run chinook in 1990. The current framework plan of the PFMC specifies an escapement rate for Klamath River fall chinook of between 33 and 34 percent. The plan also requires a minimum escapement of 35,000 naturally spawning adult fish in all years. Allowable ocean and inriver harvest levels of Klamath River fall chinook are determined in the Klamath River Technical Advisory Team's (KRTAT) Harvest Rate Model (HRM) using age-specific stock abundance projections (KRTAT, 1986).

A comparison of pre- and post-season ocean abundance estimates made since 1985 is presented in Appendix A.

DATA AND ANALYTICAL METHODS

Klamath River fall chinook contribute to ocean and inriver fisheries primarily as ages 3 and 4 fish and, secondarily, as ages 2 and 5 fish. Stock abundance estimates are developed in this report by age class for use in the HRM.

Age 2 Fish

No predictor of ocean abundance of age 2 fish has been developed. For 1990 management, ocean abundance of age 2 fish is estimated by dividing the 1986-1989 (most recent brood cycle) average ocean abundance of age 3 fish (Table 2) by 0.50 percent, the age 2 overwinter survival rate assumed in the HRM.

Age 3 Fish

Linear regression analysis was used to develop the age 3 ocean stock size estimate, the methodology used since 1985. The regression was based on ocean stock size estimates of age 3 fish during 1982 and 1984-1989 regressed on inriver run-size estimates of age 2 fish the year before (same cohort). The 1983 return year was omitted because of El Nino effects. The relationship is shown in Figure 1 and the r^2 for the fit is 0.52.

Ocean stock-size estimates for age 3 fish were calculated using cohort reconstruction methods for hatchery and natural components of the stock that accommodates the varying maturity rates between years (Table 2) (KRTAT, 1990). Previous cohort reconstruction methods used a set maturity schedule (0.43 for age 3 fish and 0.89 for age 4 fish). In addition, age 3 ocean abundance in 1988 and 1989 used assumptions of age 3 maturity, since the cohorts are not yet complete.

TABLE 2. Estimated Number of Fall-run Chinook Salmon by Age Entering the Klamath River During 1981-1989 in Thousands of Fish, Including Estimates of Ocean Population Sizes. a/

	INRIVER AGE COMPOSITION					OCEAN HARVEST RATE BY AGE		OCEAN POPULATION BY AGE		
RETURN YEAR	AGE 2	AGE 3	AGE 4	AGE 5	TOTAL ADULTS	AGE 3	AGE 4	AGE 3	AGE 4	TOTAL
1981	27.8	61.8	13.8	1.7	77.3	0.42	0.66	246.6	45.6	292.2
1982	39.0	29.4	33.4	2.2	65.0	0.64	0.65	338.6	106.7	445.3
1983	3.8	35.4	20.5	0.9	56.8	0.39	0.71	103.0	83.8	186.8
1984	8.2	28.0	15.3	2.3	45.6	0.17	0.42	100.1	29.2	129.2
1985	69.0	30.6	31.9	0.9	63.4	0.26	0.29	137.3	45.1	182.3
1986	44.3	165.5	26.9	TR	192.4	0.40	0.52	592.4	55.9	648.3
1987	18.9	116.7	87.4	TR	204.1	0.46	0.52	388.8	188.2	577.0
1988	23.8	133.5	51.7	1.0	186.2	0.44	0.44	586.6	104.5	691.1
1989	9.7	18.5	100.7	3.3	122.5	0.36	0.44	78.1	181.7	259.8

a/ Ocean harvest rate and ocean population size for age 3 fish in 1981 and age 4 fish in 1981 and 1982 from CDFG, 1989; all others from KRTAT, 1990.

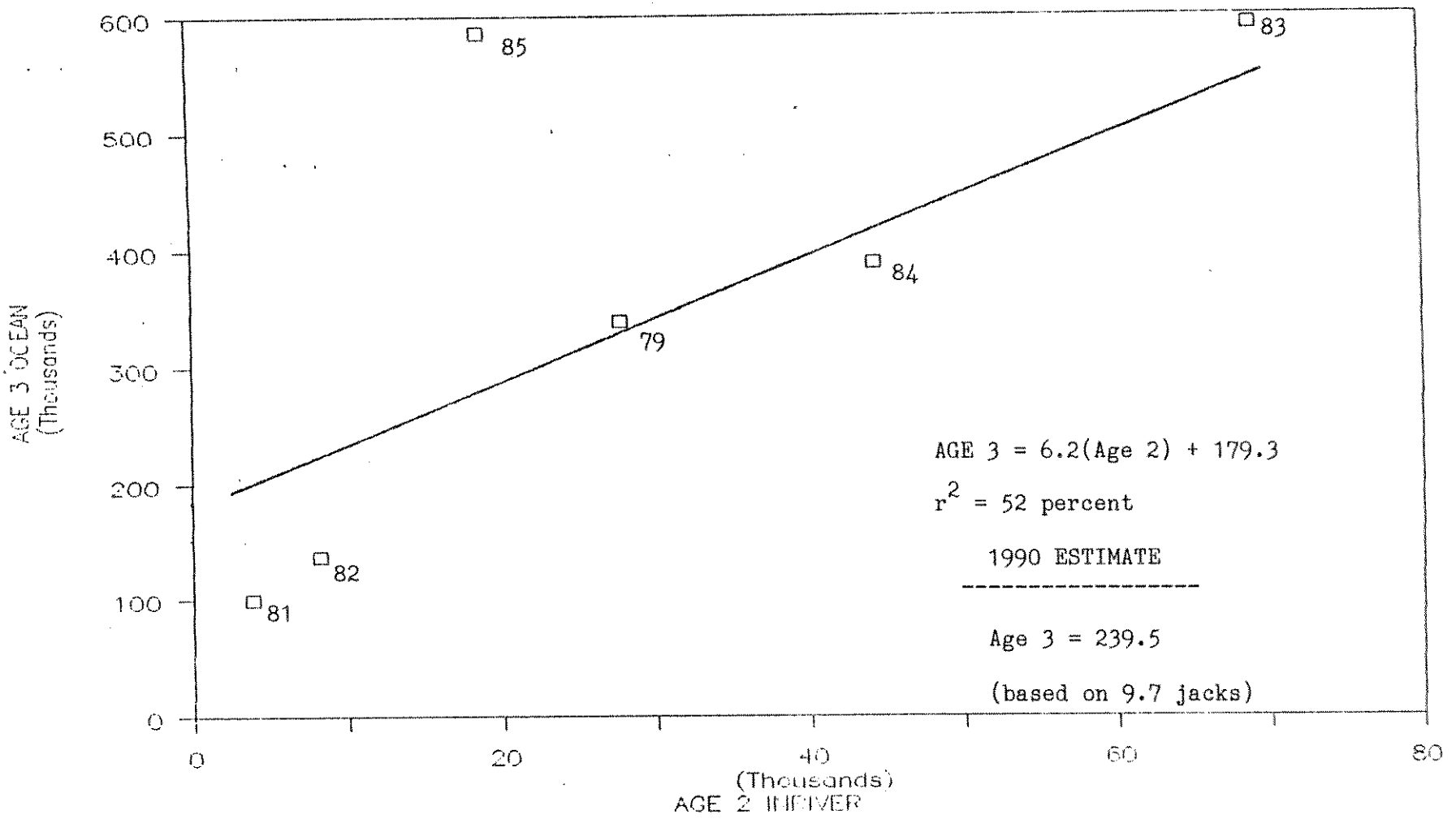


Figure 1. LINEAR REGRESSION OF OCEAN AGE 3 ON INRIVER AGE 2 KLAMATH RIVER FALL CHINOOK OF THE SAME COHORT, 1979-1985 BROODS WITHOUT THE 1980 BROOD.

It should be noted that the low estimate of 3-year-old chinook to the river in 1989 is driven by the very low tag recovery rate for both Iron Gate and Trinity River hatchery releases (KRTAT, 1990). The U.S. Fish and Wildlife Service seine data in the lower river indicated a somewhat higher proportion of age 3's in the river. Due to sampling biases of the seine data identified in previous years, results from the cohort analysis were used. and are expected to yield better results overall. Both methods for estimating age structure inriver yield low predictions of 4-year-old Klamath stock size for 1990.

Age 4 Fish

An analysis comparable to that done for age 3 fish was made for age 4 fish, except that 1979-1985 broodyear data were used (1983-89 ocean abundances) (Table 2). The relation between age 4 ocean abundance estimates and inriver run-size estimates of age 3 fish of the same cohort is shown in Figure 2. The r^2 for this fit is 0.85. An assumption of maturity rate in 1989 for age 4 fish was made because the cohort is not yet complete.

Age 5 Fish

The age 5 abundance estimate is based on the age 4 inriver run-size estimate for 1989, an age 4 maturation probability of 0.93 (average 1979-1984 maturation probability from cohort reconstruction) and an estimated overwinter survival rate of 0.80, the values for age 5 fish used in the HRM.

Proportion of Adult Spawners Using Natural Areas

An estimate of the proportion of the adult escapement that will use natural areas in 1990 is critical to determining whether the 35,000 adult escapement floor for the basin will be cleared. To make this projection, the ratio of natural spawning and hatchery adults (N/H ratio) in the Klamath and Trinity river basins were regressed on the comparative N/H ratios for jacks the year before (Table 3). The relation was significant for the Klamath River, but not for the Trinity River. The Klamath River regression was $Y = 0.77 + 0.323X$, and indicates an N/H adult ratio for the area in 1990 of 1.87 (3.40 N/H jack ratio in 1989).

The average N/H adult ratio for the Trinity River since the 1979 adult return year is 4.1, the value assumed for the 1990 Trinity River return.

The estimate of the overall basin N/H adult ratio (r) was developed using the following equation:

$$r = ((ka \times KJ) + (ta \times TJ)) / (KJ + TJ) \qquad (1)$$

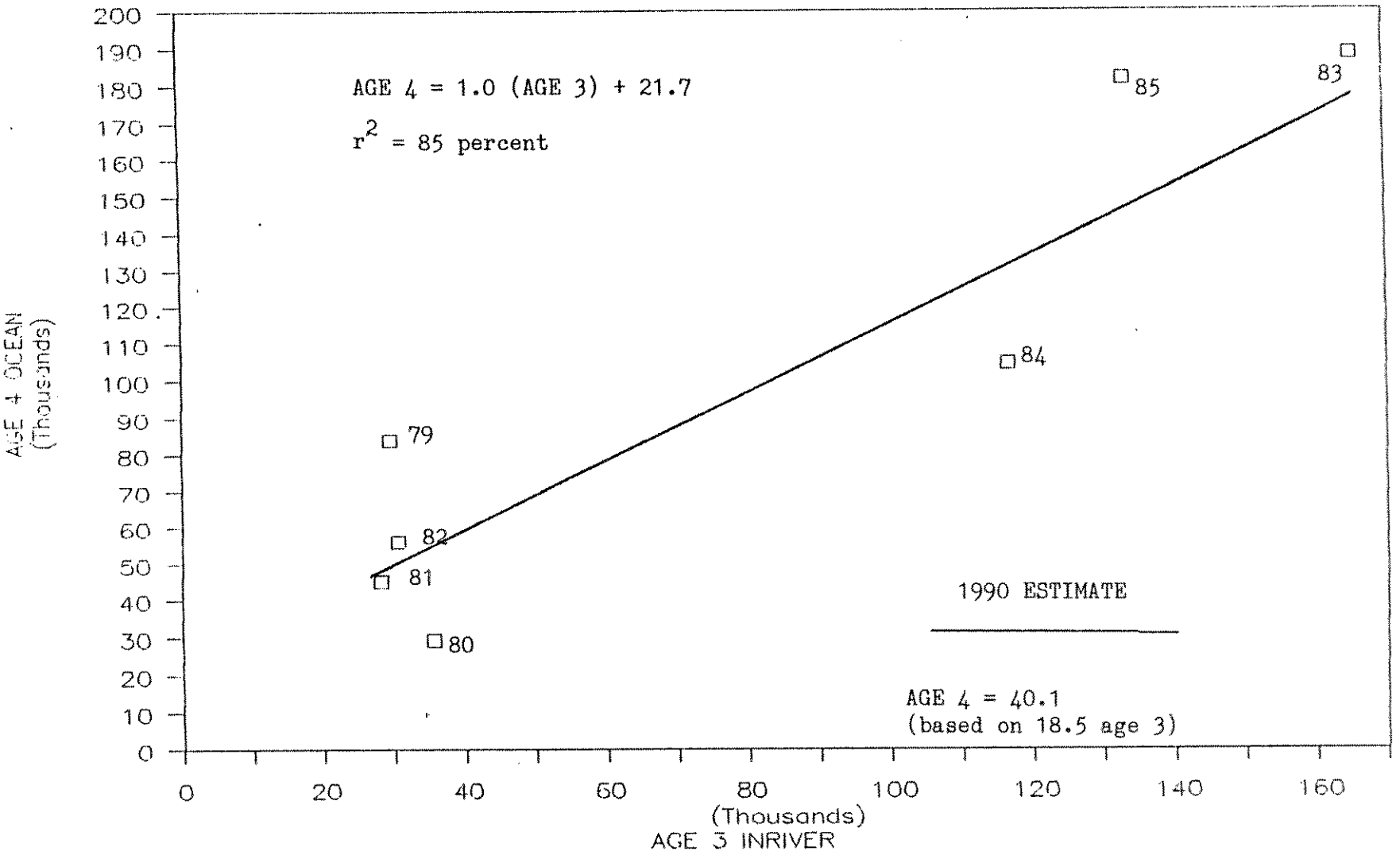


FIGURE 2. LINEAR REGRESSION OF OCEAN AGE 4 ON INRIVER AGE 3 KLAMATH RIVER FALL CHINOOK OF THE SAME COHORT, 1979-1985 BROODS.

TABLE 3. Natural to Hatchery Ratios for Adults and Jacks in the Klamath Basin Spawning Escapement, 1979-1989 Adult Return Years, in Numbers of fish

Adult return year	Klamath River		Trinity River	
	N/H 1/ Jacks 2/	N/H Adults	N/H Jacks 2/	N/H Adults
1979	12.8	9.7	3.6	6.0
1980	10.6	5.5	4.1	1.9
1981	21.9	9.0	7.5	6.5
1982	19.6	2.7	5.9	4.5
1983	5.7	1.6	1.9	3.1
1984	3.3	2.0	3.1	2.6
1985	2.4	0.8	4.5	3.6
1986	3.0	1.2	1.6	5.9
1987	5.8	2.0	5.7	5.2
1988	1.5	2.1	2.4	2.6
1989	3.1	0.9	2.2	2.9
Averages	8.2	3.4	3.9	4.1

1/ N/H = natural to hatchery ratio.
2/ Jack ratio in the year before.

where:

ka = Klamath River basin N/H adult ratio projection for 1990 (1.87)
KJ = Upper Klamath River Basin jack return in 1989 (3,700)
ta = Trinity River Basin N/H adult ratio projection for 1990 (4.10)
TJ = Trinity River jack return in 1989 (3,000)

Solving for r, the projected N/H adult ratio for the Klamath River Basin is 2.87 (74 percent).

STOCK PROJECTIONS AND ALLOWABLE FISHERY LANDING LEVELS

Ocean abundance estimates for Klamath River fall chinook in 1990 are as follows:

Age 2:	852,600
Age 3:	239,500
Age 4:	40,100
Age 5:	6,100

These stock projections will allow for combinations of ocean and river landings of Klamath fall chinook as summarized in Table 1.

