



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Klamath River Fishery Resource Office
P.O. Box 1006
Yreka, CA 96097-1006

March 24, 1993

Memorandum

TO: Klamath Fishery Management Council Members

FROM: Project Leader, Klamath River FRO
Yreka, California

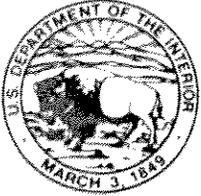
SUBJECT: Correction to the full version of KFMC minutes (mailed to Council
2/25/93)

On page 17, in the third paragraph, under the topic of COORDINATION ISSUES, sub-topic of "stepping down the long term plan into action items," the full minutes should be corrected as shown by the underlined text below:

One option is to leave the "non-Hoopa" designation as is and add an amendment to have a Yurok representative in light of the Yuroks being established. Then a Karuk member could occupy the non-Hoopa seat. This would be a technical amendment. If there is not a strong desire to change the specific wording, then this can easily be done.

This correction was provided by Lisle Reed.

Ronald A. Iverson



United States Department of the Interior



FISH AND WILDLIFE SERVICE

Klamath River Fishery Resource Office
P.O. Box 1006
Yreka, CA 96097-1006

February 25, 1993

Memorandum

TO: Klamath Fishery Management Council and Technical Advisory Team

FROM: Project Leader, Klamath River FRO
Yreka, California

SUBJECT: Draft summary and full minutes

Enclosed for your review are both versions of the draft minutes. Please provide comments or corrections back to us by Monday, March 8, 1993.

Ronald A. Iverson

Klamath Fishery Management Council
28-29 January 1993
MINUTES FOR THE RECORD

JANUARY 28 -- Quality Inn, Arcata CA

10:30 am The meeting was called to order by chair Don McIsaac with a quorum of members present (Attachment 1).

ADMINISTRATION

Review and approve agenda (Attachment 2).

Reed asked to have two items added: 1) remarks on high seas drift nets and 2) remarks on including the Council activities in the Task Force Accomplishments Report under new business.

** Consensus **

Approve minutes of April and September meetings
Deferred.

LEGISLATION/POLITICAL UPDATES

Introduction of Congressman Hamburg's staff
Deferred.

Update on Clinton Administration appointments

Reed: Bruce Babbitt has been appointed as Secretary of Interior. He is a westerner with a scientific background who is knowledgeable about biological issues. John Turner is staying on as Director of Fish and Wildlife Service (at least for the time being).

McInnis: Ron Brown is the Secretary of Commerce. His background is as an attorney and lobbyist.

Within National Marine Fisheries Service (NMFS), Dr. Michael Tillman has been selected as the new Regional Science Director in La Jolla. There has not been an appointment to fill the Southwest Regional Director position (Charlie Fullerton's old position). The head of NOAA has not yet been chosen. Dr Fox has moved to a deputy position with NMFS (career position).

Warrens: The Endangered Species Act (ESA), Marine Mammal Protection Act and the Magnuson Act are all up for re-authorization.

Public Law 102-575: Central Valley Project Improvement Act
(aka HR 429)

Bitts: This Act provides 800,000 af of water for fish and wildlife on an annual basis. It also provides provisions for water transfers.

Orcutt: Title 34 of Public Law (PL) 102-575 provides for 340,000 af minimum flows for the Trinity River. The Bureau of Reclamation estimates it will cost \$600-800 million to implement this law. Changes may occur in the way things are currently handled (i.e. transfer of federal water management to state water management and the possibility of setting minimum standards for Klamath River flows). This Council needs to stay up to date on this issue.

Bruss: One of the important things about PL 102-575 is that it provides for such activities as fish passage studies at Red Bluff diversion dam. The full legislation is open to a lot of interpretation because it was passed as one of the last activities of congressional session. Attachment 3 summarizes the highlights of Title 34 which is the portion of the law dealing specifically with CVP reform.

Review of high seas driftnet fishing (McInnis)

The President signed the High Seas Driftnet Fisheries Enforcement Act (Public Law 102-582) in November. This legislation will carry out the United Nations moratorium for high seas driftnet fisheries worldwide (beginning Jan 1, 1993).

This new Act provides for sanctions that will be imposed on vessels and nations whose vessels fish with large scale high seas driftnets after December 31, 1992. ("High seas" means beyond a nation's 200 mile Exclusive Economic Zone.) Among the sanctions imposed by the law are prohibitions of imports of fish, fish products and sportfishing equipment against any nation that is found to continue to allow high seas driftnet fishing by any of its vessels.

If a nation is identified as continuing to high seas driftnet fish, and does not correct its actions within 6 months, the nation will be certified under the Fisheries Protection Act. Imbedded in the new high seas act is an extension to the Fisheries Protection Act that could include banning any product for any duration (in addition to those products already banned). Individual vessels which are identified as continuing violators will be denied access to any of the ports of the U.S. (or territories or protectors of the U.S.). Subsequent to the passage of this law, it has

been certified that Japan, Korea and Taiwan (major driftnetting countries) have recalled vessels that fish with driftnets. With the demise of the legal driftnet fisheries, it will be easier to press charges against the illegal driftnet fisheries. There have been discussions about getting greater access to military enforcement for assistance on the high seas, but this hasn't begun to be implemented. Jigging may be the new technology used by vessels who previously had used high seas driftnets to fish for flying squid in the North Seas.

Observers on legal driftnet boats have found that the incidence of catch of anadromous fish originating from the west coast states has been low. Reports on the tags collected from both the legal and illegal fishery showed that the majority were from Canadian, Southeast Alaska and Russian chum salmon. Some steelhead have been picked up. There were very few, if any, west coast stocks picked up in the high seas driftnet fishery.

TECHNICAL REPORTS

Technical Team Reports (Barnes)

The technical team met this week to do the annual stock projection. The final report will be done before the 16th when the Salmon Technical Team (STT) meets in Portland.

Review of 1992 chinook harvests (Attachment 4)

In the handout we've prepared you can see the salmon season structure for this year (Attachment #4, pages 4-5). Essentially there was no commercial fishery between Florence Jetty to Point Arena.

Page one shows the troll fishery in southern Oregon (down to 108,000 fish). From Humbug to Horse Mt (Shelter Cove) there was no troll fishery. In the area between Point Arena and the US/Mexico border 158,900 fish were caught (brought to ports in San Francisco and Monterey -- approximately 100,000 fish were caught at Monterey and 50,000 were caught in San Francisco.).

Note: The zone in which there was no commercial fishing this year was actually bigger than the Humbug to Horse Mountain points of reference. The "Area" designated in the table for 1992 should be corrected to be Cape Falcon to Florence South Jetty, Florence South Jetty to Point Arena and Point Arena to US/Mexico border. The Humbug to Horse Mountain landmarks are still appropriate for the recreational fishery.

Klamath chinook impact for troll and recreational fisheries is combined because there were only 5 coded wire tags recovered in California and about 40 from Oregon. We come up with less than 1500 fish for the Klamath impact in the ocean. "Impact" includes harvest, plus an estimate of Age 3 shaker mortality. Less than 7,000 fish were harvested as adults in-river.

Page three of Attachment 4 shows the last 3 years of natural escapement. The sad story is that the number of adults returning this year are again less than a third of the 35,000 fish floor. Late season impacts are included in the 1,374 fish (on page one).

Q: Has the 1500 Klamath fish harvested in the ocean been broken out to assess the Klamath impact by time/area cell?

A: No, because there were so few tags collected in California. In the next few weeks, this data will be compiled into a time area matrix.

Q: What is the impact on Klamath stocks as a result of the target specific Elk and Chetco fisheries in Oregon?

A: There were no Klamath tags recovered in that fishery. Overall, 700 fish were harvested in the sport fishery and 400 fish were caught in the troll fishery.

Q: How are the estimates for the sport catch in Area 3 made?

A: Mark Pisano (CDFG -- Klamath River Project):

[Area 1: Mouth to Highway 101 bridge, Area 2: 101 bridge to Coon Creek Falls (RM34), and Area 3: Coon Creek Falls to Iron Gate Dam (excludes Trinity River)]

Prior to 1990, annual estimates of angler harvest of chinook salmon in portions of the Klamath River upstream of our creel census were based on the annual ratios of \$10 reward tag returns from Area 2 (applied during seining operation in the estuary in those years) to returns from the uncensused upstream area (Area 3), using an equation that analyzed catch to tag returns.

For several years prior to 1990, the numbers of tag returns had been declining, due in part to decreasing annual run sizes. Diminishing tag returns had reduced the reliability of this estimator. Because of this, and anticipation of continuing small runs, we halted our seining/tagging operations in the estuary after the 1989 season.

In order to estimate angler harvest in Area 3 in 1991, we used the average of the proportions of total annual angler harvest estimated to have occurred in Area 3 during each of the years, 1984 through 1989. On average, during that six-year period, 40% of the total angler harvest of chinook salmon in the Klamath River occurred in Area 3, and 60% occurred in Areas 1 and 2.

Q: What do you feel the confidence interval is for the estimate of angler harvest?

A: Page 3 of Attachment 4 shows that you are estimating a relatively small component of the total run. Our confidence is high in the angler harvest estimates for the lower Klamath and Trinity Rivers. Our confidence is lower for the Area 3 portion of the Klamath River.

Q: Can the megatable include ocean impacts as well as in-river impacts?

A: No, because this is an in-river report. The ocean impacts don't come out until January and the megatable comes out in December.

The tribes want these reports to go out side by side so that people can see the ocean and inriver impacts at the same time.

Note: The preseason projection for Indian net harvest was 4,100 fall chinook in 1992. The postseason estimate shows 5,577 fish harvested in the Indian Net Harvest in 1992.

Q: Could shaker and other mortality be included in the megatable in the future?

A: These impacts are shown in the total ocean impact on page one of Attachment 4 (1,374 fish). Non-landed age-3 shaker mortality is included in the table. 1,374 does not yet include 2-year old shakers. The megatable, in contrast, shows inriver harvest only -- not non-landed impacts.

Q: Could you tell us more about the three year old impacts?

A: (Baracco) In 1992 it is due to 2 things: #1 the status of age 3 chinook being less than fully vulnerable to ocean fisheries and therefore experiencing some shaker mortality of sub-legals in chinook retention fisheries and #2 the prosecution of a 1992 chinook non-retention coho fishery off the central Oregon coast.

Q: Was a normal sampling rate used to come up with the 5 California tags?

A: Yes, 20-30% of the landed catch were examined for tags.

McIsaac: Oregon extended season fisheries harvested 1,100 fish. The details behind this are shown in Attachment #5. This also shows a very preliminary stock composition estimate based on tag recovery.

Q: How do the actual catches compare to what was expected? How do ocean landings, recreational and tribal catches measure up?

A: Between Horse Mountain and the US/Mexico border 92,000 chinook were expected to be caught in the troll fishery and 67,000 in the recreational fishery. The actual harvest was

exceeded by the troll fishery, but the recreational fishery was right on. California Fish and Game Commission set an 820 adult fish quota for river angler harvest compared to the 1,310 fish that were caught. Bureau of Indian Affairs and the Hoopa Tribe set a tribal fishery harvest of 4,920 versus 5,577 that were actually caught. The projected harvest for KMZ sportfishing was 3,500 thru August 31. By the end of September, a total of 5,300 fish were caught. The total Klamath impact in ocean fisheries was 1,374. The expectation for ocean impact was 4,100.

The PFMC's Fishery Review report will specifically answer many of your questions.

Review of 1992 Klamath chinook spawning escapements (Barnes)
(Attachment 4)

Page 8 (of Attachment 4) shows a post-season estimate of what was actually in the ocean. These low ocean populations resulted in 1992 having the lowest spawning escapement since 1981!

Projection of 1993 ocean abundance, Klamath fall chinook (Barnes)
(Attachment 4)

Page 6 shows this year's age 3 fish regressed on age 2 fish. The data fits well within the database so we have reasonable confidence in the estimate this year. Note that the r-squared is 0.90.

The scale composition report will be put together before the March PFMC meeting.

Last year the jack return was only 1,800 (below the database figures) so confidence in the age 3 projection was low. This year the 12,800 jacks are well within the database.

Baracco: In summary, this year's harvest will be less than full power no matter which fishing combination is chosen. The 35,000 fish natural adult escapement floor called for in Amendment 9 will constrain the ocean and in-river fisheries. If the full harvest rate (66%) is applied to the estimated 1993 stock abundance (145,000 age 3 fish and 30,000 age 4 fish) we estimate that there would be approximately 30,000 natural spawners this year. Fishing will probably not be constrained as much as in 1991 or 1992.

McIsaac: It looks like we are in a much different situation than last year. Last year there was nothing that could be done to achieve the minimum spawning escapement floor. This year we have

the ability to have harvest and still reach the 35,000 spawning escapement.

Overall, ocean chinook catches were generally larger than expected and ocean impacts on Klamath fish were less than expected. Approximately 25,000 natural spawners were expected this year and 7,000 fish were expected to return to the hatcheries. The hatchery spawning expectation was met, but the natural return was 14,000 less than expected -- only 11,000 fish.

Spring chinook predictive methodology (Barnes)

When we met in Brookings we showed you methodology that produced some good predictive correlations with Trinity River Hatchery spring chinook. The bottom line is that spring chinook ocean populations can be "reasonably confidently" estimated. Pages 9 and 10 show the natural and hatchery components for each year.

Q: Why is there more variability in the ratio of natural fish to hatchery fish for spring chinook compared to fall chinook?

A: (Polos) The variability is due to the '87 and '88 brood and due to the domination of hatchery stock. Other than this, the data points fit pretty well.

The Klamath National Forest is currently implementing \$250,000 a year for the spring chinook recovery program underway on the Salmon River. Copies of this report are available through Klamath National Forest.

Lunch

Report from technical team responding to last meeting's questions

Barnes: There were 3 questions asked at the last meeting that the technical team would like to respond to.

#1: The first question centered around why there was such a lack of correlation between escapement and recruitment. The answer is printed on page 2 of Attachment 4.

The high escapement in '86-'88 did not produce the expected high numbers in the years since then. If we knew more about the survival rates in the ocean (on an annual basis) then we could possibly arrive at a more accurate index of ocean production. An example of a way in which we could research ocean production would be studying the number of fish that would be recruited to the ocean fishery if the freshwater mortality associated with outmigration was eliminated.

Bitts: We need to know the primary variables that impact fall chinook production. The assumption that escapement drives fall chinook needs to be set aside.

#2: Jim Walters asked if low flows in the river could be correlated with escapements/returns to the river. Again, this relates to trying to remove variables from the equation. Flows, temperature, and other factors could be included in future analyses.

#3: Keith Wilkinson and Sue Masten asked: a) if it was possible to predict a variable escapement "floor" in the river based on variable environmental conditions and b) if there was a variable system of setting an escapement goal, then how could it be regulated within the season? Technical team response: The full team hasn't addressed this question, but several members of the team wonder how you use a variable floor when you can't predict in-river environmental conditions.

Review of harvest rate management (Baracco)

At the request of the Council, I have prepared a basic primer on the way in which we manage our salmon resource. See Attachment 6, entitled "Harvest Rate Management."

