DRAFT

Klamath Fishery Management Council
3-5 March 1992
Eureka, CA
MINUTES FOR THE RECORD

March 3, 1992

Meeting called to order at noon by Chairman Charlie Fullerton.

ADMINISTRATION

Introduction of members (see attachment 1).

Announcement: Federal policy calls for this meeting to be held in a smoke-free room.

Approval of previous minutes and agenda (Attachment 2)

** Consensus **

TECHNICAL REPORTS

Fall chinook (Technical Advisory Team (TAT))

1991 escapement.

Baracco: In attachment 3 (table II-2) you can see that the in-river run size is estimated to be only 30,900 fish. In addition, only 1,300 jacks returned.

Q: What do really low jack counts mean in the future? Where does the data really come from? Creel surveys? Carcass counts?

A: The runs are enumerated by several on-the-ground programs to estimate the numbers of fish returning to the basin. None of the escapement numbers are generated from anything other than actual data.

Q: How long did fish counting continue in 1991?

A: I do not have the specific dates. The fish were counted as long as they kept returning. It is generally sometime in mid-December that the counting operations are closed down. The peak time of river entry is the last week of August or the first week of September. How far up river they go is dependent on many other factors. Fish might be delaying their entry into the river.

1992 stock abundance.

Baracco: The Klamath River Technical Advisory Team (TAT) and the Salmon Technical Team (STT) projected stock abundance for 1992. The two teams used different methods to make the projection so the numbers were slightly different. The STT's method was used to make this year's projections (as shown in attachment 4). In Table II-4 (page 2-7), the ocean impact rate by age and the ocean

population are shown. 1,300 jacks are estimated to have returned in 1991. This is noteworthy because it is far below any previously observed level of jack return and it is "outside the range of available data." The adult age composition is from coded wire tag (CWT) information.

Table II-5 (page II-9) shows the wide variability in estimates of 3 year olds. There is a fairly good relationship between the 4 year old pre and post season estimates.

Figure II-2 (page II-10) shows the actual methodology for predicting age composition. The asterisks show data that were not used in the regression.

For 1992 the STT did not use any of the above methods. They assumed the 1992 brood year has a similar 2-year old maturity schedule as the other low brood years (1981, 1982, 1987). The average maturity rate for all years is 5% but for these low years, the maturity rate was 2%. The average from these 3 low years is 19 fish in the ocean for every jack that came in the river. When 1,300 jacks (1991 return) are plugged into this relationship, the stock projection is 25,000 3-year olds. The STT based their projection of 25,000 fish upon: #1 this evidence, #2 the performance of other low abundance broods, #3, their meeting with the Science and Statistical Committee (SSC).

Table II-6 (page II-11) shows some other options, but the STT and the SSC agree with the 25,000.

Figure II-3 (page II-13) shows age 4 regressed upon the age 3 data. This method has a good track record. It is used to produce the estimate of 35,800 age 4 fish.

Discussion on 2% vs 5% maturity rates:

Baracco: For the 3 broods that returned to the river in low abundance, their age 2 maturity rate was only 2% as opposed to the 5% maturity rate average for all years.

Q: Would it be reasonable to assume that the maturity rate for these fish was 5% instead of 2%?

A: We could, but it would only reduce the number of fish even more. It would lead us to believe that there are only 15 fish out in the ocean (instead of 19 fish in the ocean) for each of the jacks.

Q: In 1989 we had a high spawning escapement. Now this dismal jack return comes off a 66,000 jack return in 1989. Why?

A: We have seen declining stock abundance since 1988 for many reasons. We have had 6 years of drought, we have had less than optimum ocean survival conditions for the fish that have been in the ocean since 1988, stocks of fish in the Sacramento and San Joaquin Rivers are down, water management dilemmas and 31 million people have not helped the fish to prosper. When we look at years like 1987 and 1988 we have to believe that ocean conditions must have had something to do with it.

Q: Figure II-2 appears to have a fairly good fit with the lines. There seems to be a disparity between what shows up on the graph and what shows up on the data table (Table II-5). The postseason estimates are making this look good but why is there such disparity between pre and post season estimates?

A: There is a high variability between age 3 pre and post season estimates based on the variability of their maturity rates. Since we started collecting data, the age 3 predictor has not performed very well. Management may reconsider the methodology. But in a year like 1991 where only 1,300 jacks returned, we can't be that far off in predicting low abundance of age 3's in 1992.

Q: Has there been any discussion of improving the performance of the age 3 on 2 predictor? Length information may give us better data. If we had known pre-season what the maturity schedule was for the upcoming brood, then it would have helped our projections. What I'm looking for is an indicator that is more predictable than using 3's on 2's.

A: We have looked at all options. Right now we are projecting from September of Year 1 to May of Year 2 and we have large variability. The variability may be due to interactions with other species, abundance, ocean conditions, etc.

Q: The 4 year old forecast track record speaks for itself. The 3 year old forecast would have been 60,000 if the traditional regression method were used. I think it was a prudent decision to use the poor broods for this forecast. Would you characterize the forecast you have made?

A: There is always variability in the estimates. The data (Table II-5) suggest that we are just as likely to be under as over.

Fullerton: We can guess and estimate what the faults may be with this estimate, but this is the best that the team can come up with.

Q: If we had a medium abundance of fish, would you have used the same predictors you used?

A: Yes.

1992 harvest rates.

The projected 1992 stock size (25,000 3's, 35,800 4's) will not support harvest. [Attachment 4, page II-12, fifth paragraph, has an error: The sentence with "1991" should read "1992".]

1991 scale analysis.

Polos: Last year the TAT set up a program to collect scales from 16 sampling locations to estimate the age composition of the 1991 Klamath River fall chinook run on coded wire tag (CWT) data (attachment 5).

Table 5 shows estimated age compositions based on CWT and scale sampling data to be very similar. The TAT wants to carry out this type of data gathering for another year to further verify it.

Q: Is 55cm (21.5 inches) used to differentiate between jacks and adults?

A: Yes. Although, there might be a sampling bias at the hatchery because jacks were being killed then sampled, while adults were kept in the ponds until ripe then sampled. It might be more prudent to sample fish as they come in to the hatchery.

Q: Is it the technical team's opinion that the estimated percentage of jacks is too high at Trinity River Hatchery?

A: Yes. Sometimes 3 year olds are over 55cm, sometimes under. The cut off point between jacks and adults is fork length, not total length.

The technical team's recommendation is that the scale sampling program be continued.

Spring chinook (TAT).

1991 Escapement

Polos: A couple of years ago we came up with methodology to project the abundance of spring chinook. During the past two years, this method has not worked at all. Table 1 (in attachment 6) shows the data. The TAT does not want to make a projection based on this data. The team hasn't been formally assigned to look into spring chinook abundance.

McCovey: The Hoopa Tribe is really interested in spring chinook because they are used for subsistence. I think that the council should put more effort into developing methodology for projecting their abundance.

Q: Are any of the impacts of the high seas driftnet fishery considered for their impact on spring chinook?

A: No.

Q: Are there any hatchbox programs in place for spring chinook?

A: No. There is a problem with capturing spring chinook for hatchbox broodstock.

Masten: My concerns are with the threat of listing spring chinook. It is crucial that we come up with a methodology for projecting their numbers. I'd like to recommend that we ask the TAT to develop this methodology.

Options for allocation of fall chinook harvest.

Baracco: The TAT did not prepare harvest allocation options for fall chinook (because the projections do not show enough fish to be harvested).

Council discussion:

Masten: I thought that someone would be drafting harvest impacts and how far back we would have to go with different harvest options.

Baracco: There is no way for the TAT to do that unless you give us something to model.

Q: If the indicators are that we can't have an in-river or ocean fishery, then how far do we have to go up and down the coast to minimize the impact to Klamath fish?

A: Some level of impact on Klamath fall chinook occurs all along the coast.

o The chances to get an emergency amendment to harvest fish below the floor of 35,000 are low.

o If we are talking about a "no-fishing" option, what will this mean? We will need to specify and quantify the specifics of this before we give a recommendation to the PFMC.

o In Portland, at the PFMC's Salmon Advisory Subpanel meeting, the Salmon Technical Team briefed those in attendance on the options for closing fishing in the Klamath Management Zone. The evening user group meetings should decide the specifics of closing salmon fishing. For example, the Columbia River spring chinook are listed, but they are still harvested at a reduced rate.

o We need to determine the escapement number that is our goal. If we are going to develop an option, then we need to have the specifics.

Q: Would we need an emergency amendment to allow other fisheries to operate if they have an incidental take of Klamath chinook?

A: No. Because they are incidental take. Although, any directed salmon fisheries would need an emergency amendment.

Q: Why should the salmon fishery be restricted to de minimis levels while letting significant takes of Klamath fish occur in the whiting fishery? ("de minimus" means insignificant).

o My recommendation is to move the whiting fishery north and south of the zone.

o The relative contribution rate does not bind us to consider only biological data, we can also consider economic data. The whiting fishery will not be closed down to protect the salmon fishery.

Q: With the low stock abundance in the ocean, what is the percent contribution of Klamath fish in the different zones?

A: It depends on the time of year. Picture a bell shaped curve centered on the Klamath and ending at Monterey and Coos bay.

Q: Can you let us know what the impacts are to these areas?

A: Yes. I'll provide this information to the council in a handout. We could use the harvest rates of other areas to determine the de minimus impact. The average of the Klamath observations for the total Klamath impact south of Pt Arena is 6% (contribution rate).

Options for allocation of spring chinook harvest

The technical team did not draft an option for allocating spring harvest because they did not feel that their methodology for projecting abundance was accurate. They have not received a formal request from the council to look into spring chinook abundance.

Charlie asked the technical team to make a recommendation on an option for allocation of spring chinook.

Technical Advisory Team Assignments

#1: Plot contribution rates by the area along the coast and by the monthly period of catch.

#2: Estimate abundance of spring chinook.

#3: Make a harvest recommendation for spring chinook.

#4: Review/evaluate hatchery performance.

#5: Cohort analysis -- Shasta River tags.

Projection of 1992 environmental conditions.

Water abundance, Klamath and Trinity basins.

Odemar: Bureau of Reclamation projects only 48% of the average inflow into upper Klamath Lake. Because of these low inflows, agricultural users were notified to discontinue diversions. Presently only 200 cfs is being released from Keno, and only 300-350 cfs is being released from Iron Gate. This is less than last year and less than the FERC license requires.

Grover: The Bureau of Reclamation is under consultation with Fish and Wildlife Service for protection of endangered species. The March 5 lake level for suckers will not be met. March 15 lake level goal will also not be met. Without the water, they will not be releasing flows to meet the minimum flows in the Klamath. Until consultation is through, they will not be releasing more water into the Klamath.

The Secretary of Interior has established that 340,000 acre feet will be released from the Trinity. There have been no similar flow levels established for the

Klamath.

McCovey: 340,000 acre feet of water is needed on the Trinity River for spawning habitat and to maintain cool water temperatures. We are concerned that water should stay in the Trinity basin, not be shipped to the Sacramento basin.

Odemar: The water situation and water temperatures will determine how long fish can be held at the hatchery.

Grover: Overall it seems that anadromous fish on the Klamath are #3 on the list to get water.

COUNCIL PARTICIPATION IN 1992 FISHERY MANAGEMENT

Technical Advisory Team Assignments

Baracco: There are almost an infinite variety of things that you can ask the TAT to look at.

Q: Is it possible to show us a transition place where you suddenly shift from a "reasonably lot" of Klamath fish to "not many" Klamath fish?

A: Yes, we could have this information prepared for you. The information would also contain the contribution rates based on blocks of time.

Q: Do you have the ability to break down the data by small geographical areas?

A: No. We can only use the data the way it is collected: five broad ocean areas.

Q: Is there any chance of dampening the amount of Klamath fish that are caught in the San Francisco bay area?

A: Tag data indicate a higher Klamath impact in the commercial fishery than in the sport fishery, in that area.

Concerns:

o Why are we spending all this time on these harvest issues if we will be dipping into escapement?

o What are we buying with all this negotiation? A season? Two seasons? Are things going to change a year from now? Ever?

o When we manage for the floor and for 2 years fish below it, how long will it take us to recover if we intentionally fish below the floor?

o Commercial fishermen cannot consider the option of "no fishing" unless we are paid to stay off the water. This problem of low fish numbers has not been caused by fishing (either in the river or in the ocean). We are tired of paying for problems that are not a result of our actions.

o Natural escapement has failed to meet the floor four times since 1978 (1983, 1984, 1990, 1991).

o What about minimum need?

o The resource should come first.

o We can't continue spending the credit card with no money in the bank.

o We are trying to avoid any management action that will jeopardize stocks that are in critical condition. There is no viable fishery from Canada to Mexico. Our objective for the Klamath will be to harvest at minimum levels.

o Commercial fishing is down by 3/4, some people are changing gear in order to fish for black cod or rockfish instead of salmon.

o I would like the TAT to model an area in the ocean for zero that will be a "no fishing" option.

o Let's try 5% harvest (the same rates as last year). It will give us a better idea of what things look like. Could we also look at 5% sport in the absence of other fisheries?

Baracco: Technicians can model the fisheries structure, but we cannot model a level of harvest because it depends too much on regulations -- there are many regulatory combinations that could produce a given harvest rate.

Assignments to ad hoc committees of in-river and ocean harvesters.

Dave Bitts will chair the ocean users meeting and Virginia Bostwick will chair the in-river users meeting.

Break

PUBLIC COMMENT PERIOD

Jim Welter, representing Brookings Harbor coalition: Attachment 7 shows Klamath Basin spawner escapements from 1978-1991 and hatchery releases in May and June. When you jump from 3,406,599 to 17 million fish released from the hatchery something significant had to happen. There was also massive natural spawner escapement during this time.

Odemar: The 1983-1984 releases were bigger fish, but the problem seems to be too many cattle on too small of a pasture.

Polos: When we set traps to capture outmigrating juveniles in April, we catch natural fish at low levels. In June when the hatchery fish are released, we see a big pulse of (hatchery) fish so they would be in competition with any natural fish that stayed upriver. We started keeping track of the temperatures in 1987. In June/July the temperatures are up in the 70's.

Bill Hornbrook, representing himself: I don't find the facts and figures produced by the technical team to be accurate. I don't believe that ocean sport fishery caught as many as 20,000 chinook in the KMZ, in 1991 (see Table I-11, attachment 3). I have 451 salmon punch cards from 1991 that were not mailed to California Department of Fish and Game. Of these cards: May 4 chinook, June 389 chinook (CA), 33 (Oregon), July 402 CA, 18 OR. This is a total of 896 chinook. If you divide 450 by 896 then anglers caught 1.99 fish each for the season (46 day season, only 14 days were open because of weather). I don't believe the counting procedures. We can't verify your numbers.

During a warm water year (like the ones we have been having for the past several years) salmon do not necessarily enter a river let alone make it to their spawning grounds. The Nimbus hatchery has 13.25 million chinook salmon, the Feather River hatchery has 30 million salmon. Since salmon do not go where flows and temperatures are not good, many of the Klamath fish have gone to another river to spawn. I feel that the council is using inept management. The 20,000 fish estimated by the technical team is grossly overestimated.

McIssac: Based on 1.99 fish per person, and based on 20,000 fish estimated by the technical team as being caught, this gives only 9,000 people catching fish all up and down the KMZ. Isn't this reasonable?

Wilkinson: There is a concern in Oregon about the uniform application of the punch card for establishing uniformity within the zone. Would you be willing to help ODFW with this effort?

Welter: Yes.

John Wilson, salmon troller, technical team member:

> 1) This (attachment 7) indicates that June releases are not surviving. Hatchery practices need to be changed. The reason that we are in this mess today is because the hatcheries are using the wrong methods. I would like to see a Sept/Oct release based on water temperature. The problem with June release is the assumption that there is additional rearing capacity in the river.
>
> 2) There have been requests from this council to model the salmon season. I'd like to see the technical team model the greatest number of fish that could be caught along the west coast while impacting Klamath fish the least.

Bill Johnson, Brookings: If we can figure this out, why can't the technical team? Will I get a refund for my license fees?

Robert Rohde, representing: #1 his 7 yr old daughter who may never see fish and #2 the fish: The numbers are accurate. It is best to recognize that we are at floor levels and to go beyond it is to recognize that we are causing these fish to go extinct. We simply need to recognize that we are at minimum levels. I propose that we have a 5 year moratorium on all commercial harvest. Let the fish decide whether they can survive. Give them one full generation to prove if they

can make it. Commercial fishermen may go bankrupt during these 5 years.

Russ Crabtree, chair of the KMZ Fisheries Coalition: I'm here to ask the council to consider the economic impacts of closing fishing. Attachment 8 is a letter explaining our ideas.

Warrens: Can you tell me of any developing whiting processing facilities?

Eureka fisheries has one and Crescent City has the potential to develop one.

Rocky McVay, Curry County Commissioner: I hope the council seriously considers the socio-economic impacts of closing fishing in the KMZ.

Carol Davis, commercial fisher, Brookings: The whiting fishery is impacting the salmon fishery a lot.

Bob Hallmark, Marina in Trinidad: I'm concerned about the economics. We can't open until we have a better idea of what is going to happen. We must have a complete season of some sort or we are out of business. Permanently. It is not economically viable for us to continue if we are closed this year. This wouldn't impact just us, it would also hit motels, trailer parks, marina owners etc. Sportfishing and tourists are the reason for Trinidad's existence.

Warrens: Perhaps some dampening measures could be instated that would help you. For example, if fishing were limited to 5 days a week. Other possibilities include a one fish bag limit, or some kind of other restrictive scenario that would still allow people to come and fish.

Ken Burdis, business owner, port commissioner: The council has a tough task ahead. I couldn't help but notice the "maybes" that were stated during the technical team report. For us though, it will not be an estimate, it will be extinction of an industry.

Ken Neil, Trinidad, RV park: I've heard that there is a sucker living behind some dam upriver. I've heard suggestions to close down all fishing. I've heard estimates of fish populations. We just cannot afford to close down all fishing. I don't see how we need to have 35,000 fish return to the Klamath if there are so many fish in other rivers. The number of fish needs to be correlated with the people who make their living off the fish.

Fred Stutzman, ex-charter boat operator, Brookings: Shutting down the sport fishing last year broke me. I can only say that we need a viable fishery in order to keep going. It's too late for me.

Jack Samen, Fish market, Brookings Harbor: When the season was closed last year, I had to lay off people. Some sort of season that keeps at least 50% of the people coming to the Brookings area is necessary. The fishing season involves everyone in Brookings. It is a fishing town.

Anna Sparks, Humboldt County Supervisor: I have great empathy for all the people whose lives are dependent on fish. I have yet to see one accurate projection from the technical people. It is imperative to have fishing in this county.

State money needs to be allocated to keep fish hatcheries going. I am trying to find the balance in protecting fish for the lifestyle of people. Block closures are extremely detrimental. The season needs to run continuously throughout the season.

Don McCann, president of chamber of commerce: Concerned that the technical team's projection about "no fishing" is being publicized before it has been fully decided. Zero season is sensational to the media, but people need to understand that it has not been decided yet.

Adjourned.

March 4, 1992

LONG TERM PLANNING

PFMC salmon fishery management plan Issue 2: Modification of Klamath fall chinook escapement goal.

Analysis of the issue

Barnes: This document on the modification of the Klamath River fall chinook spawning escapement goal (attachment 9) was put together by Robert Kope -- he will be able to answer any questions you may have.

Table 1 shows the estimated landings using alternative 1 (current harvest rate management) compared to alternative 2 (partial ceiling on spawning escapement). The columns on the right illustrate the change that occurs with alternative 2. In terms of escapement this alternative doesn't buy a whole lot.

We admitted we did not know the spawning capacity of the basin when we adopted the 35,000 fish as the spawning escapement goal.

Bitts: Can you can show me a relationship between spawning escapement and 3 yr old recruits (attachment 10)?

Barnes: You are asking the basic question, "Do spawners generate recruits?" This goes right to the heart of harvest rate management. High spawning escapement didn't bring back too many fish, while low spawning escapement brought back better runs.

Comments

- We need to remember that some unusual environmental conditions are also playing a large part of why things are happening the way they are.

- There is no evidence that spawning escapement drives production in the database that we have. River conditions are shown to be critical as well.

- Until we know what restoration of the river holds for us, I don't think that we should put a ceiling on the number of fish that are allowed to spawn.

o High escapement during periods of poor environmental conditions can produce poor returns. This fall we will see poor escapement on top of poor conditions. I suspect the worst returns this fall. We can learn a lot from this year's returns.

o It is a bit premature to change the experiment that we are in. I think that there is a relationship between spawners and recruits.

Barnes: I think it is a good idea to continue to look at the natural system the way we have been for the past several years. Because of the efforts of the Hoopa Tribe we have a commitment for 340,000 acre feet of water flowing down the Trinity, therefore we should see relatively good spawning in the Trinity.

Q: We have heard about the terrible water conditions in the upper basin, what about the water conditions in the tributaries (Salmon, Scott and Shasta)?

A: It will be strictly a function of how much precipitation we get. The council might want to recommend a letter be written to Roger Patterson at Bureau of Reclamation to emphasize the need for water for anadromous fish.

o We do need to see what a good escapement could do under good conditions, but I would like to see us concentrate on doing the best we can with whatever conditions we have each year. We can't influence ocean conditions but we can influence river conditions.

o If we are concerned with the poorest spawning escapement and the highest spawning escapement, then we need to also be concerned with natural (river and ocean) conditions. For example, the drought following on the heels of the El Nino appeared to be bringing about the poorest spawning escapement ever. We were all surprised when the worst conditions (in recent history) brought about the best ocean escapement. The years of big seasons and high abundance came after bad natural conditions. We need to pay attention to the good things that happened too. We need to look at what we can do with what we've got in terms of watershed conditions.

o This could be a result of the 1 million yearlings that were put into the estuary in the fall. Remember, hatcheries are necessary because we lost the prime conditions of the rivers.

Public Comment

- I think that we understand the importance of hatcheries. We would like to see more large smolts released from the hatchery.

- We need to look at the number of fish that come back to the hatchery besides the natural spawners.

Council recommendation to PFMC

Item #1:

The PFMC needs our recommendation on issue #2 of the PFMC's salmon fishery management plan.

The council considered several ways of carrying their findings forward to the PFMC, including motions by Dave Bitts and Lisle Reed (later withdrawn), then the council forged ahead with the following actions:

** Motion **

McIsaac: The KFMC recommends against continued consideration of Amendment 11 Issue #2 as proposed. The KFMC recommends a full review of the spawning escapement goal for Klamath River fall chinook.

Second (Warrens).

Discussion.

Q: Who (KFMC or PFMC) will initiate this review?

A: I would presume that the PFMC will hand it back to us for review.

** Consensus **

Motion carried. Charlie will convey this message to the PFMC.

Item #2:

** Motion **

Bitts: This council should send a letter to Roger Patterson of the Bureau of Reclamation expressing our strong concern over the critical flow situation for anadromous fish in the Klamath River.

** Consensus **

Reed: May I suggest that the tone in your letter be helpful by realizing that he (Mr. Patterson) has 3 problems: endangered sucker, agricultural users and water flows for the Klamath? If you would work with FWS in helping to get the water levels resolved for the sucker, you may get a lot farther along in the process.

Courtesy copies will be sent to Klamath Management Zone Fisheries Coalition and the Pacific Council.

Item #3:

Odemar: Another letter should be sent concerning instream flow studies in the Scott and Shasta Rivers. This kind of work had been proposed under CDFG's director Pete Bontadelli, now that we have a new director it would be helpful to show support in this area. A show of support may help to direct funding to this activity.

o I would like to see some expression of purpose from this council regarding escapement and survival based on river conditions.

o We must be extremely careful in usurping habitat rehabilitation concerns from the Task Force.

o KRFRO is putting together a meeting agenda for the 3 chairs. Perhaps that meeting could be a chance to carry these thoughts forward. Let's ask Ron to add habitat concerns as an agenda item for that meeting.