Ocean landings of Klamath River fall chinook in 1989 late season (September-November) ocean fisheries totaled 1,600 summer fishery equivalents, including 700 age 4 fish and 900 age 5 fish (Table 4). In previous years, these landings have been subtracted from the ocean allocation in the coming year. The 1990 adult spawning escapement is projected, under combinations of ocean and inriver harvest levels, to range between 64,000 and 69,000 adults including between 47,400 and 51,100 (74 percent) that will spawn in natural areas, 12,400 to 16,100 fish over the escapement floor (35,000 adults).

REFERENCES

Klamath River Technical Team. 1986. Recommended spawning escapement policy for Klamath River fall-run chinook. Pac. Fish. Mgmt. Council, Portland. 96 p.

Klamath River Technical Advisory Team. 1990. Cohort analysis of Klamath River Basin fall chinook salmon of the 1979 through 1984 broods. January 1990, Rancho Cordova, CA.

TABLE 4. Calculations of September-November, 1989, Ocean Fishery Landings of Klamath River Fall Chinook

Brood year (Age Class)	Number ocean CWT's	Summer equivalent CWT's	Inriver CWT's	Total inriver	BY CWT expansion factor	Ocean landings
86(4)	160	128	3,475	18,500	5.3	678
85(5)	44	35.2	4,018	100,700	25.1	884
					Total	1,562

Appendix A. Comparisons of Pre- and Post-season Ocean Abundance Estimates for Ages 3 and 4 Klamath River Fall Chinook, 1985-1989 Seasons

Age	Season	Preseason estimate	Postseason estimate	Pre/post
3	1985	56,500	137,300	0.41
	1986	213,000a/	592,400	0.36
	1987	255,900	388,800	0.66
	1988	185,400	586,600b/	0.32
	1989	225,300	78,100b/	2.88
			Average	0.93
4	1985	45,500	45,100	1.01
	1986	53,000	55,900	0.95
	1987	164,900	188,200	0.88
	1988	149,100	104,500	1.43
	1989	172,400	181,700	0.95
			Average	1.04

a/ 75 percent jack count adjustment applied because most of jacks were in the Trinity River. Also, the basin jack count was outside the database.

b/ This is a very preliminary estimate as the cohort has not nearly completed its life cycle.

DRAFT PLAN FOR A COMMERCIAL GILL NET FISHERY FOR SPRING CHINOOK SALMON ON THE YUROK INDIAN RESERVATION DURING 1990

I. INTRODUCTION

The Bureau of Indian Affairs (Bureau) intends to conduct a Yurok Indian gill net fishery for spring chinook salmon in the estuary portion of the Klamath River, Del Norte County, California during 1990. Both subsistence fishing and commercial fishing for salmon will be allowed, but this plan is concerned only with the commercial harvest and sale portion of that fishery.

At this time, there is no overall reservation-wide quota for spring chinook salmon to be applied nor is there an approved escapement level to be maintained. Accordingly, the Bureau has adopted a "target" of 5,000 adult spring chinook salmon for the commercial fishery. For purposes of this plan "adult" means those fish over 26 inches in total length.

This action is in agreement with and follows the procedures established in the Final Environmental Impact Statement Indian Fishing Regulations Hoopa Valley Indian Reservation/California July 1987 (INT F.E.S. 87-29). That document adopted Alternative C as the plan of management for Indian fishing in the Klamath River basin (Basin). Alternative C allows phased commercial fishing and, under that alternative, no commercial fishing will be permitted on any species until a specific harvest management plan has been prepared. Each plan must assure an adequate number of fish for Indian subsistence and ceremonial harvest and for spawning escapement after taking into any account any anticipated in-river harvest by persons not subject to Federal regulations.

This fishery will be managed under terms and conditions established by this plan and will be regulated by rules contained in the current 25 Code of Federal Regulations Part 250. It may additionally be regulated through a series of formally adopted pre-season and in-season adjustments to those regulations.

This plan and attachments have been prepared by fishery biologists employed by the U.S. Department of the Interior and is on file at the Bureau office at 1900 Churn Creek Road, Redding, California 96002; telephone number (916) 246-5141.

II. BIOLOGICAL AND TECHNICAL BASIS OF PLAN

Data on the spring chinook stocks of the Basin are sparse and generally incomplete except for the upper Trinity sub-basin. The California Department of Fish and Game (Department) has operated a weir on the main-stem Trinity River (the major tributary to the

Klamath River) at Junction City, California since 1978 to collect information on returning salmonid stocks. Information from that project and other studies by the Department has supported the generation of run-size estimates, angler harvest estimates, and spawning escapement in the area above the weir site. Those estimates are annually generated post-season and do not provide specific information concerning natural spring chinook stocks.

A major source of data used in this plan is information generated through the recovery and analysis of coded wire tag (CWT) returns at the Trinity River Hatchery (hatchery) and from the ocean commercial and recreational fisheries.

Additional data are available from annual records of salmon returning to the hatchery and from the monitoring programs for the Indian subsistence and commercial gill net fisheries on the Hoopa and Yurok Indian Reservations.

Information is also available from various state and federal agencies such as the U.S. Forest Service which describe levels of escapements to tributaries in the upper Basin such as the Salmon and Scott Rivers and in the lower Trinity River basin such as the South Fork Trinity River.

III. STOCK STATUS, RUN FORECAST AND HARVEST IMPACTS OF FISHERY

Please refer to attachment A for this information.

IV. SOCIAL AND ECONOMIC IMPACTS OF FISHERY

The Bureau recognizes that the proposed fishery may have negative and positive socio-economic impacts in the local area and on other user groups.

Those impacts can be placed into two general categories; impacts resulting from altered sharing patterns (allocations) among competing user groups and impacts which may occur as a result of actual fishing activities, i.e. competition between user groups for time, space and access to their respective fisheries. Impacts in the first category will generally be felt in the ocean fisheries while impacts in the second category will primarily occur in the estuary area of the Klamath River.

The Bureau does not believe that a Harvest Management Plan is an appropriate mechanism in which to address impacts in the first category; however, impacts which may occur in the second category must be recognized and, if possible, addressed in the Harvest Management Plan for each proposed fishery. Shaping the respective

fisheries through time and area closures to avoid potential conflicts appears to be a desireable strategy. That action should be combined with an early announcement of seasons and fishing times so that all participants can make appropriate arrangements to accommodate to the final seasons in a timely manner. However, conflict resolution must be a shared responsibility of all user groups and participants, and must not be considered to be the sole responsibility of one user group.

V. MANAGEMENT OF THE FISHERY

Participation in this fishery will be regulated by the existing 25 CFR Part 250, Section 250.5 WITH THE FOLLOWING EXCEPTION; members who are enrolled in the Hoopa Valley Tribe will NOT be permitted to participate in any fishery on the Yurok Indian Reservation regulated by the Bureau.

As stated in the introduction, harvest will be accomplished with gill nets as described in 25 CFR Part 250 and additionally regulated as necessary through formally adopted pre-season and/or in-season adjustments to those regulations.

This fishery will be conducted in the Bureau's previously established management area I and begin on May 28, 1990 and operate until July 15, 1990 or until the "target" is reached, which ever comes first. Fishing will be permitted five days each week (Tuesday through Saturday) during the hours of 12 noon to 12 midnight. Subsistence fishing methods and times in management area I will be the same as commercial fishing methods and times during the period that commercial fishing is allowed. Fishing with gill nets in other portions of the Yurok Indian Reservation will not be affected by this plan and will continue to be regulated by 25 CFR Part 250.

If an overall quota for spring chinook salmon is applied to the Yurok Indian Reservation, then specific quotas for each management area and category will have to be developed. Such an action could result in closures in either area if a quota was reached before the run cleared that area.

A significant exception to the regulations in 25 CFR Part 250 will be to allow drift net fishing with gill nets up to 200 feet long and 25 feet deep in this fishery. Set net fishing with gill nets and drift net fishing with gill nets will not be allowed in the same area at the same time. Fishing methods will alternate on a daily basis beginning with set netting on opening day (May 28, 1990) followed by one day of drift netting etc.

A major premise in shaping the timing of this fishery is that, by starting on May 28, most natural stocks of spring chinook would have cleared management area I and the fishery would target on later returning hatchery stocks from the Trinity River hatchery.

The Bureau is also aware of concerns about the possible impacts of this fishery on spring-run steelhead, sturgeon and shad. To obtain information on those potential impacts, the U.S. Fish and Wildlife Service (FWS) will intensively monitor this fishery in its entirety. For a review and discussion of the impacts of a similar fishery conducted in 1989, please refer to attachment B.

VI. CONTROL AND MONITORING OF THE FISHERY

Day to day control and enforcement of the fishery will be the responsibility of the Field Representative in charge of the Bureau's Klamath Field Office. Technical assistance and staff support will be provided on a continuing basis by the fishery biologist stationed at the Northern California Agency at Redding, California.

Enforcement will be accomplished by qualified law enforcement personnel from the Bureau stationed at Klamath, California. Warrants, citations and arrests will be prosecuted through the Court of Indian Offenses at Klamath, California and penalties for fishing violations will be assessed according to a Table of Penalties included in 25 CFR Part 250.

Monitoring will be accomplished by technical and professional personnel from the Arcata, California Fishery Assistance Office of the FWS. Monitoring will be conducted at a level which will provide for "real time" accountability of the fishery as well as an appropriate level of data collection and CWT retrieval. The FWS will report catch and effort statistics to the Bureau on a weekly basis for analysis to determine if any in-season adjustments should be considered

VII. SALE AND MARKETING

Because the Bureau must act for the Yurok Tribal Government in conducting this fishery, some special actions are necessary to insure control and accountability of all aspects of this action which involves the sale of a tribal asset.

A pre-determined landing fee of 20 percent of all individual sales of salmon will be collected by the Bureau and deposited in a tribal trust account for the future use of the Yurok Tribal government. To accomplish this tribal requirement, it will be necessary for the Bureau of intensively manage the transportation, sale, payment and accountability of fish and funds as they proceed through the system.

To purchase the fish from this fishery, an established fish buyer will be selected by the Bureau through a competitive bidding process. The successful bidder must then establish a single buying station on or near the estuary portion of the Klamath River in a specific area designated in advance by the Bureau. All fish offered for sale from this fishery must be sold to the designated buyer at the designated buying station. Delivery to the buying

station may be by boat directly from the fishing sites in area I or by vehicle under a closely monitored and controlled system involving inspections and transportation permits. NO PRIVATE OR OFF-RESERVATION SALES OF FISH OR FISH PRODUCTS FROM THIS FISHERY WILL BE PERMITTED.

Salmon to be sold will be presented at the buying station in a condition commonly known as "troll dressed", that is, gutted with head on. One price per pound will be paid for fish. Fish will not be graded as large, medium or small and the buyer will have the right to reject fish that do not meet quality control conditions such as non-fresh or having seal bites.

At the buying station, each fisher will be provided with a completed copy from a four-part receipt/data ticket showing number of fish sold, weight of fish, price per pound computed with the tribal share deducted and an extension of the amount due the fisher. Within one week, the fisher must be paid by the fish buyer by check through the mail or by direct delivery of the check at a predetermined and mutually agreeable time and place. The Bureau will also be provided with a completed copy of each fish ticket.

Before any fish can be purchased at the buying station, the fisher must present his/her pictured Fishing Identification Card to the buyer who will verify that the seller is represented by the card. No fisher may represent any other fisher in this process.

VIII. OTHER

The Bureau will prepare a final report within six months after the conclusion of this fishery which will include both statistical information on the sale and biological data on the resource as appropriate.

The Superintendent of the Northern California Agency may amend this plan to delete, change or add items that he/she deems necessary for better enforcement, safety, management or accountability of the process.

KLAMATH-TRINITY RIVER BASIN SPRING CHINOOK SALMON STOCK EVALUATION AND RUN-SIZE FORECAST

DRAFT

Introduction

The creation of a commercial gillnet fishery in 1989 targeting on Trinity River Hatchery (TRH) spring chinook salmon stocks has caused concern in the management agencies of how to address and develop a spring chinook salmon management strategy. Due to the scant information on the natural stocks of spring chinook salmon in the Klamath-Trinity Basin (Table 1), data collected by the California Department of Fish and Game (CDFG) at the Junction City weir and at TRH form the bulk of the information available in the basin in regards to run size status. Additional information is provided through coded-wire tag (CWT) recovery information from the ocean and in-river fisheries. The following presentation is provided to initiate this management strategy and provide a view as to the present status of spring chinook. It should be stressed, this provides a view of the hatchery component only.

Information for this evaluation and forecast was compiled by the U.S. Fish and Wildlife Service (Service) in an attempt to describe the spring chinook stocks and develop a run-size forecast for Klamath Basin spring chinook salmon. This stock evaluation also describes harvest impacts occurring in the ocean and river fisheries. The run size forecast method utilizes hatchery return and release information to develop a relationship between hatchery production and Klamath River run size. Harvest impacts are described through CWT recovery information from the ocean fisheries, in-river fisheries, hatchery rack and natural spawner segments of the population. A production multiplier is then calculated for each release group and applied to the individual CWT release group to reflect unmarked production represented by each CWT recovery.

Run Timing

The spring chinook salmon returning to the Klamath River Basin appear to begin entering the Klamath River mouth as early as February (information collected by the Service's net harvest monitoring crews). The typical run timing (based on observed harvest patterns) is believed to be late March to mid- June in the lower Klamath River (mouth to Weitchpec). The run peak is usually late April through late May, again based on harvest patterns in the Yurok net fishery (Table 2).

Table 1. Spring chinook salmon counts from the Klamath and Smith River basins, 1964 through 1989.

KLAMATH RIVER SPRING CHINOOK SALMON COUNT 1964-1989

Stream	1964	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
Salmon River Mainstem	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	23[a]	NS	156[a]	NS	NS	NS	NS	NS	207[a]
N. Fk. Salmon	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	27[a]	5[c]	41[a]	NS	NS	11[c]	276[c]	170[c]	101[c]
S. Fk. Salmon	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	163[a]	272[c]	365[a]	NS	NS	429[c]	515[c]	443[c]	650[c]
E. Fk. of S. Fk.	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	206 ~~8~~[b]	NS	2[b]	NS	NS	___	NS
Wooley Creek	NS	NS	NS	NS	29[a]	NS	30[c]	NS	50[a]	NS	NS	13[b]	0	3[a]	2[a]	19[a]	43[a]	8[a]	3[a]	6[a]	16[a]	13[a]	NS	1[a]	81[a]
Elk Creek	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	0	NS	NA	NA	1[a]	NS	NA	NA	NS	NA	2[b]
Indian Creek	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	3[a]	NS	0[c]	NS	2[c]	NS	NA	NS	NS	NS	1[b]
Clear Creek	NS	NS	NS	NS	NS	0[a]	1[a]	NS	1[a]	NS	NS	0[a]	NS	NS	0[a]	0[a]	0[a]	4[a]	2[a]	0[a]	1[a]	0[a]	0[a]	2[a]	4[a]

Stream	Natural Run	Hatchery Run																							
Trinity River above Lewiston	1600	1100		650	2117	109	1847	6124	7791	3000	4500	4000	4000		2878	8000	4500	Remainder in Hatchery Ad. Reports						
S. Fk. Trinity est $\bar{x}$ 600 1950-63	11000[a]	←-----	few	-----→		<100[c]	98[c]	13[d]	NA	36[a]	322[a]	342[a]	NS	NS	301[a]	25[c]	NS	161[a]	NS	27‡	300‡	183[a]	153[b]	59[a]	
N. Fk. Trinity 2000-7000 1963	NS	NS	NS	7[b]	NS	NS	NS	7[b]	NS	NS	NS	NS	Few	NS	NA	0	2[a]	NA	8[a]	weir 12	2	0	NS	NS	28[a]
Canyon Creek	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	40	NS	27	NA	NA	weir 27	20±	29	NS	NS	233[a]
New River	NS	NS	NS	2	NS	NS	NS	NS	NS	NS	NS	NS	Few	NS	NS	NS	20[a]	NA	NA	NS	3[a]	NS	NS	NS	12[b]
Hayfork Creek	700	Run Extirpated																							

Smith River Spring Chinook Counts

Stream	1964	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88
S. Fk. Smith	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	11	NS	NS	NS	NS	NS	38
M. Fk. Smith	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	9	NS	NS	NS	NS	NS	NS
N. Fk. Smith	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	3	NS	NS	NS	NS	NS	NS

[a] 90-100% of holding area surveyed
[b] 70-90% of holding area surveyed
[c] 40-70% of holding area surveyed
[d] 20-40% of holding area surveyed

‡ Estimate based on index section expansion
NA = Survey conducted but data cannot be located.
NS = No known
Prior to 1964 landslides, runs in Salmon River System were reputed to be larger.