There are two ways to manage salmon:

- 1) Escapement goal management - when you know how many fish are the optimum number to allow to spawn, then you regulate your fisheries to achieve this long term optimum. Long term production is optimized.
- 2) Harvest rate management - does not require knowing what the optimum escapement level is. When we admitted that we did not know the optimum number of fish that needed to be allowed to spawn in the Klamath River, we decided to use the system of harvest rate management.

Figure 2 shows the range of opinions of the population sizes that biologists thought were needed to achieve the optimum number of spawners needed to reach basin capacity. In 1986 when we decided to use harvest rate management, we only had figures on what happened when low numbers of parents were available for spawning (Figure 3). We were faced with some tough decisions, because if we had chosen a high spawning escapement goal, but the basin didn't have the capacity for that high of escapement we could have foregone a harvestable fishery yield.

Given that we had concerns about the carrying capacity of the basin and could not determine the appropriate escapement goal, we investigated harvest rate management and applied it to the Klamath stocks. We needed 3 things in order to embark on this decision: 1) set an escapement rate, 2) decide on spawning floor and 3) set an allocation agreement.

We decided on a 33% escapement rate, 35,000 natural spawning floor and decided on an allocation agreement. The value of the

floor is to decrease the risk of getting into the situation where a long period of recovery is needed in order to get back to a viable population.

Figure 4 shows that you can meet the 33% escapement with several different combinations of ocean/inriver harvest rates. The foundation behind all this is that once a harvest rate combination is chosen it shouldn't be deviated from by very much. The technical team recommended that harvest rate combinations that are not more than 2 steps apart (as shown in the figure) are reasonable.

Like most management schemes, harvest rate management has its own set of needs: 1) stock projections, 2) fishery impact estimates (e.g., if we close area of ocean, gear changes, etc), 3) monitoring programs (troll fishery, sport fishery, net fishery), 4) coded wire tag programs (technology used to differentiate stocks). States, the federal government and tribes monitor the tag returns in addition to the stations at Iron Gate and Lewiston which are run by California Department of Fish and Game. A variety of agencies also run spawning surveys. Besides these needs, the personnel who work under this management system need to have the "patience of a saint and the hide of a buffalo."

Questions from the Council

Q: What is your analysis of the value of coded wire tag programs versus scale reading programs to estimate age composition?

A: Coded wire tag programs have been run in the Trinity basin on an extensive basis for 14 years. Scale reading has only been carried out for 2 years, but we are pleased with the accuracy of the results. The outlook looks good to continue doing scale analysis in order to attain a higher degree of accuracy.

Q: How does a harvest rate of 0.35 in the ocean compare with a harvest rate of 0.5 in-river?

A: The harvest rate percentages shown in Figure 4 (Attachment 6) are not produced on the same basis. This chart actually shows the percentage of the fish that the ocean or in-river fishery would have available to it at the various harvest rate combinations. For example, the harvest rate combination of .25/.60 would result in a roughly equal share for the user groups. For the ocean the harvest rate is the percent of the population that is available for harvest (fully vulnerable age 4 fish). The in-river harvest rate, is based on the number of age 4 and 5 fish actually coming into the river. So, if a harvest rate of 0.35 ocean and 0.5 in-river is chosen, it means that 35% of the fish that are available for harvest in the ocean can be harvested and half of the fish returning to the river can be harvested.

Public comment on harvest rate management

Q: What has been the performance of harvest rate management in other fisheries?

A: Harvest rate management is not being applied in other salmon fisheries on the West Coast. We basically manage other systems with the escapement goal set (e.g. Sacramento, Oregon coastal natural coho, and Oregon coastal chinook). (Baracco)

Harvest rate management is not new in the fisheries area. More and more fisheries management strategies are moving towards a management system like this for species other than salmon (e.g. rockfish). (L.B. Boydston)

The benefit of harvest rate management is that it could lead to the adoption of an escapement goal for the Klamath River basin. Although I'm not sure if an escapement goal would serve you as well as harvest rate management does. It would take another 2-3 years of harvest rate management before we could come close to setting an escapement goal. (Baracco)

McIsaac: I will provide the Council with another piece of information on genetic stock identification that Oregon has produced when it becomes available.

CDFG Hatchery Evaluation Committee Report (L.B. Boydston)

One of the recommendations that came out of the Three Chairs meeting in June was to put together a committee to evaluate hatchery operations at Iron Gate Hatchery (IGH) and Trinity River Hatchery (TRH), and look at potential impacts of hatchery operations on natural production. On January 13 the committee (7 members) met to look at many issues, including: the purposes of facilities and the appropriateness of releasing fish at small sizes (90/lb) in spring. A response to the Three Chairs Committee will be formalized in a letter soon. Recommendations for another committee meeting have not yet been made.

McIsaac: The hatchery evaluation meetings were successful and effective. CDFG has agreed to make some changes right away and make other changes over time. For example, they have agreed to stop releasing unfed fry and other fish smaller than 90/lb.

Council discussion on technical reports

- o Masten: I'd like to ask to have all the data presented in one report that shows pre-season and post-season numbers, escapement and harvest impact for both ocean and inriver.

- o Orcutt: The report should include spring chinook.
- o PFMC publishes a pre and post report but it does not show inriver uses.

Action: The Chairman directed Sue, Dave, and Mike to write down the format for the report that they want the technical team to produce.

Q: Does CDFG plan improve precision of upriver sport harvest estimates?

A: CDFG has had a reduction in funding. After June 30, 1994 some aspect of the sampling program will have to be cut (e.g., recreational sampling may be cut). There is no provision in the budget to expand sampling efforts.

Q: Given the small number of Klamath fall chinook tags recovered in ocean fisheries, how good is the estimate of 1,374 ocean "impacts?" Would a higher tagging rate have made the estimates more accurate?

A: Right now there is a tagging ratio of 1:33 so every tag represents about 30 fish. I think the data is accurate enough to be useful for management.

- o The tag data is very interesting and very important. I think we should continue to collect this data!
- o CDFG could come and tell you more about their data collection program at a future meeting.
- o We need better information to make management decisions. We need to continue to have the current data collected.

Public comment

George Kautsky (biologist with Hoopa Tribe): Regarding the recreational salmon harvest in Area III, I'm curious about what Mark Pisano stated about using assumptions that may not be accurate any more because the upriver/downriver ratios of harvest have changed from what they were in the high abundance years. What did he mean by this?

Baracco: CDFG is not using the average catch information anymore. Instead they are using the average ratio. The data could be analyzed using another approach.

Council discussion continued

- o In the high abundance years when there was a lot fish, the database does not show how much time fishermen spent out on the ocean. There may be a correlation with effort and

harvest rate. In '88 there was high effort and high harvest rate.

- o The technical team will be finalizing the stock size projection, then calibrating the Klamath ocean harvest model before the next KFMC meeting. The stock projection report will describe the stock sizes available for 1993, and allowable harvest rate combinations.

Action: Assignments to Technical Team

Q: (Boydstun) Total harvest rate will have to be reduced below 0.66 in order to meet the escapement floor. Can the Team assume that ocean and in-river harvest rates will be reduced proportionately, as called for in the 5 year Agreement?

A: (Masten) Please calculate proportionately-reduced rates.

We need the technical team to report expected catches next to actual catches.

Council discussion on harvest guidelines set by different agencies and tribes

The Council discussed the problems with having harvest guidelines set by agencies and tribes at different times (e.g., PFMC setting the preseason quota, the state setting the in-river sport and BIA setting the in-river tribal quota).

- o The tribal harvest target was based on the letter to the Secretary of Commerce calling for "fish for fish" (Sue Masten will provide this letter to the Klamath River Fisheries Resource Office (KRFRO) for distribution to the Council at later date).
- o Dr. Matlock expressed at the last meeting that one of the reasons we are ignoring each other's recommendations is that the Klamath Council has not been able to make a recommendation for the last few years. If we do not want to have this same conversation next year then we need to reassess our consensus process for making a recommendation.
- o Harvest estimates by the Karuk Tribe have been reported to the Council in the tribes final report for the Karuk Tribal Harvest Monitoring Program in 1991. In the future, CDFG will make an effort to get data on Karuk harvest put into the megatable.

LONG RANGE PLANNING

Long term harvest plan

Status of distribution of the document (Parker)

The comments made by the Council and the public have been incorporated into this new, final version of your long range strategic plan. Copies have been sent to the interested parties (approximately 200 addresses). People who commented on the draft plan have received Appendix D which contains their comments and shows where their comments were incorporated. This long range plan has been sent to the Task Force as well.

Amendment Process

Masten: I am concerned about the language in Appendix A. It is different from the plan text. I feel that the language in the appendix description for Option 7.2 is contrary to what the Council agreed to.

Iverson: I'm checking the minutes to clarify this discrepancy. In the notes from the April meeting, it shows that KRPRO staff were told to write the descriptive language for the appendix, then send it out for Council comments. We did this and no comments were received. At the September meeting, we agreed to the language as written (page 11).

Bitts: If my memory serves me correctly, the language we agreed to was "abide by the prevailing legal definition."

McIsaac: How would the Council like to handle this?

- o I suggest that we send out an erratum stating that there is a typographical error on page A-12.
- o I recommend that we do not go into an elaborate amendment process (e.g. like the PFMC's amendment process) for a inconsistency such as this. I suggest that our amendment process could consist of any Council member making a suggestion at one meeting. If we determine the suggestion is worth further discussion, then a 2nd meeting for discussion and public comment could be held. At a 3rd meeting, and after a vote, the suggestion could be written into the plan,
- o This is the same basic process that the PFMC used before their staff and budget constraints made them go to a biennial review process.
- o I like the proposed format but we need a specific timeframe for the amendment process.

- o Can we characterize any harvest sharing agreement that might be developed in the next month or two as an appendix? Or would it be an amendment?

** Motion: (Masten) I move that we adopt an amendment process whereby any proposed amendments be sent to KRFR0 30 days prior to the September meeting so that they can be considered at the September meeting for adoption. Public comments would be accepted at the January meeting and final adoption would occur at the March meeting.

Second (Wilkinson).

Clarification: Any proposed amendment will require consensus before going through the next steps for the next meeting. The 30 days lead time for a proposed amendment to be reviewed before the meeting is an optional timeframe for courtesy. The window would still be open until the September meeting.

Amendment to motion: (Warrens) I move that all proposed amendments must be submitted to this Council at or prior to the September meeting. Modifications could occur prior to January. Additional public review would occur between January and March to allow proposers time to more fully develop their idea. Any technical review could occur between September and January.

- o When an allocation recommendation is made, then it has to be consistent with the long range plan.

Call for question on amendment to motion: motion fails.

**** Original motion approved by consensus.

Proposed amendments that are sent to KRFR0 will get reviewed by the Council in the process that we have described. Other proposals that are received at the meeting may need to have a longer review process - perhaps even up to one year.

Successor to the five year harvest allocation agreement (Wilkinson)

Participants in the work group are demonstrating a high degree of energy and integrity to re-model the old agreement. There are reasons for optimism and the group plans to meet again.

Masten: The group working on harvest allocation asked if all the agencies and tribes could give reports at an upcoming meeting on monitoring and law enforcement.

Note: Congressman Hamburg's office just notified us that their representative will not be here today. They apologize. (It is interesting to note that Hamburg has been appointed to the Merchant Marine Committee.)

JANUARY 29, 1993

8:00 am Meeting called to order.

Unfinished business

We needed to have public comment on the motion for the amendment process before we called for the question. So we will now call for public comment: no comments.

Approval of minutes from April and September meetings.

** Motion to approve April minutes (Bitts). Seconded.

Discussion:

Reed: I recommend people review these minutes within a week or two after receiving them. Comments need to get back to the field office right away for their incorporation into the finalized set of minutes that is mailed to interested parties three weeks after the draft version is sent to us.

**** Consensus. Orcutt abstained.

Review of the minutes from the September meeting:

- o The discussion of the long range plan in the minutes is incomplete. We agreed to substitute "prevailing legal definition of" for "court's decision on" in the clarifying language for Option 7.2 (page A-12).
- o The cover letter to the September minutes asks Council members to notify the field office prior to November 30 with any comments or changes to the minutes.
- o The September minutes (page 11) show that the Council discussed the descriptive language and decided that there were no changes to the field office's language.

** Motion: Appendix A, Option 7.2 (page A-12) should have descriptive language that reads: "it is the intent of the Council to abide by the prevailing legal definition of tribal reserved fishing rights... (Masten).

Seconded.

**** Consensus (McInnis abstained).

** Motion: The Council will take the time to thoroughly review the long range plan. An errata sheet may be sent out after the next Council meeting. (Warrens)

Seconded.

**** Consensus.

COORDINATION ISSUES

Issues arising from the Three Chairs meeting of 6/29/92.

Option 4.10 in the Council's long range plan calls for establishing a coordination mechanism between the this Council, the Klamath Task Force and the Trinity Task Force.

Council discussion of Three Chairs Issues

- o The meetings of the Three Chairs are not yet set into an annual meeting schedule.
- o I support whatever this Council can do to promote communication between the field personnel who are involved with these federal advisory committees.

McIssac: Mike, would you be interested in heading up the coordination effort to have the Three Chairs meet on an annual basis? Orcutt: Yes.

If there are comments on the minutes of that meeting, please take them to the author of that document -- Ron Iverson.

Possible agenda items for a future meeting of the Three Chairs

Action: Orcutt will draft a letter (for review by KFMC) stating that we are interested in establishing a coordination mechanism between these three groups and that, at a minimum, an annual meeting should be held.

Stepping down the long term plan into action items

Option 4.4: We should let the Karuk tribe know that we are interested in adding another representative. Option 4.3 needs to move with option 4.4.

Is there a process in Department of Interior (DOI) to submit a bill to Congress to get these options added?

Reed: These options could be added through DOI or through this Council. A technical amendment would be the easiest way. As soon as the Yurok tribe is established, it will make it clear that the Yurok tribe should be added. It is not a technical amendment to add the Karuk Tribe.

One option is to leave the "non-Hoopa" representative as is and add an amendment to have a Karuk representative. If there is not a strong desire to change the specific wording, then this can easily be done.

Wilkinson: On the Task Force side, two new seats have been called for in the "Smith Amendment" to the law. These appointments will occur after the plan's amendment is adopted. The Klamath Tribe of Oregon can now have a representative on the Task Force as can the Klamath County Commissioners. The hang up is that the commissioners deny the Task Force's long range plan and plan amendment, so these positions are "on hold" until this issue is resolved.

The Klamath Basin Conservation Area didn't include the area upstream of Iron Gate until after the solicitor's opinion.

Reed: The best way to solve this issue seems to be to go back in time and start over with the whole watershed being considered and with the Klamath Commissioners being fully included from the start. The methodology for handling this may be to have it brought forward by Bureau of Indian Affairs (BIA) or Fish and Wildlife Service (FWS) to let them deal with the Congressional Branch or Office of Management and Budget. Could I explore this and report back to the Council on the steps that would be required?

Action: Reed to report on procedure for amending Klamath Act.