Fullerton: The intent of this council is to communicate to the Task Force our concerns about habitat restoration.

Break

KFMC long-term harvest management plan

Whitehouse: Draft #2 (November 1991) was revised after being discussed at the November council meeting. These revisions are shown in Draft #3 that we mailed to you on January 17, 1992.

Review of draft plan changes agreed on at the last meeting

Whitehouse: At the November meeting, two options were added. Option 4.4 regarding adding a seat to the council for a Karuk representative and Option 7.2 regarding allocation strategies.

On January 17 we also mailed you the revised comment digest with public comments that still need to be addressed. The subcommittee had reviewed all the comments received on the plan and decided to forward a select few to the full council for review. The notes from the last council meetings do not reflect that the council has considered these comments.

The issues that we need to consider today are:

#1 discuss option 7.2
#2 address the remaining comments.

Dave Mackett provided comments on this digest (attachment 11).

It will be up to the council to decide how they want the public comments handled.

Discussion:

o Some comments can just be acknowledged. I feel we have addressed these comments, even though we haven't discussed them individually. I have read and thought about these, even if we haven't discussed them as a group.

o I suggest we consider just the amendments from the last meeting (attachment 12) as the remaining work. This is a living document that can be amended later. When we reach consensus on options 4.4 and 7.2 we will be done with the plan.

** Motion **

Consider the 44 comments as having been considered in draft #3 (McIsaac).

Second (Wilkinson).

Discussion

Fullerton: Do you mean to use the draft as written?

McIsaac: Not necessarily. The record will reflect that public comment has been considered.

** Consensus **

** Motion **

Language in the appendix (attachment 13) needs to be reworded to be pertinent to current option 7.2. (McIsaac).

Seconded.

Discussion

Let's clarify wording of 7.2 first.

Fullerton: The minutes of our November meeting (pp 9-10) say that members were to take the new wording back to constituents. This agrees with my memory.

McIsaac: I thought we agreed on final language.

McCovey: I have problems with the language in option 7.2.

Bitts: So do I. I don't like the wording "2-tiered" and I don't like the "legally defined" phrase.

Wilkinson: It sounds like constituent review of these options is still a problem.

Odemar: The subcommittee who worked on re-wording option 7.2 recognized that tribes wanted recognition of legal rights without quantifying tribal rights because that decision is yet to be made by the courts.

Bitts: It seems redundant, but I see your point. My other concerns are that once the tribal right is defined, what is the allocation role of the KFMC?

Fullerton: There are still lots of fish to allocate among other users. The issue of the level of harvest will also need to be worked on.

Bitts: How do we deal with salmon harvest allocation in the interim until the tribal right is defined?

Fullerton: Note that there is an agenda item on a renewed allocation agreement later in this meeting. I think we need the legal interpretation to make the agreement meaningful.

Reed: Without the legal interpretation, we are better off working year to year on the allocation.

Bitts: Can we delete "2 tiered?"

McCovey: Our council discussed this language. We feel it doesn't provide for trust responsibility, and we prefer the language in option 7.2 (alternate) that was stricken (attachment 13). We cannot support the current version of option 7.2.

McIsaac: I don't see that there was a motion on this recorded in the notes, but I believe we did pass a motion that the plan we developed in November was final.

Fullerton: I disagree.

Bitts: I disagree. I was there and I remember the 7.2 language was only provisionly adopted, although I'm not sure if there was a motion.

Masten: The Department of Interior (DOI) solicitor's opinion is forthcoming. For this year, we don't need to adopt language on allocation. If we want to rewrite, we can send the language back to subcommittee. It doesn't matter if this plan is final, for the '92 season.

Reed: But we want to have a final plan, to clean it up. The minutes of the November meeting are adopted and they say the issue was not finalized.

McCovey: This language says we will wait for the solicitor's opinion. We want our rights recognized now, not later.

Bitts: 7.2 says ours is ours, and yours is negotiable. I can't buy it.

Fullerton: I think it says that the legal right of the tribes will come off the top and the rest of the tribal share is negotiable, along with other shares.

> Q: Can someone define trust responsibility as it is now used? What are current legal constraints on the allocation between ocean and river?
>
> A: The legal constraints on the allocation between ocean and river is being drafted. The earlier opinion from 10 years ago will be superseded. I understand that the guideline is the trust responsibility lies with DOI. The basic tenets are that tribes have a property right to some fish and DOI is responsible to see that right is managed appropriately, i.e. conserved. Second, absent quantification of the right, DOI is to try to get as large a tribal share as possible, as opposed to conceding to a smaller amount. Courts say there is a right to a certain amount of fish, but they haven't established a percent mark. (Reed)

Q: So, absent quantifiable rights, would we not default to our current 5 year agreement as the basis for annual allocation until we get legal interpretation?

A: Probably not, according to what lawyers tell me (Reed). You see, back in 1987, the agreement should have clearly put conservation of resource first - by us (government), yet the 5 year agreement didn't do this. Second, the deficiency was from the lack of quantifiable tribal rights.

Warrens: So we are left to negotiate allocation this year. Conservation will prevail. We need a reasonable way to finish this plan and implement it. Let's stop second guessing how the allocation ruling will come out, I am happy with the November wording of 7.2 which deals with this issue.

Reed: I agree. The language is fine with me. I wish we knew the quantifiable right, but we don't, so lets use flexible wording.

** Motion **

Revise option 7.2 to read "establish an allocation system." (removing "two tiered") (Odemar).

Seconded.

McCovey: We need the wording to say "2 tiered."

Break -- 5 minute tribal caucus.

** Amendment to Motion **

Take out "two-tiered allocation system" and replace with "After providing an allocation of fish that is consistent with tribal reserve fishing rights, the remaining fish will be allocated to maximize social and economic benefits." (Reed)

Discussion

McIsaac: "After" implies that, at low run size, one group will get it all. I prefer "After providing an allocation share"

Reed: I'm sorry to tell you that in some years tribes will indeed get all the harvest (at low fish levels). This is because the tribes have a unique property right.

McIsaac: But in treaty areas to the north, we don't have the history of excluding the non-Indian share. Sometimes that share is put into escapement, but we have never had the tribes get all the harvest.

Reed: I still don't like to use word share, because the legal entitlement isn't to be shared.

McIsaac: That is not my intent.

Warrens: I oppose the amendment on 2 grounds. First, it implies an exclusion of all other harvesters. This is inconsistent with the Boldt decision, which speaks of sharing in common (50/50). It would be presumptuous of us to prejudge the pending legal disposition of this issue. Second, we don't know what tribal rights are.

Bitts: Let's review the tasks of our predecessor group which was to devise a sharing program to meet the minimum needs of all. We agreed in 1986 to share in both scarcity and abundance. This language departs from that agreement.

Reed: I withdraw my amendment and return us to original wording.

** Amendment withdrawn. **

Masten: We need to work on the clarifying paragraph for option 7.2. I don't think we have consensus on this. I don't know if I'll accept this, since the definition isn't written.

** Motion **

I suggest we drop 7.2 from the plan (Reed).

** Vote **

Motion does not carry.

** Motion **

I move we strike option 7.2 and the clarifying discussion (Reed).

Second (Wilkinson).

Discussion:

- o I agree that we need to get the plan done. I think we need to display the draft versions, so can show there was work on it.

- o Could we table consideration of this option, pending definition of tribal harvest share?

- o Without this option, our plan is missing its "guts." I do not support a plan that leaves out allocation.

- o One problem is that the people making up this council have changed from when the plan was first drafted to now. Without knowing the legal entitlement, I am reluctant to agree to giving up the second tier. The tribe should have a shot at getting more than their property right. It seems like the socio-economic part of this option leaves out the tribes. What if the tribes are entitled only to bare subsistence? The present language leaves tribes short in an abundant year.

o I fear the legal interpretation would do the opposite - cut commercial fishing out.

** Motion withdrawn. **

** Motion **

The wording for option 7.2 would be:

> Establish an allocation system that is consistent with the legally defined harvest share allocable to tribal reserved fishing rights and allocate the remaining share to optimize social and economic benefits (McIsaac).

Seconded.

Discussion:

o I speak against it because it doesn't address troller concerns for the possibility of a generous legal opinion on indian rights. For example if the legal opinion is 50,000 fish for indians, then that leaves little to share in most years.

o This council's language will not change what DOI or the courts decide.

o What if we changed the wording? We could return to the stricken language of 7.2 on page A-12, adding "This 2-tiered allocation system will be consistent with legally defined tribal share, once that share is legally defined" or "pending legal definition." If we had this in place now (in a year like this one, where minimum needs clearly wont be met) then we would go back to the old one-year agreement to share the pain. This would mean a proportional cutback from minimum needs, to satisfy escapement.

o I endorse the motion. I foresee that each year, each group will bargain to meet their minimum needs, consistent with the tribal right.

o I am against the motion. In the Boldt area there is no harvest without sharing.

o At low abundance, indian ceremonial and subsistence would be the only harvest.

o Tribes can do what they want with their share, like reallocate it to the sport fishery, or ocean fishery.

o Another five year agreement may be in line here.

Public comment period postponed until after lunch and after this discussion is finished.

RECESS FOR LUNCH

Mike Orcutt is now serving as Pliny McCovey's alternate.

Further discussion:

** Amendment **

Bitts: I propose an amendment that reads: "allocate remaining share among ocean (troll and sport) and in-river harvesters." This identifies where the "remaining" goes, and names the other groups. I feel this takes care of providing something more than the legal minimum for tribes, but specifies that others are involved too.

** Amendment is adopted. **

Orcutt and Bitts abstain.

** Motion passes. **

Orcutt and Bitts abstain.

Whitehouse: Now that Option 7.2 has been considered, the council needs to look at page A-8. The clarifying language for Option 4.10 needs to be cleaned up.

Fullerton: Klamath office staff can write the clarifying language for Option 4.10 and 7.2. This language will be mailed to us for comment prior to being distributed to the public.

Whitehouse: If everyone agrees to the other changes that were made to the plan in November, then we are at the point of accepting this plan.

** Motion **

Move to adopt this plan as final (Wilkinson).

** Motion passes. **

Bitts abstains.

Public comments on long-term management plan

Doug McCullough, troller, Trinidad:

> Q: I wonder what you will do with option 7.2 in the absence of legal opinion. Why are you pushing the plan through?
>
> A: We have been working on the plan for a long time and we want to finish it. Final approval of the plan is a ways off, and by then we expect to have the legal definition of trust rights. We don't expect to put this plan into operation this fishing season. By the time plan is signed by the Secretary, we should have the legal opinion on trust rights. This should occur in time for '93 season. If by chance, the opinion doesn't come through by then we will continue as we have in the past. (Fullerton, Reed)

McCullough: Your process still seems to circumvent the legal process.

> We will follow the law on the property right, and maximize benefits on the rest. I agree we are setting a precedent, but I don't see a problem. (Reed)

Q: If you don't get a court decision what will you do?

A: I foresee the DOI solicitor will offer an opinion to the Secretary. He will use that opinion, or some other legal opinion at his discretion, then he will meet with the Secretary of Commerce and Department of Justice -- the outcome will be the federal position. If the Secretaries can't agree, then it will go the President to resolve. The PFMC be guided by the Secretary of Commerce to abide by that position. If some group disagrees, and if they have standing, then they can go to court to challenge. If the court interprets otherwise, that becomes the law (Reed).

Fullerton: In case we do not get legal opinion, then we will continue to follow the PFMC framework. As it stands, the PFMC framework guides us to set aside escapement, then allocate by negotiation at Klamath Council meetings in a public setting. If we get consensus, we will take that to PFMC and expect that they would adopt our recommendation. If there is no consensus, then the PFMC will adopt something for us.

Bitts: Earlier, I felt that the language in 7.2 would not hurt us... but now I'm having second thoughts about not voting "no." Charlie, will you re-open the issue?

Fullerton: As chair, I can't re-open the issue. I need a person who voted "yes" to ask for the issue to be re-opened.

Public comment

Ken Neal, business owner from Trinidad:

Q: Can you influence CDFG's hatchery releases? Will you?

A: Hatcheries are for mitigation. The funding entities may not want to pay for some things we recommend. Still, we may get involved, in conjunction with efforts by the Task Force, to work on changing hatchery releases.

Tom Richardson, RV Park Owner from Trinidad: I hear there may not be any recreational fishing this year. If there is any, I suggest outlawing downriggers because they are really more like commercial gear than sport gear. Most king salmon are caught with downriggers. If they are outlawed then the catch would shift more to coho and it might prolong the season. We would like to have a season.

Warrens: I like your idea but now we are taking comment on the long-term plan. Tomorrow we will discuss the '92 season. If you are not here tomorrow, I will insure your idea gets considered.

Odemar: These kind of sport fishing regulation changes would be made by the California Fish and Game Commission at the May meeting.

Un-named RV Park Owner, Klamath: I am concerned about option 7.2. I want to insure sharing in lean and abundant years.

Fred Stutszman, Brookings Harbor: I don't understand the controversy over option 7.2. Allocation is done by the PFMC. Option 7.2 doesn't allocate, it is just a procedure for handling allocation.

Russ Crabtree, KMZ Coalition spokesman: Thanks for your work.

Carol Davis, troller:

Q: Do we pay for Trinity Hatchery enhancement?
A: No, not from salmon stamp funds.

Letter from the Shasta River Valley Coordinated Resource Management Plan (CRMP) (attachment 14):

Wilkinson: This letter shows a lack of understanding of how the fishery is managed. We could respond by giving the letter to the technical team, or by insuring that these groups working with the task force are better informed.

McIsaac: I looked over the data on fish returns back to 1930's -- I am concerned about the low number of jacks in '91. Note that Shasta stocks did not respond during the late 1980's "power broods" and I think they may deserve special protection. I'll discuss this more tomorrow.

Odemar: We feel environmental restoration is key e.g., identifying instream flow need. We already have regulations against angling in the Shasta River while spawners are present.

Bostwick: Is regulation of the sport catch enough of an effort to protect Shasta River stocks?

** Action **

The council should respond to this letter. Mel Odemar will work with the Klamath Office to draft a response.

Public comments on issues to include in the plan

Are there any public comments? No.

Reconsideration of Option 7.2

Bitts: Is anyone willing to re-open this issue?

Discussion:

- Ocean harvesters are concerned about whether we would be excluded with

this language. Will our opportunity will be lessened by the solicitor's ruling?

o When we discussed this issue in La Jolla, Nat Bingham and Bob Hayden wanted socio-economic optimization, although I don't know how this breaks out in terms of allocation.

o Suppose that 50% went to tribes and the balance to other users as specified in present language, how would we determine the socio-economic optimization?

o I assume we would make studies to determine the socio-economic optimization and the KFMC would review the results. There would be bargaining over allocations.

o Presently, the PFMC takes our recommendation and fits it into the Magnuson Act, which calls for economic optimization. The act may call, for example, on cutting trollers out of the KMZ to benefit other fisheries. But the Magnuson Act doesn't allow one group to be zeroed out. Since Commerce also provides approval, there is double scrutiny to ensure socio-economic fairness.

o I have two concerns with Option 7.2: First, we don't want to agree to ceding a superior right to fish. If courts dictate this, then okay, but we don't want to give it up voluntarily. Secondly, this language will be activated by solicitor's opinion, but the language may also do something that will preclude the need for a solicitor's opinion.

o Your concerns are not valid. You aren't ceding anything, just accepting the legal opinion.

o If you disagree with the legal opinion, you can go to court to adjudicate. Nothing that this council decides, can take that away from you.

o I don't see any problem for you in the first half of 7,2, but the second part may bite you. Nat suggested the second half, assuming that commercial trolling is the most economically beneficial, but it may not be.

o Nat's logic was probably along the lines that every Klamath chinook in the ocean will buy us 50 fish from other stocks.

Fullerton: Jim, do you want to reconsider your vote on the motion?

Walters: I am becoming convinced that we are reasonably protected by the KFMC, so am fairly comfortable and prefer to let the decision stand as it is.

Orcutt: Originally we were opposed because we were concerned about losing something, but now we feel that this is a reasonable compromise.

<u>Harvest allocation agreement</u>

McIsaac: I would like to see some action on this harvest allocation agreement. I would like to see it extend to hatchery reform, environmental issues, and I would like to see a core group work on it. I'm troubled that we don't have the solicitor's opinion, so I recognize that we can't do it at the table today. Maybe this new agreement could include discussion of spring chinook.

Reed: A key mechanism necessary for tribe/user group agreement is settlement of trading of economic value for harvest rights. Tribes feel uncertain about doing this until after their rights are defined. Until that is done, tribes aren't in a position to negotiate this.

In the past, ocean users have said that they would concede Klamath fish to tribes if you could get access to other stocks, but there was never a way to do this.

Bitts: Last year, tribes were leery of the offer from trollers, because of their fear of jeopardizing their right. We can't design effective troll seasons at harvest rates less than .40.

Fullerton: You guys are missing the point. If we get a solicitor's opinion before 1993, we still need allocation among other users. This will prevent us from having to start from scratch every year. We need a plan for allocating the fish in times of small stocks. We also need to have an agreement to ensure continuity because our membership will continue to change over the years.

Walters: Maybe the bind we are in now will just last for a few years. In the future there will be times of abundance.

Reed: Let's wait another year, the tribes will be better grounded, and this bad year will be behind us.

Fullerton: As soon as we get through this year (April), I would like to see us start looking at a longer term process. A longer term process will prevent us from making last minute decisions every year. I am not asking you to do this now, but we need to start implementing the long range plan. The public doesn't understand what direction we're heading so we need to say what our allocation guidelines will be.

Warrens: We need to look at why the previous agreement failed.

Fullerton: We also need to look at successful examples in other fisheries. Other successes are mostly due to having predictable, long-term procedures.

Warrens: It will also require us to list our long-term needs.

Bitts: Other problems with the long-term agreement include the possibility of a completely different management scheme, like an escapement range. This could change our whole basis of predictions.

Warrens: We can't do this without first going back to our constituents. We can't do it today.

Fullerton: What does the council want to do?

Bitts: How about revisiting the 1986 negotiations to see the principles that preceded the actual agreement? For example, meeting minimum needs. The 5 year agreement failed, but it was still on the cutting edge of a political process involving the users themselves.

Odemar: I have records of those old Klamath River Fishery Management Group meetings. I will provide copies of these meetings to council members.

Masten: Perhaps we could have a separate meeting after the season-setting meeting. At this meeting, we could review the early discussions that led to the five year agreement -- because it seems that there is a wide range of perceptions about what those discussions were.

Fullerton: I agree that we should look at history. I plan to call a meeting after the 1992 process is complete (September). The meeting topic will call for "setting of guidelines" (or policies) instead of "allocation agreement."

Do we have any notion of when the DOI opinion is coming? Will it be an interim opinion for this season?

The final opinion should be here by the end of this year. It requires consultation with the Departments of Commerce and Justice.

Public comment on allocation agreement

Doug McCullough: The council's long-term goal is fine, but our problems are short-term. We are heading into our second season of no fishery. Where do you see us KMZ trollers fitting in? Trollers are affected coastwide by constraints for Klamath chinook. It seems like the KMZ is in effect in a much wider area than the official boundaries.

Odemar: The KMZ is a statistical cell, while management for Klamath chinook may extend far beyond the actual boundaries of the KMZ.

McCollough: I don't expect to see a season opening above Pt Arena this year. so KMZ trollers are left out again. The industry is looking to fish further south. What do we do to keep from being left out?

Fullerton: We need to consider these things in our guidelines for low abundance years. Normally we rely on the troller representative as to where their allocation is caught.

Bitts: It seems that KMZ trollers are out of business unless they want to travel south of Pt Arena. It sounds like you may be out of business.

McCollough: It also destroys the industry in this area. I don't want to go to Bodega Bay and I don't want to see us going out of business. I like your long term options, but it is make or break for us this year. I feel the KFMC was set up to carve out a niche for the KMZ troll fishery, yet I don't see it happening.

Scott Boley, as member of public: (attachment 15)

My main concern is a viable ocean fishery. I don't care about quibbling over ocean/river shares. On my handout, you can pencil in a share for ocean and in-river. I urge you to focus planning on getting fish into the fisheries, rather than fine splitting of a dwindling resource. We need to start with goals for harvest, fisheries and hatchery production -- these goals can be given to the Task Force and hatchery managers.

Warrens: We need better tools for keeping track of harvest impacts outside of the KMZ. We also need to control these impacts better during years of low abundance. In addition, we need better habitat, more water, and better hatcheries.

Un-named public comment: I heard Lisle Reed say a number like 50% that will be provided for tribal fisheries. Sue Masten said she sympathizes with KMZ ocean users. I want to ask if she can tell us the tribes low/medium/high range of tribal harvest needs, so the KFMC can go ahead with a long term allocation. In this way, the council won't have to wait for this number to come from above.

Masten: The fact is that we were party to the 5 year agreement which gave us a numerical share. That agreement doesn't even apply this year. User needs are secondary to allowing enough fish for spawning escapement. Minimum needs for trollers have never been identified either, beyond calling for viable fishery. When we had a really big ocean catch, nobody admitted that it was beyond what was needed. Please don't confuse our needs with our legal right. We may not need all of our right, and may decide to allocate to others.

Walters: Note that the tribes have given up their commercial fishery, and sacrificed quite a bit.

Council discussion

Orcutt: Responding to the request for low/medium/high tribal fish needs, we saw our low range last year with 12,000 fish. The medium range is 30% more than that, but the high range is our entitlement, which we don't know yet.

Regarding Boley's comments on hatcheries, I hope we will discuss this further at the "Three Chairs" meeting.

Warrens: When will we discuss the next steps (e.g. amendments) for the long-range plan?

That will be appropriate for the September meeting. The cover letter to the Secretary of Interior will address the amendment process.

Adjourned for the day.

March 5, 1992

New agenda item: HATCHERY OPERATION (Bitts)

For 4 years, the hatcheries had more fish than they could handle. The fish were released in warm water in May or June and it appears that the survival rate of these fingerlings and was extremely poor. I would like this council to look at hatchery practices with an eye toward having release practices changed. I would like to see changes made this year.

Fullerton: This issue should be taken to the Task Force for consideration.

Odemar: I am concerned about hatchery practices and I can assure you that they will improve this year. One problem has been the warm receiving water at Iron Gate Hatchery. Changes are in the works to improve hatchery practices although they won't all happen before May. On the Trinity side we need to be careful about the disease problem and the increased straying rate. In the past, we were criticized for trucking fish by the same people who are now criticizing us for not trucking fish.

Normally hatcheries produce only 1/3 of the total fish in the Klamath. I see no reason to indicate that hatcheries caused the natural stocks to crash.

Wilkinson: I'd like to carry these concerns about hatcheries to the Task Force and continue this review process.

McIsaac: Intraspecific competition between natural and hatchery fish is definitely a concern. Other hatcheries have adjusted their releases to avoid straying problems. On the Elk River, the time of hatchery release was reviewed. Findings showed that highest survival came from the fish that were released when the natural fish were present too.

Can we assign this task to the technical team for review?

** Action **

The technical team will:

#1: Provide a preliminary assessment of survival of various release groups of fingerlings and yearlings from Trinity and Iron Gate Hatcheries.

#2: Provide an assessment of the scope of the data needs to evaluate effects of environmental conditions following release.

The team will report back to the council with their recommendations and give a presentation of assignment #1 at the April Task Force meeting.

Grover: FWS is only involved with Trinity River Hatchery as far as the restoration program goes. We have conducted an ongoing evaluation program that primarily looks at in-hatchery interactions.

Odemar: The response to the Klamath Management Zone Coalition letter (requesting changes in hatchery practices) has been processed and is in Portland. That letter says that trucking fish won't work, and that the number of fish produced for mitigation in hatcheries is determined under agreement with the Bureau of Reclamation and Pacific Power and Light, but CDFG will maximize yearling releases in 1992.