Table 2. Monthly Spring Chinook Harvest Estimates.
Yurok and Hoopa Net Fisheries, 1984–1989.

		Yurok Fishery			Hoopa Fishery
Year	Month	Estuary	Middle Klamath	Upper Klamath	
1984	April	1	20	4	10
	May	3	90	25	10
	June	1	35	10	90
	July	50	15	5	180
	August	0	0	0	90
	September	0	0	0	0
1985	April	5	49	51	0
	May	2	96	104	240
	June	33	35	75	358
	July	569	10	90	169
	August	0	0	0	348
	September	0	0	0	0
1986	April	5	54	98	10
	May	6	37	76	103
	June	15	71	169	719
	July	15	5	155	1115
	August	0	0	0	156
	September	0	0	0	0
1987	April	10	51	18	0
	May	11	115	120	397
	June	250	10	169	1837
	July	538	0	402	1694
	August	0	0	0	346
	September	0	0	0	0
1988	April	2	20	18	0
	May	251	178	294	437
	June	225	512	227	1734
	July	1199	0	0	640
	August	0	0	0	0
	September	0	0	0	0
1989	April	123	445	191	0
	May	360	1331	1217	663
	June	307	232	479	653
	July	60	17	13	372
	August	0	0	0	310
	September	0	0	0	0

Run timing in the Klamath River above Weitchpec is harder to define, no information is available. Information from the work done in the Salmon River indicates Spring Chinook begin to appear in holding pools as early as June. Spring chinook salmon returning to the Trinity River Basin begin to enter the lower Trinity during May. Harvest information collected by the Hoopa Fisheries Department concerning the Hoopa net fishery shows peak run timing to be June and July (Table 2).

Information from the CDFG operated weir at Junction City during 1984 through 1989 shows peak movement of spring chinook occurs in late June. By mid to late August the spring run has passed the weir site (Figure 1). In September and October fish passing Junction City are fall chinook migrating up river to spawning areas.

Field work done by the Service in 1988 (Randy Brown, USFWS Lewiston, personal communication) using direct observation to count spring chinook in holding pools in the upper Trinity River (above Junction City) from late May through mid-September shows an influx of fish in mid-June. Counts held steady and then decreased in late August as fish migrated into spawning areas. While in these holding areas, fish seemed to prefer shaded, low velocity areas.

Hatchery return information indicates spring chinook enter the hatchery between the first of September and the first week of October (TRH annual reports, 1973 through 1985). This time frame may be approximate, however; due to recent run sizes of spring and fall chinook returning to TRH and the inability to differentiate the races. This issue is addressed in a later section.

Harvest Patterns

Harvest of spring chinook originating in the Klamath River Basin occurs in various ocean and in-river fisheries (primarily the ocean troll, Indian net and in-river sport fisheries). Recoveries of CWT spring chinook have been recovered from Columbia River sport and net fisheries, the ocean groundfish fishery, and fisheries in Puget Sound and British Columbia.

As with the harvest impacts of fall chinook salmon, the recruitment of spring chinook to the fisheries is size related due to mesh selectivity of the gill nets and size regulations in the ocean fisheries. Analysis of CWT recorded information from these fisheries describe the age specific impacts and because of the life history and size at age of spring chinook, CWT release groups of TRH spring chinook stocks have differing contribution rates to the various fisheries. The following impact analysis is based on CWT recovery information from the 1978 through 1984 brood years of TRH spring chinook stocks.

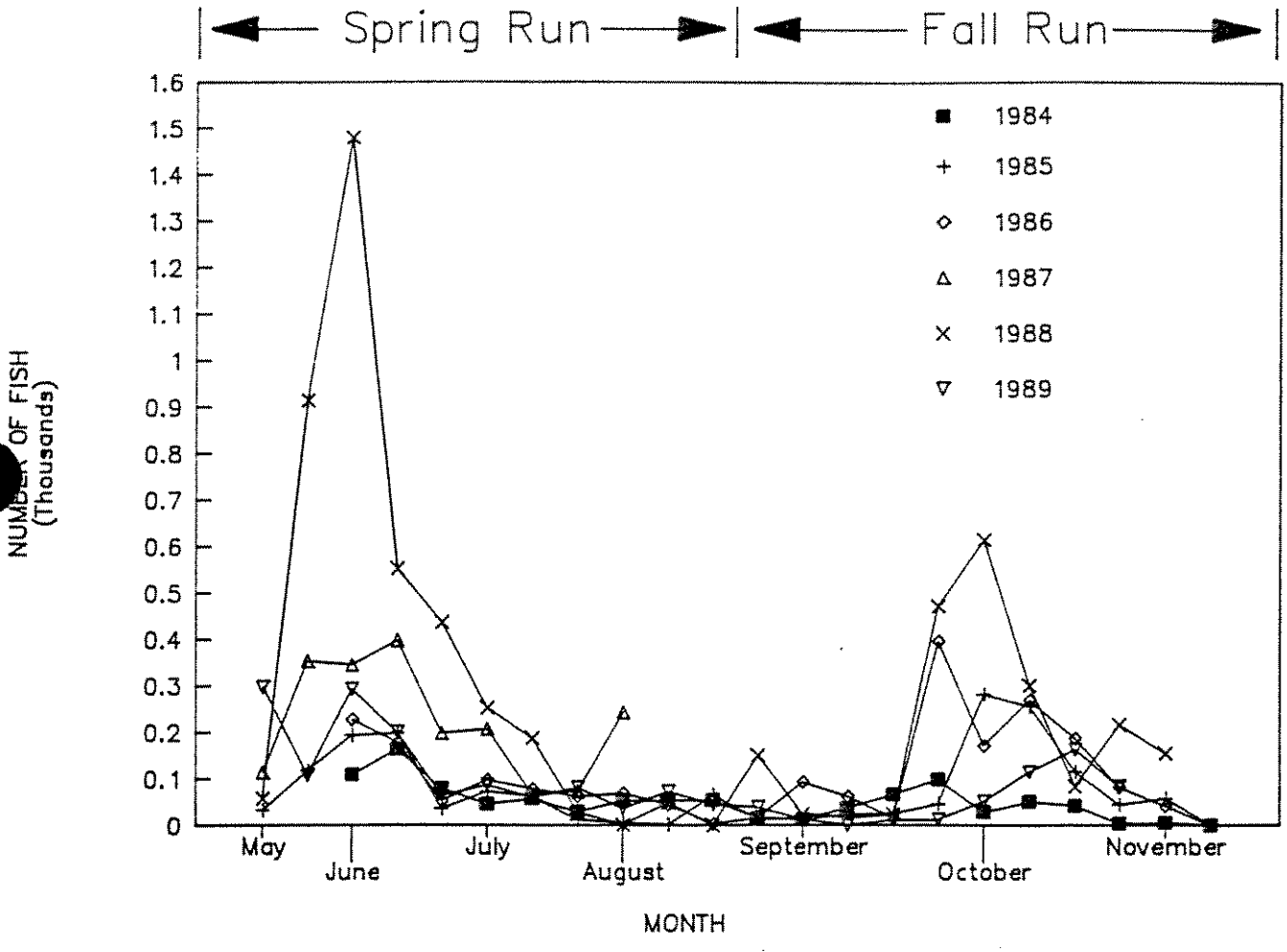


Figure 1. Adult Chinook Weir Counts at Junction City, 1984—1989.

As pointed out by Hankin (1985), analysis of CWT recovery information concerning spring chinook must take into account the fact that spring chinook mature during the early segment of the typical commercial troll season (May through June). This causes maturing spring chinook to have different vulnerabilities to the troll fishery than non-maturing fish of the same age and similar size. Due to time constraints and data needs this analysis does not address this issue. It is hoped that this aspect of ocean harvest can be investigated in the near future.

Ocean Fisheries

The primary ocean fishery impacting Klamath River spring chinook stocks is the California commercial troll fishery. Using CWT recovery information from the ocean fisheries, TRH spring chinook stocks have been harvested in significant numbers from the represented brood years (1976 through 1984) (Table 3). The age composition of the harvest in all ocean fisheries is 2% age 2, 75% age 3 and 23% age 4. The mean fork length of CWT recoveries is 66.9 cm (unweighted mean based on PFMC recovery summaries). The small size and large component of age 3 fish is no doubt driven by the fact maturing fish are leaving the fisheries mid-season (May and June), leaving smaller immature fish to contribute to the remaining fishery. As stated earlier, this phenomenon must be accounted for in describing harvest impacts and the resulting population.

In-River Fisheries

Based on known harvest patterns of the Indian gillnet fisheries collected by the Service and the Hoopa Fisheries Department, it has been shown that the subsistence net fisheries harvest an average of 3,350 adult spring chinook annually (1,780 for the Hoopa net fishery and 1,570 for the Yurok fishery)(Table 4). The majority of the harvest occurring in the Yurok net fishery occurs in the Klamath Glen to Blue Creek area and from Johnsons to Moore's Rock (Figure 2). Depending on river flows and spring weather patterns, harvest is concentrated in mid-to late April through late May. In the recent past (1986 through 1988) a number of spring chinook (identified through CWT recovery) have been taken during July in the estuary of the Klamath River. The estuary does not receive very much net fishing pressure early in the spring due to high river flows and debris problems. By mid-June the effort in the lower Klamath River net fishery has been greatly reduced due to low catch rates. The mean fork length of the spring chinook taken in the Yurok net fishery has been 75.8 cm (s=5.46, n=32), 74.0 cm (s=7.43, n=49), 72.0 cm (s=7.07, n=139) and 68.9 cm (s=4.87, n=103), in 1985, 1986, 1987 and 1988, respectively (U.S. Fish and Wildlife Service annual reports). A commercial fishery targeting on spring chinook in the estuary of the Klamath River during June and July of 1989 harvested 206 chinook. The mean fork length of spring chinook sampled during

Table 3. Expanded recoveries, multiplied by production factor, by age, by code, by recovery method

	Ocean Fisheries age					Yurok net age					Hoopa net age					In-river Sport age				
code	2	3	4	5	total	2	3	4	5	total	2	3	4	5	total	2	3	4	5	total
66106	0	738	678	0	1415											1	68	20	2	91
66104	4	137	136	0	278											0	43	66	0	108
66111	6	729	25	0	760	0	169	45	0	214	0	160	11	0	171	6	128	2		136
66112	17	1812	58	0	1888	0	402	64	0	466	0	29	0	0	29	82	938	17		1037
66130	5	1327	202	1	1535	0	156	671	19	846	0	82	47	6	135	5	281	58		345
66131	0	221	174	4	399	0	30	416	0	445	0	0	58	0	58	0	45	53		98
66132	28	171	64	0	263	0	0	16	0	16	0	30	0	0	30	1	25		0	26
66133	10	1790	334	0	2133	8	48	87	0	144	0	144	2	0	146	2	130		0	133
66134	14	850	358	0	1221	5	44	30	0	79	0	40	11	0	51	3	56		0	59
66136	0	33	172	11	217	0	0	10	0	10	0	8	0	0	8	1	9		0	10
66139	10	63	45	0	118	0	10	40	29	79	0	0	0	9	9	39		18	0	57
66135	55	164	27	0	246	0	0	0	0	0	0	0	82	0	82		96	103	0	198
66137	40	251	283	4	578	0	33	265	0	298	0	0	254	22	276		167	200	4	370
66138	0	1368	358	0	1726	0	262	172	0	434	0	262	251	0	513	7	17	38	3	65
66141	0	59	1	0	60	0	6	12	0	19	0	0	0	0	0	6	44	65	0	115
66140	58	6703	2882	29	9671	19	462	1025	5	1511	0	986	1280	0	2266	144	1713	1944	10	3811
66143	383	11592	3278	0	15254	0	1087	1316	0	2403	51	1230	641	0	1922	898	4715	732	0	6345
sum	630	28008	9076	49	37763	33	2709	4169	53	6964	51	2971	2639	37	5698	1196	8475	3317	19	13006
all age	0.02	0.74	0.24	0.00	1.00	0.00	0.39	0.60	0.01	1.00	0.01	0.52	0.46	0.01	1.00	0.09	0.65	0.26	0.00	1.00
adult age %		0.75	0.24	0.00			0.39	0.60	0.01			0.53	0.47	0.01			0.72	0.28	0.00	

Table 3. (Continued). Expanded recoveries, multiplied by production factor, by age, by code, by recovery method

	Hatchery age					Natural age					other recoveries age					
code	2	3	4	5	total	2	3	4	5	total	2	3	4	5	total	total recoveries
66106	20	18	56	3	97	2	335	244	2	583	0	0	0	0	0	2186
66104	9	122	101	1	233	1	533	76	1	611	0	0	0	0	0	1231
66111	54	67	3	0	124	16	148	8		172	0	0	0	0	0	1578
66112	455	1101	64	0	1620	962	2150	122		3234	0	0	0	0	0	8275
66130	69	429	275	0	774	14	325	188		527	0	0	2	0	2	4164
66131	2	69	253	4	328	0	52	174		226	0	0	2	0	2	1557
66132	19	117	38	1	176	4	80		1	85	0	5	0	0	5	601
66133	48	135	49	0	232	12	912		0	924	0	5	0	0	5	3717
66134	53	266	191	1	511	13	182		1	196	0	10	3	0	13	2131
66136	15	45	90	0	149	3	30		0	33	0	0	0	0	0	428
66139	55	181	50	5	290	120		51	0	171	0	3	0	0	3	727
66135	103	253	554	0	910		260	465	0	725	0	7	21	0	27	2189
66137	47	439	1108	4	1598		458	930	11	1398	0	0	25	0	25	4544
66138	72	813	362	0	1247	10	83	207	14	313	0	3	0	0	3	4303
66141	5	30	20	1	56	15	206	345	0	565	0	0	0	0	0	816
66140	486	2858	1814	14	5173	515	9036	6804	34	16388	10	29	10	0	48	38868
66143	624	4400	1327	23	6374	3725	16495	3135	0	23356	57	418	154	0	629	56284
sum	2136	11343	6356	57	19893	5411	31287	12750	64	49510	67	480	218	0	765	
all age %	0.11	0.57	0.32	0.00	1.00	0.11	0.63	0.26	0.00	1.00	0.09	0.63	0.28	0.00	1.00	
adult age %		0.64	0.36	0.00			0.71	0.29	0.00			0.69	0.31	0.00		