Public Comments

Edgar Bush, troller: I have a problem with the figures being skewed that they use to set the ocean harvest areas. Why would a scientific person want to use skewed figures? It flies in the face of option 7.2.

McIsaac: The case you make is a good one. When a troller unloads at a dock they mark down the port of landing no matter where the area fished was. Currently they are trying to go back and correct data to the area fished.

Mrs. Bush: The commercial trollers are not at ease to give the proper information because they feel it has been used against them. You are going to have information that is not correct. It

is the fishermen's fault, but they were concerned that they would be even more curtailed in the future if the truth were told.

McIsaac: These are good points. We need to get data that is as accurate as we can. We hope fishermen realize that in the long run more accurate data will help their case.

Bitts: The problem is that most troll fishermen do not have any faith that the data they provide will help their cases.

Fred Stutsman, Brookings sport fisherman: We are interested in time on the water, not fish. Last year we had a very short 6 day season which closed down fishing and the community.

Fred Schutt, Brookings Harbor Commissioner: The seasons set last year are not fair to the people who drove out here to fish.

BREAK

NEW BUSINESS

Policy guidance for the Klamath Restoration News: how to deal with opinions and varied viewpoints

Reed: I discussed this issue with staff last night. Since the publication is printed at Department of Interior expense, and is endorsed as a medium to communicate the work being accomplished by federal advisory committees to the Secretary, the newsletter will only contain balanced representation on issues surrounding the restoration program.

PUBLIC COMMENT

Paula Fitzgerald Yoon, (works for the salmon and the conservation of their habitat, working to help people understand the salmon fishing industry (using slide programs, display, talks to high schoolers)): Today I'm here to share a family story -- my grandparents live in Hoopa, my husband and I had always tried to keep salmon in freezer for them to eat. Now that the commercial season is closed, we are thankful for the Native Americans who have been helping to provide for my grandparents. The lesson here is that it is not important who they get the salmon from, just so they get it. I'm concerned that the current confrontation between Department of Interior and Department of Commerce may lead to getting the President involved. I hope this is not what we want. I hope we can take care of these problems locally by feeling empathy by walking in each other's shoes.

We need to let the federal government know that we need legislation such as HR 429, because this is the positive direction we need to continue in. We also need disaster legislation for all user groups.

Orcutt: I wholeheartedly agree with preventing our decisions from needing to go the President to be made.

Reed: Speaking for the present Secretary and the others I've worked for over the years, it is always their hope that our problems are worked out at the local level rather than having to be made at higher levels.

Discussion on water allocation

A flow evaluation team will be in Hoopa on March 23. The tribes want whatever flows it takes for full restoration of Klamath stocks on a watershed based management system.

Bruss: I suggest that this Council consider adopting the common goal statement adopted at the Three Chairs meeting. This statement reads: "Klamath Basin-wide fisheries restoration."

McIsaac: How would adoption of this statement fit into goals of the long range plan that we have just adopted?

- o Goals of KFMC are on page 22 of long term plan - they are pretty numerous.
- o We could adopt a goal to go along with the Trinity and Klamath Task Forces in their adoption of the same statement.

** Motion: I move that "Klamath basin-wide fisheries restoration" be a goal of this Council (McIsaac).

Seconded.

Discussion:

- o The Trinity Task Force has already adopted this goal as stated in the Secretary's report.
- o I am not recommending that this goal be put in our blue long range plan. But I do think we should adopt it for whatever use comes up.
- o Whatever we adopt has to be consistent with the Act. We have to include in our goal statement that we are not involved in restoration.
- o The motion infers that this goal will show our support for restoration efforts.

**** Consensus.

Discussion on possible funding and projects

Iverson: The fiscal year 1994 request for proposals will be sent out to potential cooperators within the next 30-45 days. The cover letter from this document will be sent to Council members so that you can be aware of the timeframe. CDFG has a separate funding window.

Technical Team assignment: Research data needed and apply for funding (see #6 below).

The people from the National Ecology Research Center (NERC) could help our program if we let them know that we need help.

Action: Mike Orcutt will draft a letter requesting their assistance and provide it to us prior to their March meeting.

McIsaac: It is an expensive exercise to do a GSI analysis like we did up north, but it could be on a wish list.

Wilkinson: We need to recognize that there is a lack of knowledge throughout the basin on what this Council does. We need to continue to fund development of educational and communication materials to continue to add to the public's level of understanding. Don McIsaac has put a slide show together on harvest that he showed at the Oregon Salmon Summit. I'd like to recommend that the Task Force, the Council and people in the Upper Klamath Basin see this presentation.

McIsaac: I will show these slides to the Council at the March meeting and I may show the Task Force the presentation this summer.

Walters: At the Klamath compact meeting in Redding, I was told that the best use for Klamath water is to make sure it doesn't make it to the ocean. We definitely have different definitions of "conservation!" I also discovered that farmers in upper Klamath are family farmers as opposed to large-scale businesses.

The education and communication programs that are underway in the Klamath and Trinity basins can be described more fully by the education coordinator and contractors as a future Council agenda item.

Technical Team Assignments (Barnes)

- 1) Finalize the 1993 stock projections by February 15.
- 2) Run the harvest rate model.
 - a) Use prior agreement (.35/.525) (inc maturing component in ocean by age class).
 - b) Proportionally reduced combinations.

3) Total number maturing (aka zero fishing option). This will yield an estimate of about 80,000 spawners.

3) Revised harvest and escapement -1992 (expected vs. actual by fishery). By 3/7, Mike and Susan to tell the Team what reporting format they want.

4) Stock/recruitment relationship analysis and environmental variability - long term (get this done at the first level in the next few months to a year).

5) Spring chinook report (its essentially done as soon as Joe gets the data from CDFG) will include hindcasting for 1992.

6) Develop and prioritize the basin and ocean data needed for better management of Klamath stocks. Provide this information to the Council at the next meeting in order to apply for FWS funding.

<u>Research</u>	<u>Current/short term</u>
harvest rate mgt performance	ocean sampling
full marking	in-river sampling
	cwt/scale
	age composition
	upper basin sport (Coon
	Ck to Iron Gate (Area 3))

The team will develop an information needs wish list at their summer meeting, bring it to the KFMC meeting in the fall, and submit it for funding the following spring.

McInnis: I received the draft 1992 annual accomplishment report for the Task Force in October (prepared by KRFR staff). I feel that the document would be more complete if it included Council activities, since the budget portion covers Council activities. Could this report cover Council activities in the future?

Iverson: We have interpreted this assignment to mean that we will summarize the harvest management activities that had impacted Klamath stocks by reviewing the objectives, then summarizing the results.

McInnis: The goals of the Council need to be reflected and so do all the activities that apply to the ocean and lower river harvesters.

Iverson: I agree that the annual report for the restoration program should include Council activities. We will prepare the requested information then submit it to the technical team for review. Since we don't want to interrupt the technical team's immediate schedule, it may come out a little late this year.

Action: Harvest management accomplishment report to be provided for KFMC review.

Oregon Governor's Coastal Salmon Initiative (McIsaac)

Many people involved in salmon management met in Newport at the Governor's call because of the concern for the decline of stocks. The 3 day workshop had the following results:

- 1) Writing a statewide strategic plan.
- 2) Developing a method of correcting various problems by compensating people with economic incentives instead of legal regulations.
- 3) Providing tax breaks for industries that suffered fishing closures.
- 4) Setting up a database.
- 5) Developing a list of restoration projects as funded by legislature.
- 6) Attempting to write recommendations for changes to harvest plans.
- 7) Review of the Marine Mammal Protection Act.
- 8) Overview of point sources of juvenile mortality.
- 9) Reviewed 2 plans for the use of hatcheries, a) artificial seeding, b) using current hatcheries to help natural stocks recover.

Orcutt: The Summit had a good technical review of what's needed to get fish back. We need to forward what we learned to managers in California.

Boydston: The Summit had excellent presentations. I noticed that 99% of the people involved were Oregonians. There was a distinct absence of people from Washington.

There was a lot of discussion at the Summit on the possibility of marking all hatchery fish with a physically visible mark (adipose clip, dye, etc.). Steelhead anglers are an in-river user group who want to see all hatchery steelhead marked. The recent report put out by the Pacific States Marine Fisheries Commission recommends against making too many changes too quickly.

NEXT MEETING

The Council will meet Saturday, March 6 1:00 p.m until 9:00 p.m. and all day Sunday, March 7. A Monday evening meeting may be called as well.

The town of Hoopa will be on the list for locations in the future.

The Harvest Allocation Work Group will meet from 8:00 a.m. until noon on Saturday the 6th of March. (A Saturday evening meeting may be called.) The critical issue for this group is the ocean/inriver sharing issue.

Agenda items for the next meeting:

Outstanding agenda items from this meeting, including: "Getting better council performance" and "Identifying steps to proceed with developing the harvest sharing agreement."

PUBLIC COMMENT

Jim Welter: I have two main points.

1) A lot of time has been spent by this Council, but the fishery has continued in a steady downhill since '86. This year there was virtually a zero commercial fishery in the KMZ. Right now the runs are coming back up due to lower escapement and better environmental conditions.

2) What we have been looking at here lately is the change in instream hydrologic conditions. We need to look at the entire system, its a coastwide problem, not just a local problem. The Buoy 10 fishery was pretty fair this year compared to what happened in the Klamath zone. Hatchery supplementation needs to be balanced.

3:30 p.m. Meeting adjourned.

Attachment 1

Management Council Members
Attendance Roster
January 28-29, 1993

<u>Name</u>	<u>Representing</u>
Dave Bitts	California Commercial Salmon Fishing Industry
Virginia Bostwick	Klamath In-River Sport Fishing
Sue Masten	Yurok Tribe
Rod McInnis (alternate for Gary Matlock)	National Marine Fisheries Service
Mike Orcutt (alternate for Pliny McCovey)	Hoopa Valley Tribal Council
Donald McIsaac	Oregon Department of Fish and Wildlife
L.B. Boydston (alternate for Al Petrovich)	California Department of Fish and Game
J.Lisle Reed	U.S. Department of the Interior
Jim Walters (arrived after meeting began)	California Offshore Sport Fishery
Frank Warrens	Pacific Fishery Management Council
Keith Wilkinson	Oregon Commercial Salmon Fishing Industry

List of Attendees

<u>Name</u>	<u>Representing</u>
Edgar Bush	Self-Oregon Troller
Jim Craig	U. S. Fish and Wildlife Service
Judy Cunningham	Self
W. L. Duncan	SCCFA
Rick Fielitz	Bureau of Indian Affairs
Greg Goldsmith	U. S. Fish and Wildlife Service
Dorothy Haberman	Yurok Tribe
Rich Haberman	Yurok Tribe
Leaf Hillman	Karuk Tribe
Karen Jeffries	Times Standard
Robert Kane	Bureau of Indian Affairs
George Kautsky	Hoopa Valley Tribe
Paul Kirk	Klamath Coalition
Robert Lane	Bureau of Indian Affairs
Marion Limville	Self-Commercial Fisherman
Pauline Locher	U. S. Fish and Wildlife Service
Susie Long	Yurok Tribe
Paul Loon	Self
Mark Magneson	U. S. Fish and Wildlife Service
Ray Manks	Sylvan Harbor
Mike Orcutt	Hoopa Valley Tribe
Fred Startzman	KFM Task Force
Maria Tripp	Yurok Tribe
Fred Schutt	Port of Brookings
Tom Shaw	U. S. Fish and Wildlife Service
Jim Welter	Klamath Management Zone Coalition
Tom Weseloh	California Trout
Desma Williams	Bureau of Indian Affairs

FINAL AGENDA
Klamath Fishery Management Council
Meeting of January 28-29, 1993
Quality Inn, Arcata CA

28 January

10:30 am Convene

ADMINISTRATION

Review and approve agenda
Approve minutes of the last meetings (April and September)
Introduce members

LEGISLATION/POLITICAL UPDATES

Introduction of Congressman Hamburg's staff
Update on Clinton administration appointments (Reed, Matlock)
HR 427, the Central Valley Project Reform Act (Bingham)

TECHNICAL REPORTS

Technical Team reports (Barnes)
Review of harvest rate management (Baracco)
Review of 1992 harvests
Review of 1992 Klamath chinook spawning escapements
Projection of 1993 ocean abundance, Klamath fall chinook
Spring chinook predictive methodology
Other Tech Team assignments
Report of the hatchery evaluation committee (Petrovich)

1230 LUNCH

1330 RECONVENE

TECHNICAL REPORTS (continued)

Council discussion
Public comment, questions
Council action: assignments to Tech Team

LONG RANGE PLANNING

Long term harvest plan

Status of distribution of the document (Parker)

Amendment process, including review of PFMC amendment process

Stepping down the long term plan into action items

Successor to the five year harvest allocation agreement - report from workgroup (Wilkinson)

Identify steps to proceed with developing agreement (Mackett?)

Identify goals and constraints

Discuss steps for drafting agreement

Parties responsible

Level of public involvement needed

Public comment on long range planning issues

Council action:

Action on the long term harvest plan: Adoption of an amendment process; adoption of an action planning process.

Action on a new harvest sharing agreement: Adopt goals, constraints, process.

1730 ADJOURN

29 January

0800 RECONVENE

COORDINATION ISSUES

Issues arising from the Three Chairs meeting of 6/26/92

Report on Task Force discussion on Three Chairs issues
(Wilkinson)

Council discussion of Three Chairs issues

Possible agenda items for a future meeting of the Three Chairs

Development of a Council request to the Klamath Task Force to pursue
balanced allocation of water (McIsaac)

Public comment on coordination issues

Council action:

Decision on how to implement Three Chairs issues

Decision on new issues to elevate to Three Chairs

Decision on water allocation request

OTHER OLD BUSINESS

Getting better Council performance in reaching consensus on harvest
management recommendations

Council discussion

Public comment

Council action

NEW BUSINESS

Policy guidance for the Klamath Restoration News: how to deal with
opinions and varied viewpoints? (Reed)

The Oregon Governor's Coastal Salmonids Restoration Initiative
(McIsaac)

Update on the Klamath Task Force's plan amendment for the upper
Klamath basin (Wilkinson)

1200 LUNCH

1315 RECONVENE

NEW BUSINESS (continued)

Public comment on new business issues

Council action:

Recommendations for Klamath Restoration News

Recommendations for Oregon coastal salmonids restoration

Recommendations to Task Force on upper Klamath basin
strategies

NEXT MEETINGS

Date, time, and identification of agenda for next two meetings.

ADJOURN

CENTRAL VALLEY PROJECT IMPROVEMENT ACT

Public Law 102-575, Title 34

The Story Behind the Law

In one of its last actions of the session, the 102nd Congress passed multipurpose water legislation which was signed into law October 30, 1992. Previously referred to as H.R. 429, Public Law 102-575 contains 40 separate titles providing for water resource projects throughout the West. Title 34, the Central Valley Project Improvement Act, mandates changes in management of the Central Valley Project (CVP), particularly for the protection, restoration, and enhancement of fish and wildlife.