Report on technical methods of fishery management

Report on application of GSI to Klamath stocks. (Barnes)

I read the Gall report in detail. There appear to be major errors in those conclusions although it might be valuable to use GSI when we get low numbers of fish and not enough CWT information is available.

Report on Klamath Task Force request for emergency change in Klamath River angling regulations (Odemar)

There is a proposal to close 3 areas on the mainstem Klamath River to angling. That proposal is now before the California Fish and Game Commission. I have no reason to believe that it will not be adopted this year. It will give added protection to those stocks. The proposal was prepared by Dick Sumner and Region One staff.

Walters: California Department of Fish and Game's proposed regulation changes are not being conveyed to the people in Northern California.

Odemar: We have sent press releases out, but we have no control over what the newspapers publish. You might like to let the news editor know that you are interested in this type of information. We will check the list to make sure that the small papers and local tv stations in your area are on our mailing list.

1992 FISHERY MANAGEMENT

Report from technical team

Baracco: The technical team was asked what the contribution of fall chinook were in various areas along the coast (see attachment 16).

Fishery contribution rates are broken down by age 3 and age 4 Klamath fish. The figure in parenthesis is the average annual catch of all chinook over the 86-90 period. This information coupled with coded wire tag information gives the contribution rate (2.2). For example, for Northern Oregon, an average of 2.6% of the fish landed were of age 4 Klamath River origin. The zone troll fishery (KMZ-t) has generally operated under quotas within this time frame.

The model clumps contribution rates for February, March and April into May.

The rest of the handout looks at what levels of impact various rates of harvest would have.

> Q: Yesterday, we got the model runs showing ocean landings, spawning escapement, etc. The ad hoc committee of ocean users was glad to have this info. Now we are seeing big differences between that data and this data. What's up?
>
> A: I don't see any inconsistency. If you refer to page F of the handout we gave the ocean users yesterday (attachment 17), it shows 3,800 Klamath

ocean landings, ages 3,4, and 5, at an 8% harvest rate. Table A (attachment 16) shows a catch of 5,700 Klamath chinook at an 8% harvest rate, but that number is for all ages, including 2-year-old shakers. Different tools are used to project the numbers in different situations, so there may be slight variances with the numbers.

Q: When our season re-opened in August we caught 100 fish. Am I (Walters) right in seeing (attachment 17, page A) that out of those 100 fish, 76 were of Klamath origin?
A: Yes. The number was extrapolated from the tags in just a few fish.

Q: Can this group ask for more tags to be put in more fish so that the data needs less extrapolating and more fact?

A: The data is reasonably distributed across the board. The confidence for these numbers is good.

Walters: The watershed is damaged for whatever reasons. If we stop all harvest, the salmon are still going to die. I feel like we are still getting lower and lower numbers of fish so we need to get more and more direction from technical people to do a better job. Yesterday's talk about water was very informative and helpful.

Baracco: Low fish numbers are really not a technical problem. The policy level changes that the council is working towards seem to be the right direction to direct energies to restore fish numbers.

Q: When you modeled the sport catch did you model the change that would occur as a result of a closed commercial fishery?

A: No.

Baracco: Charter boats are not randomly sampled. All the fish are counted, but all the fish do not need to be counted.

Q: Is it correct to say that in May of 92 for the Southern California cell (South of Pt Arena) 780 fish of Klamath origin would be caught under 1991 type regulations (page B)?

A: Yes.

Q: You said that there is no production tagging on the Sacramento River. Does that mean that the tagging rates in the Sacramento River are too low to get good data?

A: There are no production tags. Tagging is done for experimentation purposes only, for example to check the success of fish from a hatchery.

Q: Would it be helpful to the technical team if there were Sacramento fish production tags?

A: Yes. Additional data is usually helpful.

CDFG tags 3 million fish to study fish passage and mitigation. We need to make sure that more tagging is needed before we move into larger tagging programs.

The council expressed appreciation to the technical team for putting all this information together.

Public Comments

Orcutt: The Hoopa Tribe is looking really carefully at the levels of harvest that could be possible, although the PFMC will make the ultimate decision.

Un-named Brookings business owner and port commissioner: Thanks to the technical team for enlightening us on where Klamath fish are caught. Thanks especially for letting us know about the Southern California cell. People down there have a lot of things that they could do for recreation. Up here, our communities depend on fishing.

Jack Olsen, Harbor District: The regulatory agencies need to allow for incremental development each year. If we do an economic study, it needs to keep a running total of all the year's that we have had cut backs.

Russ Crabtree, KMZ Coalition: I support what Dave and Keith have laid out for options.

Reed: We are all in a precarious position. Nobody here likes what we are faced with. My question for you is: "You've made an appealing case for a zone fishery, but do you all treasure Klamath fish more than people in the SF area? Do you think that it would be logical for the PFMC to provide only a recreational fishery in the zone and zero everywhere else on the west coast?" I want to look at the equity of this. I just can't imagine a fishery just in the Klamath Zone and closing it everywhere else. If we let everyone have a fishery and then close the Klamath is that fair?

Doug McCollough: This council is looking at Klamath fish and the Klamath Zone. If you are looking at the total picture, and if you want to talk about equity for southerners, then we need equity all around.

Odemar: The PFMC will look at the recreational impacts of the Southern California cell. I believe that there will be attempts made to reduce the impacts.

Bitts: We need to remember the injured parties here...

Reed: ... and the Klamath fish.

Preliminary Council recommendations to management entities for developing 1992 harvest plans

Warrens: All the regional management councils have decided upon a definition of overfishing. PFMC's definition of overfishing is the failure of a stock to meet spawning escapement objectives for 3 or more years. If this occurs, then it is up to the PFMC to put together a plan to rebuild that stock.

Bitts: The major damage to the winter run has not been fishing. If we zeroed out all fishing on the west coast, it still wouldn't help the problem. PFMC doesn't have the authority to put their finger on the roots of the problem.

Questions for the technical team

Q: Could the technical team give us a rough estimate of the spawning escapement that could occur for a 10% in-river and 10% ocean harvest?

A: Table A (attachment 16) ocean numbers would not change -- there would be a 7,100 ocean harvest. Table AA shows 3,900 fish for river harvest. When 10% ocean harvest is added the river numbers are reduced so natural spawning escapement would be 26,200.

Q: If 35,000 is the minimum natural spawning escapement, then is the minimum need for hatcheries 13,000?

A: Right. The hatcheries have not been full for any year except for the middle years when we had good returns.

Bitts: If the only occasions that hatcheries have met their mitigation needs is a few cases, then for brood years where they haven't met their needs, has there been better recruitment?

Lunch

The technical team provided corrections to the errors on attachment 17, pages D and E for the Southern California cell. The number at the bottom that shows the 1% contribution is still correct.

Preliminary Council recommendations to management entities for developing 1992 harvest plans

Recommendations to PFMC for ocean salmon management options.

Zone Recreational Fishery

** Motion **

(Wilkinson) This council should recommend the following range of options to the PFMC:

Option One: zero fishing
Option Two: 1 fish/day, 5 days/week
Option Three: 1 fish/day, 6 fish in 7 days.

Seconded.

Discussion

- I want to see the recreation and troll recommendations combined.

o It is critical to the PFMC that ocean users work out their options prior to the PFMC meeting.

o I speak in favor of the option that has been proposed.

o Before I vote on any options, I want to see all of them.

Q: I had presumed that we would proceed in a fashion of looking at spawning escapement first, then determining what quantity, if indeed any, we could allow be taken from that. If we do allow some to be taken, then how are we going to do that?

A: I feel that we have to be prudent.

A: 10% ocean, 10% river would give 26,200 natural spawning escapement. As much as I want to be liberal, this spawning escapement is the closest I can come to being realistic. There are various ways of accomplishing these kinds of numbers. For example, it is probably not too late to look at Klamath impacts south of Pt. Arena.

o I would like to explore with tribal interests the potential for supplementing their subsistence take.

o Let's recommend a range of options to PFMC. I am not comfortable sending in something that is not realistic.

o The one other time that we got consensus was within a range.

o We need a range of options, one of which includes the zero option.

o Let's postpone this motion until after season structure motions are considered.

Wilkinson: Motion withdrawn.

** Motion ** (Bitts)

	Harvest			Escapement
	River	Ocean		
OPTION 1)				
	zero	zero		42,000
		3%	natural:	31,000
		(1,000 already caught)		
OPTION 2)				
	zero	13% (6,800)		38,000
			natural:	28,000
[Option 2a)]				
	[18% (6,800)]	[zero]		[31,000]
			natural:	[23,000]

OPTION 3)

zero	16% (8,700)		36,600
		natural:	27,000

[Option 3a)]

[26% (8,700)]	[zero]		[27,800]
		natural:	[20,600]

Seconded.

Bitts: My intent was that the zone recreational motion be included in this motion.

** Motion tabled.

** Motion ** (McIsaac)

	ocean	river	escapement
Option One:	0	0	31,400 *
Option Two:	.10	.10	26,200
Option Three:	.16	.16	20,000

* This is the ultimate conservation effort that could be made this year. It also allows other fish managers to see that we have considered the zero option.

Seconded (Reed).

Discussion

- o I don't see how we consider going beyond a 10% harvest rate (total) because it reduces the natural escapement too much. We should focus our discussion within the 10% harvest rate.

Reed: We are at very low levels and we have been for many years. My feeling is that we are not in a position to let little amounts go, but we can't let 5,000 fish go at this critical period. In good conscience, it is impractical for us to even offer options that go beyond this.

The next question is if 10% can be taken, where do we let that 10% come from?

Break

McCovey: We support Reed's position. We need to look at conserving these fish.

Reed: I will vote no on this motion because the 3rd option is out of the range of acceptability.

** Motion failed.

** Motion (reintroduced) **

(Wilkinson) This council should recommend the following range of options to the PFMC:

Option One: zero fishing
Option Two: 1 fish/day, 5 days/week
Option Three: 1 fish/day, 6 fish in 7 days.

Second. (Warrens)

Discussion

Reed: I could only consider voting on this motion if I could see what the total ocean take would be.

** Amendment **

Amend the motion by adding a cap of 3% (Odemar).

- o This won't work. 10% overall ocean harvest of which 3% is gone minus 4% for recreational fishing leaves only 3% for the troll fishery. This essentially closes troll fishery.

- o I would like to see how many fish I'm voting for.

- o The final cap could be reduced depending on what we want for other users.

- o I can't support any motion or range of options going out of here today that doesn't include 16% ocean harvest.
- o We are talking about a 3% cap. If the troll cap was 3%, then in no event can the total exceed 10%. PFMC can decide which one to change.

** Amendment fails.

** Motion fails.

Discussion

- o If it comes down to 2 halves that are so small that they are not good to anybody, then we aren't doing anybody any good. We need to have 3,000 fish for each group for it to be worthwhile to fish.

- o For equity, should we recommend zero fishing for everybody right now?

** Motion ** (McIsaac)

	ocean	river	escapement
Option One:	3	0	31,000
Option Two:	10	10	26,800
Option Three:	13	10	25,400

Seconded.

- Indian people have always put the resource first.

** Consensus **

McCovey abstained.

NEW BUSINESS

None.

PUBLIC COMMENT

No verbal comments. Written comments are attachments 19 and 20.

DATE, TIME, AND IDENTIFICATION OF AGENDA FOR NEXT MEETING

The next meeting will be held on April 5 in Millbrae to provide final recommendations to the PFMC on harvest rates. In September, we will meet to look at our final long-range plan.

Adjourned

List of attachments
1) Attendance Roster
2) Agenda
3) Excerpts from the Review of 1991 Ocean Salmon Fisheries
4) Excerpts from the Pre-season Report
5) KRTAT: Age composition of the 1991 Klamath River fall chinook..
6) KRTAT: Spring chinook run size projection
7) Klamath Basin Spawner Escapement
8) KMZ Fisheries Coalition: Comments
9) Evaluation of the Escapement Goal for the Klamath Basin (Robert Kope)
10) Graphic of age 3 recruits to adult spawners
11) Dave Mackett's comments on the comment digest
12) Excerpts from the November version of the KFMC's long-term plan
13) Excerpts from the January version of the KFMC's long-term plan
14) Letter from the Shasta CRMP
15) Graphic from Scott Boley
16) Average contribution rates of 3 and 4 chinook based on cells along coast
17) KRTAT: Klamath Ocean Harvest Management tables
18) Shasta river chinook counts
19) Public comment: George Jewell, Humboldt County Supervisor
19) Public comment: Stan Dixon

DRAFT

ATTACHMENT 1

KLAMATH FISHERY MANAGEMENT COUNCIL
Attendance Roster
March 3-5, 1992
Eureka, California

Management Council Members

Dave Bitts for Nat Bingham	California Commercial Salmon Fishing Industry
Virginia Bostwick	Klamath In-River Sport Fishery
E. C. Fullerton (Chair)	National Marine Fisheries Service
Jim Walters for Robert Hayden	California Ocean Sport Fishery
Pliny McCovey	Hoopa Valley Tribal Council
Susan Masten	Non-Hoopa Indians Residing in Klamath Area
Don McIsaac	Oregon Department of Fish & Wildlife
Mel Odemar	California Department of Fish & Game
Lisle Reed	U.S. Department of the Interior
Frank Warrens	Pacific Fishery Management Council
Keith Wilkinson	Oregon Commercial Salmon Fishing Industry

Others Attending

Jack Alderson
Charles Baldwin
Judith Behary
Skip Behary
Scott Boley
Earl Brown
Roy Brown
Steven Brown
Bill & June Byrtus
Jim Carlisle
Jeff Chan
Gene Clark
Lila Coburn
Barry Collins
John Coon
Russ Crabtree
Linda Damm
Carol Davis
W. L. Duncan
Rick Fielitz
Vina Frye
Stan Griffin
T. Haberman
Bob Hallmark
Terry Hanscam
Carol Hensel
Leaf Hillman
Donna Irwin
Gus Isenburg
Ron Iverson
Karen Jeffries
Bill Johnson
George A. Kautsky
Walt Laetham
Bob Lake
John Lang
Steve Linton
Matt Longenday
Duncan MacLean
Don MacKay
Ray Manka
Lyle Marshall
Doug McCollough
Rocky McVay
Mike Morford
Dennis Pecaut
Ronnie Pierce
Bob Rohde
John Ruit
Gene Schnell
Tom Shaw
Clay Speake
Fred Stutsman
Michael Wallow
Jim Waldvogel
Jim Welter
Tricia Whitehouse
Jerry Wickline

KLAMATH FISHERY MANAGEMENT COUNCIL
AGENDA FOR 3-5 MARCH 1992
EUREKA, CA

3 MARCH 1992. CONVENE 12:00 NOON.

12:00-12:30 ADMINISTRATION

- Correction and approval of previous minutes, and agenda.
- Introduction of new members.

12:30-4:00 TECHNICAL REPORTS.

- Fall chinook (TAT).
  - 1991 escapement.
  - 1992 stock abundance.
  - 1992 harvest rates.
  - 1991 scale analysis.
- Spring chinook (TAT).
  - 1991 escapement.
  - 1992 stock abundance.
- Options for allocation of fall chinook harvest (TAT).
- Options for allocation of spring chinook harvest (TAT).
- Projection of 1992 environmental conditions (McCovey, Odemar).
  - Water abundance, Klamath and Trinity basins.

4:00-5:00 COUNCIL PARTICIPATION IN 1992 FISHERY MANAGEMENT

- Council discussion of technical reports.
- Assignments to ad hoc committees of in-river and ocean harvesters.

5:00 PUBLIC COMMENT PERIOD

5:30 pm ADJOURN FOR THE DAY

7:00-8:30 pm USER GROUP MEETING

- Ocean harvester representatives meet in the evening to develop a recommendation for 1992 KMZ angler harvest.

4 MARCH 1992. RECONVENE 8:00 A.M.

8:00-12:00 LONG TERM PLANNING

- o PFMC salmon fishery management plan Issue 2: Modification of Klamath fall chinook escapement goal.
  - oo Analysis of the issue (TAT).
  - oo Council discussion.
  - oo PUBLIC COMMENT concerning PFMC management issue (9:00 am).
  - oo Council recommendation to PFMC.
  - oo Assignments to complete the task.
- o KFMC long-term harvest management plan.
  - oo Review of draft plan changes agreed on at the last meeting.
  - oo Review of Option 7.2, as revised at the November meeting.
  - oo Review of public comments not considered previously (Whitehouse).
  - oo Council discussion (preferably guided by Mackett).
  - oo PUBLIC COMMENT concerning long-term management plan (11:00 am).
  - oo Council decision on incorporating Option 7.2, public comments, and any other changes to the draft plan. If agreement is reached, this amounts to a completion of the final long term plan.
  - oo Discussion of what comes next:
    - -- Review for consistency with PFMC salmon plan and Klamath fishery restoration plan?
    - -- Submittal to Interior Secretary?
    - -- Printing and distribution?
    - -- Amendment process?
    - -- Action planning?
  - oo Assignments to complete the long term planning process.

1:00-5:30 HARVEST ALLOCATION AGREEMENT.

- o Identifying, clarifying problems and issues to be dealt with in writing an agreement that will be adhered to for the long term.
- o Identifying, clarifying goals of an agreement: what benefit should it provide.
- o Identifying, clarifying actions to be taken in reaching agreement.
- o PUBLIC COMMENT concerning Harvest Allocation Agreement. (5:00 pm)

5:30 pm ADJOURN FOR THE DAY.

7:00-8:30 pm USER GROUP MEETING

- o In-river harvester representatives meet in the evening to develop a recommendation for 1992 in-river harvest.

5 MARCH 1992. RECONVENE 8:00 am.

8:00-9:30 HARVEST ALLOCATION AGREEMENT (Continued).

- o Council action:
  - oo Responsibilities/assignments.
- o Report on technical methods for fishery management (TAT).
  - oo Report on application of GSI to Klamath stocks.
- o Report on Klamath Task Force request for emergency change in Klamath River angling regulations (Odemar).

10:00-noon 1992 FISHERY MANAGEMENT (Continued)

- o Report of the two ad hoc committees to the Council.
- o PUBLIC COMMENT on 1992 harvests and harvest allocation (11:00 am).
- o Preliminary Council recommendations to management entities for developing 1992 harvest plans.
  - oo Recommendations to PFMC for ocean salmon management options.
  - oo Recommendations to PFMC for management of other ocean fisheries incidentally taking salmon.
  - oo Recommendations to tribes and State of California for in-river management options.
  - oo Guidelines for content, structure, and schedule for 1992 harvest management plans to be brought before the Council for comment.
  - oo Responsibilities/assignments.

1:00-2:00 NEW BUSINESS

2:00-2:30 PUBLIC COMMENT

2:30-3:00 DATE, TIME, AND IDENTIFICATION OF AGENDA FOR NEXT MEETING.

3:00 pm ADJOURN.

ATTACHMENT 3

EXCERPTS FROM THE

REVIEW OF 1991

OCEAN SALMON FISHERIES

Reproduced by
U.S. Fish & Wildlife Service
Klamath River Fishery Resource Office
for the
Klamath Fishery Mangement Council

Pacific Fishery Management Council
Metro Center, Suite 420
2000 SW First Avenue
Portland, Oregon 97201

February 1992

LIST OF ACRONYMS AND ABBREVIATIONS

CDFG	California Department of Fish and Game
Council	Pacific Fishery Management Council
CRFMP	Columbia River Fish Management Plan
CVI	Central Valley index
CWT	coded-wire tag
EEZ	exclusive economic zone (from 3 to 200 miles from shore)
ESA	Endangered Species Act
GDP	gross domestic product
GNP	gross national product
FMP	fishery management plan
GSI	genetic stock identification
KMZ	Klamath management zone (ocean zone between Humbug Mountain and Horse Mountain where management emphasis is on Klamath River fall chinook)
KRTAT	Klamath River Technical Advisory Team
LRH	lower Columbia River hatchery (fall chinook returning to hatcheries below Bonneville Dam)
LRW	lower Columbia River wild (fall chinook spawning naturally below Bonneville Dam)
MCB	mid-Columbia River brights (hatchery fall chinook released in the Mid-Columbia River)
NA	not available
NMFS	National Marine Fisheries Service
ODFW	Oregon Department of Fish and Wildlife
OCN	Oregon coastal natural (coho)
OPI	Oregon production index (coho salmon stock index south of Leadbetter Point)
PSC	Pacific Salmon Commission
SCH	Spring Creek Hatchery (fall chinook returning to Spring Creek Hatchery)
STT	Salmon Technical Team (formerly the Salmon Plan Development Team)
TAC	total allowable catch
URB	upper river brights (fall chinook normally migrating past McNary Dam)
WCVI	West Coast Vancouver Island
WDF	Washington Department of Fisheries
USFWS	U.S. Fish and Wildlife Servicey

CHAPTER I
THE 1991 OCEAN SALMON FISHERIES

COASTWIDE SUMMARY

A summary of the actual 1991 non-Indian troll, treaty Indian troll and recreational salmon fishing regulations for both the EEZ and state territorial waters (zero to three miles from shore) is provided in Tables I-1, I-2 and I-3, respectively. Historical summaries of the regulations for each of the three Pacific coast states and for treaty Indian troll fisheries are provided in Appendix C, Tables C-1 through C-7. Table C-9 provides a summary of inseason regulatory actions and events during the 1991 season.

Coastwide ocean salmon landings of chinook, coho and pink salmon, since 1971, for recreational and troll fisheries in each state, as well as southeast Alaskan and Canadian troll fishery landings, are summarized in Tables I-4 through I-6. Further harvest details for each of the three Pacific coast states are displayed in Table I-7 for commercial fisheries and Table I-8 for recreational fisheries. Historical harvest data, by state, are provided in Appendix A, Tables A-1 through A-19. Historical harvest data, by management area, are provided in Appendix A, Tables A-20 through A-29.

Table I-9 lists the 1991 coho and chinook quotas for each fishery and compares them with actual harvests. An historic record of the annual preseason catch quotas for the area north of Cape Falcon, as well as the stocks that were critical for ocean fishery management actions, are provided in Appendix C, Table C-8.

The sections which follow contain detailed assessments of management objectives, regulations, fishing effort and harvest, and fishery goal assessment by management area. The final section of this chapter outlines management under the Pacific Salmon Treaty with Canada, including the 1991 catch ceilings for Alaskan and Canadian fisheries and a comparison with actual harvests.

TROLL FISHERIES BY MANAGEMENT AREA

U.S./Mexico Border to Horse Mountain

Management Objectives

Chinook

Ocean troll management objectives for chinook salmon fisheries south of Horse Mountain (near Shelter Cove) were based on (1) the escapement goal range for Sacramento River fall-run chinook of 122,000 to 180,000 hatchery and natural adults combined; (2) the limitation of the harvest rate on Klamath River fall-run chinook to 16 percent; and (3) the Sacramento River winter-run chinook impacts being no greater than those occurring in 1990. The preseason estimated troll harvest south of Horse Mountain was 240,300 fish. The anticipated spawning escapement in the Sacramento River was 132,400 fall-run chinook adults.