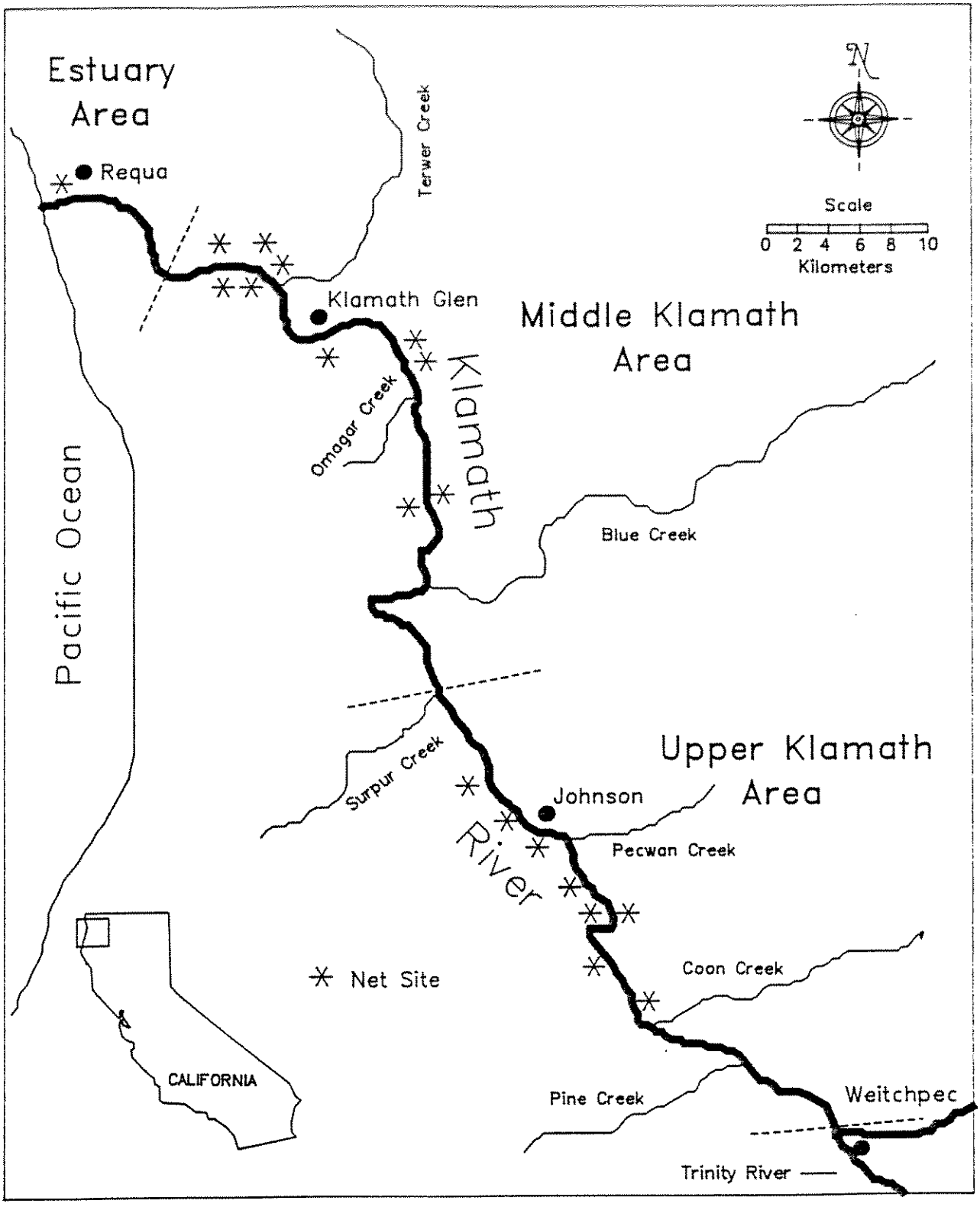


Figure 2. Map of Lower Klamath River Denoting Net Fishing Sites During Spring Chinook Season.

Table 4. Yurok and Hoopa Spring Chinook Net Harvest 1980–1989.

Area	Yurok Estuary Comm	Yurok Subs	Klamath	Total	Harvest rate	Hoopa total	Harvest rate
1980							
1981		1320	397	1717	0.16	1090	0.13
1982		172	2268	2440	0.32	715	0.14
1983		60	450	510	*	75	*
1984		52	195	247	0.08	380	0.13
1985		580	494	1074	0.10	1000	0.10
1986		41	651	692	0.03	2022	0.08
1987		786	860	1646	0.03	4146	0.09
1988		1677	1249	2926	0.04	2727	0.04
1989	206	644	3925	4775	0.16	1978	0.08
1980–1989		592	1165	1781	0.11	1570	0.10
1984–1989		630	1229	1893	0.07	2042	0.09

* No Spring Chinook Estimate Made.

this fishery was 72.5 cm (s=5.42, n=171). The age composition of the spring chinook (based on CWT recoveries) in the Yurok subsistence net fishery has averaged 0% age 2, 39% age 3, 60% age 4 and 1% age 5 over the 1978 through 1984 brood years (Table 3).

The majority of the net harvest in the Hoopa net fishery occurs during June and July. The mean fork length of the spring chinook taken in the Hoopa net fishery has been 73.3 cm (n=204), 69.1 cm (n=460), 70.9 cm (n=592), and 69.9 cm (n=363) in 1985, 1986, 1987 and 1988 respectively (Hoopa Fishery Department Reports). The age composition of the spring chinook (based on CWT recoveries) in the Hoopa net fishery has averaged 1% age 2, 52% age 3, 46% age 4 and 1% age 5 (Table 3).

The sport fishery in the lower Klamath and lower Trinity Rivers occurs in the same time frame as the net fisheries in the respective areas. There is no harvest information available to describe impacts from these fisheries. The sport fishery above Junction City occurs during July through September. The age composition of the spring chinook (based on CWT recoveries) in the sport fishery above Junction City has averaged 9% age 2, 65% age 3 and 26% age 4 (Table 3). Based on run size estimates from the Junction City weir, the sport fishery annually has harvested 13% of the estimated adult run size above Junction City (Table 5). Concerns as to the impacts on natural stocks of spring chinook occurring in the subsistence fisheries is real and should be addressed, to provide increased protection to these stocks. This concern can be stated for all fisheries discussed here.

A concern about the lack of harvest information from the Klamath and lower Trinity River must be addressed in order to provide necessary information and to identify harvest impacts on natural stocks.

Spawning Escapement

Natural Stocks

Spawning escapement information on spring chinook is very scant except for counts at TRH and the estimated escapements above Junction City (Table 5 and 6). The major spawning areas for natural spring chinook in the Trinity River Basin include the mainstem Trinity River, the South Fork Trinity River, Canyon Creek, New River and the North Fork Trinity River. The major spawning areas for spring chinook in the upper Klamath River Basin appear to be limited to Salmon River and its tributaries (Wooley Creek, North Fork and South Fork)(Table 1). In the Trinity River above Junction City, 26% of the run size has returned to the hatchery while 62% of the run size has returned to natural spawning areas since 1984. This is not presented here to describe the hatchery/natural composition of the run, but to describe the apportionment of the returns by the estimation methods.

Table 5. Trinity Spring Chinook Salmon Run Size Above Junction City
Angler Harvest and Spawning Escapements, 1977–1989

Year	Run Size Estimate Above Junction City					Angler Harvest	% of run size	Spawner Escnt	% of run size	Hatchery returns	% of run size	H/W spn ratio
	Jacks	Adults	Total	% Jacks	% Adults	(Adult)	(Adult)	(Adult)	(Adult)	(Adult)	(Adult)	(Adult)
1977	no estimate									1124		
1978	190	18816	19006	0.01	0.99	752	0.04	14384	0.76	3680	0.20	0.26
1979	113	7964	8077	0.01	0.99	1298	0.16	5008	0.63	1658	0.21	0.33
1980	1949	2301	4250	0.46	0.54	140	0.06	1614	0.70	547	0.24	0.34
1981	347	7913	8260	0.04	0.96	2146	0.27	3362	0.42	2405	0.30	0.72
1982	656	5731	6387	0.10	0.90	637	0.11	3868	0.67	1226	0.21	0.32
1983	no estimate									930		
1984	255	2465	2720	0.09	0.91	375	0.15	1354	0.55	736	0.30	0.54
1985	1434	8278	9712	0.15	0.85	736	0.09	4897	0.59	2645	0.32	0.54
1986	7081	23403	30484	0.23	0.77	2949	0.13	13371	0.57	7083	0.30	0.53
1987	4858	46016	50874	0.10	0.90	8467	0.18	29083	0.63	8466	0.18	0.29
1988	720	61972	62692	0.01	0.99	8738	0.14	39329	0.63	13905	0.22	0.35
1989	2021	27239	29260	0.07	0.93	2152	0.08	19581	0.72	5506	0.20	0.28
1977–1989	1784	19282	21066	0.12	0.88	2581	0.13	12350	0.63	4066	0.24	0.41
1984–1989	2728	28229	30957	0.11	0.89	3903	0.14	17936	0.62	6390	0.26	0.42

The only spawning escapement goal established for natural areas in the Klamath-Trinity River Basin is 6,000 adult spawners for the Trinity River. This goal is stated in the Trinity River Restoration Plan. Goals for other areas have not been established and current information is lacking to allow proper determination in many instances.

Trinity River Hatchery Stocks

The escapement goal for the hatchery is 3,000 adult fish annually (IGH does not produce spring chinook salmon) with an assumed male to female ration of 1:1.1. The assumed fecundity is 3,000 eggs per female. From information obtained in hatchery records since 1977 the average adult escapement has been 4,020, the male to female ratio has been 1.4:1 and the fecundity has been 2910 eggs per female (Table 6). It should be pointed out due to different methodologies used to estimate the spring/fall chinook cut off, the hatchery returns presented in Table 5 and Table 6 are different. Hatchery records had to be used to define the fecundity and the male/female ratio.

The age composition of the hatchery returns (based on CWT recoveries from all releases has been 11% age 2, 57% age 3, 32% age 4 and 0% age 5 (Table 3). Size information from a 1983 brood year yearling release and a 1982 brood year fingerling release of spring chinook recovered at the hatchery is shown in the following table:

Table presenting size at age of TRH spring chinook returns from a 1982 brood fingerling release and a 1983 brood yearling release. Information presented by sex (M or F), size is forklength in centimeters, sample sizes in ( ).

				Size at Age							
		Release		2		3		4		5	
Code	By	Size	Site	M	F	M	F	M	F	M	F
Fingerling											
6-61-41	82	81/lb.	TRH	39(5)	---	66(14)	63(15)	72(7)	72(12)	---	74(1)
Yearling											
6-61-40	83	11/lb.	TRH	45(101)	---	62(403)	62(191)	75(157)	73(220)	---	---

Information obtained from Bill Heuback, CDFG, Arcata.

Table 6. Trinity River Hatchery Return Data, From Hatchery Reports, 1977–1989.

Trinity Hatchery returns

Year	Jacks	Males	Female	Adults	Total	% Jacks	% Males	% Female	%adults	Male/Fem Ratio	Females Spawned	Eggs Taken	Fecund	Egg Size #/oz
1977	385	598	526	1124	1509	0.26	0.40	0.35	0.74	1.14	228	568000	2491	81
1978	143	1858	1898	3756	3899	0.04	0.48	0.49	0.96	0.98	1171	3175000	2711	83
1979	146	597	801	1398	1544	0.09	0.39	0.52	0.91	0.75	484	1344000	2777	83
1980	776	296	216	512	1288	0.60	0.23	0.17	0.40	1.37	137	377000	2752	90
1981	224	1155	1296	2451	2675	0.08	0.43	0.48	0.92	0.89	839	2680000	3194	102
1982	225	639	685	1324	1549	0.15	0.41	0.44	0.85	0.93	545	1571465	2883	89
1983	279	394	462	856	1135	0.25	0.35	0.41	0.75	0.85	313	701596	2242	95
1984	168	738	367	1105	1273	0.13	0.58	0.29	0.87	2.01	305	720709	2363	108
1985	2206	2303	1820	4123	6329	0.35	0.36	0.29	0.65	1.27	1394	4383490	3145	83
1986	963	2764	1942	4706	5669	0.17	0.49	0.34	0.83	1.42	1478	4134844	2798	106
1987	2022	5177	3362	8539	10561	0.19	0.49	0.32	0.81	1.54	1159	3449310	2976	88
1988	775	9232	5873	15105	15880	0.05	0.58	0.37	0.95	1.57	1228	3772735	3072	90
1989	166	3769	3477	7246	7412	0.02	0.51	0.47	0.98	1.08	875	2707305	3094	82
1977–19	652	2271	1748	4019	4671	0.14	0.49	0.37	0.86	1.30	781	2275804	2808	91
1984–19	1050	3997	2807	6804	7854	0.13	0.51	0.36	0.87	1.42	1073	3194732	2908	93

Table 7. Pounds of Spring Chinook Released on Site, by Size.

Brood year	Yearlings	Fingerlings	Total
76	8286	20627	28913
77	11111	0	11111
78	46983	14440	61423
79	6855	2900	9755
80	3478	0	3478
81	28140	18766	46906
82	25540	1875	27415
83	43585	0	43585
84	44583	0	44583
85	86206	44405	130611
86	15777	27536	43313
87	0	32979	32979
88			
1976–1987	26712	10879	37591
1980–1985	30914	15695	46609

Table 8. Age At Recovery of Returning CWT Releases at Hatchery Rack.

CWT code	Brood Year		Age At Return 2	3	4	5	Total Recoveries
66106	Y76		19	17	53	3	92
66104	Y77		9	117	97	1	224
66111	F78		52	65	3	0	120
66112	F78		78	189	11	0	278
66130	Y78		56	346	222	0	624
66131	Y78		2	58	214	3	277
66132	F79		18	110	36	1	165
66133	F79		40	113	41	0	194
66134	Y79		53	265	191	1	510
66136	F79		14	43	87	0	144
66139	Y80		54	178	49	5	286
66135	F81		15	37	81	0	133
66137	Y81		13	121	305	1	440
66138	Y82		21	236	105	0	362
66141	F82		5	29	19	1	54
66140	Y83		101	594	377	3	1075
66143	Y84		109	769	232	4	1114
On site		sum	567	3109	2079	23	5778
		% all age	0.10	0.54	0.36	0.00	1.00
		% adults		0.60	0.40	0.00	
Fingerling		sum	208	543	191	2	944
		% all age	0.22	0.58	0.20	0.00	1.00
		% adults		0.74	0.26	0.00	
Yearling		sum	451	2744	1932	21	5148
		% all age	0.09	0.53	0.38	0.00	1.00
		% adults		0.58	0.41	0.00	
All Rel		sum	659	3287	2123	23	6092
		% all age	0.11	0.54	0.35	0.00	1.00
		% adults		0.61	0.39	0.00	

Table 9. Restructure of Hatchery Returns Based on CWT Age Comp at TRH

Brood Year	Adult returns (age 3 and 4)	return/brood pounds released
1976	1217	0.042
1977	1271	0.114
1978	1934	0.031
1979	1105	0.113
1980	850	0.244
1981	1479	0.032
1982	4368	0.159
1983	7593	0.174
1984	10556	0.237
1985	10564	0.081
1986		
1987		
1976–1985	4094	0.123
1980–1985	5902	0.155

Table 10.Spring Chinook CWT release Information, in numbers of fish released.