Ten Major Areas of Change

- ✓ 800,000 acre-feet of water dedicated to fish and wildlife annually;
- ✓ Tiered water pricing applicable to new and renewed contracts;
- ✓ Water transfers provisions, including sale of water to users outside the CVP service area;
- ✓ Special efforts to restore anadromous fish population by 2002;
- ✓ Restoration Fund financed by water and power users for habitat restoration and improvement and water and land acquisitions;
- ✓ No new water contracts until fish and wildlife goals achieved; no contract renewals until completion of an Environmental Impact Statement; terms reduced from 40 to 25 years with renewal at the discretion of the Secretary of Interior;
- ✓ Installation of the temperature control device at Shasta Dam;
- ✓ Implementation of fish passage measures at Red Bluff Diversion Dam;
- ✓ Firm water supplies for Central Valley wildlife refuges; and
- ✓ Development of plan to increase CVP yield.

What Happens First

The Bureau of Reclamation is developing interim guidelines for initial efforts to implement Title 34. Many provisions of the Act must be preceded by completion of a comprehensive EIS evaluating the impacts of Title 34 and the impacts of contract renewals.

Act to Address a Wide Range of Goals

Key legislated purposes of Title 34 are:

- ✓ To protect, restore, and enhance fish, wildlife, and associated habitats in the Central Valley and Trinity River basins of California;
- ✓ To address impacts of the CVP on fish, wildlife, and associated habitats;
- ✓ To improve the operational flexibility of the CVP;
- ✓ To increase water-related benefits provided by the CVP to the State of California through expanded use of voluntary water transfers and improved water conservation;
- ✓ To contribute to the State of California's interim and long-term efforts to protect the San Francisco Bay/Sacramento-San Joaquin Delta Estuary;
- ✓ To achieve a reasonable balance among competing demands for use of CVP water, including the requirements of fish and wildlife, agricultural, municipal and industrial, and power contractors.

For More Information

Reclamation welcomes your participation in the implementation process. For current information on Title 34, please call the "Grapevine" at 800-742-9474 and enter 208. Leave your name and address, and we will place you on our mailing list for public involvement activities. Copies of P.L. 102-575 can be obtained by calling the Public Affairs Office at (916) 978-4919.

*Published by the Bureau of Reclamation, Mid-Pacific Region
Public Affairs Office
November 30, 1992*

MEMORANDUM

TO: Klamath Fisheries Management Council
 FROM: Klamath River Technical Advisory Team
 DATE: 26 January 1993
 SUBJECT: Team Report

1992 Fisheries

Ocean Chinook Landings

Cape Falcon to the US/Mexico Border

Area	Troll	Recreational
Cape Falcon to Humbug	108,100	9,400
Humbug to Horse Mnt. (KMZ)	--	5,300
Horse Mnt. to US/Mex	158,900	69,500
Elk and Chetco Rivers State Waters Fisheries	1,100	--
	<u>268,100</u>	<u>84,200</u>

Klamath Chinook Impact, Troll and Recreational Combined

1,374

In-River Adult Fall Chinook Harvest

Recreational	1,310
Tribal	<u>5,577</u>
Total	<u>6,887</u>

Preliminary 1993 Ocean Stock Projection

The projection is preliminary and subject to revision as input data become finalized.

Age 3	144,836
Age 4	29,468

See attachments for additional detail.

1992 Pre- and Post Season Ocean Stock Projection Estimates

	KRTAT	PFMC	Actual
Age 3	44,000	25,000	19,800
Age 4	29,800	35,800	18,500

Response to KFMC Request for Explanation for Lack of Correlation
Between Escapement and Recruitment

There has been a lack of correlation between escapement and subsequent ocean recruitment for the Klamath fall run (and for other salmon stocks coast wide). Assuming that the Ricker recruitment curve is appropriate for the Klamath stock, the lack of correlation can only be the result of high variability in the ocean and freshwater environment. Such variability results in wide fluctuations of survival rates for these fish which can mask the relationship between escapement and recruitment.

In order to produce an escapement/recruitment relationship, the effect of environmental variation needs to be minimized. One possible method would be to account for the variation in ocean survival rates, using either survival of yearling releases or fish planted in ocean or estuary areas--such as S.F. Bay/Delta as an indicator of survival, independent of the freshwater environment. If either of these can be found to be a fair surrogate of ocean survival, the vast majority of the stock abundance variation, those not due to the Ricker type effects, can be eliminated. This may result in the ability to construct a stock/recruit relationship for the Klamath fall run.

Spring Chinook Report

The spring chinook report is currently in its last edit and should be completed by the next council meeting. Only some of the data for the 1992 spring chinook run is available at this time (See Attachment).

Klamath River Basin Fall Chinook Salmon Spawner Escapement, In-river Harvest and Run-size Estimates, 1978-1992 *

SPAWNER ESCAPEMENT

	1990			1991			1992		
	Grilse	Adults	Totals	Grilse	Adults	Totals	Grilse	Adults	Totals
Hatchery Spawners									
Iron Gate Hatchery (IGH)	321	6,704	7,025	65	4,002	4,067	3,733	3,580	7,313
Trinity River Hatchery (TRH)	371	1,348	1,719	205	2,482	2,687	229	3,658	3,887
Subtotals	692	8,052	8,744	270	6,484	6,754	3,962	7,238	11,200
Natural Spawners									
Trinity River basin (above Willow Creek, excluding TRH)	241	7,682	7,923	382	4,867	5,249	2,292	6,547	8,839
Salmon River basin	596	4,071	4,667	143	1,337	1,480	628	896	1,524
Scott River basin	236	1,379	1,615	146	2,019	2,165	892	1,689	2,581
Shasta River basin	118	415	533	10	716	726	57	484	541
Bogus Creek basin	53	732	785	20	1,261	1,281	555	597	1,152
Main Stem Klamath River (excluding IGH)	59	505	564	8	572	580	234	366	600
Misc. Klamath tributaries (above Hoopa and Yurok Reservations)	30	694	724	9	495	504	197	381	578
Hoopa and Yurok Reservation tribs.	17 h	58 h	75 h	0 h	232 h	232 h	0 h	160 h	160 h
Subtotals	1,350	15,536	16,886	718	11,499	12,217	4,855	11,120	15,975
Total Spawner Escapement	2,042	23,588	25,630	988	17,983	18,971	8,817	18,358	27,175

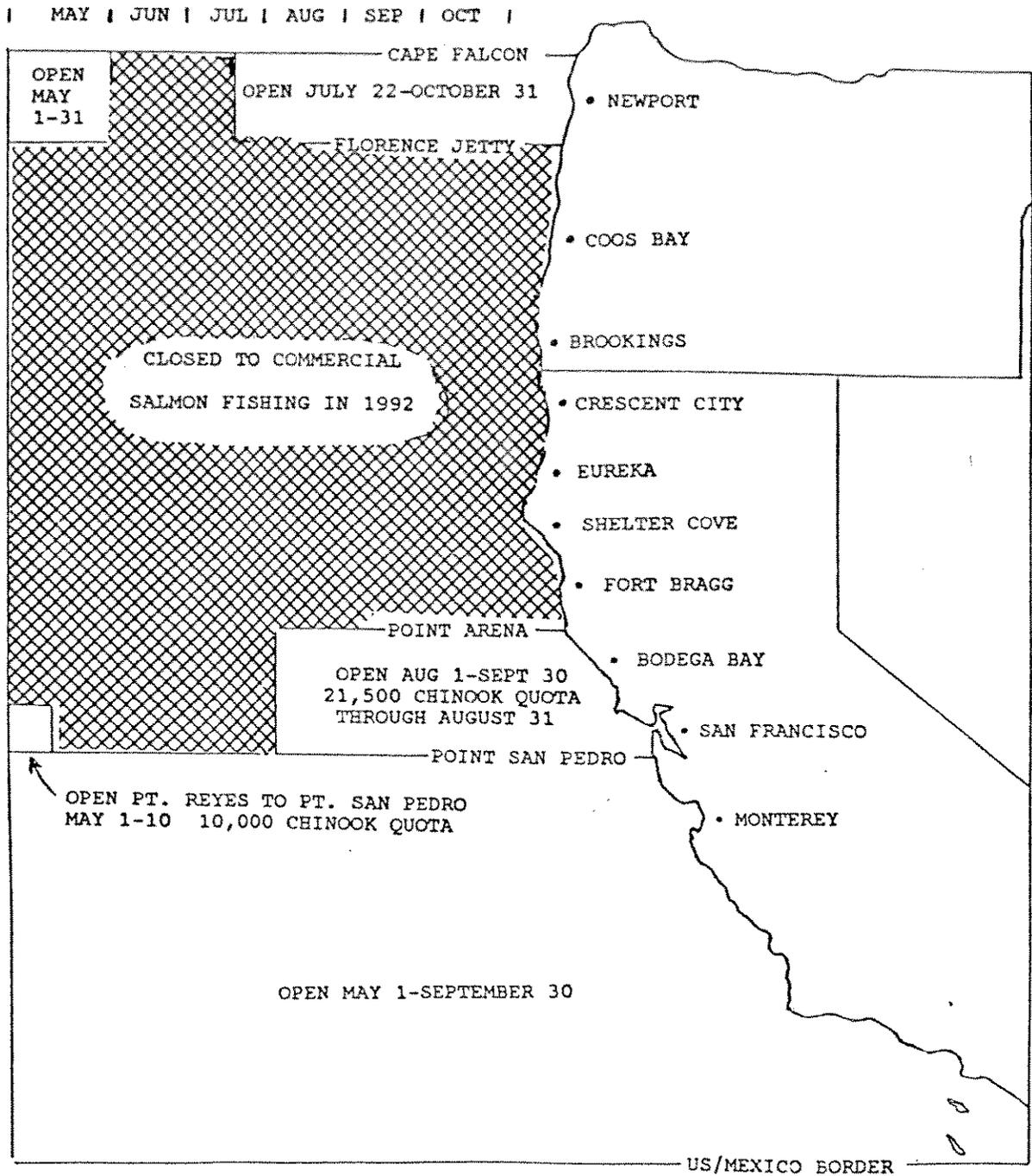
IN-RIVER HARVEST

	1990			1991			1992		
	Grilse	Adults	Totals	Grilse	Adults	Totals	Grilse	Adults	Totals
Angler Harvest									
Klamath River (below Hwy 101 bridge)	58	291	349	19	314	333	115	76	191
Trinity River basin (above Willow Creek)	22	328	350	94	1,177	1,271	137	553	690
Balance of Klamath system	2,020	2,934	4,954	573	1,892	2,465	3,425	681	4,106
Subtotals	2,100	3,553	5,653	686	3,383	4,069	3,677	1,310	4,987
Indian Net Harvest									
Klamath River (below Hwy 101 bridge)	13	3,536	3,549	7	3,902	3,909	37	1,032	1,069
Klamath River (Hwy 101 to Trinity mouth)	138	3,447	3,585	25	5,016	5,041	196	3,599	3,795
Trinity River (Hoopa Reservation)	36	811	847	30	1,280	1,310	42	946	988
Subtotals	187	7,794	7,981	62	10,198	10,260	275	5,577	5,852
Total In-river Harvest	2,287	11,347	13,634	748	13,581	14,329	3,952	6,887	10,839

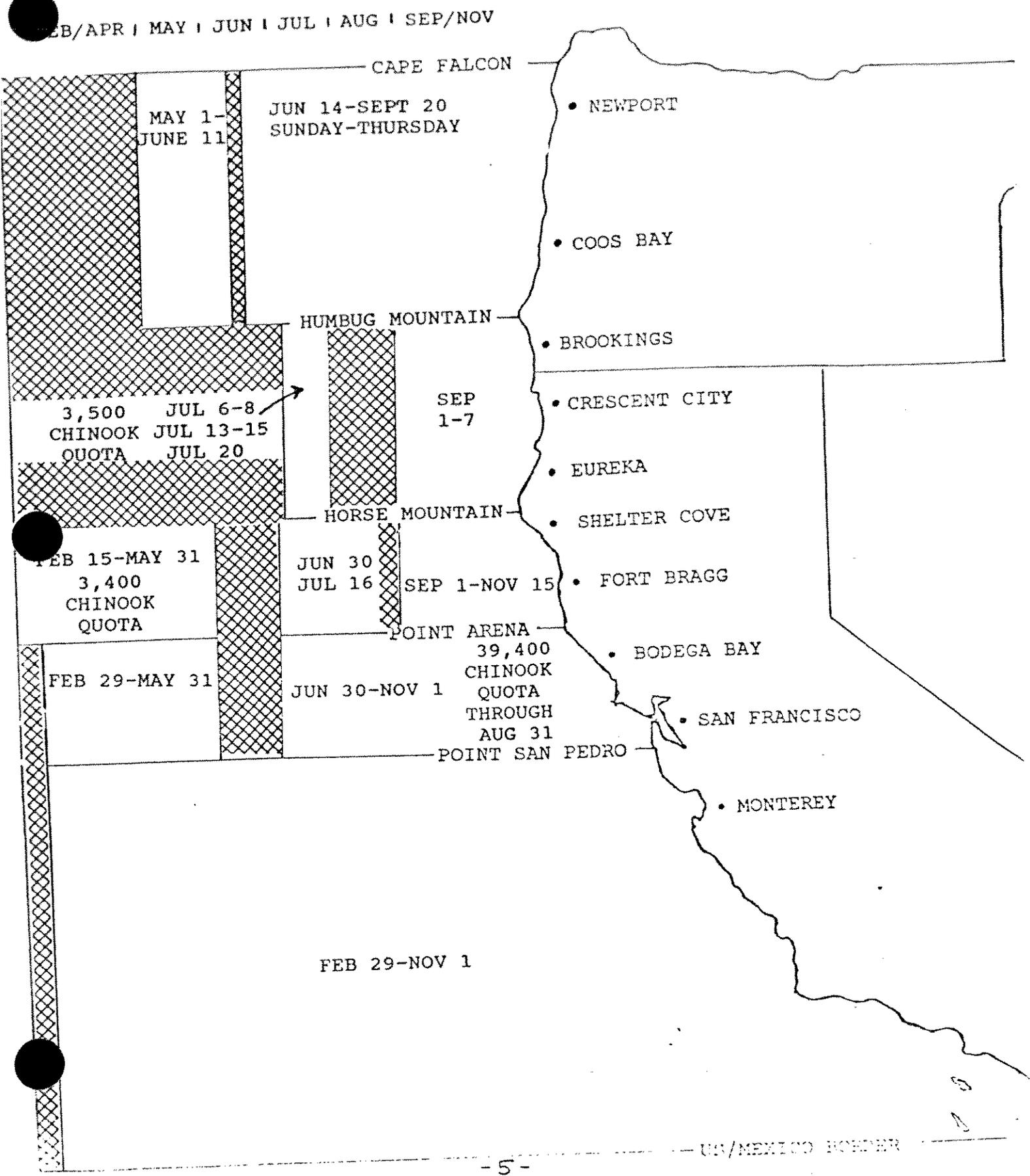
IN-RIVER RUN

	1990			1991			1992		
	Grilse	Adults	Totals	Grilse	Adults	Totals	Grilse	Adults	Totals
Totals									
In-river Harvest and Escapement	4,329	34,935	39,264	1,736	31,564	33,300	12,769	25,245	38,014
Angling Mortality (2% of harvest) f	42	71	113	14	68	82	74	26	100
Net Mortality (8% of harvest) f	15	624	639	5	816	821	22	446	468
Total In-river Run	4,386	35,630	40,016	1,755	32,448	34,203	12,865	25,717	38,582