TABLE I-1. Summary of actual ocean non-Indian troll salmon fishing regulations for 1991. (Page 1 of 2)

Area and Season	Salmon Species	Actual Quota or Guideline(*) Chinook	Actual Quota or Guideline(*) Coho	Special Restrictions[a/]
U.S.-Canada Border to Cape Falcon, Oregon May 1-June 15 (46 days)	All except coho	31,200*	-	Conservation Zone 1 (Columbia River mouth) is closed.
U.S.-Canada Border to Carroll Island, Washington Aug. 16-19; Aug. 23-26; Aug. 30-Sept. 2; Sept. 6-9; Sept. 13-15 (19 days)	All	3,500*[b/]	35,000*	Possession and landing limit per vessel of 80 coho per open period. Vessels must land and deliver in the area, or adjacent closed area, within 24 hours of each closure. Harvest guideline of 160,000 pink salmon. Open only outside 100 fathoms, except Sept. 13-15 opening. Flashers with barbless, bare, blued or pink hooks or pink hoochies of 3 inches or less only.
Copalis Head, Washington to Cape Falcon, Oregon Sept. 1-2 (2 days)	All	3,300	32,500 (22,900)[c/]	Possession and landing limit per vessel of 75 coho for the 2-day opening. Vessels must land and deliver in the area, or adjacent closed area, within 24 hours of the closure. Conservation Zone 1 (Columbia River mouth) is closed.
Leadbetter Pt., Washington to Cape Falcon, Oregon Aug. 10-11 (2 days)	All	2,000*[b/]	19,500*	Possession and landing limit per vessel of 100 coho for the 2-day opening. Vessels may land and deliver south of Cape Falcon, or in the closed adjacent area to the north, but must land within 24 hours of the closure. Conservation Zone 1 (Columbia River mouth) is closed.
Cape Falcon to Cascade Head, Oregon May 1-June 30 (61 days) July 1-14 (14 days) July 15-23; Aug. 1-Oct. 31 (101 days)	All except coho All All except coho	None None None	- d/ -	No more than 4 spreads per line in June.
Cascade Head to Florence South Jetty, Oregon May 1-June 23 (54 days) June 24-July 11 (18 days) July 12-23; Aug. 1-Oct. 31 (104 days)	All except coho All All except coho	None None None	- d/ -	No more than 4 spreads per line in June.
Florence South Jetty to Cape Arago, Oregon June 24-July 11 (18 days) July 12-14; Aug. 1-9; (12 days)	All All except coho	None None	d/ -	
Florence South Jetty to Humbug Mt., Oregon Sept. 1-Oct. 31 (61 days)	All except coho	15,000*	-	
Sisters Rocks to Mack Arch, Oregon Sept. 1-15 (15 days)	All except coho	7,500	-	Closed beyond 6 nautical miles from shore.

TABLE I-1. Summary of actual ocean non-Indian troll salmon fishing regulations for 1991. (Page 2 of 2)

Area and Season	Salmon Species	Actual Quota or Guideline(*) Chinook	Coho	Special Restrictions[a/]
Trinidad Head to Punta Gorda, California				Closed beyond 6 nautical miles from shore; no more than 6 lines per boat.
Sept. 1-Oct. 31 (61 days)	All	15,000	–	
Horse Mt. to Pt. Arena, California				No more than 6 lines per boat.
Aug. 1-2; Aug. 12-27 (18 days)	All	None	d/	
Aug. 3-11; Aug. 28-Sept. 30 (43 days)	All except coho	None	–	
Pt. Arena to Pt. San Pedro, California				No more than 6 lines per boat.
May 1-31; July 12-15; Aug. 3-11; Aug. 28-Sept. 30 (78 days)	All except coho	None	–	
June 8-12; June 26-July 2; July 11; Aug. 1-2; Aug. 12-27 (32 days)	All	None	d/	
Pt. San Pedro, California to U.S.-Mexico Border				No more than 6 lines per boat.
May 1-31; July 12-31; Aug. 3-11; Aug. 28-Sept. 30 (94 days)	All except coho	None	–	
June 1-July 11; Aug. 1-2; Aug. 12-27 (59 days)	All	None	d/	

a/ Single-point, single-shank barbless hooks required coastwide. Minimum size limits north of Cape Falcon were 28 inches for chinook and 16 inches for coho. South of Cape Falcon minimum size limits were 26 inches for chinook, 16 inches for coho caught north of Humbug Mt. and 22 inches for coho caught south of Humbug Mt.

b/ In addition, about 3,900 chinook unharvested in the May/June fishery were made available to the Aug. fisheries.

c/ Quota reduced inseason due to harvest in excess of coho guideline in the Leadbetter Pt. to Cape Falcon Aug. 10-11 fishery.

d/ For the entire area south of Cape Falcon, the preseason catch quota was 361,000 coho. A 75 percent subarea impact ceiling (catch plus hook-and-release mortality) within the overall impact allowed a catch of no more than 271,000 coho south of Cascade Head. A separate subarea catch quota of 5,000 coho was reserved within the 271,000 catch ceiling to allow the troll fishery south of Horse Mt. to continue after the ceiling was met.

TABLE I–2. Summary of actual treaty Indian ocean and Area 4B troll salmon seasons for 1991. (Page 1 of 1)

Tribe and Area	Seasons[a/]			Minimum Size Limit (Inches)	
	Salmon Species	Dates	Days	Chinook	Coho
Quinault, Hoh, and Quileute Tribes					
Areas 2 and 3	Chinook	May 1–June 30	61	24	–
	All	July 7–19	13	24	16
	All	Aug. 3–8	6	24	16
	All	Aug. 10–13	4	24	16
	All	Aug. 19	1[b/]	24	16
Makah Tribe					
Areas 3N, 4 and 4A	Chinook	May 1–June 30	61	24	–
	All	July 7–19	13	24	16
	All	Aug. 3–8	6	24	16
	All	Aug. 10–13	4	24	16
	All	Aug. 19	1[b/]	24	16
Area 4B	All	Jan. 1–Apr. 30	120	24	22
	Chinook	May 1–June 30	61	24	–
	All	July 7–19	13	24	16
	All	Aug. 3–8	6	24	16
	All	Aug. 10–13	4	24	16
	All	Aug. 19	1[b/]	24	16
	All	Oct. 7–Dec. 31	86	24	22
Klallam Tribes (Lower Elwha, Port Gamble and Jamestown)					
Area 4B	All	Jan. 1– Apr. 30	120	24	16
	Chinook	May 1–June 30	61	24	16
	All	July 1–Aug. 13	44	24	16
	All	Nov. 1–Dec. 31	61	24	16

a/ Overall quotas for these fisheries were 33,000 chinook and 80,000 coho for the May 1–Sept. 30 ocean management period.

b/ The Aug. 19 fishery was open 6 hours for the Quinault and Hoh tribes and 12 hours for the Quileute and Makah tribes.

TABLE I-3. Summary of actual ocean recreational salmon fishing regulations for 1991.[a/] (Page 1 of 1)

Area and Season	Salmon Species	Actual Quota or Guideline(*) Chinook	Actual Quota or Guideline(*) Coho	Daily Limit and Special Restrictions[b/]
U.S.–Canada Border to Cape Alava, Washington July 1–24 (noon); (17.5 days) Sunday–Thursday only	All	2,000*	23,300	2 salmon.
Cape Alava to Queets River, Washington July 1–30 (22 days) Sunday–Thursday only	All	200*	4,800	2 salmon.
Queets River to Leadbetter Pt., Washington June 24–Aug. 12; Sept. 3–4 (38 days) Sunday–Thursday only	All	21,200*	88,400	2 salmon.
Leadbetter Pt., Washington to Cape Falcon, Oregon June 24–Aug. 12; (36 days) Sunday–Thursday only	All	16,600*	109,500	2 salmon. Conservation Zone 1 (Columbia River mouth) is closed.
South of Red Buoy Line, Oregon Sept. 15–18 and Sept. 26 (5 days)	All	c/	c/	2 salmon.
Cape Falcon to Humbug Mt., Oregon May 1–26 (26 days) Within the 27 Fathom Curve May 27–July 28 (62 days)	All	None	d/	2 salmon, no more than 6 salmon in 7 consecutive days.
Humbug Mt., Oregon to Horse Mt., California May 25–July 28; Thursday–Monday only (47 days); Aug. 31–Sept. 2 (3 days); Sept. 6–29; Friday–Sunday only (12 days)	All	20,000*	d/	2 salmon; except only 1 may be a chinook; no more than 6 salmon in 7 consecutive days. Conservation Zone 2 (Klamath River mouth) closed Aug. 1–31.
Trinidad Head to Punta Gorda, California Oct. 1–31 (31 days)	All	None	d/	2 salmon, no more than 6 salmon in 7 consecutive days. Closed beyond 6 nautical miles from shore.
Horse Mt. to Pt. Arena, California Feb. 16–Nov. 17 (275 days)	All	None	d/	2 salmon.
Pt. Arena to U.S./Mexico Border Mar. 2–Nov. 2 (246 days)	All	None	d/	2 salmon. Conservation Zone 3 (near mouth of San Francisco Bay) closed Mar. 2–31.

a/ In addition to the seasons listed here, ODFW established an all–salmon–except–coho fishery inside 3 nautical miles of shore at the mouth of Tillamook Bay from Sept. 16–Oct. 31.

b/ Single–point, single–shank barbless hooks required from the U.S.–Canada border to Pt. Conception. Minimum size limits were (1) 24 inches for chinook and 16 inches for coho north of Cape Falcon; (2) 20 inches for chinook and 16 inches for coho from Cape Falcon to Humbug Mt.; and (3) 20 inches for both chinook and coho south of Humbug Mt.

c/ This fishery was originally scheduled to open Sept. 16 with a preseason quota of 7,000 coho. Enough chinook were to be reserved from the entire subarea guideline (16,600) in Aug. to assure access to the coho. Low chinook harvest rates made setting a chinook guideline unnecessary. Approximately 5,600 coho (inseason estimate) not harvested in the June 24–Aug. 12 fishery were used to open the fishery on Sept. 15, 1 day earlier than scheduled.

d/ Overall recreational catch between Cape Falcon and the U.S.–Mexico border limited by a preseason catch quota of 259,000 coho. Only the area north of Humbug Mt. closes upon projected attainment of the quota.

Coho

Coho are managed as a unit south of Cape Falcon and are discussed more fully in the Cape Falcon to Humbug Mountain section. The area south of Horse Mountain did have a separate reservation of 5,000 fish within the south of Cape Falcon overall quota, which were to be harvested upon attainment of the rest of the overall quota.

Regulations

In attempting to achieve the above objectives, a total of 45 days of closure in June and July was imposed within the May 1 through September 30 season in the area between Point San Pedro and Point Arena. The opening of the fishery between Point Arena and Horse Mountain was delayed until August 1. The area south of Point San Pedro opened May 1 and ran continuously until September 30.

Within these time frames, fishing for coho was permitted from June 1 through July 11 under the general south of Cape Falcon quota, and from August 1 through August 2 and August 12 through August 27 under the 5,000 coho reserve.

Effort and Harvest

Commercial trollers harvested 289,900 chinook salmon from ocean waters south of Horse Mountain, 70 percent of the 1990 harvest of 415,800 chinook. Trollers harvested 80,900 coho south of Horse Mountain, including 5,200 fish, after the general coho quota south of Cape Falcon closed. This compares to 59,800 coho landed in the same area in 1990. The Horse Mountain to U.S./Mexico border troll fishery landed 5,200 coho in August, 4 percent above the 5,000 fish reserve.

Effort by trollers fishing south of Horse Mountain totaled 33,600 days fished compared to 45,200 days fished in 1990.

Fishery Goal Assessment

Indices of ocean harvest rate and population size of Central Valley chinook have been developed based on ocean troll and recreational harvests south of Point Arena and Central Valley adult chinook salmon spawning escapements. Central Valley chinook stocks probably comprise 85 to 95 percent of chinook catches south of Point Arena. The 1991 abundance index for Central Valley chinook was 440,600 fish (Table I–10, Figure I–1) compared to 571,100 fish in 1990. The harvest rate index of 0.72 was 7 points lower than the 1990 index (Figure I–2).

Horse Mountain to Humbug Mountain

Management Objectives

Chinook

Management objectives for chinook salmon between Horse Mountain (near Shelter Cove) and Humbug Mountain (KMZ) were based on harvest rate goals for chinook salmon stocks originating from local streams, particularly the Klamath and Rogue rivers. The adopted regulations took into

Figure I-2. Central Valley chinook salmon harvest rate index, 1970-1991.

consideration the Council's harvest rate plan (Amendment 9) calling for a spawning escapement rate for Klamath River fall chinook of 33 to 34 percent, with a natural adult spawning escapement floor of 35,000 fish. The Council's Klamath River inriver run target for 1991 was 60,300 fall-run adults, the minimum number meeting the escapement floor taking into account an inriver harvest of 13,000 adults and returns to basin hatcheries. The Council's harvest rate plan projected a total ocean harvest of 15,900 Klamath River fall chinook and an ocean harvest rate of 16 percent on the age-4 component in all ocean fisheries.

It was anticipated that reduced harvest rates in 1991 would also benefit other depressed northern California coastal stocks and depressed south/localized migrating Oregon coastal stocks.

Coho

Coho are managed as a unit south of Cape Falcon and discussed more fully in the Cape Falcon to Humbug Mountain section.

Regulations

The low harvest projected for Klamath River fall-run chinook of 16 percent, compared to an ocean harvest rate objective of 37.5 percent in 1990, precluded general area troll fisheries in the KMZ. Two late-season special area fisheries were adopted by the Council: (1) the area from Sisters Rocks to Mack Arch inside 6 nautical miles from September 1 through September 15 with a 7,500 chinook quota, and (2) the area from Trinidad Head to Punta Gorda inside 6 nautical miles from September 1 through October 31 with a 15,000 chinook quota. The Sisters Rocks to Mack Arch fishery was an all-salmon-except-coho fishery while the Trinidad Head to Punta Gorda fishery was an all-salmon fishery.

Effort and Harvest

Trollers landed 4,700 chinook and 3,000 coho in the Trinidad Head to Punta Gorda fishery, compared to 1,900 chinook and 1,200 coho in 1990. Trollers landed 200 chinook in the Sisters Rocks to Mack Arch fishery (Table I-11), compared with 100 chinook in 1990.

Fishery Goal Assessment

The ocean harvest rate goal of 16 percent on age-4 Klamath River fish was expected to be attained in all ocean troll and recreational fisheries prior to September 1 in the area between northern Oregon and the U.S./Mexico border. Based on CWT recoveries in ocean and inriver fisheries and spawning escapements (a method used in the past, but currently being reviewed by the KRTAT), the overall ocean harvest rate on age-4 fish in 1991 (20 percent) exceeded the goal. A more complete analysis will be provided in preseason report I, based on the KRTAT review.

Humbug Mountain to Cape Falcon

Management Objectives

Season determinations for the area between Humbug Mountain and Cape Falcon, as for most areas between Cape Falcon and the U.S./Mexico border, were driven by impacts on Klamath River fall

TABLE I-11. Summary of 1991 chinook landings and recreational effort in the KMZ. (Page 1 of 1)

Fishery	Chinook Landings[a/]							Sport Angler Trips		
	Troll			Sport						
	California	Oregon	Subtotal	California	Oregon	Subtotal	Total	California	Oregon	Total
General Area[b/]	-	-	-	12,500	6,800	19,300	19,300	50,800	36,400	87,200
Rogue River (Sept.)	-	200	200	-	-	-	200	-	-	-
Eel River (Sept.-Oct.)	4,700	-	4,700	400	-	400	5,100	2,300	-	2,300
TOTAL	4,700	200	4,900	12,900	6,800	19,700	24,600	53,100	36,400	89,500

a/ Landings are preliminary and are shown by state where landed.
b/ Recreational fishery May 25-July 28 and Aug. 31-Sept. 30.

chinook and OCN coho stocks. The combined troll and recreational season structures were designed to target a coastwide 46 percent total harvest rate (ocean and inland) on OCN coho and 16 percent ocean harvest rate on Klamath River fall chinook. Preseason objectives called for an OCN coho ocean harvest rate of 44 percent. These rates reflect a reduction from the 1990 preseason harvest rate goal of 37.5 percent (ocean) on Klamath River fall chinook and 50 percent (ocean and inland) on OCN coho (the OCN coho harvest rate fluctuates with stock abundance of less than 400,000).

Adopted regulations for fisheries between Cape Falcon and the U.S./Mexico border incorporated season structuring to achieve the desired Klamath River fall chinook ocean harvest rate goal. Achieving this goal, together with management objectives of providing opportunity to harvest the available coho, resulted in the adoption of troll fisheries which were extremely restricted between Point San Pedro, California and the Florence, Oregon south jetty.

Chinook

A discussion of details leading to the adoption of the Klamath River fall chinook 16 percent ocean harvest rate was presented in the management objectives section for the area from Horse Mountain to Humbug Mountain.

It was anticipated that reduced ocean harvest rates in 1991 would also benefit depressed Oregon south coast chinook stocks and Snake River fall chinook, the latter of which has been proposed for listing as threatened under the ESA. For the Snake River fall chinook, the combined south of Cape Falcon chinook harvest was estimated to represent a 26 percent reduction in adult equivalent ocean exploitation rate compared to the 1990 observed levels.

Coho

The Council took emergency action to reduce the targeted harvest rate (ocean and inland combined) on OCN coho from 52 percent to 46 percent. Preseason abundance estimation methodology used for this stock has consistently overestimated stock abundance for the past three years, and the spawning escapements have been far short of the annual goal for the past four years. Until the estimation procedure is improved, the Council opted to purposely reduce harvest impacts to help assure that permanent damage is not done to the OCN stocks. The reduction in harvest rate was anticipated to result in a spawning escapement level that met or exceeded the floor goal of 135,000 adult coho.

Sharing of allowable coho impacts between ocean recreational and commercial troll fisheries, in the area between Cape Falcon and the U.S./Mexico border, was guided by the Council framework amendment schedule. The framework amendment also provided for an inseason reallocation of a portion of the total ocean recreational quota to the troll fishery about August 1, if the projected total ocean recreational fishery harvest was less than the preseason harvest allocation.

A troll coho harvest ceiling was established for the area between Cascade Head and the U.S./Mexico border. The coho ceiling was designed to address port equity concerns in the Cascade Head to Cape Falcon area. It also was designed to prevent geographical shifts in coho impacts that differ substantially from those anticipated preseason.

Regulations

The 1991 troll coho fishery between Cape Falcon and the U.S./Mexico border was constrained by an overall impact of 390,000 coho, based on preseason estimates of troll harvest and hook-and-release mortality by catch area. An estimated 29,000 coho were projected preseason to be lost to hook-and-release mortality. The remaining 361,000 coho were established as the harvest quota for the entire area from Cape Falcon to the U.S./Mexico border. Within this overall quota, the area between Cascade Head and the U.S./Mexico border was constrained under a 271,000 coho harvest ceiling.

The Council did not make an inseason adjustment (i.e., harvest reallocation), in the area from Cape Falcon to the U.S./Mexico border, between the recreational fishery and the troll fishery in 1991. The coho allocation was not sufficient to meet the season duration goals of the recreational fishery.

Minimum size limits for coho and chinook were 16 and 26 inches, respectively. Single-point, single-shank barbless hooks were required.

Chinook and coho salmon fishing regulations differed between subareas within the Humbug Mountain to Cape Falcon area. A summary of the regulations by subarea follows.

Humbug Mountain to Cape Arago

The fishery was open from September 1 through October 31 as an all-salmon-except-coho fishery under a 15,000 chinook guideline from Humbug Mountain to the south jetty of Florence. The fishery ran continuously through the automatic closure date of October 31. The scheduled October 1 through October 8 closure, designed as an accounting measure, was rescinded when managers determined that it was unnecessary. The traditional late-season Oregon state-water fishery off the Elk and Sixes rivers did not occur.

Cape Arago to the South Jetty of Florence

The all-salmon fishery was open from June 24 through July 11 when the coho harvest ceiling for the area from the U.S./Mexico border to Cascade Head was attained. The subarea reopened from July 12 through July 14, and from August 1 through August 9 as an all-salmon-except-coho fishery. The fishery was also open from September 1 through October 31 as an all-salmon-except-coho fishery under a 15,000 chinook guideline from Humbug Mountain to the south jetty of Florence. See the above Humbug Mountain to Cape Arago subarea for additional details on this fishery.

South Jetty of Florence to Cascade Head

The all-salmon-except-coho fishery was open from May 1 through June 23 with no more than 4 spreads per line gear restriction during June. The fishery reopened to all-salmon fishing from June 24 through July 11 when the coho harvest ceiling for the area from the U.S./Mexico border to Cascade Head was attained. The subarea reopened from July 12 through July 23 and from August 1 through October 31 as an all-salmon-except-coho fishery.

Cascade Head to Cape Falcon

The all-salmon-except-coho fishery was open from May 1 through June 30 with a no more than 4 spreads per line gear restriction during June. The fishery reopened to all-salmon from July 1 through July 14 when the south of Cape Falcon coho quota, minus the 5,000 coho reserve for the area south of Horse Mountain, was reached. The 5,000 coho reserve is discussed under the U.S./Mexico border to Horse Mountain section. The subarea reopened from July 15 through July 23 and from August 1 through October 31 as an all-salmon-except-coho fishery.

Effort and Harvest

Troll fishery effort between Humbug Mountain and Cape Falcon totaled 14,100 vessel days. This was 43 percent below the comparative 1990 effort (24,800). Total chinook landings of 73,700 fish were 68 percent less than landings from the 1990 season (228,000). Total coho landings of 282,600 fish were 2.5 times greater than landings from the 1990 season (110,300). Pink landings totaled 1,600 fish. There were no pink landings in 1990.

Fishery Goal Assessment

Preliminary information suggests that the observed 1991 coastwide ocean harvest rate on Klamath River fall chinook exceeded the 16 percent goal on age-4 fish (20 percent), and the combined ocean and inland harvest rate on OCN coho equaled the 46 percent goal. The estimated ocean harvest rate of 42 percent was below the preseason objective of 44 percent. Actual reductions in Snake River fall chinook exploitation rates cannot be estimated at this time.

The combined Cape Falcon to U.S./Mexico border troll fisheries landed 366,600 coho, 2 percent above the 361,000 harvest quota (Tables I-9 and I-12). The landings for the area between Cascade Head and the U.S./Mexico border totaled 274,700 coho, 1 percent above the 271,000 harvest ceiling. A postseason estimate of troll fishery coho hook-and-release mortality for the combined Cape Falcon to U.S./Mexico border troll fisheries is 18,500 coho, 36 percent below the 29,000 preseason estimate. This level of hook-and-release mortality is a substantial reduction from recent year levels, and is largely a result of reduction in single species (chinook) fishery effort. With the addition of coho hooking mortality, the estimate of the total Cape Falcon to U.S./Mexico border troll fishery impact is 385,100 coho. This impact is 99 percent of the adopted preseason troll impact (390,000) and 72 percent above the 1990 troll impact (223,400).

The Cascade Head to U.S./Mexico border harvest ceiling was not effective in preventing a substantial shift of coho harvest into the south of Horse Mountain area. The coho harvest south of Horse Mountain was much larger than anticipated preseason.

The south jetty of Florence to Humbug Mountain troll fishery landed 12,000 chinook during the September 1 through October 31 period, 20 percent below the 15,000 harvest guideline.