Code	Brood Year	Release Type	#Marked Release	#Unmark Release	Total# Release	Tag Rate
66106	76	Y	94230	4770	99000	0.95
66104	77	Y	56840	2368	59208	0.96
66111	78	F	192800	7200	200000	0.96
66112	78	F	170800	824545	995345	0.17
66130	78	Y	191916	46058	237974	0.81
66131	78	Y	134948	24864	159812	0.84
66132	79	F	187494	12606	200100	0.94
66133	79	F	181134	35478	216612	0.84
66134	79	Y	86594	174	86768	1.00
66136	79	Y	35666	1294	36960	0.96
66139	80	Y	34601	527	35128	0.98
66135	81	F	182635	1066840	1249475	0.15
66137	81	Y	98637	259631	358268	0.28
66138	82	Y	96461	235831	332292	0.29
66141	82	Y	146194	5681	151875	0.96
66140	83	Y	90293	344164	434457	0.21
66143	84	Y	98568	465402	563970	0.17

Table 7 presents the hatchery release data from the 1978 through the 1984 brood year. Table 8 presents the CWT returns recovered at the hatchery racks. From this information an age composition of returns from on site releases has been described which shows 60% of the returning adults are age 3 and 40% are age 4 fish. Using this age composition information to reconstruct the hatchery returns since 1977 return per brood pound of fish produced can be calculated (Table 9). This information is presented here to provide additional information on hatchery production and returns. Table 10 presents the CWT releases for the brood years 1976 through 1984 with their associated unmarked releases and production multiplier values.

Contribution and Exploitation

Contribution to the various fisheries have been estimated for the CWT represented release groups from TRH and presented in Table 3. While the estimated harvest presented here is not able to describe overall harvest rates on the spring chinook stocks, it is a guide to show contribution and patterns of one fishery relative to another fishery.

A crude cohort analysis is presented in Table 11. Exploitation rates for TRH spring chinook stocks are presented in Table 12. This information is based on CWT recoveries from the 1978 through 1984 brood years. As used in this table, the ocean exploitation rate is the ocean harvest divided by the starting population. The In-river exploitation rate is the In-river harvest divided by the In-river harvest plus the escapement. For brood years as a whole, age specific ocean exploitation rates are highest for age 4 fish (0.3044), while the In-river exploitation rate is highest for Age 3 fish (0.2744).

Run Size Forecast

The method used here to forecast the TRH 1990 spring chinook adult returns is based on a similar method used by the Washington Department of Fisheries and the Northwest Indian Fisheries Commission in forecasting the Skagit River Hatchery spring chinook returns. For the Skagit River Hatchery return forecast a return per brood pound of release value was calculated over a ten year average. This value was applied to the respective brood release returning in the current year to forecast the hatchery return as shown below:

1990 adult hatchery return = (1986 brood pounds released on-site) x (1980 through 1985 hatchery return/brood pound released on-site rate).

Table 11. Age-specific Estimated Harvests, Escapements and starting populations for CWT Release groups of Spring Chinook Salmon From TRH.

		age 5 p	0.8			age 4 p	0.8			age 3 p	0.8			age 2 p	0.5		
		shaker	0			shaker	0.26			shaker	0.26			shaker	0.26		
		% legal	1			% legal	0.7			% legal	0.5			% legal	0.2		
code	Br Yr	age 5 OH	age 5 IH	age 5 IE	age 5 start	age 4 OH	age 4 IH	Age 4 IE	Age 4 start	Age 3 OH	Age 3 IH	Age 3 IE	Age 3 start	age 2 OH	Age 2 IH	Age 2 IE	Age 2 start
66106	Y76	0	2	5	7	929	20	299	1258	1121	68	353	3115	0	1	22	6253
66104	Y77	0	0	2	2	187	66	177	432	209	43	655	1447	10	0	10	2915
66111	F78	0	0	0	0	34	58	11	104	1108	297	216	1750	14	220	70	3805
66112	F78	0	0	0	0	80	82	186	348	2755	1340	3252	7782	40	548	1416	17568
66130	Y78	1	25	0	26	277	776	464	1550	2017	438	754	5146	11	851	83	11236
66131	Y78	4	0	4	7	239	527	428	1202	337	75	121	2035	0	445	2	4517
66132	F79	0	0	2	2	88	16	38	145	260	25	197	663	64	17	23	1430
66133	F79	0	0	0	0	458	90	49	596	2721	178	1048	4692	22	154	60	9621
66134	Y79	0	0	2	2	491	41	191	726	1292	100	448	2747	32	87	66	5679
66136	Y79	11	0	0	11	236	10	90	351	50	9	75	573	0	11	18	1174
66139	Y80	0	39	5	44	61	58	101	274	96	10	181	629	23	118	175	1574
66135	F81	0	0	0	0	38	185	1019	1242	250	96	513	2410	126	0	103	5049
66137	Y81	4	25	15	44	389	719	2038	3200	381	200	897	5478	92	298	47	11392
66138	Y82	0	3	14	17	491	462	568	1543	2079	279	896	5182	0	441	83	10888
66141	F82	0	0	1	1	1	78	365	445	90	50	236	932	0	25	20	1909
66140	Y83	29	14	48	91	3953	4249	8618	16933	10188	2175	11894	45424	133	1674	1001	93656
66143	Y84	0	0	23	23	4496	2689	4463	11677	17620	5853	20895	58965	882	3301	4348	126461
sum all years		44	84	117	245	11817	8682	18017	38822	36355	9086	38288	132257	1383	6128	5976	278000

Table 12. Ocean Exploitation rates, River Exploitation rates, Maturation Probabilities and Age 2 Survival rates.

code	Br Yr	age 5 oc exp	age 5 ir exp	age 5 mat	age 4 oc exp	age 4 ir exp	age 4 mat	age 3 oc exp	age 3 ir exp	age 3 mat	age 2 oc exp	age 2 ir exp	age 2 mat	age 2 survival
66106	Y76	0.00	0.29	1.00	0.74	0.06	0.97	0.36	0.16	0.21	0.00	0.05	0.00	0.06
66104	Y77	0.00	0.00	1.00	0.43	0.27	0.99	0.14	0.06	0.56	0.00	0.00	0.00	0.05
66111	F78			1.00	0.33	0.84	1.00	0.63	0.58	0.80	0.00	0.76	0.08	0.02
66112	F78			1.00	0.23	0.30	1.00	0.35	0.29	0.91	0.00	0.28	0.11	0.02
66130	Y78	0.05	1.00	1.00	0.18	0.63	0.97	0.39	0.37	0.38	0.00	0.91	0.08	0.05
66131	Y78	0.50	0.00	1.00	0.20	0.55	0.99	0.17	0.38	0.12	0.00	0.99	0.10	0.03
brood		0.14	0.87	1.00	0.20	0.57	0.98	0.37	0.33	0.62	0.00	0.57	0.10	0.02
66132	F79	0.00	0.00	1.00	0.61	0.29	0.95	0.39	0.11	0.55	0.04	0.42	0.03	0.01
66133	F79			1.00	0.77	0.65	1.00	0.58	0.15	0.62	0.00	0.72	0.02	0.04
66134	Y79	0.00	0.00	1.00	0.68	0.18	0.99	0.47	0.18	0.38	0.01	0.57	0.03	0.07
66136	Y79	1.00		1.00	0.67	0.10	0.88	0.09	0.11	0.16	0.00	0.39	0.02	0.03
brood		0.73	0.00	1.00	0.70	0.30	0.96	0.50	0.15	0.48	0.01	0.62	0.02	0.03
66139	Y80	0.00	0.88	1.00	0.22	0.37	0.74	0.15	0.05	0.36	0.01	0.40	0.19	0.04
66135	F81			1.00	0.03	0.15	1.00	0.10	0.16	0.28	0.02	0.00	0.02	0.00
66137	Y81	0.08	0.64	1.00	0.12	0.26	0.98	0.07	0.18	0.22	0.01	0.86	0.03	0.03
brood		0.08	0.64	1.00	0.10	0.23	0.99	0.08	0.17	0.24	0.01	0.67	0.03	0.01
66138	Y82	0.00	0.20	1.00	0.32	0.45	0.98	0.40	0.24	0.38	0.00	0.84	0.05	0.03
66141	F82	0.00	0.00	1.00	0.00	0.18	1.00	0.10	0.17	0.34	0.00	0.56	0.02	0.01
brood		0.00	0.19	1.00	0.25	0.37	0.98	0.35	0.23	0.37	0.00	0.82	0.04	0.03
66140	Y83	0.32	0.23	1.00	0.23	0.33	0.99	0.22	0.15	0.40	0.00	0.63	0.03	0.22
66143	Y84	0.00	0.00	1.00	0.39	0.38	1.00	0.30	0.22	0.65	0.01	0.43	0.06	0.22
all years		0.18	0.42	1.00	0.30	0.33	0.99	0.27	0.19	0.49	0.00	0.51	0.04	

This methodology has been modified to reflect a multiple age of returns at TRH in order to represent the adult return age composition observed at TRH. Due to the hatchery practice of off-site releases prior to the 1980 brood year production only the 1980 through 1985 broods and the respective (1984 through 1989) adult returns are used to derive the return/brood year release rate.

adult hatchery return = (1987 brood release x hatchery age 3 composition) + (1986 brood release x hatchery age 4 composition) x (1980 through 1985 return/brood release).

To calculate the adult run size above Junction City forecast the 1984 through 1989 hatchery component of the Junction City run size (Table 7) was applied to the TRH return forecast.

adult run above Junction City = (1990 TRH return forecast) (1984 through 1989 hatchery adult run-size component).

To calculate the Klamath River adult run size forecast the assumption that 90% of the basin run originates above Junction City is applied to the Junction City run size forecast.

Klamath River adult run-size = (Junction City adult run-size forecast)/0.90.

The run forecast and the in-river harvest schedule are presented in Table 13. Table 14 summarizes the 1978 through 1989 adult run size, harvest and resulting escapements. Fisheries such as the lower Klamath and lower Trinity sport and the commercial net fisheries are not forecast here due to no information or the need for further negotiations to determine allowable harvest levels.

Table 13. 1990 Adult Spring Chinook Run Forecast

1990 Spring Chinook return to TRH forecast
(87 br rel*hatchery age 3)+(86 br rel*hatchery age 4)*(mean return/br yr rel)= 4540
(87 br rel*hatchery age 3)+(86 br rel*hatchery age 4)*(80–85 mean return/br yr rel)= 5711

1990 Spring Chinook run Above Junction City forecast
(90 TRH returns)*(78–89 hatchery run size component) = 18560
(90 TRH returns)*(84–89 hatchery run size component) = 23348

1990 harvest schedule for Spring Chinook in Klamath Basin

TRH escapement needs 3000 adults.
Trinity River natural spawner escapement goal is 6,000 adults
Yurok Subsistence fishery takes 7% of the Klamath River mouth run size
Hoopa Subsistence fishery takes 9% of the Trinity River mouth run size
Recreational fishery above Junction city takes 13% of Spring Chinook Run
Run size above Junction City is 90% of the Klamath River basin Run size
Klamath escapement is assumed to be 2 per cent of run size at Weitchpec
Lower Trinity Escapement is assumed to be 3 per cent of run size entering Trinity River
Recreational fishery harvest levels in the Klamath and lower Trinity Rivers are not available
Commercial fishery harvest are not presented at this time.

Run size Klamath Mouth	Yurok Harvest Comm	Subs	Rec Hrvst Klamath	Klamath Escape	Trinity run size	Hoopa Harvest Comm	Subs	Net Harves All Areas
25942		1877		481	23584		2050	3927

Sport Harvest lower Trinity	Lower Trinity escapement	Run size above J.C.	Sport Harvest above J.C.	TRH Escape	Natural Escape
	708	20826	2879	5315	12835

Harvest rate Net harvest	Harvest rate sport and net	Escapement rate natural and hatchery
0.15	0.26	0.74

Table 14. 1978–1989 Adult Spring Chinook run size, Harvests, Spawning Escapements.

Constructed using following assumptions and information:
1978–1985 Trinity River run size above J.C.is 75% of entire basin run size
1986–1988 Trinity River run size above J.C. is 90% of entire basin run size
1989 Trinity River run size above J.C.is 90% of entire basin run size
Indian harvest pattern in 1978 –1980 were similar to harvest pattern in 1981–1986, averaged 15% of the run size estimate to that point.

Year	Klamath Run Size	Yurok Harvest	Rec Hrvst Klamath	Klamath Escape	Trinity Run Size	Hoopa Harvest	Rec Hrvst Lwr Trin	Lr Trin Escape	Calc Run J.C.	Run Size J.C.	Rec Hrvst J.C.	TRH Escape	Natural Escape
												1124	
1978	25088	3763		426	20898	3135		627	17137	18816	752	3680	14384
1979	10619	1593		181	8845	1327		265	7253	7964	1298	1658	5008
1980	3068	460		52	2556	383		77	2096	2301	140	547	1614
1981	10551	1717		177	8657	1090		260	7307	7913	2146	2405	3362
1982	7641	2440		104	5097	715		153	4229	5731	637	1226	3868
1983		510				75						930	
1984	3287	247		61	2979	380		89	2510	2465	375	736	1354
1985	11037	1074		199	9764	1000		293	8471	8278	736	2645	4897
1986	25743	692		501	24550	2022		737	21792	23403	2949	7083	13371
1987	50618	1646		979	47992	4146		1440	42406	46016	8467	8466	29083
1988	68169	2926		1305	63938	2727		1918	59293	61972	8738	13905	39329
1989	29963	4775		504	24684	1978		741	21966	27239	2152	5506	19581
1978–1989	22344	1820		408	19996	1581		600	17678	19282	2581	3839	12350
1984–1989	31470	1893		592	28985	2042		870	26073	28229	3903	6390	17936
1990	25942	1877		481	23584	2050		708	20826	20826	2879	5315	12835

Attachment 2
(to Attachment 12)

REPORT ON THE SPRING FISHERY ON THE YUROK INDIAN RESERVATION

SPRING CHINOOK TEST COMMERCIAL FISHERY 1989

The spring chinook test commercial fishery in the Klamath River estuary began on June 13, 1989 and ended on July 15, 1989. Fishing was allowed from 7 AM to 7 PM on Tuesday through Saturday each week. Drift net fishing was allowed on Tuesday and Wednesday and set net fishing was allowed from Thursday to Saturday. On July 4, regulations were changed allowing fishing to occur from 7 PM to 7 AM and allowing drift net fishing during outgoing tides and set net fishing during incoming tides.

The fishery was monitored by biologists from the U.S. Fish and Wildlife Service (FAO-Arcata). Information describing catch, effort and biological parameters were gathered by interviewing Indian gill net fishers at the commercial buying station or at their camps. Commercially sold chinook were sampled for fork length and fin clips. Scale samples were collected for age identification. Snouts from adipose fin clipped (AD) chinook were collected for coded wire tag (CWT) analysis.