Commercial Salmon Season Structure South of Cape Falcon, Oregon in 1992



Recreational Salmon Season Structure South of Cape Falcon, Oregon in 1992

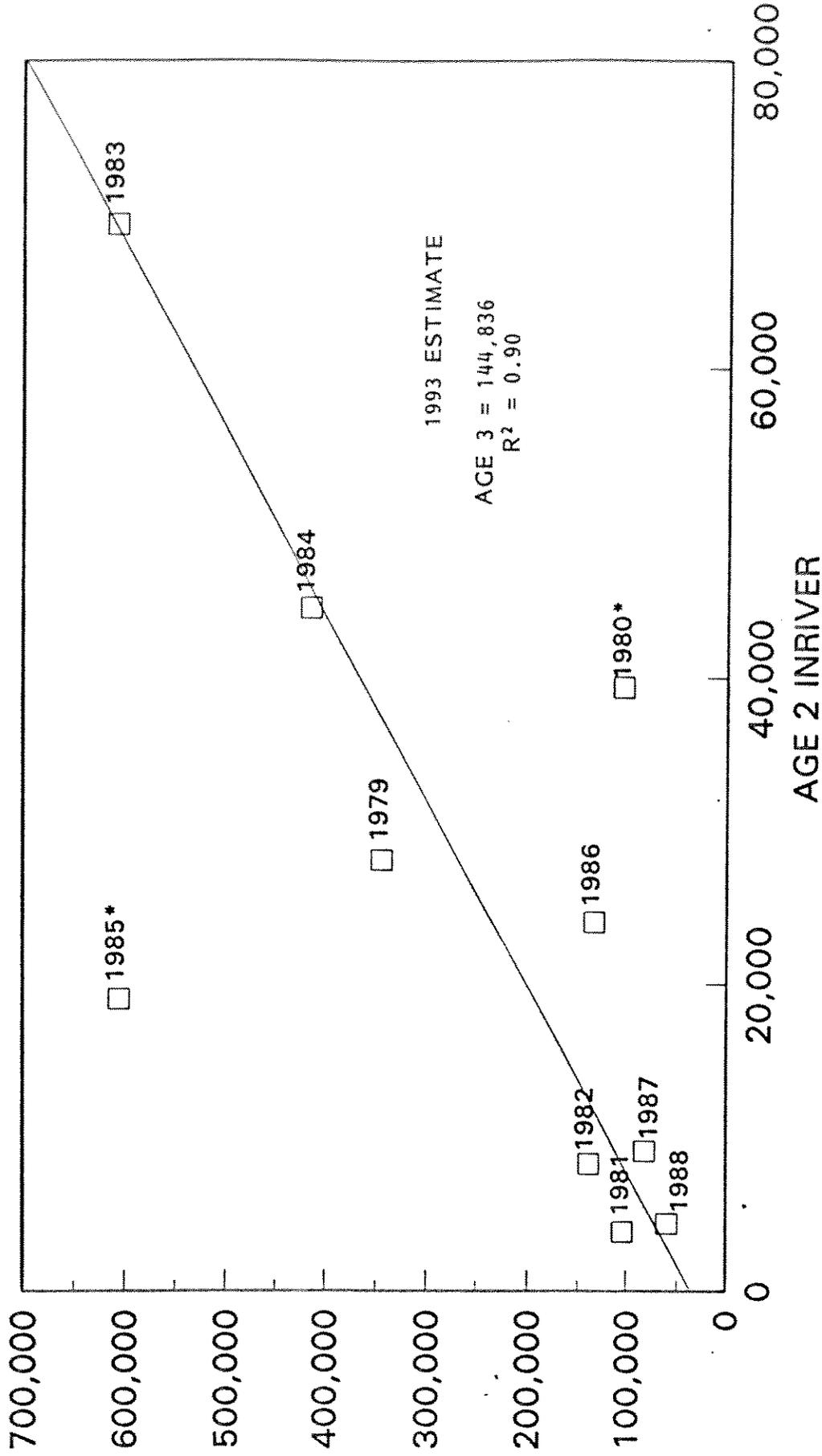


PRELIMINARY

AGE 3 ON 2 KLAMATH FALL CHINOOK

1979 - 1988 BROOD YEARS (W/O 1980 & 1985)

AGE 3 OCEAN POPULATION



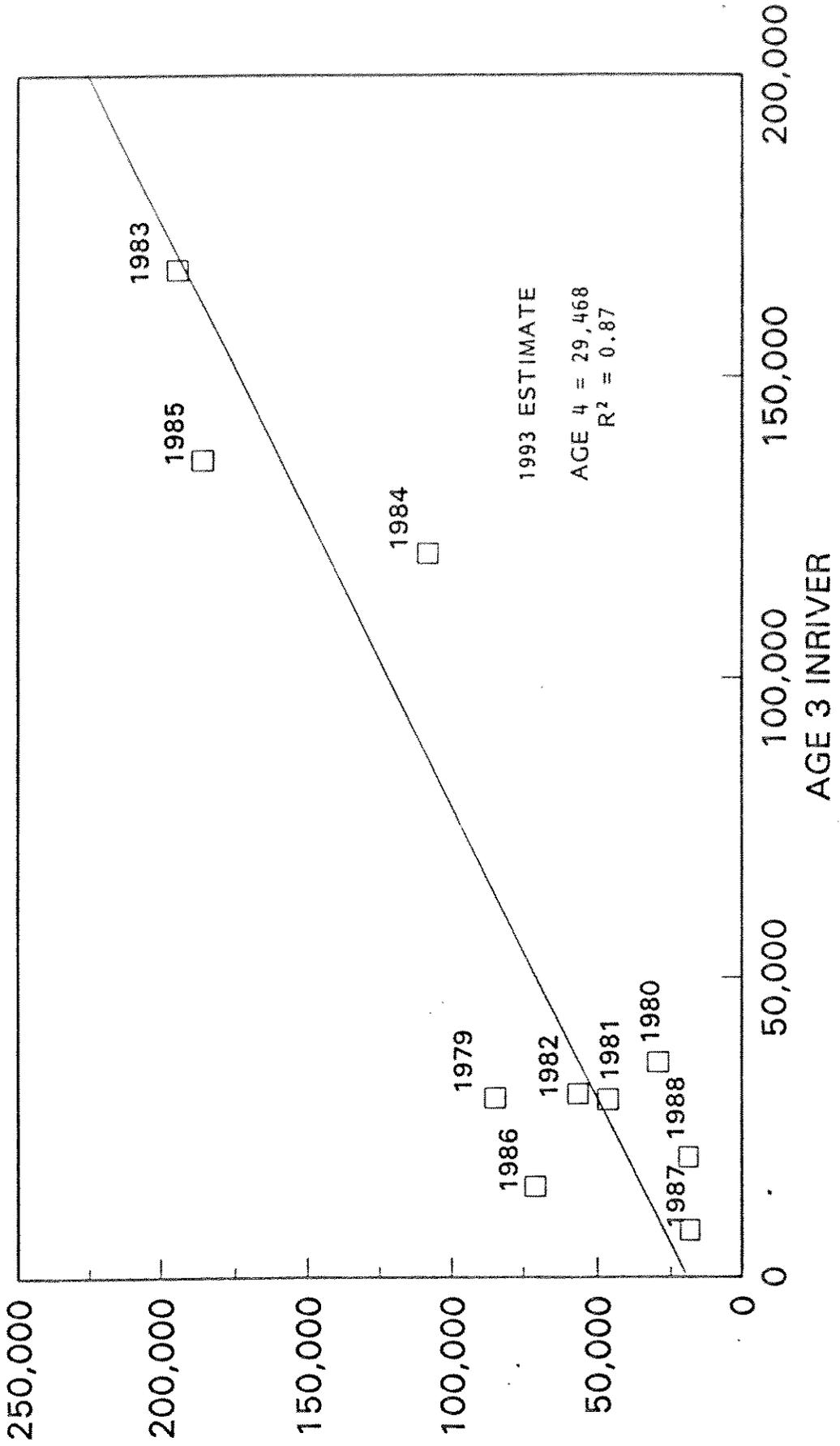
* Excluded from regression

PRELIMINARY

AGE 4 ON 3 KLAMATH FALL CHINOOK

1979 - 1988 BROOD YEARS

AGE 4 OCEAN POPULATION



PRELIMINARY

TABLE 1. Estimated Number of Fall-run Chinook Salmon by Age Entering the Klamath River During 1981-1992 in Thousands of Fish, Including Estimates of Ocean Population Sizes. a/

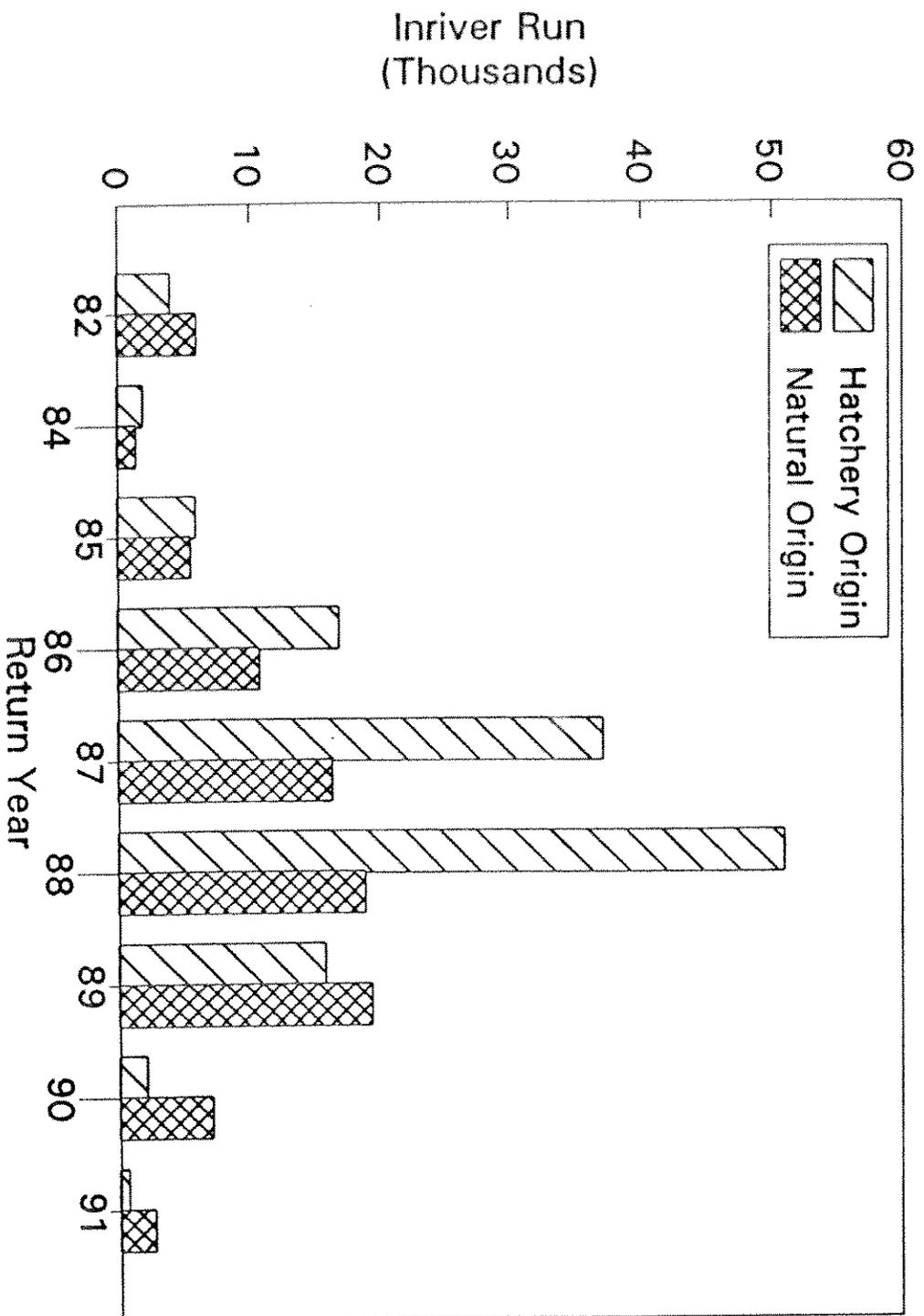
RETURN YEAR	IN RIVER AGE COMPOSITION					OCEAN HARVEST RATE BY AGE		OCEAN POPULATION BY AGE		
	AGE 2	AGE 3	AGE 4	AGE 5	TOTAL ADULTS	AGE 3	AGE 4	AGE 3	AGE 4	TOTAL
1981	28.1	64.0	14.3	1.8	80.1	0.42	0.66	246.6	45.6	292.2
1982	39.4	30.0	33.9	2.6	66.5	0.62	0.65	344.7	106.7	451.4
1983	3.8	35.8	20.7	0.9	57.5	0.39	0.71	103.8	84.9	188.8
1984	8.3	29.6	15.2	2.3	47.1	0.17	0.42	103.4	29.2	132.6
1985	69.4	30.6	32.8	0.9	64.4	0.26	0.29	138.4	46.3	184.7
1986	44.5	167.7	27.0	TR	194.8	0.40	0.52	607.8	56.4	664.2
1987	19.0	120.8	87.9	TR	208.7	0.48	0.53	415.7	194.3	610.0
1988	24.0	136.3	53.3	1.2	190.8	0.44	0.45	617.4	108.5	725.9
1989	9.1	15.2	105.4	3.3	123.9	0.22	0.43	106.3	185.9	292.2
1990	4.1	7.7	27.6	0.2	35.5	0.67	0.61	146.2	71.0	217.2
1991	1.8	20.0	12.4	0.1	32.5	0.36	0.22	22.2	27.6	49.8
1992	12.9	7.1	17.8	1.0	25.9	0.03	0.04	19.8	18.5	38.3

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 after KRTAT, 1990.