TABLE I-12. Ocean harvest of coho salmon by all fisheries in the OPI area during the 1991 season with comparable harvest for 1990, 1989, 1988 and 1987 in thousands of fish. (Page 1 of 1)

Fishery Area	1991 Ocean Harvest Quota	Percent of 1991 Quota	Ocean Harvest (thousands of fish) 1991[a/]	1990	1989	1988	1987
			TROLL				
Leadbetter Pt. to Cape Falcon	31.5[b/]	131	41.4[c/]	32.4[d/]	37.1[e/]	0.0[f/]	18.5
South of Cape Falcon	361.0	102	366.6[g/]	171.4[h/]	478.5[i/]	676.2[j/]	384.7[k/]
Cape Falcon to Humbug Mt.	-	-	282.6	110.3	435.6	623.2	336.6
Humbug Mt. to Horse Mt.	-	-	3.1	1.2	10.6	14.5	20.9
Horse Mt. to U.S./Mexico Border			80.9	59.8	32.8	38.4	27.2
Troll Total	392.5	104	408.0	203.7	515.0	676.2	403.2
			RECREATIONAL				
Leadbetter Pt. to Cape Falcon	116.5	98	114.6	124.0	116.6	31.6	79.6
Cape Falcon to U.S./Mexico Border	259.0	112	288.8	216.0	287.6	251.1	199.4
Cape Falcon to Humbug Mt.	-	-	197.5	149.1	205.0	201.4	134.7
Humbug Mt. to Horse Mt.	-	-	62.3	55.3	77.9	46.2	62.2
Horse Mt. to U.S./Mexico Border			29.0	11.6	4.8	3.5	2.6
Recreational Total	375.5	107	403.4	340.0	404.2	282.7	279.0
Total OPI Ocean Fisheries	768.0	106	811.4[c/g/]	543.7[d/h/]	919.2[e/i/]	958.9[f/j/]	682.2[k/]

a/ Preliminary.
b/ This quota reflects the revised Aug. quota in the Cape Falcon to Leadbetter Pt. fishery combined with the proportion of the revised Sept. quota in the Cape Falcon to Copalis Head fishery estimated by the proportion of the fishery harvest which occurred in the OPI area.
c/ Does not include the postseason hook-and-release mortality estimated at 1,500 coho in the all-salmon-except coho troll fishery.
d/ Does not include the postseason hook-and-release mortality estimated at 2,100 coho in the all-salmon-except-coho troll fishery.
e/ Does not include the postseason hook-and-release mortality estimated at 1,200 coho in the all-salmon-except-coho troll fishery.
f/ Does not include the postseason hook-and-release mortality estimated at 2,800 coho in the all-salmon-except-coho troll fishery.
g/ Does not include the postseason hook-and-release mortality estimated at 18,500 coho in the south of Cape Falcon troll fishery.
h/ Does not include the postseason hook-and-release mortality estimated at 52,200 coho in the south of Cape Falcon troll fishery.
i/ Does not include the postseason hook-and-release mortality estimated at 87,200 coho in the south of Cape Falcon troll fishery.
j/ Does not include the postseason hook-and-release mortality estimated at 112,700 coho in the south of Cape Falcon troll fishery.
k/ Does not include the postseason hook-and-release mortality estimated at 39,000 coho in the south of Cape Falcon troll fishery.

RECREATIONAL FISHERIES BY MANAGEMENT AREA

U.S./Mexico Border to Horse Mountain

Management Objectives

The Council's management objectives in recreational fisheries in this area parallel those discussed previously for the commercial fisheries. An issue that is noteworthy is the objective to reduce impacts on Sacramento River winter-run chinook as required by the ESA.

Regulations

Recreational fishery regulations south of Horse Mountain were more restrictive than those in place in 1990; however, barbless hook requirements north of Point Conception, the daily bag limit of 2 salmon and the minimum legal size of 20 inches total length were the same as in previous years. The season north of Point Arena ran from mid-February to mid-November, while south of Point Arena it was shortened to open in early March and close in early November. In addition, an area centered on the mouth of San Francisco Bay extending out about three miles was closed during March.

Effort and Harvest

Recreational chinook landings at ports south of Horse Mountain totaled 67,600 fish. These landings were 58 percent of comparative 1990 landings (116,100). Recreational angler effort south of Horse Mountain totaled 142,900 angler trips, compared to 170,800 trips in 1990. The chinook salmon catch per angler trip averaged 0.47 chinook compared to 0.68 chinook in 1990.

Humbug Mountain to Cape Falcon

Management Objectives

Seasonal duration objectives for this recreational fishery was a season from approximately May 1 through September 15. Chinook harvest in this area is minor and did not constrain the fishery. Season determination and allowable coho harvest levels for the recreational fishery between Humbug Mountain and Cape Falcon were driven by impacts on OCN coho stocks. The Council took emergency action to reduce the targeted harvest rate (ocean and inland combined) on OCN coho from 52 percent to 46 percent. A discussion of details leading to the adoption of the OCN coho 46 percent harvest rate is presented in the coho management objectives section for the Humbug Mountain to Cape Falcon troll fishery.

Sharing of allowable coho impacts between ocean recreational and commercial troll fisheries, in the area between Cape Falcon and the U.S./Mexico border, was guided by the Council framework amendment schedule. The framework amendment also provided for an inseason reallocation of a portion of the total ocean recreational quota to the troll fishery about August 1, if the projected total ocean recreational fishery harvest was less than the preseason harvest allocation.

Regulations

The 1991 recreational coho fishery between Cape Falcon and the U.S./Mexico border was constrained by an overall harvest quota of 259,000 coho. Only the area between Humbug Mountain and Cape Falcon closed for the remainder of the season upon attainment of the coho quota. The fishery in the Humbug Mountain to Cape Falcon area was open to all-salmon fishing under a two fish daily bag with a six fish in seven days restriction. Minimum size limits for coho and chinook were 16 and 20 inches, respectively. The fishery opened in waters less than 27 fathoms deep (approximately 0 to 2 miles from shore) from May 1 through May 27. After May 27, the fishery operated without the area restriction. The fishery remained open through July 28 when the 259,000 coho quota was exceeded.

The Council did not make an inseason adjustment (i.e., harvest reallocation), in the area from Cape Falcon to the U.S./Mexico border, between the recreational fishery and the troll fishery in 1991. The coho allocation was not sufficient to meet the season duration goals of the recreational fishery.

Effort and Harvest

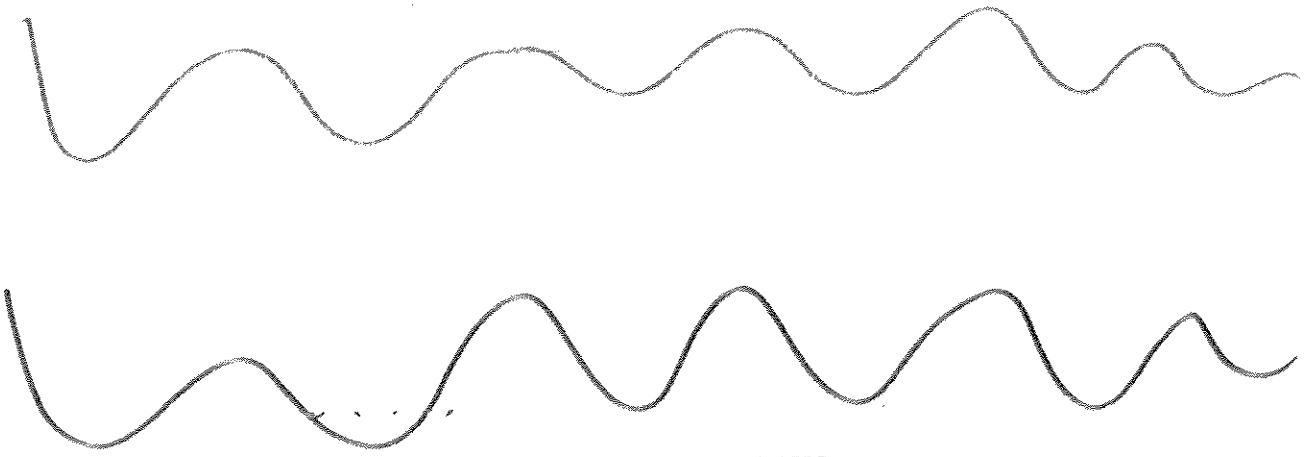
Recreational fishery effort between Humbug Mountain and Cape Falcon totaled 132,000 angler trips. This was 22 percent below the comparative 1990 effort (169,100). Total chinook landings of 6,600 fish were 37 percent below landings from the 1990 season (10,400). Total coho landings in this area of 197,500 fish were 32 percent above landings from the 1990 season (149,100). Pink landings totaled 200 fish. There were no pink landings in 1990.

Fishery Goal Assessment

The combined Cape Falcon to U.S./Mexico border recreational fisheries landed 288,800 coho, 12 percent above the 259,000 harvest quota (Tables I-9 and I-12). The estimated ocean harvest rate on OCN coho (42 percent) was below the preseason objective of 44 percent.

The Cape Falcon to Humbug Mountain fishery season duration objectives were not met as the fishery closed July 28 when the Cape Falcon to U.S./Mexico border coho quota was exceeded.

CHAPTER II
INSIDE CHINOOK SALMON FISHERIES AND SPAWNING ESCAPEMENTS



KLAMATH RIVER STOCKS

Inside Harvest

Fisheries in the Klamath River harvested 13,200 adults, the third lowest inriver landing for the basin since 1978. Both the inriver Indian and recreational fisheries were managed under quotas. The overall inriver allocation consistent with the Council's ocean decisions was 13,000 fall-run adults. Adult chinook landings totaled 10,200 fish in the Indian fishery and 3,000 fish in the recreational fishery (Table II-2). The 1991 landings by recreational and Indian gillnet fisheries were the third lowest since 1978.

Escapement and Goal Assessment

The preliminary inriver run estimate for Klamath River basin fall chinook salmon is 30,900 adults, the lowest since comprehensive inriver monitoring began in 1978 (Figure II-2) and 51 percent of the predicted escapement of 60,300 adults under Council-adopted regulations.

The Klamath River basin spawning escapement of 17,600 adults was 83 percent of the 1990 escapement (21,100) and was the lowest since 1978. The escapement to natural spawning areas of 11,100 was 85 percent of the comparative 1990 escapement (Appendix B, Table B-4) and well below the floor of 35,000. This is the second consecutive year that natural escapement has been below the floor. The hatchery spawning escapement was 6,500 adults.

Natural spawning escapements in upper Klamath River tributaries totaled 6,000 adults, 13 percent greater than 1990. The Shasta River is the most important chinook salmon spawning stream in the upper Klamath River. Counts of chinook salmon spawners in the Shasta River date from 1930 (Appendix B, Table B-6). The 1991 count of 700 adults was 75 percent greater than the 1990 run (400), but was only 11 percent of the 1971-1975 average (6,300). The Shasta River supported a run of 30,700 adults, as recently as 1964, and historically received as many as 63,700 adults.

TABLE II-2. Klamath River adult inriver fall chinook run size, spawning escapement, recreational catch and Indian net harvest in numbers of fish and percent of the total inriver run size. (Page 1 of 1)

	Spawning Escapement		Inriver Recreational Catch		Indian Net Catch		Inriver Run Size
Year	Numbers	Percent	Numbers	Percent	Numbers	Percent	Numbers
1978	71,500	78	1,700	2	18,200	20	91,300
1979	34,300	68	2,100	4	13,700	27	50,100
1980	28,000	63	4,500	10	12,000	27	44,500
1981	38,300	49	6,000	8	33,000	43	77,300
1982	42,400	65	8,300	13	14,500	22	65,200
1983	44,600	79	4,200	7	7,900	14	56,800
1984	23,600	52	3,300	7	18,700	41	45,600
1985	48,200	76	3,600	6	11,600	18	63,400
1986	146,300	76	21,000	11	25,100	13	192,400
1987	130,800	64	20,200	10	53,100	26	204,100
1988	112,300	60	22,200	12	51,700	28	186,200
1989	65,700	55	8,800	7	45,600	38	120,000
1990	21,100	65	3,600	11	7,800	24	32,400
1991[a/]	17,600	57	3,000	10	10,200	33	30,900

a/ Preliminary.

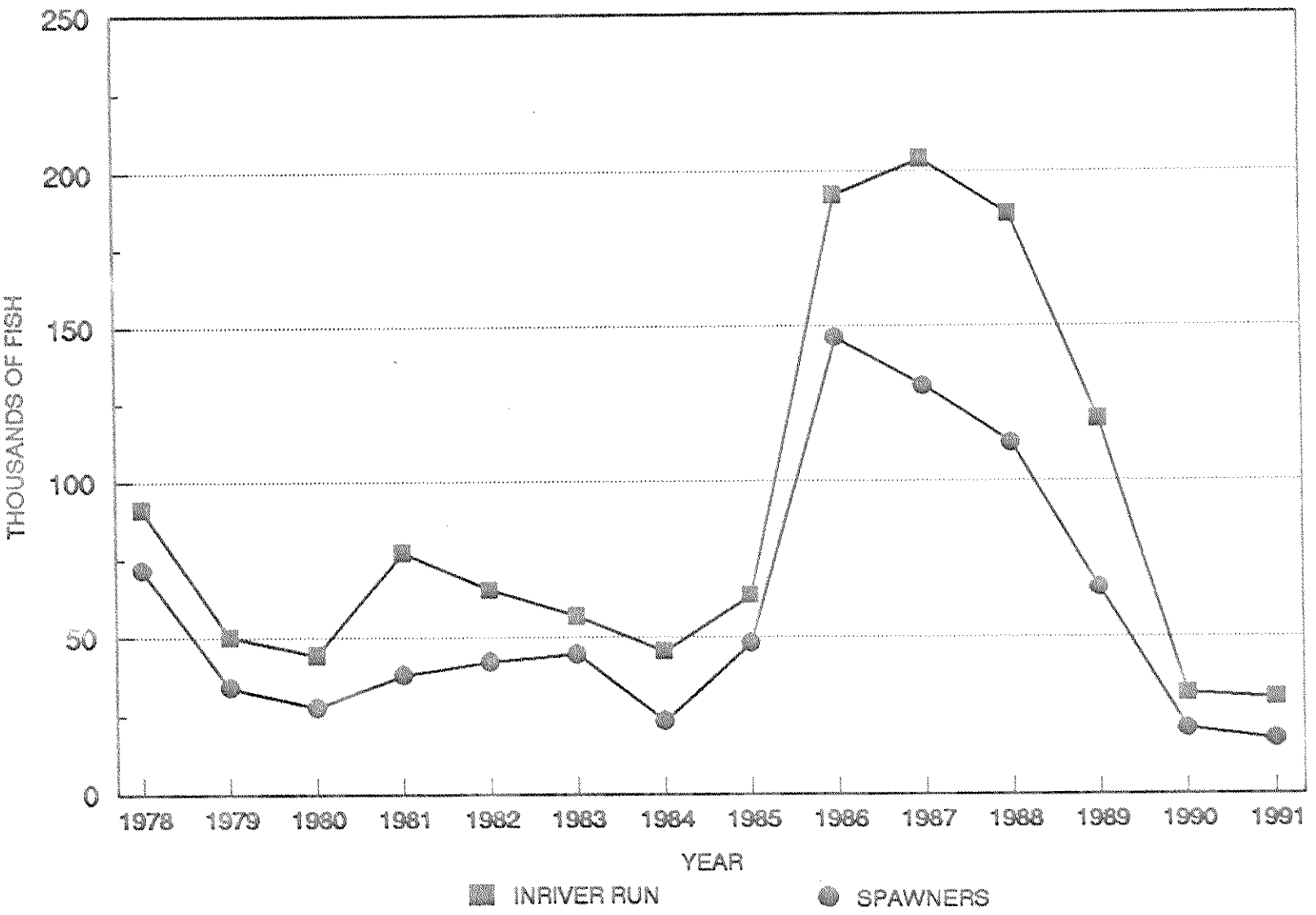


Figure II-2. Klamath River fall-run chinook salmon inriver and spawning escapements, 1978-1991.

NORTHERN CALIFORNIA COASTAL STOCKS

River harvest estimates for streams outside the Klamath River basin are not available. Indices of spawning abundance, or actual spawning escapement estimates, for chinook salmon in California coastal streams outside of the Klamath River basin are limited to one tributary of the Mad River and two tributaries of the Eel River (Appendix B, Table B-7). The preliminary results of the 1991-1992 surveys indicate very few chinook spawned in those areas. No spawning escapement goals are in place for these river systems.

OREGON COASTAL STOCKS

Oregon coastal chinook stocks are commonly categorized into two major subgroups based on ocean migration patterns. Although their ocean harvest distributions somewhat overlap, they have been labeled as either north or south/localized migrating.

North migrating chinook stocks include stocks north of and including the Elk River, with the exception of Umpqua River spring chinook. These stocks contribute primarily to ocean fisheries off British Columbia and southeast Alaska, and to a lesser degree off Washington and Oregon.

South/localized migrating chinook stocks include Rogue River spring and fall chinook, and fall chinook from smaller rivers south of the Elk River. These stocks are important contributors to ocean fisheries off Oregon and northern California. Another central Oregon stock, Umpqua River spring chinook, contributes primarily to ocean fisheries off Oregon and California, and to a lesser degree off Washington, British Columbia and southeastern Alaska.

Inside Harvest

Inside recreational harvest of fall and spring chinook occurs in most Oregon coastal estuaries and rivers. Complete estimates of the 1991 recreational chinook harvest will not be available until the fall of 1992. Estimates of estuary chinook harvests in Tillamook, Yaquina, Siuslaw, Umpqua and Coos bays from July 29 through September 2, occurring after the closure of the ocean salmon season, totaled approximately 1,000 adults. The 1990 recreational harvest estimates of fall and spring chinook, derived from ODFW salmon and steelhead punch card returns, were 39,800 and 15,500 adults, respectively (Table II-3).

Inside commercial chinook harvest is limited to returns to private aquaculture operations. A total of 4,100 chinook adults (Table II-4) returned to Oregon private aquaculture facilities in 1991.

Escapement and Goal Assessment

Oregon coastal chinook are managed for an aggregate spawning escapement of 150,000 to 200,000 naturally spawning adults. Actual escapement is not estimated for this stock aggregate. Achievement of this goal is assessed through spawning escapement indices (e.g., stream surveys, dam counts, etc.). The escapement goal is equivalent to peak spawner index counts of 60 to 90 adults per mile for both subgroups, and include both spring and fall chinook, as stated in the FMP.

TABLE II-3. Oregon coastal adult spring and fall chinook hatchery escapement and freshwater harvest. (Page 1 of 1)

	Hatchery Return		Freshwater Harvest[a/]	
	Chinook		Chinook	
Year	Spring	Fall	Spring	Fall
	THOUSANDS OF FISH			
1976	2.9	0.5	13.5	24.3
1977	2.4	4.2	13.8	35.6
1978	4.4	1.6	13.1	43.4
1979	7.0	2.0	16.4	31.2
1980	7.9	1.8	11.9	22.7
1981	2.5	1.8	11.2	30.0
1982	4.1	2.3	11.6	25.1
1983	3.9	4.0	4.9	21.5
1984	5.6	3.3	4.1	29.0
1985	8.7	3.5	9.0	29.5
1986	30.6	5.8	17.3	36.5
1987	22.8	7.1	20.2	54.8
1988	22.0	6.4	28.9	61.7
1989	32.7	4.3	23.7	53.7
1990	6.3	3.4	15.5	39.8
1991[b/]	5.2	2.6	NA	NA

a/ Freshwater harvests are derived from punch card returns and represent fish larger than 24 inches.
b/ Preliminary.

TABLE II-4. Number of salmon returning to Oregon private hatchery facilities. (Page 1 of 1)

Year	Chinook Adults	Chinook Jacks[a/]	Coho Adults	Coho Jacks[b/]	Chum
		THOUSANDS OF FISH			
1978	0.2	0.03	8.1	3.9	0.5
1979	0.3	0.4	48.5	0.7	0.01
1980	0.8	2.6	39.2	4.2	0.5
1981	2.6	2.5	111.3	6.6	0.5
1982	7.5	4.4	176.9	7.8	1.1
1983	5.1	0.9	138.1	0.8	0.5
1984	3.5	2.7	114.9	0.5	0.8
1985	9.3	25.4	313.2	18.8	3.2
1986	62.6	8.2	445.1	8.6	0.8
1987	36.8	1.9	119.0	1.5	0.3
1988	20.9	3.4	115.7	3.6	1.0
1989	13.7	0.7	45.4	1.5	0.5
1990	6.6	1.2	35.6	0.0	0.3
1991[c/]	4.1	0.0	35.1	0.0	NA

a/ Number of chinook jacks include adults less than 24 inches in length.
b/ Biological coho jacks only (separated from small adults by scale analysis).
c/ Preliminary.

North Migrating Chinook

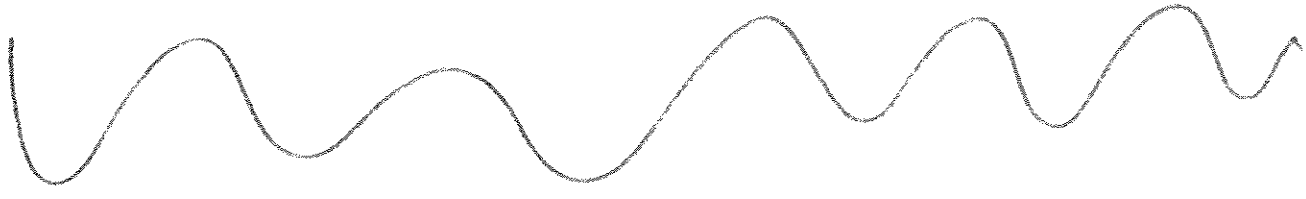
An index of spawning adults (peak count per index mile) in nine standard streams is used to measure natural spawning escapement trends for north migrating fall chinook stocks. Data have been collected since about 1950 for most systems. Overall peak chinook adult index spawning counts in 1991 are preliminarily estimated at 150 adults per mile (Appendix B, Table B-11). The north migrating stock component remains healthy as the 150 fish per mile exceeds the goal range of 60 to 90 fish per mile.

South/Localized Migrating Chinook

Standard fall chinook spawning index escapement data for the smaller southern Oregon coastal rivers (south of the Elk River) are available for the Winchuck, Chetco and Pistol rivers (Appendix B, Table B-8). Two trend indicators of Rogue River fall chinook ocean escapements are used: (1) seining studies to determine the average number of fish caught per seine haul in the lower river and (2) carcass counts (Appendix B, Table B-10). In addition, two trend indicators of spring chinook ocean escapements are utilized: (1) Rogue River counts at Gold Ray Dam and (2) Umpqua River counts at Winchester Dam (Appendix B, Table B-9). Stock status based on these indicators peaked generally during the 1986-1988 period, mostly as a result of excellent survival due to favorable ocean environmental conditions. A decrease in ocean and spawning escapement occurred from 1989-1991, with extremely low counts observed in 1990. Spring chinook escapement remained extremely poor in 1991, but escapement of fall chinook improved somewhat, probably a result of reduced chinook harvest rates during the 1991 ocean fisheries. Overall, the south/localized migrating component remained depressed in 1991.

The aggregate Oregon coastal chinook natural spawning goal of 150,000 to 200,000 adults probably was met in 1991, although the south/localized migrating component remained depressed. The status of the north migrating component remains healthy.

A preliminary estimate of total fall and spring chinook returns to Oregon coastal hatcheries in 1991 is 2,600 and 5,200 adults, respectively. Spring chinook hatchery egg-take goals were not met for the Umpqua River. Fall chinook hatchery egg-take goals were not met for the Alsea, Elk and Chetco rivers.



CHAPTER III
INSIDE COHO SALMON FISHERIES AND SPAWNING ESCAPEMENTS

CALIFORNIA STOCKS

Inside harvest of coho is not available for any river system in California. Spawning escapement estimates are available for Klamath River basin hatcheries, but not for spawning in natural areas. In 1991, coho returns to Iron Gate and Trinity hatcheries were 2,800 adults, compared to a combined goal of 2,300 adult coho.

OREGON COASTAL STOCKS

OCN coho stocks are managed as one stock aggregate that includes coho produced from Oregon rivers south of the Columbia River. The OCN stock aggregate contributes primarily to ocean fisheries off Oregon and California, and to a lesser degree to ocean fisheries off Washington and British Columbia. As discussed in the FMP, ocean fisheries within the OPI area (Leadbetter Point to the U.S./Mexico border) are managed to achieve OCN coho spawning escapement goals.

Inside Harvest

Inside recreational harvest of coho occurs in most Oregon coastal estuaries and rivers. Complete estimates of the 1991 recreational coho harvest will not be available until the fall of 1992. Estimates of estuary coho harvests in Tillamook, Yaquina, Siuslaw, Umpqua and Coos bays from July 29 through September 2, occurring after the closure of the ocean salmon season, totaled approximately 32,600 coho adults. This harvest exceeds the level anticipated preseason. The 1990 adult coho harvest in Oregon coastal estuaries and rivers is estimated at 9,500 fish (Table III-1).

Inside commercial coho harvest is limited to returns to private aquaculture operations. A total of 35,100 coho adults returned to Oregon private aquaculture facilities in 1991 (Table II-4 in Chapter 2).