A total of 322 chinook salmon were harvested in the estuary during the spring chinook test commercial fishery (Table 1). Two-hundred and six chinook (64%) were sold. Catch levels did not reach expectations for 1989 as the harvest in the estuary during June and July was less than in 1987 and 1988 (Table 2). In 1988 a significant portion of the spring chinook harvest (41%) occurred in the estuary and was indicative of a strong spring chinook run into the Trinity River (Figure 1). Trinity River spring chinook are predominantly of hatchery origin . A similar harvest trend was also seen in 1987.

Drift net fishing was allowed during the test fishery in an attempt to increase the efficiency of the gill nets. Although no clear cut comparisons should be made due to the low numbers of fish harvested, drift net fishing appeared to be more efficient than set net fishing during daytime fishing (Table 3). Drift netting accounted for 229 (71%) of the spring chinook harvested during the test fishery. Ninety percent of the sturgeon were captured by drift nets while the steelhead harvest was approximately equal between drift and set nets. During nighttime fishing catch effort for the drift and set netting were similar.

A total of 227 of the estimated 322 chinook harvested were examined for AD-clips. The snouts of 29 of the 31 observed AD-clipped chinook were collected and 26 CWTs were recovered and decoded. These recoveries expanded out to an estimated harvest of 42 CWT spring chinook, 2 fall chinook and 3 no tags during the test fishery. Recoveries by tag code are presented in Table 4. Tag code 06-61-44, a yearling release from Trinity River Hatchery from the 1985 brood, accounted for 66% of the ad-clipped spring chinook harvested during the test spring chinook fishery. Age composition based on expanded CWTs was 22.8% age 3, 70.9% age 4 and 6.4% age 5.

Age composition from 170 scale samples collected was 9.4% age 3, 85.3% age 4, and 5.3% age 5. Mean fork length of chinook salmon measured at the buying station was 72.5 cm (s=5.42,n=171).

Incidental catch of other species

Concerns about the impact of the test commercial fishery on wild spring chinook, steelhead, sturgeon, and shad were expressed but apparently did not materialize. An estimated 7 steelhead and 10 green sturgeon were harvested during the test spring chinook fishery. A comparison of observed AD-clip rates during the commercial fishery (13.5%) and at the Junction City weir (13.3%), which is predominantly hatchery fish, indicates that there was minimal impact of the wild chinook stocks. The negligible impact on steelhead was expected due to the selectivity of the gear used. Gill net selectivity investigations by FAO-Arcata indicate that the impacts on steelhead will probably be minimal due to the mesh sizes commonly used (7-8" stretched mesh). Very few shad were observed during the test fishery and the impacts on this species is not believed to be a concern. The impacts on sturgeon, although small this year (10), could potentially be a problem if a more intense fishery were to occur. A portion of the Klamath River sturgeon population, on their post-spawning migration to the ocean, pa s through the estuary during June through August and are vulnerable to the gill net fishery. Since nothing is known of the sizes of the Klamath River green and white sturgeon populations, the potential detrimental impacts of this fishery is unknown.

SPRING FISHERY ON THE YUROK INDIAN RESERVATION

In 1989, an estimated 4,775 spring chinook (including the 206 that were sold in the test fishery) were harvested on the Yurok Reservation (Table 2). This is the highest level of spring chinook harvest observed since net harvest monitoring began in 1979. In 1989, the majority of the harvest (61%) occurred during May. In 1987 55% of the harvest occurred in July and in 1988 74% occurred in June and July (Figure 2). An estimated 82 steelhead trout, 256 green sturgeon and 25 white sturgeon were harvested during the spring net harvest period (April to mid-July).

An estimated 638 CWT spring chinook were harvested on the Yurok reservation during spring (this includes the estuary harvest during the test fishery)(Table 4). An estimated 2 CWT fall chinook and 47 no tags were also harvested. The observed ad-clip rate was 14.0% based on a mark sample of 600. Age composition based on expanded CWTs was 4.1% age 3, 95.5% age 4, and 0.4% age 5.

Mean fork length of spring chinook was 74.2 cm (s=5.37, n=526), 59.7 cm for steelhead (s=11.4, n=9), and mean total length for green sturgeon was 169.8 cm (s=18.7, n=18).

TABLE 1. HARVEST AND EFFORT ESTIMATES (ACCOUNTED HOURS AND FISHES IN PARENTHESES) DURING THE 1989 SPRING CHINOOK COMMERCIAL FISHERY IN THE ESTUARY AREA.

WEEK	HOURS FISHED	CHINOOK	STEELHEAD	GREEN STURGEON	WHITE STURGEON
6/13–17	766 (487)	122 (66)	0 (0)	2 (0)	0 (0)
6/20–24	170 (114)	40 (36)	0 (0)	4 (3)	0 (0)
6/27–7/1	336 (208)	100 (68)	7 (5)	2 (1)	0 (0)
7/4–7/8	118 (77)	34 (11)	0 (0)	0 (0)	0 (0)
7/11–7/15	161 (104)	26 (12)	0 (0)	2 (2)	0 (0)
TOTAL	1551 (990)	322 (193)	7 (5)	10 (6)	0 (0)

TABLE 2. MONTHLY SPRING CHINOOK HARVEST ESTIMATES ON THE YUROK INDIAN RESERVATION BY AREA FOR 1986–1989.

YEAR	MONTH	ESTUARY	MIDDLE KLAMATH	UPPER KLAMATH	TOTAL
1986	APRIL	5	54	98	157
	MAY	6	37	76	119
	JUNE	15	71	169	255
	JULY	15	5	155	175
	TOTAL	41	167	498	706
1987	APRIL	10	51	18	79
	MAY	11	115	120	246
	JUNE	250	10	169	429
	JULY	538	0	402	940
	TOTAL	809	176	709	1694
1988	APRIL	2	20	18	40
	MAY	251	178	294	723
	JUNE	225	512	227	964
	JULY	1199	0	0	1199
	TOTAL	1677	710	539	2926
1989	APRIL	123	445	191	759
	MAY	360	1331	1217	2908
	JUNE	307	232	479	1018
	JULY	60	17	13	90
	TOTAL	850	2025	1900	4775

TABLE 3. WEEKLY DRIFT AND SET NET CATCH/EFFORT (CHINOOK/HR), ESTIMATED HOURS FISHED (ACCOUNTED HOURS IN PARENTHESES), AND CHINOOK HARVEST DURING THE ESTUARY SPRING CHINOOK COMMERCIAL FISHERY IN 1989 (JUNE 13–JULY 1 FISHING PERMITTED 7AM–7PM, FROM JULY 4–JULY 15 FISHING PERMITTED FROM 7PM–7AM).

	DRIFT				SET			
WEEK	C/E	HOURS		CHINOOK	C/E	HOURS		CHINOOK
6/13–17	0.51	190	(115)	28	0.05	572	(372)	94
6/20–24	0.41	82	(59)	2	0.04	88	(55)	38
6/27–7/1	0.82	102	(61)	22	0.11	234	(147)	78
7/4–8	0.26	40	(19)	24	0.29	78	(58)	10
7/11–15	0.17	52	(41)	17	0.28	109	(63)	9

TABLE 4. ACTUAL (#) AND EXPANDED (EXP #) CODED-WIRE TAG RECOVERIES FOR CHINOOK SALMON FOR THE SPRING FISHERY (APRIL 4 – JULY 15) ON THE YUROK INDIAN RESERVATION IN 1989.

					Reservation Monitoring Area							
					3/ Estuary		Middle Klamath		Upper Klamath		All Areas	
Tag Code	Brood Year	Race	1/ Hatchery of Origin	2/ Release Type	#	EXP #	#	EXP #	#	EXP #	#	EXP #
06–56–25	1985	Fall	TRH	Y	1	2.17	0	0.00	0	0.00	1	2.17
06–61–42	1985	Spring	TRH	F	0	0.00	4	62.48	0	0.00	4	62.48
06–61–43	1984	Spring	TRH	Y	1	2.83	0	0.00	0	0.00	1	2.83
06–61–44	1985	Spring	TRH	Y	18	29.34	20	375.34	10	138.53	48	543.21
06–61–45	1986	Spring	TRH	F	1	2.83	0	0.00	0	0.00	1	2.83
06–61–46	1986	Spring	TRH	Y	4	7.30	1	15.62	0	0.00	5	22.92
TOTAL TAGS					25	44.47	25	453.44	10	138.53	60	636.44
NO TAGS					2	2.50	2	31.24	1	12.77	5	46.51
TOTAL					27	46.97	27	484.68	11	151.30	38	682.95

1/ TRH – Trinity River Hatchery

2/ F – Fingerling (May or June release)
Y – Yearling (Late September to December release)

3/ All CWT recoveries in the Estuary occurred during the commercial fishery.

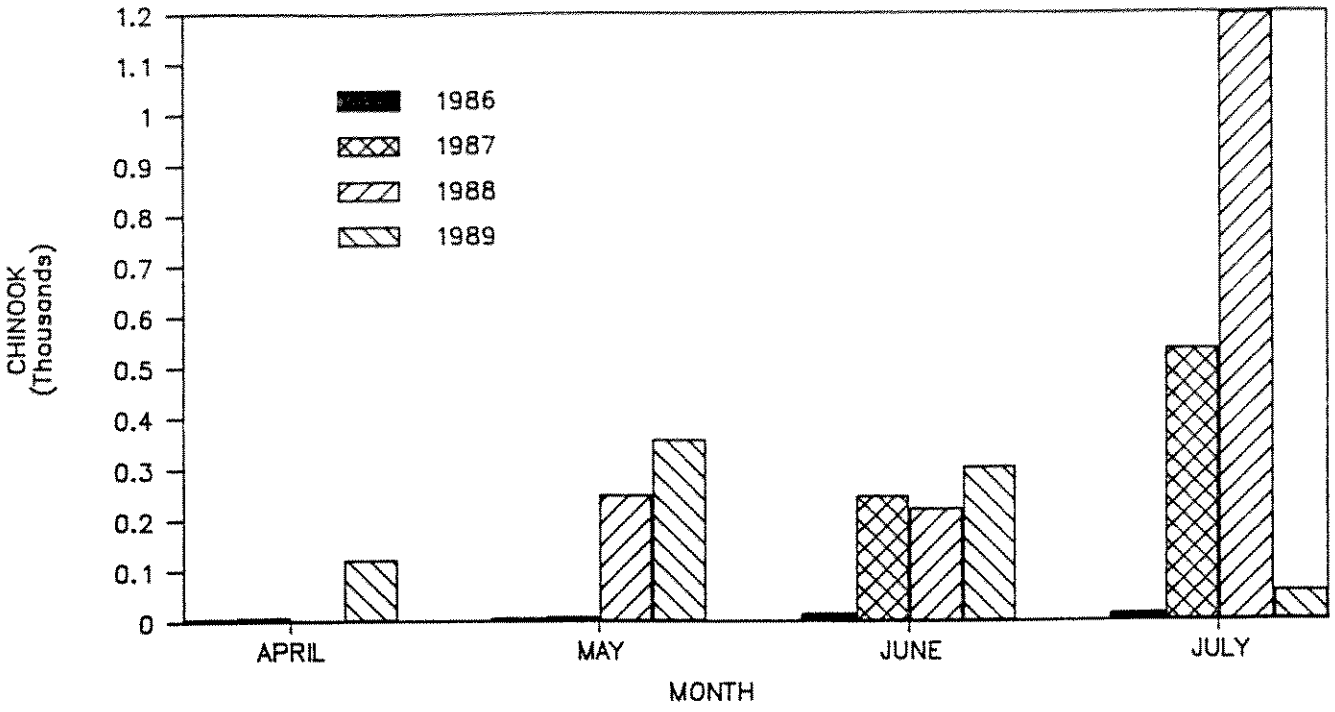


Figure 1. Spring chinook harvest in the estuary of the Yurok Indian Reservation (1986–1989).

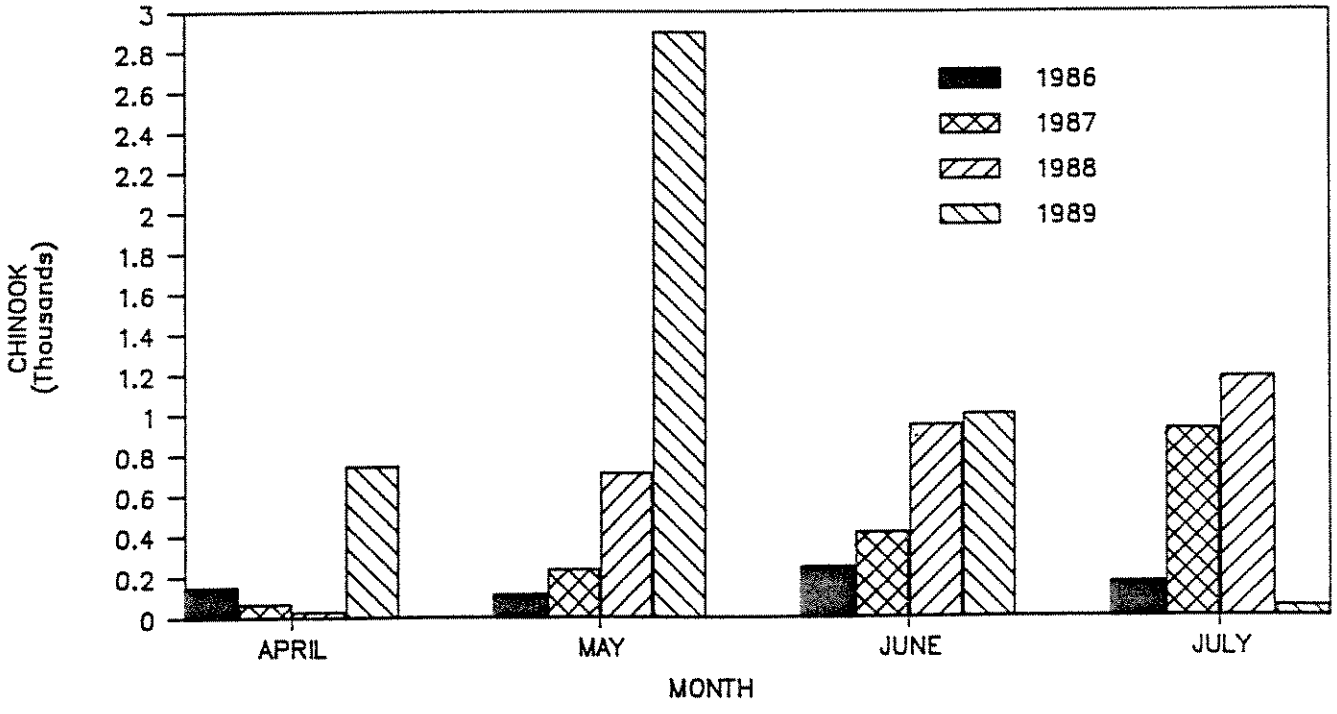


Figure 2. Spring chinook harvest on the Yurok Indian Reservation (1986–1989).

ATTACHMENT 13

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COLLEGE OF AGRICULTURAL AND
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AGRICULTURAL EXPERIMENT STATION
COOPERATIVE EXTENSION

DEPARTMENT OF WILDLIFE AND FISHERIES BIOLOGY
UNIVERSITY OF CALIFORNIA
DAVIS, CALIFORNIA 95616-5270

January 26, 1990

A. E. "Spike" Naylor
California Department of Fish & Game
1416 Ninth Street
Sacramento, California 95814

RE: Spring-run chinook salmon

Dear Spike:

I understand that pressure on the Department is increasing to "do something" about spring-run chinook salmon, especially in the Klamath drainage. I would like to add to the pressure, if that is possible!