26-Jan-93

Harvest and escapement estimates of Klamath Basin adult spring chinook and estimated number of adult spring chinook of hatchery origin from the cohort reconstruction.													
Year	Salmon River	Lower Trinity Tribes			Natural Escpmnt		Hatchery	Sport Above		Yurok	Hoopa	Total **	Spring Chinook of Hatchery Origin *** %
		2	40	301	J.C.*	J.C.*		J.C.	Above				
78	2	40	14,384	3,680	752	N/A	N/A	N/A	N/A	N/A	18,873	N/A	
79	19	301	5,008	1,658	1,298	N/A	N/A	N/A	N/A	N/A	8,310	N/A	
80	256	74	1,614	547	140	N/A	N/A	N/A	N/A	N/A	2,634	N/A	
81	285	169	3,362	2,405	2,146	1,717	1,090	11,301	715	9,937	3,986	43	
82	585	6	3,868	1,226	930	510	75	1,613	380	3,226	1,359	N/A	
83	18	52	1,354	736	375	247	1,000	11,335	5,839	1,881	60	60	
84	453	329	4,897	2,645	736	1,074	1,000	11,335	5,839	1,881	60	55	
85	791	183	13,371	7,083	2,949	692	2,022	27,394	16,776	63	63	63	
86	614	153	29,083	8,466	8,467	1,646	4,146	53,265	37,059	71	71	71	
87	1,039	332	39,329	13,905	8,738	2,926	2,727	69,680	50,906	75	75	75	
88	287	18	19,581	5,506	2,152	4,775	1,978	34,948	15,671	45	45	45	
89	148	218	2,975	2,411	796	1,413	865	9,047	2,020	23	23	23	
90	190	66	1,363	685	333	287	263	3,243	595	20	20	20	
91	330	N/A	N/A	N/A	N/A	396	344	N/A	N/A	N/A	N/A	N/A	
92													

* spawning escapement above Junction City weir (includes hatchery fish spawning in natural areas)
 ** includes escapement data from Lower Trinity and Salmon River (data for some years is incomplete)
 *** hatchery contribution of spring chinook to inriver run from cohort reconstruction



Natural and hatchery components of the Klamath Basin spring chinook run 1982, 1984-1991 (hatchery component derived from cohort reconstruction).



MEMORANDUM

OREGON DEPARTMENT OF FISH AND WILDLIFE

INTRA-DEPARTMENT

DATE: January 25, 1992

TO: Don McIsaac and Rod Kaiser

FROM: Eric Schindler and Mark Vargas

SUBJ: Estimated chinook stock composition of the Elk and Chetco rivers state waters fisheries, 1992.

The only available estimator of stock composition from these fisheries are the coded wire tag recoveries. Due to the extremely small quotas (400 for the Elk fishery and 500 for the Chetco fishery), we have very few CWT's upon which to base any analysis (25 chinook and 1 no tag from the Elk fishery; and 24 chinook, 4 no tags, and 1 illegal Iron Gate Hatchery coho from the Chetco fishery).

In the Elk fishery, we sampled 354 of the 384 chinook landed (92.2% sample rate). We observed 26 adipose clips (7.3% mark rate), and recovered 25 readable CWT's from those fish. All CWT's were from Elk River Hatchery releases into Elk River. Table 1 shows the tag recoveries by brood year, total estimated CWT's by brood when expanded for sampling rate, and estimated catch by brood based on an expansion for unmarked hatchery fish and natural production. Estimates of juvenile chinook natural production were made by ODFW district personnel. From this expansion, an estimated 395 chinook can be accounted for (103% of the catch), all from the Elk River.

In the Chetco fishery, we sampled 345 of the 705 chinook landed (48.9% sample rate). We observed 29 adipose clips (8.4% mark rate), and recovered 25 readable CWT's from those fish. All chinook CWT's were from either the Chetco River or the Winchuck River. Table 2 shows the tag recoveries by tagcode, total estimated CWT's by tagcode when expanded for sampling rate, and estimated catch based on an expansion for unmarked hatchery fish and natural production. Estimates of natural production for the Chetco were made by district personnel based on adult hatchery to wild ratios, for the Winchuck an estimate of juvenile natural production was available. From this expansion, an estimated 562 chinook (80%) can be accounted for from the Chetco and the Winchuck rivers. Assuming that this expansion is accurate; the remaining 20% would have come from other stocks (possibly Smith River, Pistol River, Hunter Creek, etc.), but no other CWT's were recovered to indicate the presence of outside stocks in the fishery.

The information presented here is very preliminary and relies on past juvenile counts. Further analysis will be performed as more data on the adult returns become available (i.e. chinook scales are read).

c. Tim Unterwegner

EDS OCPFILES1-25-93.WQ1

Table 1. Elk River state waters troll fishery chinook coded wire tag recoveries and expansions by brood year and release basin, 1993.

BASIN	BROOD YEAR	CWTS RECOVERED	TAGGED TO UNTAGGED RATIO a/	SAMPLE RATE	CWTS EXPANDED FOR SAMPLE RATE	EXPANSION FOR TAGGED TO UNTAGGED RATIO
Elk	87	3	0.1734	0.92	3	19
Elk	88	8	0.1378	0.92	9	63
Elk	89	14	0.0486	0.92	15	313
Total		25			27	386

a/ Tagged to untagged ratio includes natural smolt production estimates by district personnel of: 216,000 brood 1987, 233,000 brood 1988, and 197,000 brood 1989.

Table 2. Chetco River state waters recreational ocean chinook fishery coded wire tag recoveries and expansions by tagcode, release basin, and brood year, 1993.

TAGCODE	BASIN	BROOD YEAR	CWTS RECOVERED	TAGGED TO UNTAGGED RATIO a/	SAMPLE RATE	CWTS EXPANDED FOR SAMPLE RATE	EXPANSION FOR TAGGED TO UNTAGGED RATIO
074804	Chetco	88	1	0.1771	0.49	2	12
074836	Chetco	88	1	0.5080	0.49	2	4
074837	Chetco	88	1	0.4953	0.49	2	4
074824	Chetco	89	2	0.1689	0.49	4	25
075420	Chetco	89	3	0.4257	0.49	6	14
075421	Chetco	89	1	0.4625	0.49	2	4
075422	Chetco	89	10	0.0427	0.49	20	478
074925	Chetco	90	4	0.6054	0.49	8	13
074803	Winchuck	88	1	0.2640	0.49	2	8
Total			24			49	562

a/ The tagged to untagged ratio for the Chetco includes an expansion for natural production based on a 7 year average hatchery to wild ratio of 0.635 from adult surveys in the Chetco River by district personnel. For the Winchuck, based on smolt trapping data from the 1990 brood, district personnel estimate 40,000 chinook smolts were produced in the 1988 brood.

HARVEST
RATE
MANAGEMENT

MANAGEMENT STRATEGIES

ESCAPEMENT GOAL

MANAGEMENT

HARVEST RATE

MANAGEMENT

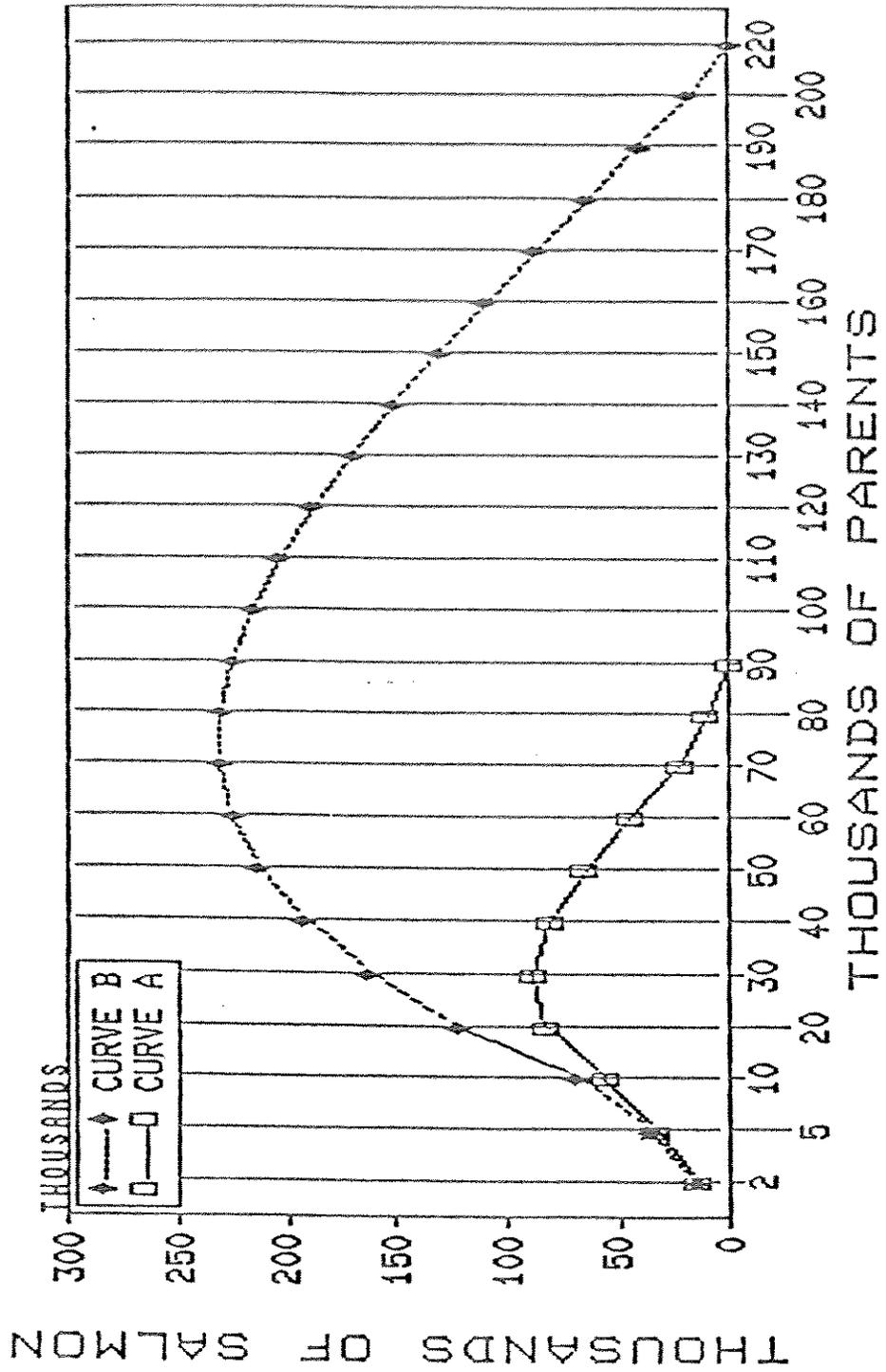


FIGURE 2. Fishery yield curves using a low estimate of basin capacity (Curve A, $1/\text{Beta} = 41,000$) and a higher estimate of basin capacity (Curve B, $1/\text{Beta} = 106,000$).

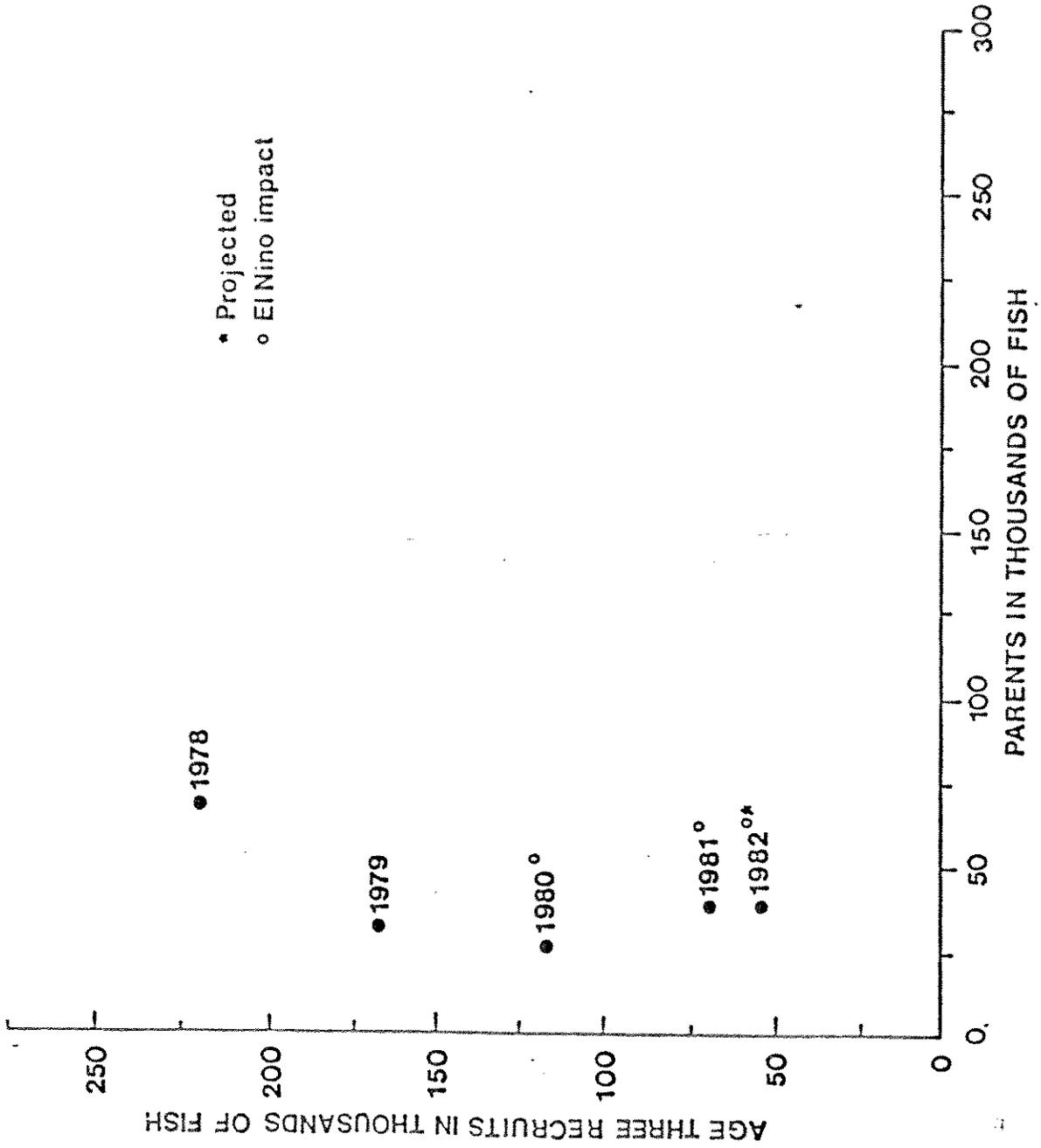


Figure 3. Klamath River fall chinook stock-recruitment data, 1978-1982 broods.