Escapement and Goal Assessment

OCN coho were managed for a 1991 aggregate spawning escapement of 200,000 adults. Because of concern for overestimation of the OCN stock abundance, the Council, by emergency action, adopted a harvest rate target of 46 percent. This target harvest rate was designed to produce a spawning escapement of at least 135,000 adult coho. Spawning surveys are not complete for Oregon coastal river and lake systems. Therefore, a final analysis is not yet available. A preliminary assessment of 1991 OCN spawning escapement, adjusted for private and public hatchery strays in some systems, indicates about 109,000 adult spawners (Table III-1). This number of adults is similar to the 1990 escapement of 104,000 fish. Preliminary information based on standard index surveys suggests that the recent trend of disproportionate spawner distribution among coastal rivers was not a problem in 1991.

A preliminary estimate of total coho returns to Oregon coastal hatcheries is 38,700 adults. Hatchery egg-take goals were not met for the Tillamook, Nestucca, Umpqua, Eel Lake and Coquille systems.

CHAPTER IV
SOCIO-ECONOMIC ASSESSMENT OF THE 1991 OCEAN SALMON FISHERIES

In general, the 1991 season brought lower prices and a smaller troll catch than 1990 resulting in a 37 percent drop in exvessel value for the coast. In inflation adjusted terms, this brought the total exvessel value down to a level more similar to that experienced during the years of the El Nino effect than to other fishing years. The total number of recreational trips taken on the West Coast decreased almost 24 percent in 1991 compared to 1990.

INCOME IMPACTS OF THE 1991 OCEAN TROLL AND RECREATIONAL FISHERIES

Coastal community impacts are presented, in order to address concerns about the effects of regulations on local economies as expressed in the Magnuson Fishery Conservation and Management Act and Regulatory Flexibility Act.

and state income impacts which may [illegible]
income impact numbers in this review are reported in real (inflation adjusted) 1991 dollars.

Coastal Community and State Level Income Impacts by Area

For coastal county residents dependent on income from the ocean commercial salmon fishery, 1991 was another poor year with estimated total income impacts declining by 32 percent from $31.8 million for 1990 to the $22.3 million estimated for 1991. For those dependent on the ocean recreational fishery, there was a 22 percent decline in estimated income impacts as compared to 1990 (from $40.0 million to $31.3 million). The total state level income impact, aggregated for all 3 states, was $66.4 million for the recreational and troll ocean fisheries combined down 28 percent compared to 1990 levels and 58 percent compared to the 1976–1990 average. Relative to the 1976–1990 average, the declines related to the troll and recreational fishery were 72 and 34 percent, respectively.

California

In California, the estimated 1991 coastal area personal income generated as a result of salmon trolling decreased by 22 percent (compared to the 1990 estimate) to $18.5 million (Table IV–7). Crescent City and Eureka were hit hard leaving them with estimated income impacts of 99 and 92 percent, below the 1976–1990 average, respectively. In Fort Bragg, the drop relative to this historic average was about 75 percent and with lesser but significant reductions occurring in more southern ports.

On the recreational side, relative to the 1976–1990 historic average, the decreases in the northern ports were moderate (not more than 10 percent) with increases occurring in Fort Bragg and Monterey. There was a significant decrease in recreational activity out of San Francisco. Estimated income impacts for that area dropped by about one–third. Relative to 1990, San Francisco, Eureka and Crescent City experienced reduction of between 20 and 40 percent, while the decrease in Monterey was only 7 percent and there was close to a 60 percent increase in Fort Bragg.

Oregon

Overall, the estimated Oregon coast personal income generated by troll fishing fell 46 percent from $9.4 million in 1990 to $5.0 million in 1991 (Table IV–8). Troll related income impacts fell in every port except for Tillamook and Newport which benefitted from a heavy coho harvest. The income impacts for the Brookings area were down almost 90 percent relative to 1990 and 98 percent relative to the 1976–1990 average.

Recreational income impacts in every port dropped between 10 and 40 percent, with the largest proportional decrease occurring in the Tillamook area. In 1991, Brookings was 42 below the 1976–1990 average, farther below this average than any other port.

EXCERPTS FROM THE

PRESEASON REPORT

STOCK ABUNDANCE ANALYSIS FOR 1992 OCEAN SALMON FISHERIES

Reproduced by
U.S. Fish & Wildlife Service
Klamath River Fishery Resource Office
for the
Klamath Fishery Mangement Council

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LIST OF ACRONYMS AND ABBREVIATIONS

CDFG	California Department of Fish and Game
Council	Pacific Fishery Management Council
CVI	Central Valley index
CWT	coded-wire tag
ESA	Endangered Species Act
FMP	fishery management plan
GSI	genetic stock identification
HRM	harvest rate model
KMZ	Klamath management zone (ocean zone between Humbug Mountain and Horse Mountain where management emphasis is on Klamath River fall chinook)
KOHM	Klamath Ocean Harvest Model
KRTAT	Klamath River Technical Advisory Team
LRH	lower Columbia River hatchery (fall chinook returning to hatcheries below Bonneville Dam)
LRW	lower Columbia River wild (fall chinook spawning naturally below Bonneville Dam)
MCB	mid-Columbia River brights (hatchery fall chinook released in the mid-Columbia River)
NA	not available
NMFS	National Marine Fisheries Service
OCN	Oregon coastal natural (coho)
OCNL	Oregon coastal natural (coho) lake component
OCNR	Oregon coastal natural (coho) river component
ODFW	Oregon Department of Fish and Wildlife
OPI	Oregon production index (coho salmon stock index south of Leadbetter Point)
OPIH	Oregon production index area hatchery (adult coho)
PRIH	Oregon coastal private hatchery (adult coho)
SAS	Salmon Advisory Subpanel
SCH	Spring Creek Hatchery (fall chinook returning to Spring Creek Hatchery)
SSC	Scientific and Statistical Committee
STEP	Salmon Trout Enhancement Program (Oregon)
STT	Salmon Technical Team (formerly the Salmon Plan Development Team)
TAC	total allowable catch
TR	trace
URB	upper river brights (fall chinook originating primarily above McNary Dam)
USFWS	U.S. Fish and Wildlife Service
WCVI	West Coast Vancouver Island
WDF	Washington Department of Fisheries

CHAPTER I
COASTWIDE SUMMARY

Council framework amendment management goals for chinook and coho salmon are presented in Appendix A, Table A-1. Abundance expectations in 1992 for chinook and coho stocks are summarized in Tables I-1 through I-3.

CHINOOK

Abundance Projections Compared to 1991 Preseason Projections

Abundance projection details for individual stocks are contained in Table I-1 and Chapter II.

- Central Valley chinook: similar to 1991 (third lowest since 1970)
- Klamath River fall chinook: considerably below 1991. Lowest age-2 returns (age-3 predictor) on record and very low age-3 returns (age-4 predictor)
- Oregon Coastal chinook:
  - South/localized migrating: similar to 1991 low level
  - North migrating: average to above long-term average
- Columbia River:
  - URB: 23 percent decrease (second lowest return on record)
  - LRH: 59 percent increase (still below average)
  - SCH: 27 percent decrease (second highest since 1984 but still below average)
  - LRW: 37 percent increase
  - MCB: 12 percent decrease (below recent 5-year average)

Impacts of 1991 Regulations

Given 1992 abundance expectations, normal fishing patterns and 1991 quotas (catches or harvest rates for fisheries without quotas), the impacts of the 1991 regulations or regulatory procedures on chinook stocks in 1992 would be as follows for stocks with potential problems.

- Sacramento River escapement in 1992 would be near or below the lower end of the Council's goal range.
- Klamath River escapement would not meet the minimum spawning escapement floor.
- The inriver return of LRH stocks is projected to be 59 percent above the 1991 preseason projection and 81 percent above the level observed in 1991, but still may not be sufficient to meet

TABLE I-1. Preliminary preseason forecasts in thousands of fish for chinook stocks. (Page 1 of 3)

Production Area, Type of Prediction and Stock or Stock Grouping		Preseason Estimates of Adults (Postseason Estimates in Parentheses) 1992	1991	1990	1989	Methodology for 1992 Prediction and Source
California Central Valley (Index) Sacramento and San Joaquin Basins, Fall, Late Fall and Spring Runs		452.0	466.0 (440.6)	500.0-900.0 (571.1)	625.0-885.0 (660.7)	Hatchery data and jacks. CDFG.
Klamath River (Ocean Abundance) Fall Run, Age-3 and -4 Fish		60.8	123.8 (67.1)	279.6 (178.5)	397.7 (298.2)	Linear regression analysis of age-specific ocean abundance estimates on inriver runs of same cohort, 1979-1986 broods and other procedures discussed in Chapter II. STT.
Oregon Coast South/Localized and North Migrating			Preseason Estimates Not Made			None.
Columbia River (Ocean Escapement)						Relationships between successive age groups within a year class of Columbia River returns, 1962-1989 broods. Columbia River Joint Staffs.
Upriver Spring		71.4	61.9 (59.8)	120.8 (99.4)	92.7 (83.3)	
Willamette Spring		102.5	107.0 (103.6)	125.5 (127.8)	102.0[a/] (115.1)[a/]	
Upriver Summer		24.2[b/]	28.4[b/] (18.9)	31.0[b/] (25.0)	31.3[c/] (28.8)	
URB Fall		68.4	88.8 (102.2)	127.2 (152.2)	234.0 (259.9)	
SCH Fall		40.9	56.3 (52.3)	27.3 (18.5)	29.5 (26.8)	
LRW Fall		17.4	12.7 (19.9)	23.7 (20.3)	27.3 (38.6)	
LRH Fall		113.2	71.4 (62.6)	68.5 (59.9)	104.9 (130.9)	
MCB Fall		42.5	48.4 (36.6)	69.5 (58.5)	d/ (93.1)	
Washington Coast			Not Available			WDF and Tribes.
Puget Sound[e/]						WDF and Tribes
Nooksack/Samish	Hatchery & Natural	60.5	66.5	67.3 (104.0)	93.2 (72.7)	1988 brood release times average return/release.
East Sound Bay	Hatchery	0.7	2.8	3.4 (1.3)	4.0 (2.9)	1983-1990 mean return times assumed no 4 year old production.
Skagit	Hatchery	1.4	1.2	1.4 (1.5)	0.6 (0.8)	1988 brood release time 1986-1990 mean return/release.

TABLE I-1. Preliminary preseason forecasts in thousands of fish for chinook stocks. (Page 2 of 3)

Production Area, Type of Prediction and Stock or Stock Grouping		Preseason Estimates of Adults (Postseason Estimates in Parentheses) 1992	1991	1990	1989	Methodology for 1992 Prediction and Source
Skagit	Natural	16.8	16.2	21.7 (19.4)	21.7 (13.0)	1986–1990 mean run size.
Stillaguamish	Natural	1.9	2.0	3.3 (1.8)	2.8 (1.7)	Midpoint of 2 methods: (1) average run size 1986–1990 and (2) 1988 escapement times average return/spawner.
Snohomish	Hatchery	1.5	1.2	1.1 (2.0)	1.1 (2.9)	1988 brood release times 1986–1990 average return/release.
Snohomish	Natural	7.5	7.7	8.7 (8.4)	15.0 (6.3)	Midpoint of 2 methods: (1) average run size 1986–1990 and (2) 1988 escapement times average return/spawner.
Tulalip	Hatchery	1.1	3.1	2.2 (2.2)	2.9 (2.9)	1988 brood release times average return/release.
South Puget Sound	Hatchery	67.2	67.0	69.8 (67.4)	56.5 (72.4)	Appropriate brood release times age-specific return/release for Area 10E. Mean run size for Deschutes, Couler, Green, Lake Washington, Nisqually. 1988 brood release times average return/release for McAllister. Regression of run size versus brood release for Carr, Puyallup.
South Puget Sound	Natural	27.9	31.3	22.2 (63.0)	16.6 (49.5)	1988 escapement times average return/spawner for Lake Washington, Puyallup. Mean run size for Green, Nisqually. Proportion of hatchery and natural forecast for Carr, McAllister (see method for hatchery).
Hood Canal	Hatchery & Natural	23.7	26.7	25.6 (12.9)	21.1 (25.5)	1986–1990 mean run size.
Strait of Juan de Fuca	Hatchery	1.7	2.0	1.8 (0.7)	2.1 (1.2)	Appropriate brood release time age-specific return/release.
Strait of Juan de Fuca	Natural	6.4	6.8	5.5 (3.7)	1.4 (5.5)	Average natural proportion times total run size forecast from hatchery data, method above for Elwha. 1988 escapement times Skagit average return/spawner for Hoko.

a/ Includes jacks.
b/ Previous 3-year average of ocean escapements.
c/ Previous year's ocean escapement; no preseason estimate was made for this stock.
d/ Preseason estimates for the Council were not made.
e/ 1991 postseason estimates not available; forecast is Puget Sound run size. Run available to U.S. net fisheries. Does not include fish caught in troll and recreational fisheries.

TABLE 1-2. Preliminary preseason forecasts of total age-3 ocean abundance, in thousands of fish, for coho salmon stocks. (Page 1 of 2)

Production Source and Stock or Stock Group		Preseason Estimates of Adults (Postseason Estimates in Parentheses) 1992	1991	1990	1989	Methodology for 1992 Prediction
All OPI Area Stocks (California and Oregon Coasts and Columbia River)		652.7	1,681.3 (1,991.5)	1,376.9 (979.5)	2,039.3 (1,986.2)	Sum of stock component estimates.
OPI Public Hatchery		385.3	1,215.4 (1,722.4)	909.6 (575.4)	1,381.5 (1,573.1)	Multiple linear regression of OPI public hatchery jacks to adults adjusted for Columbia River delayed smolt release; data base 1971-1991.
Columbia River Early		215.7	793.4	426.3	515.3	
Columbia River Late		111.7	293.8	396.0	619.7	
Coastal		57.9	128.2	87.3	246.5	
Private Hatchery		0.0	37.1 (60.4)	142.8 (124.3)	206.4 (104.8)	No smolts were released in 1991.
OCNR		255.0	409.2 (191.5)	307.5 (263.1)	430.0 (294.9)	Recruits per spawner, adjusted changes in OPI public hatchery jacks per smolt between 1991 and 1990 release years.
OCNL		10.7	12.7 (8.8)	13.5 (12.2)	16.2 (11.0)	Most recent 3-year average population abundance.
STEP		1.7	6.9 (8.4)	3.5 (4.5)	5.2 (2.4)	Smolt production with 1991 smolt to adult survival rates adjusted by changes in OPI public hatchery jacks per smolt between 1991 and 1990 release years.
Washington Coast Willapa[a/]	Hatchery	113.5	174.7	165.7	162.1	Regression of terminal run size and jack returns.
Grays Harbor[a/]	Natural	60.4	244.6	81.2	83.5	Smolt outmigration estimate time predicted marine survival.
	Hatchery	76.5	109.8	121.0	85.3	Average return per release and regression of terminal run size and jack returns.
Quinault	Natural	13.3	13.7	14.0	14.9	Recent average ocean recruits.
	Hatchery	16.7	16.9	17.3	13.7	Juvenile to adult survival rate applied to release.
Queets	Natural	11.7	16.1	13.6	13.6	Average smolt to adult survival rate applied to 1991 smolt estimate.
	Hatchery	18.2	21.9	28.5	32.3	Average smolt to adult survival rate applied to release.
Hoh	Natural	8.9	6.3	8.1	11.0	Recruits per spawner from Queets River stock applied to Hoh River percent spawners, adjusted for differential survival.
	Hatchery	2.6	0.3	2.2	1.2	Average smolt to adult survival rate applied to release.

TABLE 1-2. Preliminary preseason forecasts of total age-3 ocean abundance, in thousands of fish, for coho salmon stocks. (Page 2 of 2)

Production Source and Stock or Stock Group		Preseason Estimates of Adults (Postseason Estimates in Parentheses) 1992	1991	1990	1989	Methodology for 1992 Prediction
Quillayute Fall Run	Natural	22.8	16.3	45.5	28.2	Average ocean recruit per spawner to brood year escapement.
	Hatchery	4.5	14.9	6.2	7.6	Total marine recruits regressed on brood jacks rack return times proportion of falls in total smolt release.
Quillayute Summer Run	Natural	3.1	2.9	1.5	2.3	Average ocean recruit per spawner to brood year escapement.
	Hatchery	5.0	14.7	10.6	12.0	Total marine recruits regressed on brood year jacks rack return times proportion of summers in total smolt release.
Puget Sound[a/]						
Strait	Natural	25.7	24.1	25.8	20.8	b/
	Hatchery	51.4	60.5	44.0	34.0	c/
Nooksack-Samish	Natural	81.9	75.3	84.2	66.6	b/
	Hatchery	512.6	441.7	562.0	553.8	c/
Skagit	Natural	80.1	95.3	98.9	78.0	d/
	Hatchery	28.5	66.2	67.9	94.1	d/
Stillaguamish-Snohomish	Natural	432.1	380.3	384.6	302.9	e/
	Hatchery	197.4	235.7	143.4	164.2	c/
South Sound	Natural	340.3	311.2	336.9	253.4	b/
	Hatchery	1,039.5	1,214.7	1,160.5	1,204.0	c/
Hood Canal	Natural	23.2	38.1	94.2	79.3	f/
	Hatchery	47.4	124.2	159.9	199.6	c/

a/ Run sizes scaled to coho assessment model base period (1979-1981) catch and escapement.
b/ Natural prediction: relationship of summer stream flows and adult returns 2 years later; 1963-1984 base years.
c/ Hatchery prediction: average juvenile to adult survival rates.
d/ Natural and hatchery forecast of ocean abundance based on smolt outmigration estimates times marine survival.
e/ Snohomish River estimate based on Beverton-Holt spawner-recruit function. Stillaguamish River forecast is midpoint of a range established by (1) Beverton-Holt spawner-recruit function and (2) spawner-recruit function adjusted for winter high flow index.
f/ Hood Canal forecast is the average of (1) summer flow model and smolt outmigration estimates and (2) multiple regression of flow and outmigration estimates.

TABLE 1-3. Comparison of 1992 estimated ocean escapements for critical natural coho stocks under 1991 Council regulations, with 1991 and 1992 preliminary preseason abundance forecasts.[a/]

Coho Stock	Ocean Escapement Estimates: 1992 Preseason Abundance	Ocean Escapement Estimates: 1991 Preseason Abundance	1992 Spawning Escapement Goal[b/]
	COHO (thousands)		
Skagit[c/]	29.0	40.8	30.0
Stillaguamish[c/]	15.7	32.9	17.0
Hood Canal[c/]	8.5	17.6	19.1
Quillayute Fall	6.1	8.8	6.2-15.8
Hoh	2.4	3.4	2.0-5.0
Queets	3.5	7.9	5.8-14.5
Grays Harbor	24.4	138.0	35.4
OCN	28.4	238.1	135.0[d]

a/ Quota levels include catch and hooking mortality estimates used in planning the Council's 1991 ocean fisheries and a coho catch for the Canadian troll fishery off the WCVI of 1.8 million.

b/ Spawning escapement goals are not directly comparable to ocean escapement since inside fishery catch is not considered.

c/ Estimated number of fish entering Area 4B and available to U.S. net fisheries (excludes Puget Sound troll and recreational catch).

d/ Goal varies with stock abundances below 400,000 coho.

all hatchery production goals, since a large number of the 1991 jacks returned to a single tributary, the Willamette River. Inriver fisheries impacts will determine achievement of LRH brood stock needs.

- The inriver return of SCH tule fall chinook is projected to be 27 percent below the 1991 preseason projection and 22 percent below the level observed in 1991. Achievement of the escapement goal for this stock depends upon impacts of inriver fisheries.

- The inriver return of upper Columbia River brights is projected to be 23 percent below the 1991 preseason projection, 33 percent below the 1991 observed level and the second lowest return on record. Achievement of the spawning escapement goal for this stock will require very restrictive inside fisheries.

- Columbia River upriver spring and summer chinook returns will be well below their respective goals. However, Council area fisheries have a minor impact on these depressed stocks.

COHO

Abundance Projections Compared to 1991 Preseason Projections

Details for individual stocks are contained in Chapter III and Table I-2.

OPI:

- 61 percent below 1991 preseason estimate and 67 percent below the 1991 postseason estimate.

- OCN -- 37 percent below 1991 preseason estimate and 33 percent above 1991 postseason estimate.

- Public hatchery -- 68 percent below the 1991 preseason estimate and 78 percent below the 1991 postseason estimate.

Washington Coastal:

- With the exception of the Hoh and Quillayute rivers fall runs, most natural stocks are anticipated to be less abundant than forecast in 1991. Decreases in abundance range from 27 percent for the Queets River stocks to 75 percent for the Grays Harbor stocks. Increases over the 1991 forecast for the Quillayute and Hoh rivers fall stocks are projected to be 40 and 41 percent, respectively.

- Hatchery stocks are expected to be less abundant than forecast in 1991, except for the Hoh River run. The Hoh River hatchery run forecast of 2,600 fish is 8 times larger than the 1991 forecast. Decreases in hatchery run size forecasts range from 1 percent for Quinault River to 70 percent for Quillayute River.

Puget Sound:

- Combined natural and hatchery stocks are 7 percent below the 1991 forecast. The abundance of combined natural stocks is expected to be 6 percent above the 1991 forecast while the combined hatchery stocks are 12 percent below the 1991 forecast. The Hood Canal natural

stock is expected to be 40 percent less than the forecast abundance level in 1991. The Skagit River natural stock abundance is expected to be 16 percent below the expected abundance level of 1991. The Stillaguamish River natural stock is expected to be 34 percent less than the 1991 forecast.

Impacts of 1991 Regulations

Based on the STT analysis for 1991 regulations and quotas with 1992 projections of abundance, impacts on coho stocks with potential problems are as follows. All natural stocks, except the Hoh River stock, would not meet spawning escapement goals under the 1991 preseason expected regulations (Table I-3). Additionally, the Columbia River hatchery early and late coho stocks would not meet their egg-take goals under 1991 planned fishery levels.

KLAMATH RIVER FALL RUN CHINOOK

Predictor Description

Linear regression analyses have been used for Klamath River fall chinook to relate ocean population estimates for age-3 and -4 fish to inriver run size estimates of age-2 and -3 fish, respectively, of the previous year. From 1986-1989, ocean population estimates, using cohort reconstruction, were based on CDFG inriver run size estimates for jacks and adults, USFWS inriver adult age composition estimates, ocean harvest rate estimates based on CWTs, and fixed stock maturity rate estimates used in the KRTAT HRM. In years subsequent to 1989, the KRTAT has modified the cohort reconstruction methods previously used, determining river adult age composition and maturity rates from CWT data for each year.

The age-3 ocean population estimate for 1992 is based on the 1979-1987 broods, omitting the 1980 brood due to El Nino effects, and the 1985 brood because of its poor fit with the other data points in the relationship. The age-4 ocean population estimate is based on the 1979-1986 broods (Table II-4.)

Ocean fisheries harvest small numbers of age-2 and -5 Klamath River fall chinook. The abundance of age-2 fish was estimated by dividing the 1988-1991 average ocean abundance of age-3 fish by the over-winter survival rate (50 percent) assumed in the HRM. The abundance of age-5 fish was estimated by multiplying the age-4 ocean cohort size remaining at the end of the 1991 season by the over-winter survival rate (80 percent) assumed in the HRM.

TABLE II-4. Estimated number of fall-run chinook salmon by age entering the Klamath River (in thousands of fish), including estimates of ocean population sizes.[a/]

Return Year	Inriver Age Composition					Ocean Impact Rate by Age		Ocean Population		
	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	0.60	0.65	344.7	106.7	451.4
1983	3.8	35.8	20.7	0.9	57.5	0.30	0.70	103.8	84.9	188.8
1984	8.3	29.6	15.2	2.3	47.1	0.15	0.43	103.4	29.2	132.6
1985	69.4	30.6	32.8	0.9	64.4	0.27	0.29	138.4	46.3	184.7
1986	44.5	167.7	27.0	TR	194.8	0.32	0.52	608.1	56.4	664.6
1987	19.0	120.8	87.9	TR	208.7	0.38	0.53	420.3	194.5	614.8
1988	24.0	134.9	54.6	1.2	190.8	0.38	0.45	617.1	110.7	727.8
1989	9.1	11.8	108.8	3.3	123.9	0.22	0.45	99.3	198.9	298.1
1990	4.1	12.6	20.3	0.2	33.1	0.65	0.61	126.1	52.4	178.5
1991	1.3	12.4	19.2	0.1	31.7	0.17[b/]	0.24	40.5[b/]	26.6	63.6

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.