I have had a study for the past several years on the salmon in Deer and Mill Creeks (Sacramento drainage), documenting the populations and ecological requirements of both adults and juveniles. It is clear that in both creeks the numbers are much less than the habitat can support and less than it historically has supported. A graduate student of mine, Elizabeth Campbell, is attempting to compile a history of spring-run chinook in the Sacramento-San Joaquin drainage, including historic records of where it has occurred, but has not yet finished the task. Once the report is finished (no later than July 1), I will use the information to determine whether or not the salmon should be listed as endangered. As the enclosed summary from my "Fish Species of Special Concern" report indicates, I am inclined to think they at least deserve threatened status. It is clear that the present numbers of wild fish in the Klamath system (less than 300) justify that status.

One of the problems I am trying to sort out is the relationship between hatchery "spring-run" salmon and wild stocks. Last year, for example, there were fairly large numbers of salmon in Butte Creek that were presumably derived from hatchery fish but I am not certain if that is a sustainable run or not. I am also concerned that hatchery "spring-run" fish in both drainages may be hybridized in the hatchery with fall-fun fish, as the hatchery distinctions between the runs are rather arbitrary (based on date).

Regardless of the resolution of problems like the ones above, I think it is extremely important that we retain the populations of wild fish in streams like Deer and Mill Creeks, the Salmon River, and Wooley Creek. Aside from economic considerations, seeing these large fish in the clear canyon pools of summer is one of the great aesthetic experiences wild California presents. We need to protect the salmon now, before we lose the last wild fish.

Sincerely,

Peter B. Moyle
Professor of Fisheries Biology

PBM:plh
PBM.003
cc: Mike Morford
2321 East Side Road
Willits, California 95490

John Turner
Inland Fisheries Branch
California Department of Fish & Game

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
STATEMENT OF PURPOSE FOR REGULATORY ACTION
(Pre-publication of Notice)

Amend Sections 3.00, 13.36, 13.86, and 27.80
Title 14, California Code of Regulations
Re: Ocean and North Coast Sport Salmon Fishing Closures and Limits to Bring State Regulations into Conformity with Federal Regulations
(Action to be taken April 6, 1990)

I. Date of Statement: January 31, 1990

II. Dates and Locations of Scheduled Hearings:

(a) Notice Hearing: Date: February 5, 1990
Location: Sacramento

(b) Action Hearing: Date: April 6, 1990
Location: Long Beach

III. Description of Regulatory Action:

(a) Description of Problem or Condition that Regulation Change is Intended to Address:

Fall-run king salmon originating from the Klamath and Trinity River Basins are managed through a cooperative system of state, federal and tribal management agencies. The regulations developed through this system are designed to meet natural and hatchery escapement needs while providing equitable harvest shares to ocean (sport and commercial) and in-river (sport and Indian) users.

Recommendations for allocation shares will be developed by the Klamath Fishery Management Council (KFMC) in February/March, 1990 and forwarded to the Pacific Fishery Management Council (PFMC) and the California Fish and Game Commission. The PFMC will adopt management options for public review at the March 6-9 meeting in Seattle, hold public hearings during March and early April, and adopt the final regulations on April 6 in Eureka. The regulations developed by the PFMC will be forwarded to the Secretary of Commerce and will apply to ocean fisheries. In-river sport and Indian fishing regulation recommendations made by the KFMC will reflect the in-river users agreements for allocating the harvest. Indian fishing regulations will be promulagated by the Bureau of Indian Affairs, sport regulations will be adopted by the Commission.

Existing regulations provide for a sport salmon season from May 1 through September 30 in ocean waters north of Horse Mountain. The regulations also provide that if by July 15 the sport take of king salmon between Horse Mountain and Orford Reef Red Buoy equals or exceeds 50% of the Klamath Management Zone harvest guidelines, as determined by the Pacific Fishery Management Council (PFMC), the daily limit of two salmon may contain only one king salmon from August 1 through September 30. Existing regulations provide for a catch limit of six salmon during any consecutive seven calendar day period. The proposed regulations may modify the opening and closing dates and catch limits.

Existing sport fishing hours are one hour before sunrise to one hour after sunset. Regulations proposed by the U. S. Bureau of Indian Affairs (BIA) would restrict sport fishing hours on the Klamath River downstream from the Highway 101 bridge for the period August 15 to October 1 from 6:00 a.m. to 6:30 p.m. This proposal by the BIA is to strengthen the rules governing the transition between the Indian gill net fishery (7:00 p.m. to 7:00 a.m.) and the sport fishery.

(b) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

Existing ocean bag limits and season length are designed to keep the ocean sport catch of salmon within the harvest allocations made by the PFMC without having to close the season early. The PFMC may adopt regulation changes in federal waters (beyond 3 miles) that will necessitate changes in state waters. Failure to conform state regulations to federal regulations will result in federal preemption of state management authority.

Existing in-river bag limits and quotas are designed to keep the in-river sport catch within the overall in-river allocation made by the PFMC and the sport/Indian allocation shares established by the Klamath Fishery Management Council (KFMC). Federal law (P.L. 99-552) provides that the KFMC shall make recommendations on Klamath River salmon management to the PFMC and the California Fish and Game Commission. Final recommendations to the PFMC and the Commission will be made prior to the April meetings. All recommendations must be by consensus vote of the KFMC.

(c) Authority and Reference Sections from Fish and Game Code for Regulations:

Authority: Sections 200, 202, 205, and 210, Fish and Game Code.

Reference: Sections 200, 202, 205-210, and 315, Fish and Game Code.

(d) Specific Technology or Equipment Required by Regulatory Change:

No new or specific technologies or equipment associated with proposed regulation.

(e) Identification of Reports or Documents Supporting Regulation Change:

None.

IV. Description of Alternatives to Regulatory Action:

(a) Major Alternatives to Regulatory Change:

(1) Reduction of daily ocean salmon limit North of Horse Mountain to one salmon.

(2) Reduction of daily ocean salmon limit North of Horse Mountain to two salmon, only one of which may be a king salmon, for the entire season.

(3) Reduction of seven consecutive day limit to four salmon North of Horse Mountain.

(4) Apply limit reductions after a pre-determined percentage of the number of king salmon allocated to the ocean sport fishery North of Horse Mountain has been landed.

(5) Change season opening and/or closing dates for ocean sport anglers North of Horse Mountain.

(6) Limit fishing hours in Klamath River downstream from Highway 101 bridge during the period August 15 to October 1 from 6:00 a.m. to 6:30 p.m.

(7) Limit fishing hours downstream from the Highway 101 bridge to some other combination.

(b) No change.

Failure to conform state regulations in ocean waters will place state regulations in conflict with federal regulations, resulting in federal preemption of state management authority. Failure to change state in-river sport regulations to conform to the consensus recommendation of the KFMC could result in increased user conflict and over-fishing.

(c) In order to take this action, the agency has determined that no alternative considered by the agency would be more effective in carrying out the purpose for which the action is proposed or would be as effective and less burdensome to affected private persons than the proposed action.

Informative Digest

Existing regulations of subsection 3.00(b)(5)(A), Title 14, CCR, restrict fishing hours on the Klamath River to daylight hours, defined as being one hour before sunrise to one hour after sunset. Proposed regulations may modify the hours on the Klamath River downstream from the Highway 101 bridge during the period August 15 to October 1. This change may be recommended by the Klamath Fishery Management Council to strengthen the regulations governing Indian and non-Indian fishing on the lower Klamath River.

Existing regulations of subsection 27.80(b)(3) provide for an ocean sport salmon season north of Horse Mountain from May 1 through September 30. Existing regulations of subsection 27.80 (c)(1) provide for a daily limit of two salmon, and a limit of six salmon in seven consecutive calendar days, with the exception that if the Department determines that by July 15 the sport take of king salmon between Horse Mountain and Orford Reef Red Buoy equals or exceeds 50% of the Klamath Management Zone harvest guidelines (as determined by the Pacific Fishery Management Council), the daily bag limit of two salmon may contain no more than one king salmon. Proposed regulations may modify the sport season opening and/or closing dates and the daily and/or seven consecutive calendar day bag limits.

ATTACHMENT 15

IN REPLY REFER TO:

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS
NORTHERN CALIFORNIA AGENCY
P. O. BOX 494879
REDDING, CALIFORNIA 96049-4879

JAN 26 1990

E.C. Fullerton, Chairman
Klamath Fishery Management Council
300 South Ferry Street
Terminal Island, California 90731

Dear Mr. Fullerton:

In order to coordinate our fisheries management activities with the schedule of the Klamath Fishery Management Council and to minimize potential misunderstandings with the in-river sport fishers, the Bureau of Indian Affairs (BIA) is accelerating its Klamath River season development and regulatory processes for 1990. By mid-March, 1990, we will establish framework seasons (days and hours of fishing) for the 1990 Indian gill net fisheries on the Yurok Indian Reservation. We will be unable to develop complete Harvest Management Plans for each species by that date because some of the information needed will not yet be available. However, we believe that this early announcement of our framework seasons will be helpful to all parties and should facilitate timely review by the Council.

Please consider this letter and the accompanying attachments as our "Letter of Intent" to conduct four commercial fisheries on the Yurok Indian Reservation in 1990. Those fisheries are: Spring Chinook Salmon, Fall Chinook Salmon, Coho Salmon and Pacific Lamprey.

Preliminary Framework Plans for each fishery are attached and a completed Harvest Management Plan for a Spring Chinook Commercial Fishery on the Yurok Indian Reservation will be provided to the Council at the Brookings meeting.

By the conclusion of that meeting, I am requesting that the Council provide the BIA with a course of suggested actions and a timetable so that we may proceed with the development and execution of those fisheries in a timely manner for the benefit of the Yurok Tribe.

Sincerely,

Karole D. Overberg
Superintendent

attachments

cc: w/attachments
Dr. J.Lisle Reed
Dr. Ron Iverson
BIA Area Director
Chairman, Hoopa Valley Business Council
Mr. Bontadelli, Dept. of Fish and Game

PROPOSED FRAMEWORK FOR COMMERCIAL HARVEST OF FALL CHINOOK SALMON ON THE YUROK INDIAN RESERVATION FOR THE 1990 SEASON

I. INTRODUCTION

The Bureau of Indian Affairs (BIA) proposes an Indian gill net fishery for the commercial harvest and sale of fall chinook salmon during August, September and October of 1990. The fishery would be conducted in the estuary portion of the Klamath River on the Yurok Indian Reservation (YIR). A "target" of _____ adult fall chinook salmon would be established to guide the upper limit of this fishery. The fishery will attempt to target on three-year-old Trinity River hatchery fish through time closures and mesh-size regulation.

This fishery is designed to allow the Yurok fishers to share in any unexpected overabundance of hatchery produced fall chinook but would also penalize them if abundance was lower than predicted.

Under this plan, incidental catches of coho salmon could be sold, but would not count against the chinook target. A separate Harvest Management Plan for coho would be prepared to account for fish taken in that fishery along with a "target" to guide the upper limit if a significant fishery developed for that species.

II. MANAGEMENT OF THE FISHERY

Participation in the proposed fishery will be regulated by the existing 25 CFR Part 250, Section 250.5 WITH THE FOLLOWING EXCEPTION; members who are enrolled in the Hoopa Valley Tribe will NOT be permitted to participate in any fishery on the YIR which is regulated by the BIA.

Harvest will be accomplished with gill nets as described in 25 CFR Part 250 and additionally regulated through pre-season and in-season adjustments to those regulations.

The proposed fishery would be conducted in the BIA's previously established Management Area I and begin on August 14, 1990 at 7:00 PM. Fishing would be permitted five nights a week (Tuesday through Saturday) for the 12 hour period of 7:00 PM to 7:00 AM. That regime would continue until 65 per cent of the "target" was taken when the fishery would be closed. Subsistence fishing periods in Area I would mirror the commercial fishing periods.

On September 10, 1990 fishing would be allowed six days a week (Tuesday through Sunday) 12 hours a day (noon until midnight) until October 15, 1990. During this period, gill net mesh size would be limited to 6 1/2 inch stretch measurement only. Quota management would not be applied to this segment of the fishery unless significant deviations from the established "target" numbers developed. After October 15, 1990, regulation of the fisheries in Management Area I would revert to 25 CFR, Part 250.

Conditions which would apply to the preparation, transport and sale of legally harvested fish from this fishery will be provided at a later date in the final Harvest Management Plan. It is not anticipated that those items will be significantly different than those of previous years.

PROPOSED FRAMEWORK FOR SUBSISTENCE HARVEST OF FALL CHINOOK SALMON ON THE YUROK INDIAN RESERVATION FOR THE 1990 SEASON

I. INTRODUCTION

The Bureau of Indian Affairs (BIA) is proposing only those changes in the management of the subsistence fishery for fall chinook salmon which are necessary to accommodate the impacts on the resource resulting from the intensive fishery in management area I during the commercial fishery.

II. MANAGEMENT OF THE FISHERY

Participation in the proposed fishery will be regulated by the existing 25 CFR Part 250, Section 250.5 WITH THE FOLLOWING EXCEPTION; members who are enrolled in the Hoopa Valley Tribe will NOT be permitted to participate in any fishery on the Yurok Indian Reservation which is regulated by the BIA.

Harvest will be accomplished with gill nets as described in 25 CFR Part 250 and additionally regulated as necessary through pre-season and in-season adjustments to those regulations.

Management Areas I and II which have previously been established on the Yurok Indian Reservation will be continued in 1990. Subsistence fish "targets" will be established for each area after the total Indian allocation of fall chinook is known.

MANAGEMENT AREA I: During the period of July 16, 1990 until July 31, 1990, fishing with gill nets in this managment area will be prohibited. Subsistence fishing with gill nets would begin on July 31, 1990 at 12 midnight and continue for seven days, 24 hours a day, until 6:00 AM August 6, 1990. At that time, subsistence fishing hours and days would be the same as those allowed for commercial fishing until the subsistence "target" is reached.

MANAGEMENT AREA II: Subsistence fishing in this management area will be regulated by 25 CFR Part 250 unless specific in-season adjustments are needed in the event that a significant deviation from the established "target" develops.

PROPOSED FRAMEWORK OF A TEST FISHERY FOR THE COMMERCIAL HARVEST AND SALE OF PACIFIC LAMPREY ON THE YUROK INDIAN RESERVATION FOR THE 1990/1991 SEASON

I. INTRODUCTION

The Bureau of Indian Affairs (BIA) is proposing a test fishery for Pacific Lamprey (also known locally as eels) to test the feasibility of commercial harvest and sale of that species.

No quota or size limits are proposed for this test fishery, but a "target" of 10,000 pounds will be considered as the minimum quantity necessary to test the market and to explore capturing, handling, holding and transportation techniques and to identify other potential problems. A Harvest Management Plan will be prepared for this species before the actual fishery is allowed to begin.

II. MANAGEMENT OF THE FISHERY

Participation in the proposed fishery will be regulated by the existing 25 CFR Part 250, Section 250.5 WITH THE FOLLOWING EXCEPTION: members who are enrolled in the Hoopa Valley Tribe will NOT be permitted to participate in any fishery on the Yurok Indian Reservation which is regulated by the BIA.