LONGTERM FISHERY YIELD

BASIN CAPACITY

41,000 106,000

115,000 GOAL 9 132

60,500 GOAL 50 131

HARVEST RATE 55 132

ESCAPEMENT

BASIN CAPACITY

41,000 106,000

115,000 GOAL

66

91

60,500 GOAL

40

43

HARVEST RATE

31

77

KLAMATH FALL CHINOOK PARAMETERS

FOR

HARVEST RATE MANAGEMENT

- o 33 PERCENT ESCAPEMENT RATE
- o 35,000 NATURAL SPAWNING FLOOR
- o ALLOCATION AGREEMENT

ESCAPEMENT/LANDINGS + ESCAPEMENT

.40
.30
.20

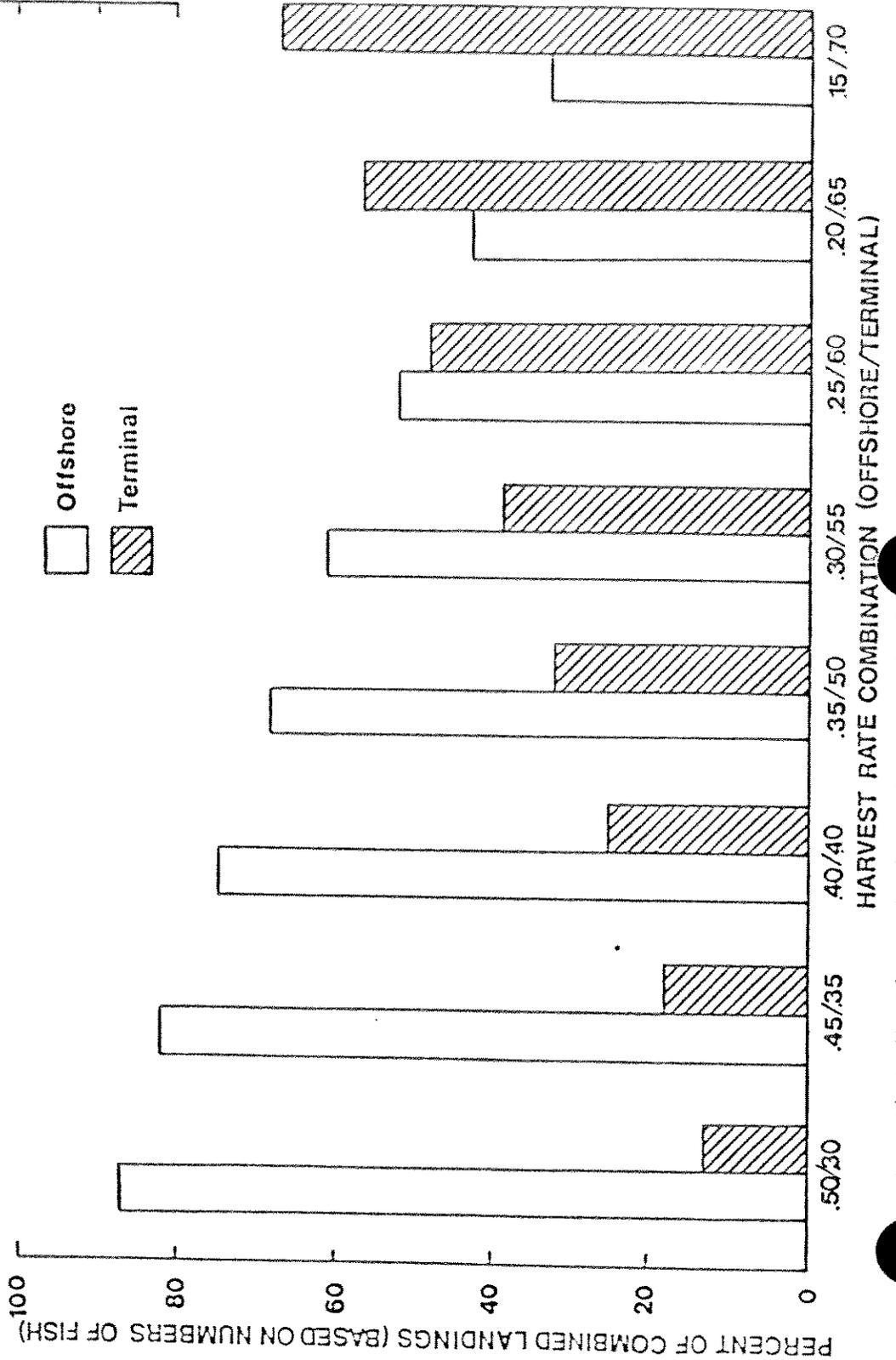


Figure 4. Distribution of Klamath River fall chinook landings over the long term under a selected range of harvest rate combinations including relative impact on the adult spawning escapement.

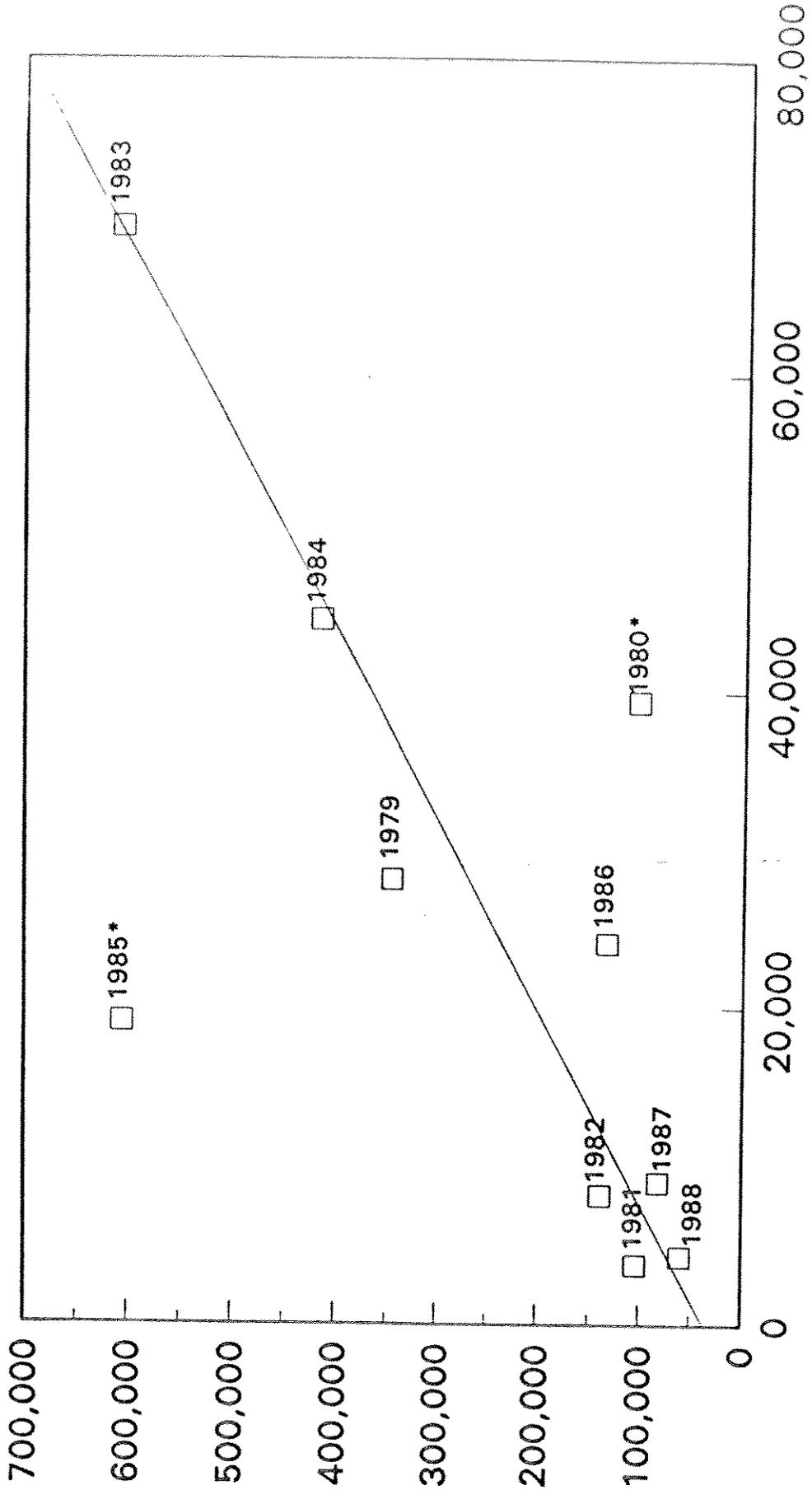
DATA NEEDS

- o STOCK PROJECTIONS
- o FISHERY IMPACT ESTIMATES
- o MONITORING PROGRAMS
- o CODED-WIRE TAG PROGRAMS

AGE 3 ON 2 KLAMATH FALL CHINOOK

1979 - 1988 BROOD YEARS (W/O 1980 & 1985)

AGE 3 OCEAN POPULATION

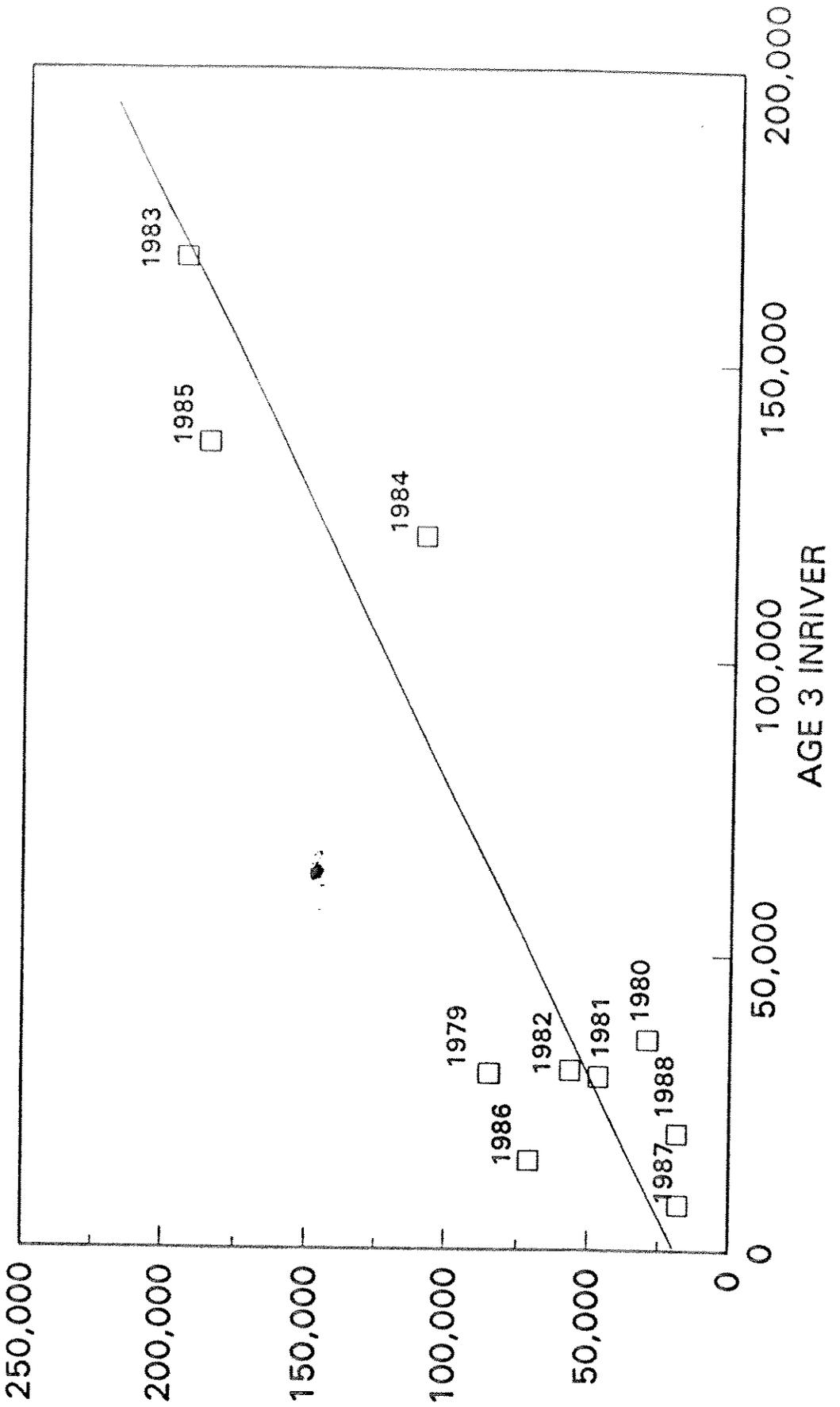


* Excluded from regression

AGE 4 ON 3 KLAMATH FALL CHINOOK

1979 - 1988 BROOD YEARS

AGE 4 OCEAN POPULATION



MONITORING PROGRAMS

- o OCEAN FISHERIES (CDFG, ODFW)
- o RIVER FISHERIES (CDFG, USFWS, HVBC)
- o HATCHERY RETURNS (CDFG)
- o NATURAL SPAWNER SURVEYS (CDFG, USFWS, HVBC, USFS)



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Manchester Field Station
Box 130
Manchester, Wa. 98353

February 3, 1993

Dr. Don McIsaac
Oregon Dept. of Fish and Wildlife
2501 SW First Avenue
PO Box 59
Portland, OR. 97207

Dear Don:

We have now completed our initial GSI analysis of the chinook samples collected by ODFW from 1992 troll fisheries. We have received and completed the lab work on 840 samples. Sample sizes were as follows: May 10 through May 31 = 128
July 22 through August 31 = 384
September 1 through October 11 = 328

These sample sizes were less than our goals of 500 each for May, July, and August. The smaller sample sizes result in less precise composition estimates especially for the smaller contributing stock groups.

We used 23 loci in the GSI analysis. These loci are sAAT-1,2*, sAAT-3*, ADA-1*, ADA-2*, GP1A*, GP1-B2*, GB1r*, GR*, HAGH*, MIDHP-2*, SIDHP-1,2*, LDH-B2*, LDH-C*, sMDH-A1,2*, sMDH-B1,2*, MPI*, PEPA*, PEPB-2*, PEPD-2*, PEP-LT*, PGDH*, HGK-2*, and TPI-4*.

We did an initial analysis on the set of 840 samples using an extensive baseline that included 192 stocks ranging from the Sacramento River to the Nass River in northern B.C. The purpose of this analysis was to examine the estimated contribution of northern stocks. The estimated contribution of all stock groups from Puget Sound on north were zero except for the Northern B.C. stock group which was estimated at 0.002 (with an SD of 0.016). We proceeded to analyze the mixtures for the individual time periods using a baseline consisting of 104 stocks that ranged from the Sacramento through the Washington coast. I've enclosed a table listing the GSI estimates.

I've also included a document listing the baseline. The underlined unit (eg Sacramento River) is the stock group for reporting estimates. The bolded unit (eg Mokelumne - Nimbus) is the stock represented in the baseline by a set of allele frequencies. The indented lines (eg Mokelumne) list samples where multiple samples have been combined to represent a stock. The information given for each sample is run time, brood year (if juvenile) or year of return (if adult), year of collection, number of fish, adult or juvenile, hatchery or wild, state or province, and location.

If you have any questions or suggestions for additional analyses of the data, please give me a call.