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

Predictor Performance

The preseason ocean abundance estimates for age-3 fish since 1985 have ranged from 30 to 227 percent and averaged 115 percent of the postseason estimates, using the KRTAT cohort reconstruction method (Table II-5). The age-4 preseason estimates for these same years ranged from 77 to 134 percent and averaged 101 percent of the postseason estimates. The Klamath River regression models have been updated each year using the revised data points for age-3 and -4 fish and the postseason estimate for the age-2 and -3 fish of the previous year. The STT can only speculate why the Klamath River regression model for age-3 abundance has failed to accurately estimate stock abundance levels. Strong possibilities are that over-winter natural mortality between age-2 and -3, set at 50 percent in the model, is highly variable, and/or variations in the age-3 maturity rate also exist.

Prior to the 1991 fishing season, the regression relationships traditionally used to predict age-3 ocean abundance (straight line relationship with a computed Y intercept) was reviewed by the Council. At that time, the discussion centered around deletion of the 1980 and 1985 broods in the age-3 predictor and whether or not the Y intercept should be computed or forced through zero. Forcing the regression through zero would satisfy the most reasonable biological condition; i.e., if there are no age-2 fish inriver, there would be no age-3 fish the following year.

There was general consensus by the STT and the SSC that the 1980 and 1985 broods should be deleted when predicting the age-3 ocean population (a significant statistical relationship does not exist if they are included). Consensus was not reached, however, on whether or not to force the Y intercept through zero. The predictor for 1991 used by the Council (straight line regression with a computed Y intercept) resulted in an overestimate of age-3 ocean stock size (Table II-5).

1992 Stock Status

The projection of age-3 Klamath River fall chinook ocean abundance in 1992 is difficult to predict due mainly to a 1991 jack return below any jack return previously observed. The jack estimate (1,300 fish) in 1991 compares to a previous low return of 3,800 fish in 1983. Therefore, the methods used by the STT in recent years to predict age-3 abundance (linear regression analysis based on inriver run size of age-2 fish) is questionable, since the 1991 age-2 return is outside the range of the regression analysis data (Figure II-2). Various regression methodologies produce estimates of 1992 age-3 ocean stock size between 11,800 and 60,100 fish (Table II-6). The STT investigation of alternative estimation procedures at low stock size indicates an age-3 ocean abundance of about 25,000 fish. These include looking at the number of age-3 fish produced per jack from other low jack returns in the Klamath River basin (an average of 19 age-3 fish per jack the previous year for the 1981, 1982 and 1987 broods) as well as analyzing average maturity rates and resultant age-3 population size during these same low abundance years.

Based on all these analyses, the STT feels that an ocean abundance estimate for 1992 age-3 Klamath River fall chinook of about 25,000 is reasonable. This is within the range of estimates examined and is very close to estimates based on the other three low abundance brood years. The STT is concerned that this stock has not met the minimum escapement goal for the past two years.

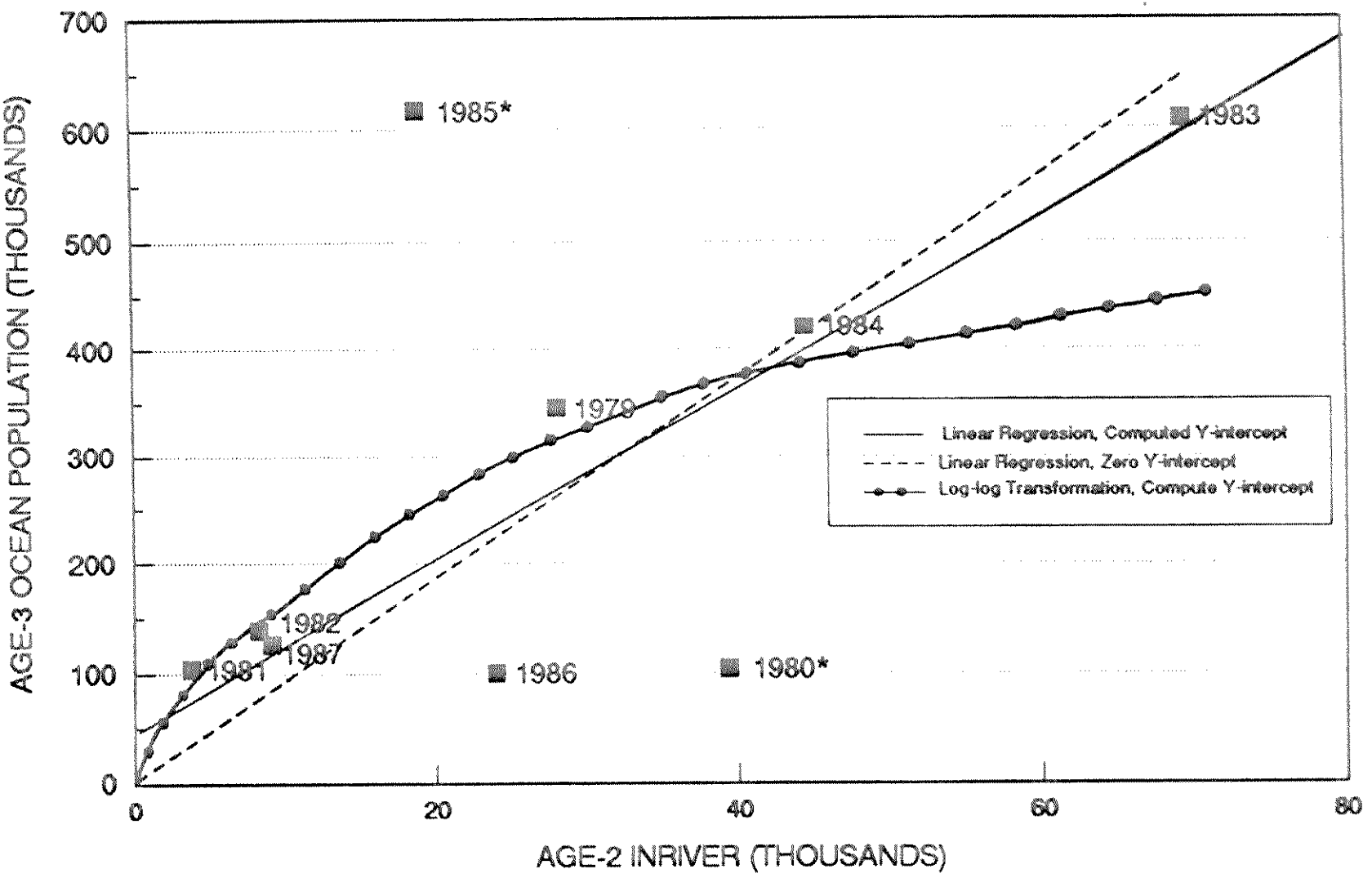
The projection of age-4 ocean stock size in 1992 is more straightforward, since the age-3 inriver return of 12,400 fish is within the range of the existing data. The linear regression of age-3 river

TABLE II-5. Comparisons of preseason and postseason ocean abundance estimates for age-3 and -4 Klamath River fall chinook.

Age	Season	Preseason Estimate	Postseason Estimate	Pre/Postseason
3	1985	56,500	138,400	0.41
	1986	213,000[a/]	608,100	0.35
	1987	255,900	420,300	0.61
	1988	185,400	617,100	0.30
	1989	225,300	99,300	2.27
	1990	239,500	126,100[b/]	1.90
	1991	88,100	40,500[b/]	2.18
	Average			1.15
4	1985	45,500	46,300	0.98
	1986	53,000	56,400	0.94
	1987	164,900	194,500	0.85
	1988	149,100	110,700	1.38
	1989	172,400	198,900	0.87
	1990	40,100	52,400	0.77
	1991	35,700	26,600[b/]	1.34
	Average			1.01

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

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



* Not Part of Regression Statistics

Figure II-2. Linear regression of ocean age-3 on inriver age-2 Klamath River fall chinook of the same cohort, 1979-1987 broods without the 1980 and 1985 broods (years shown are brood years).

TABLE II-6. Klamath River chinook age-3 ocean population size for 1992 using various regression methodologies.[a/]

Method	Age-3 Ocean Stock Size
Linear Regression, Computed Y-intercept	60,100
Log-log Transformation, Computed Y-intercept	44,000
Linear Regression, Zero Y-intercept	11,800

a/ All methods use 1979-1987 brood years without 1980 and 1985.

return and age-4 ocean population the following year for the 1979-1987 brood years (Figure II-3) was used to produce an age-4 ocean stock size of 35,800 fish.

Late-season (September through November) ocean fisheries in 1991 harvested an estimated 1,300 Klamath River fall chinook (1,000 age-4 fish and 300 age-5 fish). These fish should be deducted from the ocean allocation in determining the actual allowable ocean harvest level in 1992.

The age-4 ocean stock size of 35,800 fish, taking into account the 1,000 fish harvested in ocean fisheries in the fall of 1991 and a 94 percent maturity schedule, would produce an age-4 inriver run (in the absence of any ocean fishing in 1992 south of Cape Falcon) of 32,700 fish (Table II-7). In the absence of inriver fisheries, the escapement level in Amendment 9 of 35,000 naturally spawning fish (and assuming no inriver fishery), an additional 14,600 age-3 fish would need to enter the river to clear the escapement floor. The average maturity rate of Klamath River fall chinook (37 percent) would necessitate a minimum age-3 ocean population of 39,500 fish for the floor escapement to be cleared.

Evaluation of 1991 Regulations on 1992 Stock Abundance

The KOHM has not yet been updated to evaluate 1992 ocean fishery options. The KOHM was developed for use in evaluating 1988 ocean fishery options, and has been updated each year thereafter. When the model is recalibrated for 1992, it will be calibrated to the average 1986-1990 fishery observations. A precise estimate of 1991 regulation impacts on 1992 stock projections for Klamath River fall chinook is not possible at this time.

The Council's framework plan goal for Klamath River fall chinook (Amendment 9) is to achieve a 33 to 34 percent escapement rate for each brood of fish, except that a minimum escapement of 35,000 natural adults is to be protected in all years. The amendment allows for any ocean and inriver allocation which meets the escapement rate goal and/or minimum escapement floor. The 1991 Council-adopted regulations were estimated preseason to provide an inriver escapement of 60,300 adult fish, an ocean harvest rate on age-4 fish of 0.16 and an inriver harvest rate of 0.28. Ocean and river fisheries in 1991 are estimated to have harvested age-4 Klamath River fall chinook at rates of 0.24 and 0.51, respectively (Table II-8). An ocean/inriver allocation split in 1992, similar to that adopted preseason in 1991, would result in a spawning escapement of about 27,800 adults, 20,600 of which would spawn in natural areas, 14,400 fish below the natural escapement floor.

The projections of 1992 stock size contained in this report will not support 1991 ocean and river fisheries while meeting the objectives of Amendment 9.

OTHER CALIFORNIA COASTAL CHINOOK STOCKS

Other California streams which contribute to ocean fisheries include the Smith, Little, Mad, Eel and Mattole rivers and Redwood Creek. All of these streams support fall stocks and are believed to contribute to ocean fisheries primarily off the California and Oregon coasts. Information is insufficient to forecast ocean abundance levels of these stocks.

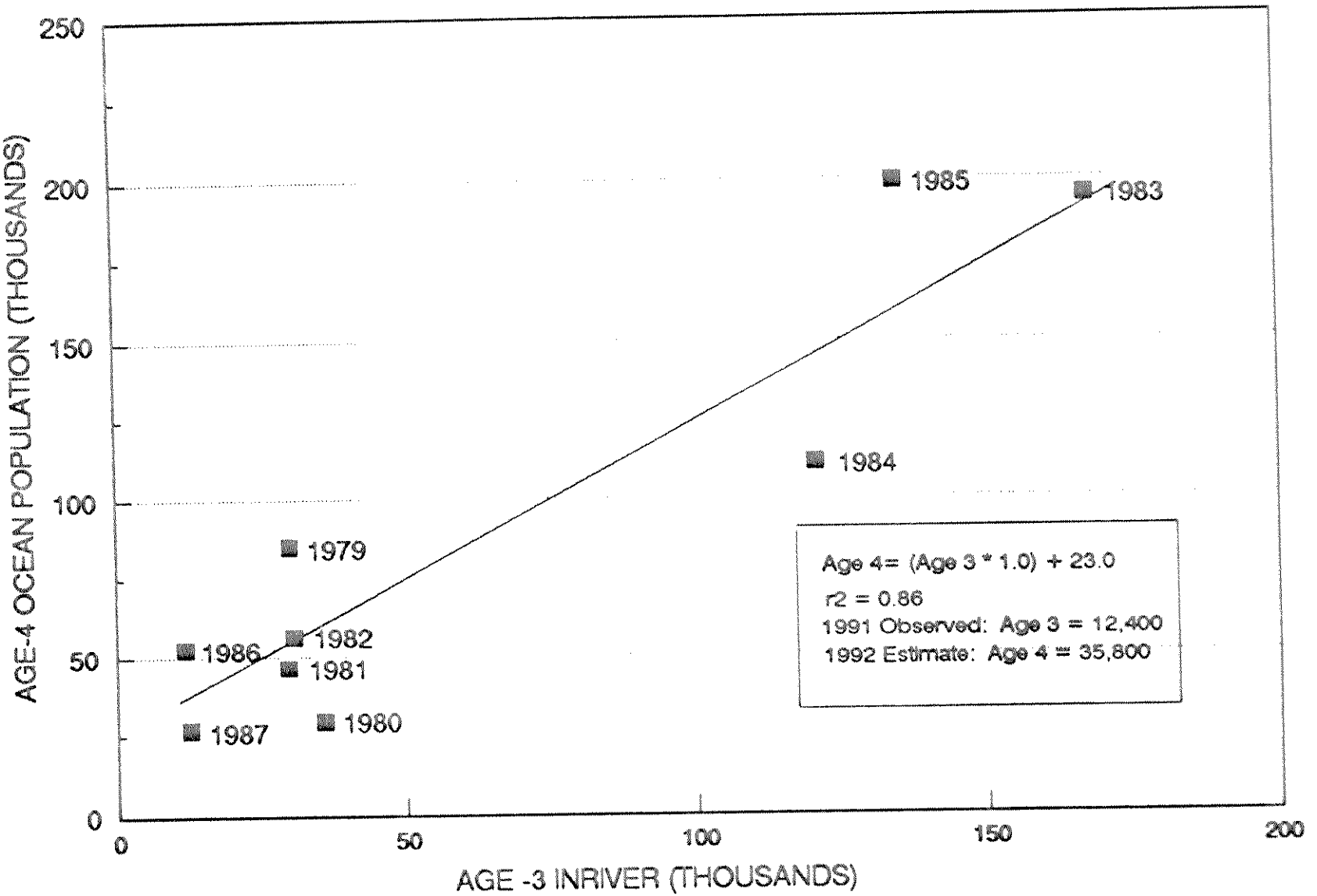


Figure II-3. Linear regression of ocean age-4 on inriver age-3 Klamath River fall chinook of the same cohort, 1979-1987 broods (years shown are brood years).

TABLE II-7. Calculation of Klamath River fall chinook natural spawning escapement requirements based on 1992 ocean stock estimates.[a/]

Parameter Description	1992 Estimate
Age-4 Ocean Stock Size	35,800 fish
1991 Fall Fishery Impacts	1,000 fish
Age-4 Ocean Stock Size Now Available	34,800 fish
Age-4 Maturity Factor	94 percent
Age-4 Inriver Population	32,700 fish
Inriver Population Needed to Provide 35,000 Natural Adults	47,300 fish
Age-3 Inriver Population Required	14,600 fish
Age-3 Maturity Factor	37 percent
Age-3 Ocean Stock Size Required	39,500 fish

a/ Assumes no ocean or river harvest in 1992.

TABLE II-8. Harvest levels and rates of age-3 and age-4 Klamath River fall chinook (biological years are defined as Sept. 1 through Aug. 31 for ocean fisheries).

Area	1991				1990				1989			
	Age 3		Age 4		Age 3		Age 4		Age 3		Age 4	
	Harvest	Impact Rate	Harvest	Impact Rate	Harvest	Impact Rate	Harvest	Impact Rate	Harvest	Impact Rate	Harvest	Impact Rate
Ocean Harvest[a/]												
KMZ												
Troll	0	0.00	100	<0.01	1,500	0.01	900	0.02	600	0.01	7,500	0.04
Recreational	2,100	0.05	800	0.03	9,800	0.08	2,100	0.04	4,100	0.04	8,700	0.04
Subtotal	2,100	0.05	900	0.03	11,300	0.09	3,000	0.06	4,700	0.05	16,200	0.08
North of KMZ	1,200	0.03	900	0.03	48,000	0.38	22,400	0.43	9,400	0.09	46,800	0.24
South of KMZ	3,200	0.08	4,400	0.17	22,500	0.18	6,600	0.13	7,900	0.08	26,200	0.13
Subtotal	4,400	0.11	5,300	0.20	70,500	0.56	29,000	0.55	17,300	0.17	73,000	0.37
Ocean Total	6,500	0.17	6,200	0.24	81,800	0.65	32,000	0.61	21,900	00.22	89,200	0.45
River Harvest[b/]												
River Net	1,900	0.15	7,800	0.41	1,300	0.10	6,000	0.30	2,700	0.23	41,000	0.38
River Recreational	1,000	0.08	2,000	0.10	1,400	0.11	2,200	0.11	900	0.08	7,700	0.07
River Total	2,900	0.23	9,800	0.51	2,700	0.21	8,200	0.40	3,600	0.31	48,700	0.45

a/ Harvest rate expressed as percent of age-specific ocean population at the start of the fishing season.

b/ Harvest rate expressed as percent of age-specific inriver run. Age-specific net harvest estimate provided by USFWS, Arcata. Age-specific recreational harvest and inriver run estimates provided by CDFG.

OREGON COASTAL CHINOOK STOCKS

Oregon coastal chinook stocks are commonly categorized into two major subgroups based on ocean migration patterns. Although their ocean harvest distributions overlap somewhat, they have been labeled as either north or south/localized migrating.

Oregon Coastal North Migrating Chinook

North migrating chinook stocks include stocks north of and including the Elk River, with the exception of Umpqua River spring chinook. These stocks contribute primarily to ocean fisheries off British Columbia and southeast Alaska, and to a lesser degree off Washington and Oregon.

Predictor Description and 1992 Stock Status

Specific techniques have not been developed to make quantitative abundance estimates for these stocks. Qualitative expectations are based on continued strong parental year spawning escapement. Spawning escapement is assessed yearly on nine selected streams from the Nehalem through Coquille rivers. Peak spawning counts of adults are obtained from standard index areas on these streams and are monitored to assess stock trends ("Review of 1991 Ocean Salmon Fisheries," Appendix B, Table B-11). Natural fall chinook stocks from the Nehalem River on the north Oregon coast south to the Elk River near Humbug Mountain dominate production from this subgroup. Also present in lesser numbers are hatchery spring and fall chinook produced in the Trask, Nestucca, Salmon, Yaquina, Alsea, Coos and Elk rivers.

The generalized expectation for these stocks in 1992 is for a continuation of average to above the long-term average (1961-1991) abundance, as observed in recent years. Record adult spawners per mile observed during the 1985-1991 period are a primary indicator of the general health of these stocks.

South/Localized Migrating Chinook

South/localized migrating chinook stocks include Rogue River spring and fall chinook, and fall chinook from smaller rivers south of the Elk River. These stocks are important contributors to ocean fisheries off Oregon and northern California. Another central Oregon stock, Umpqua River spring chinook, contributes primarily to ocean fisheries off Oregon and California, and to a lesser degree off Washington, British Columbia and southeastern Alaska.

Predictor Description and 1992 Stock Status

Quantitative abundance estimates for these stocks are not made. General trends in stock abundance for southern Oregon coastal chinook stocks are assessed through indices of escapement in area rivers ("Review of 1991 Ocean Salmon Fisheries," Chapter II and Appendix B).

Umpqua River and Rogue River Spring Chinook

Umpqua and Rogue rivers spring chinook contribute to ocean fisheries primarily as age-3 fish. Jacks counted (chinook less than 24 inches) over Winchester (Umpqua River) and Gold Ray dams (Rogue River) are composed of age-2 and -3 fish. Thus, jack counts in one year can not be directly used

to predict the abundance of age-3 fish for the following year. However, since jack returns in 1991 were substantially below levels observed in recent years, age-3 abundance in 1992 will probably be considerably below both recent year levels and the long-term average ("Review of 1991 Ocean Salmon Fisheries," Appendix B, Table B-9).

Rogue River Fall Chinook

Rogue River fall chinook contribute to ocean fisheries principally as age-3, -4 and -5 fish. Mature fish enter the river each year from mid-July through October, with the peak run occurring during August and September. Historic assessments of abundance have been based on a combination of average counts per beach seine haul and on observations of carcass counts during spawning surveys ("Review of 1991 Ocean Salmon Fisheries," Appendix B, Table B-10). Carcass counts have been shown to be a better indicator of inriver run size than are seine catches.

For the purposes of ocean impact modeling a Rogue River fall chinook ocean population index has been developed based on carcass counts, ocean harvest rates and cohort reconstruction methods (Table II-9). Linear regression analysis is used to relate the Rogue River fall chinook ocean abundance index for age-3, -4 and -5 fish to inriver carcass counts of age-2, -3 and -4 fish, respectively, of the previous year. The inriver age composition estimates are based on scale sampling of carcasses. Ocean harvest rates are based on Klamath River fall chinook CWT analysis, since 1979, because Rogue River fall chinook ocean harvest rate information is not available. The ocean harvest distribution and age composition of both Rogue and Klamath rivers fall chinook are similar. The Rogue River fall chinook ocean abundance index for 1992 is predicted at 5,700, which is 86 percent below the 1977-1991 long-term average (40,800) and is similar to the 1991 index (5,400).

Other Stocks

Information is insufficient to forecast the abundance of fall chinook from other smaller rivers south of the Elk River. Ocean escapements of chinook into these rivers have been depressed in recent years. The 1992 abundance of chinook produced from these rivers is expected to be very low.

Evaluation of 1991 Regulations on 1992 Stock Abundance

Given the 1991 regulations and 1992 Oregon coastal chinook stock abundance, it is expected that the aggregate Oregon coastal chinook goal (150,000 to 200,000 naturally spawning adults) would be met. The north migrating stocks are projected to provide the majority of this spawning escapement. The 1992 abundances for north migrating stocks are not expected to change significantly from 1991 and will remain at or above the 1961-1991 long-term average. The 1992 abundances for south/localized migrating stocks are expected to be low and similar to the depressed level observed in 1991.

CHAPTER III
COHO SALMON ASSESSMENTS

COLUMBIA RIVER AND OREGON COASTAL COHO (OPI) AREA

The majority of the coho harvested in the OPI area originate from stocks produced in rivers located within the OPI area (Leadbetter Point, Washington to the U.S./Mexico border). These stocks include hatchery and natural production from the Columbia River, Oregon coast and northern California.

Predictor Description and Past Performance

Beginning in 1988, the Council adopted revised abundance estimation procedures which were expected to more accurately predict abundance of individual OPI area origin stock components. These stock components are (1) public hatchery coho (OPIH); (2) OCN coho river production (OCNR); (3) OCN coho lake production (OCNL); (4) private hatchery coho (PRIH); and (5) Oregon coastal STEP hatchery smolt production. A description of these predictors was discussed in Chapter III of the Council's "Preseason Report I Stock Abundance Analysis for 1988 Ocean Salmon Fisheries".