The proposed fishery would be allowed reservation-wide and would commence on November 1, 1990 and extend to May 15, 1991. Fishing would be permitted seven days a week, 24 hours a day with a closure on Mondays from 9 AM to 5 PM. That is consistent with other fishing with gill nets which could be occurring on the Yurok Reservation during that period.

Fishing methods and gear are generally described in 25 CFR Part 250 and additional experiemental gear and methods may be described and authorized in pre-season or in-season adjustments to those regulations.

Harvest, monitoring, reporting, sale and transportation methods and accounting requirements will be developed and included in the Harvest Managment Plan which will be in place prior to the beginning date of this proposed fishery.

PROPOSED FRAMEWORK FOR COMMERCIAL HARVEST OF SPRING CHINOOK SALMON ON THE YUROK INDIAN RESERVATION FOR THE 1990 SEASON

I. INTRODUCTION

The Bureau of Indian Affairs (BIA) is proposing an Indian gill net fishery for the commercial harvest and sale of spring chinook salmon during May, June and July of 1990. The fishery would be conducted in the estuary portion of the Klamath River on the Yurok Indian Reservation. A "target" of _____ adult spring chinook salmon would be established for the upper limit of this fishery.

II. MANAGEMENT OF THE FISHERY

Participation in the proposed fishery would be regulated by the existing 25 CFR Part 250, Section 250.5 WITH THE FOLLOWING EXCEPTION: members who are enrolled in the Hoopa Valley Tribe will NOT be permitted to participate in any fishery on the Yurok Indian Reservation which is regulated by the BIA.

Harvest will be accomplished with gill nets as described in 25 CFR Part 250 and additionally regulated as necessary through pre-season and in-season adjustments to those regulations.

The proposed fishery would be conducted in the BIA's previously established management area I and begin on May 28, 1990 and operate until July 15, 1990 or until the "target" was reached, which ever comes first. Fishing would be permitted five days each week (Tuesday through Saturday) during the hours of 12 noon to 12 midnight.

An exception to the regulations in 25 CFR Part 250 will be to allow drift net fishing with gill nets up to 200 feet long and 25 feet deep in this fishery. Set net fishing and drift net fishing will not be allowed in the same area at the same time, but will be allowed on alternate days.

Subsistence fishing with gill nets in area I will be the same methods and times as the commercial season while this plan is in effect.

Conditions which would apply to the preparation, transport and sale of legally harvested fish from this fishery will be provided at a later date in the final Harvest Management Plan. It is not anticipated that those items will be significantly different than those of previous years.

PORT
OF BROOKINGS HARBOR

February 5, 1990

Klamath Fishery Management Council
1312 Fairlane Road
Yreka, CA 96097

Dear Councilors:

The Port of Brookings Harbor respectfully requests a fair and equable salmon season for all communities and fisheries within the Klamath Management Zone. It is suggested that the Council consider such critical factors as: our present participation in the salmon fisheries, our historical fishing practices, community dependence on the salmon fisheries, the economic impacts of the fisheries and the capabilities of fishing vessels to engage in the fisheries.

The Magnuson Act of 1976 clearly stipulates that: "Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various fishermen, such allocation shall be fair and equitable to all." This is simply not the case for fishermen inside the Klamath Management Zone. More of the stock is taken outside the zone with no restrictions, while fishermen within the zone are severely restricted in season and catch.

Businesses within the Brookings community suffer severe financial hardships as a result of the restriction placed on commercial fishermen. Given a virtual no season within the zone and tolerable season outside the zone, it's basically business as usual for the out of the zone fishermen, while at the same time KMZ businesses and fishermen are regulated right out of business. What is good for one should be good for all. Our seasons keep getting shorter and the allowable catch less.

We would appreciate a re-thinking and re-checking of the allocation formula in an effort to achieve a more equitable treatment for all parties concerned. Just one last thought, it seems that everyone is concerned and dismayed when a small business goes bankrupt, but not a second thought is given to a commercial fisherman losing his livelihood. Commercial fishing

is small business, which is the backbone of the Oregon economy. Let's not regulate the fishermen out of business!

Thank you for the opportunity to comment.

Sincerely,

Russ Crabtree
Port Manager

RC/es

cc: Commission

ATTACHMENT 17

Brookings-Harbor

CHAMBER OF COMMERCE

February 5, 1990

Klamath Fishery Management Council
1312 Fairlane Road
Yreka, CA 96097

Dear Council Members:

The salmon fishery within the Klamath Management Zone has traditionally represented an important part of the economy in Brookings and Harbor, Oregon, just as it does for every other city and town located within the management zone. And, on an individual basis, the importance of this fishery to commercial fishermen in our area should be even more obvious.

Given those factors, we respectfully ask that the Council not overlook the importance of equality and fairness as it pertains to determining the salmon season within the Klamath Management Zone.

We presently fail to see any justification for the strict quotas placed on user groups of the fishery within the zone while at the same time Klamath stock are allowed to be harvested with virtually no restrictions outside of the zone. If the objective for setting quotas is to preserve the Klamath stock in sufficient numbers to satisfy the needs of all user groups and to provide for the necessary escapement numbers, then why aren't all user groups of the Klamath stock, both inside and outside of the zone, required to abide by quotas determined on the basis of equality and fairness and not by geographical location?

For the sake of our fishermen, businesses, and communities located with the management zone, we kindly ask that you choose a more equitable method for establishing the 1990 salmon season.

Thank you for the opportunity to comment on this matter.

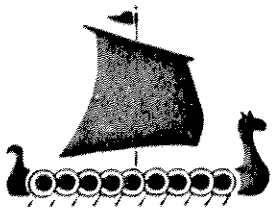
Respectfully,

Terry S. Connolly

Terry S. Connolly
Manager

ATTACHMENT 18

MARINE SUPPLIES
COMMERCIAL & SPORTS



2822
(503) 469-~~2969~~
R.M. "Bob" Knudsen, Prop.

Viking Marine
~~97636 Marina Heights Loop~~ 16118 Lower Harbor Rd.
Brookings, Oregon 97415

Klamath Fishery Management Council

Gentlemen:

I am in the business of supplying electronics & marine supplies to the commercial & sports fleets.

I cater more to the commercial fleet & my business is approximately 75% with them.

Each year it seems that the commercial season changes day by day & is dependent upon a few individuals who may or may not have any idea of the impact upon the local business community.

No one seems to understand the reasoning behind the determinations as to what constitutes the best times, or restrictions, on fishing seasons.

The way things are being managed at present it could appear that a determined effort is being made to do away with the Commercial fisherman. If this happens it isn't only the fisherman who goes down, but also my business & many others who are dependant upon the fishing fleet.

Please come up with some recommendations which are fair to all concerned.

Sincerely,

Bob Knudsen

P.O. Box 2845
Harbor, Oregon 97415-0503
Feb 6, 1990

Klamath Management Council

During the 1989 Salmon Fishery 9 Lifes were lost.

You have created a management zone with no representation.

You have created a fishery that has discriminated against the local communities and the smaller boats which do not have the ability to trip. Causing a socio and economical hardship on the KMZ.

Before you make your decisions for the 1990 Salmon season I suggest you read the Magnuson Act.

Title 3 National Fishery Management Program Section 301 16 U.S.C 1851 Paragraph 4 Fair and Equitable to all Fishermen

Section 303 Page 37-38 Paragraph 6 Ocean conditions affecting the safety of vessels.

Section 303 Paragraph 5, 6, 7 Limited Access.

Section 303 Paragraph E1 and 2 A Fishery Management Plan.

Give this your upmost consideration.

Sincerely,

Gene Elmer
Connie J. Elmer
Brookings, Oregon 97415-0503

Review of 1988 Ocean Salmon Fisheries Pacific Fishery Management Council
Metro Center Suite 420
2000 S.W. First Avenue Portland, Oregon 97201

- **Landed Price Per Pound** - The amount of revenue that a commercial fisherman received determines how much he spends on wages, supplies, and household items.

- **Yield of Product** - The cost of raw product is in direct relationship to the recovery that a processor can obtain from the fish he received.

- **Sales Price of Processed Product** - The sales price and yield determine the processor's gross margin. Gross margin is the amount he uses to pay wages, buy supplies, and create a return or profit. The gross margin is very dependent on the degree of processing it takes to create a market ready product.

- **Spending Patterns in the Local Economy** - The way harvesters or processors spend their revenues is dependent on their production process and on the inventory of the fishing fleet and processing plants in a given area. If much of the expenditures are for an out of area import such as gasoline, the impacts will be different than if most of the expenditures are for crew share payments for local area residents.

- **Size of the Local or Regional Economy** - The structure and size of the economy will also influence the final impact. A larger area generally has more businesses, thus a given dollar circulates more widely, generating more personal income in the local area.

Troll salmon (coho and chinook) are landed semiprocessed. The yield for the processor is therefore high. For example, in an average coastal community the contribution to personal income may be $4.68 per pound for coho and $5.78 per pound for chinook. The rest of the state would gain additional $1.40 and $1.72 of income per pound for coho and chinook, respectively, as the expenditures "leak out" of the community. In total, a state could expect to gain $6.08 of income per pound of coho landed and $7.50 of income per pound of chinook landed.

The term "economic multiplier" is often misused because the point of analysis is not clearly defined. Because most of the seafood harvested in coastal communities leaves these communities as a processed product, the point of analysis at which to determine the multiplier effect should be the volume and value of the processed product. However, landings volume and landings values are the most readily available data. We have therefore developed landed price to total local income relationships for representative coastal community. These are for 1988.

	Landed Price	Local Impact	Ratio
Troll Coho	2.28	4.68	1/2.1
Troll Chinook	3.05	5.78	1/1.90

The Register-Guard

ear, Number 197 — Eugene, Oregon, Monday, May 8, 1989 — ★ 25 Cents

Troller

Trawler capsizes; two die off Bandon

Wave rolls fishing vessel, Coast Guard says

STAN McKENZIE
Register-Guard

A man and woman from the Brookings area died day night after their 35-foot salmon trawler was cap- d by a wave as it approached the Coquille River bar Bandon.

Identities of the victims were being withheld by horities late Sunday until next of kin were notified.

The Marker, a commercial trawler based in Brook- s, was approaching the bar about 7 p.m. when a wave unknown size struck the boat and overturned it, a ndon woman who witnessed the incident told officials he North Bend Air Station.

Two helicopters were dispatched from the air sta- n to search for the victims and wreckage, while the Coast Guard station in Coos Bay dispatched two rescue boats.

The first helicopter located the woman about 7:25 p.m.

She was found floating face down and had been in the water approximately 55 minutes, Petty Officer 1st Class Jim Hinde of the North Bend Air Station said.

The second helicopter located the man a short time later.

He had been in the water for about an hour and five minutes, Hinde speculated.

Both were unconscious when found and were flown separately to Bay Area Hospital in Coos Bay.

While en route, rescuers initiated cardio-pulmonary resuscitation to each of the victims.

Both were pronounced dead after arrival at the hospital, a nursing supervisor said.

Bar conditions at the time of the accident included 4- to 6-foot breakers, with occasional 8-foot breakers, Hinde said, but the fatal wave could have been larger.

Sunday's incident was the fourth capsizing this year of commercial fishing boats on the Oregon Coast.

The accidents have claimed a total of nine lives.

Three crew members drowned and one survived when the Bikini, a 48-foot vessel, was rolled over Jan. 20 while crossing the Umpqua River bar at Winchester Bay.

The boat was capsized by a large wave and was smashed against the rocks of a jetty.

The 57-foot Golden Star was capsized March 5 about 25 miles out from Reedsport.

One crew member drowned and three were rescued.

Bilge pumps were failing to keep up with flooding when a wave turned the boat over.

Three crew members were aboard the Ronnie C, a 77-foot steel trawler, when the vessel disappeared off the coast from Yaquina Bay.

Oil slicks and debris were found in a massive search, but no bodies were located.

During the 1989 Salmon Fishery 9 Lifes were lost.

NAPA

BROOKINGS SUPPLY, INC "Parts on the Move"

"DETROIT DIESEL"

February 5, 1990

Pacific Fishery Management Council

Metro Center Suite 420
2000 S.W. First Avenue
Portland, OR. 97201

Gentlemen;

Our sales to the Commercial Finshing Industry in 1989 were fiftytwo (52%) percent of 1982 sales. Sales are fairly good until the salmon season opens. Sales stop because all the salmon trollers either go north or south.

If our sales to the Commercial Fishing Industry were equal to 1982 and adjusted for inflation, it would be necessary to have at least one more full time employee to properly handle the sales.

The community needs the revenue from the local fishermen who are forced to leave the area to make a living. Give the community and our local fishermen a break and let them fish at home this year.

Sincerely;

John Deck
Owner / Manager

JD/mmw

ATTACHMENT 21

BIG AUTO PARTS

Marling Auto Parts

16070 Hwy. 101 South
Brookings, Oregon 97415
Phone: (503) 469-7466

February 5,1990

To whom it may concern,

Salmon fishing is a must for our local economy. Each dollar in circulation starts as a raw material. As such the salmon fishing is a major contributor to our local economy and each dollar will change hands repeatly before leaving our local area. A large portion of my business is directly related to commercial salmon fishing. Without this income I would have to scale back my personel and operation size or possibly simply close my business.

Owner

ATTACHMENT 22

Klamath Fisheries Management Council
P.O. 1006
Yreka, Cailfornia 96097

To Whom It May Concern:

The Port Orford Fishermen's Accociation proposes that the following be taken under serious consideration prior to the establishment of the commercial salmon fishing regulations for 1990:

1) That the line presently set at the Port Orford red buoy be moved south to Humbug Mountain in consideration for the safety of the local fishermen.
2) That there be target seasons opening from April 1 on the Chetco and Rogue Rivers for returning spring Chinook.

We believe that the previous listed requests are logical and reasonable and that they work within the management goals of the salmon fisheries.

Thank you for your consideration. We would appreciate any comment regarding these proposals.

Sincerely,

Bill Cobb, President
Port Orford Fishermen's Association
42592 Port Orford Loop Road
Port Orford, Oregon 97465

Bill Cobb

ATTACHMENT 23

HUMBOLDT BAY
HARBOR, RECREATION, AND CONSERVATION
DISTRICT
(707) 443-0801
P.O. Box 1030
Eureka, California 95502-1030

Janaury 10, 1990

Klamath Fishery Management Council
P.O. Box 1006
Yreka, CA 96097

Dear Council Members:

The Board of Commissioners of the Humboldt Bay Harbor, Recreation and Conservation District herein wish to indicate their disappointment that your January meeting was held in La Jolla, California.

It would be appreciated that future meetings of the KFM Council would be held convenient to the Klamath Management Zone.

It is understood that some computer programs were needed in the deliberations. Please consider in the future the transfer of the programs electronically, so those affected might become privy to the information and methodology used.

The Klamath Fishery is of significant socio-economic importance to the residents of the zone and anything the Council can do to assist in our participating will be greatly appreciated.

Sincerely,

JACK B. ALDERSON
Chief Executive Officer

JBA/clj

cc: Senator Pete Wilson
Senator Alan Cranston
Congressman Doug Bosco
Port of Trinidad
Port of Coos Bay
Port of Brookings
Port of Port Orford
Port of Gold Beach
Port of Crescent City
Congressman Peter DeFazio
Senator Mark Hatfield
Senator Bob Packwood