Sincerely,

David Teal
Fishery Biologist



CHINOOK GSI ESTIMATES FOR 1992 OREGON COASTAL TROLL

FISHERY SAMPLES WERE TAKEN AT NEWPORT

BASELINE: 104 STOCKS FROM SACRAMENTO THRU WASHINGTON COAST

23 LOCI

STOCK GROUP	GSI ESTIMATE (WITH SD)	
	MAY, JULY, AND AUGUST (N=512)	SEPTEMBER-OCTOBER (N=328)
Sacramento	.60 (.05)	.70 (.06)
Cal coastal	.00 (.00)	.01 (.01)
Klamath	.04 (.03)	.02 (.03)
Smith River	.00 (.00)	.00 (.00)
South Oregon coasta	.10 (.06)	.10 (.09)
North Oregon coasta	.00 (.01)	.04 (.05)
Lower Columbia (SP)	.02 (.04)	.00 (.00)
Lower Columbia (F)	.19 (.05)	.01 (.02)
Upper Columbia (SP)	.01 (.01)	.00 (.00)
Snake (SP, SU)	.00 (.00)	.01 (.01)
Upper Columbia (SU)	.00 (.00)	.00 (.00)
Upper Columbia & Snake (F)	.01 (.02)	.05 (.02)
North Wash Coast (SP, SU)	.00 (.00)	.00 (.00)
Washington coastal (F)	.01 (.01)	.06 (.06)

UPPER COLUMBIA RIVER (SPRING)

COWLITZ	SPRING	81	82	50	A	H	WA	COLUMBIA
COWLITZ	SPRING	87	87	102	A	H	WA	COLUMBIA
KALAMA	SPRING	82	82	50	A	H	WA	COLUMBIA
KALAMA	SPRING	90	90	108	A	H	WA	COLUMBIA
MCKENZIE - DEXTER	SPRING	82	82	58	A	H	OR	COLUMBIA
MCKENZIE	SPRING	87	87	108	A	H	OR	COLUMBIA
DEXTER	SPRING	88	88	110	A	H	OR	COLUMBIA
MCKENZIE	SPRING	88	88	125	A	H	WA	COLUMBIA
LEWIS RIVER	SPRING	88	88	100	A	H	OR	COLUMBIA
CLACKAMAS	SPRING	90	90	100	A	H	OR	COLUMBIA
MARION FORKS	SPRING	90	90	100	A	H	OR	COLUMBIA

WILLAMETTE
WILLAMETTE
WILLAMETTE

LOWER COLUMBIA RIVER AND BONNEVILLE POOL (FALL)

SPRING CREEK - BIG CREEK	FALL	81	82	50	J	H	OR	COLUMBIA
BIG CREEK	FALL	81	82	58	J	H	WA	COLUMBIA
SPRING CREEK	FALL	87	87	104	A	H	WA	COLUMBIA
SPRING CREEK	FALL	90	90	150	A	H	WA	COLUMBIA
SPRING CREEK	FALL	90	90	108	A	H	OR	COLUMBIA
BIG CREEK	FALL	90	90	108	A	H	OR	COLUMBIA
WASHOUCAL	FALL	81	82	50	J	H	WA	COLUMBIA
WASHOUCAL	FALL	84	85	100	J	H	WA	COLUMBIA
WASHOUCAL	FALL	84	85	100	J	H	WA	COLUMBIA
COWLITZ	FALL	81	81	48	A	H	WA	COLUMBIA
COWLITZ	FALL	81	82	50	J	H	WA	COLUMBIA
COWLITZ	FALL	88	88	88	A	H	WA	COLUMBIA
COWLITZ	FALL	88	88	88	A	H	WA	COLUMBIA
KALAMA	FALL	81	82	50	J	H	WA	COLUMBIA
KALAMA	FALL	88	88	48	A	H	WA	COLUMBIA
KALAMA	FALL	89	89	100	A	H	WA	COLUMBIA
KALAMA	FALL	90	90	120	A	W	WA	COLUMBIA
LEWIS	FALL	90	90	54	A	W	OR	COLUMBIA
SANDY	FALL	90	90	54	A	W	OR	COLUMBIA

UPPER COLUMBIA RIVER (SPRING)

WARM SPRINGS	SPRING	82	82	50	A	H	OR	COLUMBIA
WARM SPRINGS	SPRING	87	87	80	A	H	OR	COLUMBIA
WARM SPRINGS	SPRING	87	87	80	A	W	OR	COLUMBIA
WARM SPRINGS	SPRING	87	87	80	A	W	OR	COLUMBIA
CARSON	SPRING	82	82	50	A	H	WA	COLUMBIA
CARSON	SPRING	89	89	100	A	H	WA	COLUMBIA
CARSON (AT KLUCKITAT)	SPRING	89	89	108	A	H	WA	COLUMBIA
CARSON	SPRING	89	89	108	A	H	WA	COLUMBIA
YAKIMA	SPRING	86	86	40	A	W	WA	COLUMBIA
YAKIMA	SPRING	89	89	100	A	W	WA	COLUMBIA
OLE ELUM	SPRING	89	89	100	A	W	WA	COLUMBIA
YAKIMA	SPRING	89	89	100	A	W	WA	COLUMBIA
YAKIMA	SPRING	90	90	141	A	W	WA	COLUMBIA
AMERICAN RIVER	SPRING	84	84	55	A	W	WA	COLUMBIA
AMERICAN RIVER	SPRING	89	89	80	A	W	WA	COLUMBIA
AMERICAN RIVER	SPRING	90	90	91	A	W	WA	COLUMBIA
AMERICAN RIVER	SPRING	90	90	91	A	W	WA	COLUMBIA
NACHES - BUMPING	SPRING	89	89	59	A	W	WA	COLUMBIA
NACHES	SPRING	89	89	35	A	W	WA	COLUMBIA
BUMPING	SPRING	89	89	40	A	W	WA	COLUMBIA
LITTLE NACHES	SPRING	90	90	64	A	W	WA	COLUMBIA
NACHES	SPRING	90	90	52	A	W	WA	COLUMBIA
BUMPING	SPRING	90	90	21	A	W	WA	COLUMBIA
LITTLE NACHES	SPRING	90	90	21	A	W	WA	COLUMBIA
WENATCHEE	SPRING	84	84	44	A	W	WA	COLUMBIA
WENATCHEE	SPRING	89	89	147	A	W	WA	COLUMBIA
WENATCHEE	SPRING	89	89	147	A	W	WA	COLUMBIA
LEAVENWORTH	SPRING	82	82	50	A	H	WA	COLUMBIA
LEAVENWORTH	SPRING	84	84	100	A	H	WA	COLUMBIA
LEAVENWORTH	SPRING	84	84	100	A	H	WA	COLUMBIA
ROUND BUTTE	SPRING	82	82	58	A	H	OR	COLUMBIA
ROUND BUTTE	SPRING	90	90	100	A	H	OR	COLUMBIA
ROUND BUTTE	SPRING	90	90	100	A	H	OR	COLUMBIA
KLUCKITAT	SPRING	89	89	100	A	H	WA	COLUMBIA
KLUCKITAT	SPRING	90	90	100	A	H	WA	COLUMBIA
KLUCKITAT	SPRING	94	85	60	J	W	OR	COLUMBIA
JOHN DAY	SPRING	84	84	100	A	H	WA	COLUMBIA
WINTHOPE	SPRING	84	84	100	A	H	WA	COLUMBIA

DESCHUTES
DESCHUTES
DESCHUTES

YAKIMA

YAKIMA
YAKIMA

YAKIMA
YAKIMA
YAKIMA
YAKIMA
YAKIMA
YAKIMA

WENATCHEE
WENATCHEE

DESCHUTES
DESCHUTES

METHOW

SNAKE RIVER (SPRING AND SUMMER)

TUCANNON	SPRING	83	85	100	J W WA SNAKE	
TUCANNON	SPRING		86	100	J W WA SNAKE	
TUCANNON	SPRING	85	87	100	J W WA SNAKE	
TUCANNON	SPRING	84	84	98	A W WA SNAKE	
TUCANNON	SPRING	87	87	83	A W WA SNAKE	
TUCANNON	SPRING	86	88	100	J W WA SNAKE	
TUCANNON	SPRING	88	88	100	A W WA SNAKE	
TUCANNON	SPRING	89	89	65	A W WA SNAKE	
TUCANNON	SPRING	90	90	108	J W WA SNAKE	
TUCANNON	SPRING	90	90	100	J W WA SNAKE	
RAPID RIVER						
RED RIVER	SPRING	81	82	49	J W ID SNAKE	CLEARWATER
RAPID RIVER	SPRING	81	82	50	J H ID SNAKE	SALMON
RAPID RIVER	SPRING	84	85	100	J H ID SNAKE	SALMON
RAPID RIVER	SPRING	88	90	100	J H ID SNAKE	SALMON
SAWTOOTH						
SAWTOOTH	SPRING	81	83	50	J W ID SNAKE	SALMON
SAWTOOTH	SPRING	88	89	100	J H ID SNAKE	SALMON
SAWTOOTH	SPRING	89	90	100	J H ID SNAKE	SALMON
SAWTOOTH	SPRING	90	91	100	J H ID SNAKE	SALMON
LOSTINE						
LOSTINE RIVER	SPRING	88	89	100	J W OR SNAKE	GRA BROWN
LOSTINE RIVER	SPRING	89	90	99	J W OR SNAKE	GRA BROWN
LOSTINE RIVER	SPRING	90	91	98	J W OR SNAKE	GRA BROWN
VALLEY CREEK						
VALLEY CREEK	SPRING	88	89	100	J W ID SNAKE	SALMON
VALLEY CREEK	SPRING	89	90	99	J W ID SNAKE	SALMON
VALLEY CREEK	SPRING	90	91	100	J W ID SNAKE	SALMON
IMNAHA						
IMNAHA	SPRING	88	89	100	J W OR SNAKE	
IMNAHA	SPRING	88	90	100	J H OR SNAKE	
IMNAHA	SPRING	89	90	90	J W OR SNAKE	
IMNAHA	SPRING	89	91	100	J H OR SNAKE	
IMNAHA	SPRING	90	91	100	J W OR SNAKE	
MARSH CREEK						
MARSH CREEK	SPRING	88	89	100	J W ID SNAKE	M.F. SALMON
MARSH CREEK	SPRING	89	90	80	J W ID SNAKE	M.F. SALMON
MARSH CREEK	SPRING	90	91	78	J W ID SNAKE	M.F. SALMON
JOHNSON CREEK						
JOHNSON CREEK	SUMMER	81	82	54	J W ID SNAKE	S.F. SALMON
JOHNSON CREEK	SUMMER	88	89	100	J W ID SNAKE	S.F. SALMON
JOHNSON CREEK	SUMMER	89	90	80	J W ID SNAKE	S.F. SALMON
JOHNSON CREEK	SUMMER	90	91	80	J W ID SNAKE	S.F. SALMON
MCCALL						
MCCALL	SUMMER	81	83	50	J W ID SNAKE	PAYETTE
MCCALL	SUMMER	88	89	100	J H ID SNAKE	PAYETTE
MCCALL	SUMMER	89	90	100	J H ID SNAKE	PAYETTE
MCCALL	SUMMER	90	91	100	J H ID SNAKE	PAYETTE
SECESH RIVER						
SECESH RIVER	SUMMER	86	89	94	J W ID SNAKE	S.F. SALMON
SECESH RIVER	SUMMER	89	90	80	J W ID SNAKE	S.F. SALMON
SECESH RIVER	SUMMER	90	91	90	J W ID SNAKE	S.F. SALMON
UPPER SALMON RIVER AT BLAINE BRIDGE	SPRING	88	89	100	J W ID SNAKE	SALMON
CATHERINE CREEK	SPRING	89	90	100	J W OR SNAKE	GRA BROWN
MIDAM RIVER	SPRING	89	90	100	J W OR SNAKE	GRA BROWN
LOOKING GLASS	SPRING	90	91	100	J H OR SNAKE	SALMON
UPPER SALMON RIVER AT FRENCHMAN CREEK	SPRING	90	91	60	J W ID SNAKE	SALMON
UPPER SALMON RIVER AT SAWTOOTH	SPRING	90	91	60	J W ID SNAKE	SALMON
CHAMBERLAIN CREEK	SPRING	90	91	80	J W ID SNAKE	SALMON

UPPER COLUMBIA RIVER (SUMMER)

OKANAGON - WELLS	SUMMER	84	85	90	J W WA COLUMBIA
OKANAGON WELLS	SUMMER	81	82	90	J H WA COLUMBIA
WENATCHEE	SUMMER	84	85	90	J W WA COLUMBIA
WENATCHEE	SUMMER	88	88	100	A W WA COLUMBIA
WENATCHEE	SUMMER	89	89	100	A H WA COLUMBIA
WENATCHEE	SUMMER	90	90	100	A W WA COLUMBIA

UPPER COLUMBIA AND SNAKE RIVERS (FALL)

HANFORD FRAC	FALL	82	82	44	A W WA COLUMBIA
WHITE BLUFFS	FALL	82	82	115	A W WA COLUMBIA
VERNITA BAR	FALL	90	90	99	A W WA COLUMBIA
HANFORD REACH					
DESCHUTES	FALL	82	82	49	A W OR COLUMBIA
DESCHUTES	FALL	84	85	54	J W OR COLUMBIA
DESCHUTES	FALL	90	90	38	A W OR COLUMBIA
FRIEST RAPIDS	FALL	80	81	100	J H WA COLUMBIA
FRIEST RAPIDS	FALL	86	86	100	A H WA COLUMBIA
FRIEST RAPIDS	FALL	87	87	100	A H WA COLUMBIA
FRIEST RAPIDS	FALL	90	90	100	A H WA COLUMBIA
LYONS FERRY	FALL	84	85	100	J H WA SNAKE
LYONS FERRY	FALL	86	86	100	A H WA SNAKE
LYONS FERRY	FALL	87	87	99	A H WA SNAKE
LYONS FERRY	FALL	90	90	100	A H WA SNAKE
MARION DRAIN	FALL	89	89	101	A W WA COLUMBIA
MARION DRAIN	FALL	90	90	52	A W WA COLUMBIA
MARION DRAIN					
BONNEVILLE	FALL	89	89	100	J H OR COLUMBIA
BONNEVILLE	FALL	90	90	100	A H OR COLUMBIA
BONNEVILLE					
LITTLE WHITE SALMON	FALL	89	89	100	J H WA COLUMBIA
LITTLE WHITE SALMON	FALL	90	90	100	A H WA COLUMBIA
LITTLE WHITE SALMON	FALL	90	90	109	A W WA COLUMBIA
YAKIMA					

YAKIMA
YAKIMA

NORTH WASHINGTON COASTAL (SPRING AND SUMMER)

SOLEDUCK	SPRING	87	87	40	A H WA COASTAL
SOLEDUCK	SPRING	88	88	123	A H WA COASTAL
SOLEDUCK	SPRING	90	90	101	A H WA COASTAL
SOLEDUCK	SUMMER	87	87	40	A H WA COASTAL

WASHINGTON COASTAL (FALL)

NASELLE	FALL	87	87	100	A H WA COASTAL
NASELLE	FALL	88	88	149	A H WA COASTAL
NASELLE	FALL	89	89	99	A H WA COASTAL
NASELLE	FALL	90	90	10	A H WA COASTAL
NASELLE					
QUINAULT	FALL	80	81	100	J H WA COASTAL
QUINAULT	FALL	90	90	100	A H WA COASTAL
QUINAULT					
QUESTS	FALL	80	81	120	J W WA COASTAL
QUESTS	FALL	90	90	70	A W WA COASTAL
QUESTS					
HON	FALL	80	81	50	J W WA COASTAL
HON	FALL	81	82	50	J W WA COASTAL
HON	FALL	90	90	76	A W WA COASTAL
HON	FALL	90	90	103	A H WA COASTAL
HUMPTULIPS					