The OCN river stock predictor has consistently overpredicted coho abundance since its adoption in 1988. For 1992, the data base years used to fit the model were revised (shortened) to address this overprediction problem. The data base now includes 1977-1989 (less 1983) for spawners, 1979-1991 (less 1982) for jacks and smolts, and 1980-1991 (less 1983) for ocean recruits (Appendix A, Table A-3).

For 1991, the combined OPI area coho stock abundance (all stocks) was predicted preseason to be 1,681,300 fish. A preliminary postseason estimate indicates an OPI area abundance of 1,983,100 coho (Table III-1). The combined preseason prediction was 16 percent below the preliminary postseason estimate. Preseason and postseason abundance estimates for individual OPI area stock components in recent years are presented in Table III-2.

OPIH Coho

For 1991, OPIH coho were predicted using a linear multiple regression that related OPI hatchery adults to the Columbia River jacks, coastal Oregon and Klamath River area jacks, and the proportion of Columbia River smolts with delayed release rearing strategy (e.g., higher survival rates). All jack counts were adjusted for the misidentification of small adults (mostly Columbia River returns). The data base included 1971-1990 adult return years, excluding the El Nino adult impact year of 1983.

The preseason abundance prediction of 1,215,400 OPIH coho was 29 percent below the preliminary postseason estimate of 1,722,400 coho.

OCN Coho

The preliminary estimate of the 1991 OCN adult spawning escapement (rivers and lakes combined) is 109,100 coho, 45 percent below the 200,000 adult coho goal (Table III-3). This number of adults is similar to the 1990 escapement of 104,200 coho.

TABLE III-1. OPI area coho abundance (ocean harvest impacts and ocean escapement) in thousands of fish.[a/]

Year	Ocean Fisheries		Ocean Escapement				Total Harvest Impacts and Ocean Escapement of All OPI Area Stocks
			Oregon and California Coastal				
	Troll[b/]	Sport	Hatchery Returns and Freshwater Harvest	OCN Spawning Escapement	Private Hatchery Returns	Columbia River	
1971	2,422.4	681.7	53.8	324.0	-	544.4	4,026.3
1972	1,214.9	533.6	29.9	127.7	-	277.9	2,184.0
1973	1,257.4	422.1	42.2	162.3	-	291.2	2,175.2
1974	1,995.3	636.8	49.5	133.3	-	460.9	3,275.8
1975	1,027.8	441.6	19.2	159.1	-	292.4	1,940.1
1976	2,796.3	931.1	62.6	162.1	-	337.0	4,289.1
1977	632.8	392.5	21.3	67.8	4.2	93.5	1,212.1
1978	1,051.6	499.6	12.7	76.7	12.3	307.0	1,959.9
1979	1,006.3	318.5	27.4	173.8	49.2	275.8	1,851.0
1980	482.8	501.3	32.0	110.7	38.7	299.8	1,465.3
1981	790.3	323.7	34.1	77.0	117.8	170.1	1,513.0
1982	704.0	286.0	37.1	131.9	184.7	453.2	1,796.9
1983	408.2	261.9	18.2	59.8	133.9	109.0	991.0
1984	88.4	166.5	51.2	207.5	115.4	423.8	1,052.8
1985	150.0	267.0	45.4	191.2	332.0	366.8	1,352.4
1986	601.6	298.1	79.3	190.8	453.7	1,545.2	3,168.7
1987	442.2	279.0	45.1	82.5	119.3	309.5	1,277.6
1988	789.3	282.7	59.9	160.8	116.1	668.9	2,077.7
1989	602.8	404.3	61.1	144.5	46.9	714.3	1,973.9
1990	255.9	338.0	28.7	104.2	35.6	196.8	959.2
1991	428.0	403.4	91.9	109.1	35.1	915.6	1,983.1

a/ The total OPI area coho abundance on this table does not match the sum of the individual OPI area stock component abundances on Table I-2 due to the exclusion of STEP production from smolt releases and the exclusion of non-OPI area harvest of the private hatchery stock from this table.

b/ Includes estimated troll fishery hook-and-release mortality for the years 1982-1991.

TABLE III-2. Preliminary preseason and postseason coho stock abundance estimates for OPI area stocks in thousands of fish.[a/]

Stock	Year	Preseason	Postseason	Preseason/ Postseason
OPIH	1985	476.6	645.7	0.74
	1986	1,544.9	2,334.0	0.66
	1987	565.4	795.8	0.71
	1988	1,591.0	1,514.5	1.05
	1989	1,381.5	1,573.1	0.88
	1990	909.6	575.4	1.58
	1991	1,215.4	1,722.4	0.71
OCNR	1985	296.0	298.5	0.99
	1986	285.6	268.3	1.06
	1987	458.0	182.7	2.51
	1988	464.3	330.4	1.41
	1989	430.0	294.9	1.46
	1990	307.5	263.1	1.17
	1991	409.2	191.5	2.14
OCNL	1985	6.6[b/]	12.9[c/]	0.51
	1986	18.4[b/]	17.8[c/]	1.03
	1987	18.0	9.8	1.83
	1988	16.0	13.0	1.23
	1989	16.2	11.0	1.48
	1990	13.5	12.2	1.11
	1991	12.7	8.8	1.44
PRIH	1985	96.8	424.4	0.23
	1986	285.5	584.9	0.49
	1987	465.6	300.1	1.55
	1988	302.5	229.0	1.32
	1989	206.4	104.8	1.97
	1990	142.8	124.3	1.15
	1991	37.1	60.4[d/]	0.61
STEP	1985	-	-	-
	1986	-	-	-
	1987	6.1	0.5	12.20
	1988	0.4	2.5	0.16
	1989	5.2	2.4	2.17
	1990	3.5	4.5	0.78
	1991	6.9	8.4	0.82

a/ Estimates for 1988-1991 use the Council-adopted revised abundance procedure developed in 1987.
b/ This estimate is for the Ten Mile Lake system only.
c/ Includes postseason estimate for the Ten Mile, Siltcoos and Tahkenitch lake systems.
d/ Estimated harvest occurring outside the OPI area is not available.

TABLE III-3. Adult spawning escapement and total stock abundance of OCN coho stocks, rivers and lakes combined in thousands of fish.

Year of Adult Return	Spawning Goal[a/]	Spawning Escapement[b/]	Total Stock Abundance[c/]
1970	-	249.5	664.1
1971	-	324.0	1,450.7
1972	-	127.7	669.8
1973	-	162.3	734.6
1974	-	133.3	700.0
1975	-	159.1	673.7
1976	-	162.1	1,288.5
1977	-	67.8	476.3
1978	-	76.7	379.6
1979	-	173.8	642.8
1980	-	110.7	358.1
1981	175	77.0	357.8
1982	172	131.9	323.9
1983	140	59.8	236.7
1984	135	207.5	290.5
1985	175	191.2	311.4
1986	143[d/]	190.8	286.1
1987	200	82.5	192.5
1988	200	160.8	343.4
1989	200	144.5	305.9
1990	161[e/]	104.2	275.3
1991[f/]	200	109.1	200.3

a/ Council goal initially established in 1981 to rebuild OCN stocks and amended in 1987.

b/ Spawning escapements prior to 1985 were calculated using complete OCN spawning habitat mileage (streams and lakes combined) and based on a coastwide average adult-spawners-per-mile value observed for streams. Estimates since 1985 are calculated by individual coastal river basins with adult-spawners-per-mile values calculated for each basin separately.

c/ Calculated as spawning escapement/(1-OPI harvest rate).

d/ Salmon framework amendment rebuilding goal of 170,000 was modified by the Council for optimum yield considerations.

e/ Spawning escapement goal for 1990 reflects Council framework amendment spawning goal (Amendment 7).

f/ Preliminary.

Rivers

The OCNR stock predictor was based on a modified Ricker spawner-recruit model. The 1991 preseason predictor related OCNR recruits to the parent brood stock size and adjusted for changes in survival by using OPI smolt to jack survival changes between 1990 and 1989 release years. The preseason abundance prediction of 409,200 OCNR coho was 114 percent above the preliminary postseason estimate of 191,500 coho.

Lakes

The 1991 OCNL stock abundance prediction was calculated from the most recent three-year average adult stock abundance estimate. The OCNL production is minor for the three lake systems in the unit (Ten Mile, Siltcoos and Tahkenitch lake systems). Production from these systems has declined substantially from levels observed during the 1950-1980 period. Stock abundance for the combined lakes has remained between 8,000 and 20,000 coho since 1981. The preseason abundance prediction of 12,700 OCNL coho was 44 percent above the preliminary postseason estimate of 8,800 coho.

The combined 1991 preseason prediction for OCN river and lake systems of 421,900 coho was 111 percent above the preliminary 1991 postseason estimate of 200,300 coho.

PRIH Coho

The PRIH coho abundance prediction methodology used for 1991 and previous years combines the number of smolts released by facility and stock type with an expected survival rate. Expected survival rates for 1991 were estimated by adjusting 1990 adult survival rates based on averaging changes in coastal ocean upwelling conditions during 1990 and changes in OPI area OPIH jacks per smolt between 1990 and 1989 release years. In 1990, releases of 2,800,000 smolts, and improved ocean survival, resulted in a 1991 preseason abundance estimated at 37,100 coho. The preseason abundance prediction was 39 percent below the preliminary postseason estimate of 60,400 coho.

Salmon Trout Enhancement Hatchery Coho Smolt Program

Preseason abundance predictions from Oregon coastal STEP coho smolt production facilities were made in 1991 for Priorli Creek (Coos River), Noble Creek (Coos River), Gardiner Reservoir (Umpqua River) and the Oregon Marine Institute of Marine Biology (Charleston). The Council-approved procedure for estimating 1991 abundance evaluated (1) smolt releases by facility, (2) smolt to adult survival based on observed 1990 STEP survival by facility, and (3) survival adjustments based on using OPI smolt to jack survival changes between 1990 and 1989 release years. In 1990, releases of 126,200 smolts, and improved ocean survival, resulted in a 1991 preseason abundance estimate of 6,900 coho. The preseason abundance estimate was 18 percent below the preliminary postseason estimate of 8,400 coho.

1992 Stock Status

The 1992 OPI area preliminary coho stock abundance projections are briefly described below. Data sets for the OPIH and OCNR appear in Appendix A, Tables A-2 and A-3. A comparison of 1991 preseason and postseason estimates together with preseason 1992 estimates is provided in Table III-4. The 1992 OPI area abundance prediction of 652,700 coho is 61 percent below the 1991 preseason

prediction (1,681,300) and 67 percent below the 1991 postseason estimate (1,991,500).

OPIH Coho

For 1992, the abundance of OPIH coho are predicted using the same linear multiple regression model used in the preseason 1991 predictor. The model, with coefficients based on data from adult coho returns in 1971–1991, is:

$$OPIH(t) = a + b*Jack\ CR(t-1) + c*Jack\ OC(t-1) + d*Jack\ CR(t-1)*(SmD(t-1)/SmCR(t-1))$$

Where: a = −141.9
b = 15.24
c = 25.28
d = 25.26
with r2 = 0.908

See Table A-2 for a definition of terms in this equation.

Using the appropriate values from Table A-2, the OPIH abundance prediction for 1992 is 385,300 coho, which is 68 percent below the 1991 preseason prediction (1,215,400) and 78 percent below the 1991 postseason estimate (1,722,400).

OCN Coho

Rivers

The OCNR coho prediction for 1992 is based on the same procedure used in 1991, except for the change in data base years used to fit the model. This change was previously described in the predictor description section. The model, with fitted coefficients, is:

$$OCNR(t) = a*P(t-3)*\exp[(b*P(t-3) + (c*Jack\ OPI(t-1)/SmOPI(t-1))]$$

Where: a = 6.619
b = −0.00983
c = 0.141

See Table A-3 for a definition of terms in this equation.

Using the appropriate values from Table A-3, the OCNR prediction for 1992 is 255,000 adult coho, which is 38 percent below the 1991 preseason estimate (409,200) and 33 percent above the postseason estimate (191,500).

Lakes

The OCNL adult coho prediction is based on the same methodology used in 1991. The OCNL prediction for 1992 is 10,700 coho, which is 16 percent below the 1991 preseason estimate (12,700) and 22 percent above the 1991 postseason estimate (8,800).

TABLE III-4. Comparison of 1991 and 1992 ocean adult recruitment abundance for OPI area stock components (thousands of fish).

Stock	1992 Preseason[a/]	1991[b/] Preseason[a/]	1991[b/] Postseason[c/]	1991[b/] Preseason/ Postseason
OPIH[d/]	385.3	1,215.4	1,722.4	0.71
STEP[e/]	1.7	6.9	8.4	0.82
OCNR	255.0	409.2	191.5	2.14
OCNL[f/]	10.7	12.7	8.8	1.44
PRIH[g/]	0.0	37.1	60.4	0.61
Total	652.7	1,681.3	1,991.5	0.84

a/ Estimates made by OPI technical team.
b/ Preliminary.
c/ Postseason estimates, except private hatcheries, are reconstructed using a postseason estimate of OPI area ocean harvest rate of 0.42.
d/ Includes catches of some non-OPI stocks.
e/ Oregon coastal STEP production for hatchery smolt-rearing sites only.
f/ Combined Siltcoos, Ten Mile and Tahkenitch lakes.
g/ Does not include minor freshwater recreational catch and straying.

The combined 1992 prediction for the OCN river and lake systems of 265,700 coho is 37 percent below the 1991 preseason estimate (421,900) and 33 percent above the 1991 postseason estimate (200,300).

PRIH Coho

There were no smolt releases in 1991 of the PRIH coho stock. The 1991 preseason estimate was 37,100 coho, and the postseason estimate was 60,400 coho.

Salmon Trout Enhancement Hatchery Coho Smolt Program

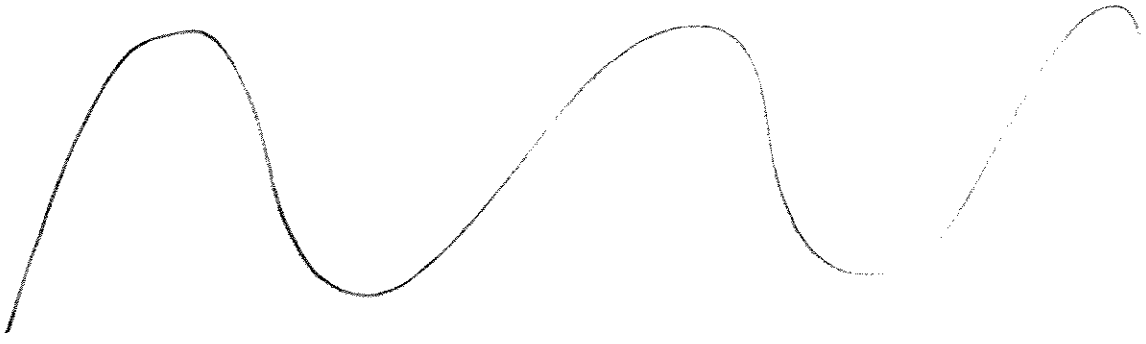
Estimates of Oregon coastal STEP coho production are made for STEP hatchery facilities rearing smolts at Priorli Creek (Coos River), Oregon Marine Institute of Marine Biology (Charleston), Noble Creek (Coos River) and Gardiner Creek (Umpqua River). The 1990 smolt release levels were 73,100 smolts. The 1992 preseason prediction for these facilities is estimated at 1,700 coho, which is 75 percent below the 1991 preseason prediction (6,900) and 80 percent below the 1991 postseason estimate (8,400).

Evaluation of 1991 Regulations on 1992 Stock Abundance

The Council's framework plan goal for OCN coho (Amendment 9) is to achieve an annual spawning escapement ranging between 135,000 and 200,000 adults. The annual goal varies with stock abundances. The 1992 projected abundance of 265,700 coho triggers a spawning escapement goal of 135,000 adults.

Ocean escapement expectation, for the OCN stock under 1991 planned quota catch levels and regulations with the 1992 preseason Council area stock abundance predictions, is 28,400 coho (Table I-3). The estimated ocean escapement would be insufficient to meet the 135,000 spawning escapement goal. The expectation assumes ocean catches and impacts equal to 1991 expected preseason levels for all Council fisheries. The OCN ocean escapement was estimated using the microcomputer spreadsheet version (coho assessment model) of the WDF/National Bureau of Standards regulation analysis model, the same fishery impact model used by the STT for the 1991 preseason assessment.

Additionally, the Columbia River hatchery early and late coho stocks would not meet their egg-take goals under 1991 planned fishery quotas. Even in the absence of any inside fishery opportunities, the escapement goals would not be met for the Columbia River hatchery stocks.



2/18/92

TO: Klamath Fishery Management Council

FROM: KRTAT

SUBJECT: Age composition of the 1991 Klamath River fall chinook run based on scale sampling program.

A total of 6,287 scales collected from 16 sampling locations were examined to estimate the age composition of the 1991 Klamath River fall chinook run (Table 1). The ages of 263 samples were not determined due to scale aberrations (regeneration, resorption, or inconclusive circuli patterns). Some of the data were not used in calculating the age composition of the in-river run because: 1) they were already included in another data set (ie. TRH was included in the Willow Creek data set) or 2) escapement or harvest data were not included in the run size estimate compiled by CDFG.

When data were available, the weekly age composition was multiplied by the number of fish counted (ie. weirs and hatchery) or harvested (net fishery) to determine the number for each age class. The overall age composition was calculated by summing the weekly estimates for numbers per age class. In cases when weekly counts were not available, the age composition was determined by summing the weekly samples for the entire season (spawning ground surveys, sport harvest) and multiplying by the total estimate for the respective sampling site. The age composition based on scale samples collected at the Willow Creek weir was used to calculate the numbers of chinook in each age class that spawned (natural spawning areas and hatchery) or were harvested above this sampling location. The Willow Creek weir data were used because of the apparent unrepresentative sampling at Trinity River Hatchery (TRH) which provided an apparent overestimate of the age 2 component of the hatchery return. Using scale data, it was estimated that 537 jacks returned to TRH while CDFG, using a jack length cutoff of 55 cm, counted 179 jacks into the hatchery. A total of 47 scale samples from TRH were aged as 2-year-olds while remaining 240 aged scales were from adults. Based on jack and adult hatchery returns reported by CDFG, this would represent a 26.3% sampling rate for jacks and a 9.5% sampling rate for adults. Another reason for using the Willow Creek weir data was the absence of scale samples from the sport harvest on the Trinity River. For locations lacking scale data, sites believed to be appropriate as a surrogate were used (Table 2).

The 1991 Klamath River fall chinook run consisted of 1,894 jacks (5.7%), 10,278 3-year-olds (31.1%), 19,864 4-year-olds (60.1%), and 1,013 5- and 6-year olds (3.1%)(Table 3 & 4). The age composition of the run based on scale samples corresponds very well with the age composition derived from coded wire tag (CWT) data (Table 5). The largest discrepancy occurs in the 5-year-old age class (age 6 chinook are included in this category). To adjust the scale data to be more comparable to the CWT data, the

jack escapement and harvest estimates compiled by CDFG were used and the age composition of the adults was applied to only the adult escapement and harvest estimates (Tables 6,7,& 8). Treating the scale data in this manner provides an estimate of age 3 and age 4 chinook virtually the same as the CWT data.

It is recommended that this program be continued so that another year of data comparing the age composition based on scale and CWT data can be collected. Standardized sampling procedures should be discussed with personnel collecting the scales so that proper sampling procedures are followed. It is also recommended that data collected from the Willow Creek weir be used to assess the age composition of salmon above this site. The collection of scales from Trinity River Hatchery may be conducted to estimate the age composition of the hatchery escapement but this data would not be necessary for estimating the age composition of the run.

Table 1. Sampling locations and numbers of samples collected for determination of the 1991 Klamath River fall chinook run.

Sampling Area	# Samples	Agency
Iron Gate Hatchery	478	CDFG
Trinity River Hatchery	289	CDFG
Shasta River Weir	328	CDFG
Scott River Weir	451	CDFG
Salmon River Weir	86	CDFG
Bogus Creek Weir	398	CDFG
Willow Creek Weir	809	CDFG
South Fork Trinity Weir	11	CDFG
Trinity Carcass Survey	357	CDFG
Scott & Salmon Carcass Survey	39	USFS
Klamath Creel Census	477	CDFG
Hoopa Net Harvest	423	HOOPA
Karuk Dip Net Harvest	96	KARUK
Yurok Harvest (Estuary)	830	USFWS
Yurok Harvest (Middle Klamath)	414	USFWS
Yurok Harvest (Upper Klamath)	801	USFWS

Table 2. Locations without scale samples and surrogate data sets used.

Location	Age Composition Used
Main Stem Klamath Spawners	Salmon, Scott and Shasta Rivers
Misc. Klamath Trib Spawners	Salmon, Scott and Shasta Rivers
Reservation Trib Spawners	Trinity River Natural Escapement

Table 3. Age composition of 1991 Klamath River fall chinook run.

	Age 2	3	4	5	6	Total
Hatchery Spawners						
Iron Gate Hatchery	23	1,159	2,686	199	0	4,067
Trinity River Hatchery	112	1,332	1,218	36	0	2,698
Subtotal	135	2,491	3,904	235	0	6,765
Natural Spawners						
Trinity River (above Willow Ck)	207	2,468	2,255	67	0	4,997
Salmon River	472	191	1,030	25	22	1,740
Scott River	144	401	1,054	46	0	1,645
Shasta River	16	79	621	10	0	726
Bogus Creek	14	367	863	37	0	1,281
Main Stem Klamath River	65	70	280	8	2	426
Misc Klamath Tributaries	92	97	392	12	3	596
Reservation Tributaries	7	73	80	0	0	160
Subtotal	1,017	3,745	6,576	206	27	11,571
TOTAL SPAWNER ESCAPEMENT	1,152	6,237	10,479	441	27	18,336
Angler Harvest						
Klamath River (below US 101 br)	79	154	89	1	0	323
Trinity River (above Willow Ck)	49	588	538	16	0	1,191
Balance of Klamath System	499	976	561	9	0	2,045
Subtotal	627	1,719	1,187	26	0	3,559
Indian Net Harvest						
Klamath River (below US 101 BR)	27	550	3,094	236	2	3,909
Klamath River (US 101 to Trin.R.)	50	1,191	3,596	201	4	5,042
Trinity River	18	377	879	37	0	1,311
Subtotal	95	2,118	7,569	474	6	10,262
TOTAL IN-RIVER HARVEST	722	3,837	8,756	500	6	13,821
TOTALS						
In-River Harvest and Escapement	1,874	10,074	19,235	941	33	32,157
Angling Mortality (2% of Harvest)	13	34	24	1	0	71
Net Mortality (8% of harvest)	8	169	606	38	0	821
TOTAL IN-RIVER RUN	1,894	10,278	19,864	979	34	33,049

Table 4. Age composition (percentages) of 1991 Klamath River fall chinook run.

	Age				
	2	3	4	5	6
Hatchery Spawners					
Iron Gate Hatchery	0.57%	28.50%	66.04%	4.89%	0.00%
Trinity River Hatchery	4.14%	49.39%	45.13%	1.34%	0.00%
Subtotal	1.99%	36.83%	57.70%	3.48%	0.00%
Natural Spawners					
Trinity River (above Willow Ck)	4.14%	49.39%	45.13%	1.34%	0.00%
Salmon River	27.13%	10.98%	59.20%	1.44%	1.26%
Scott River	8.75%	24.38%	64.07%	2.80%	0.00%
Shasta River	2.20%	10.88%	85.54%	1.38%	0.00%
Bogus Creek	1.09%	28.65%	67.37%	2.89%	0.00%
Main Stem Klamath River	15.37%	16.32%	65.80%	1.97%	0.54%
Misc Klamath Tributaries	15.37%	16.32%	65.80%	1.97%	0.54%
Reservation Tributaries	4.35%	45.51%	49.86%	0.29%	0.00%
Subtotal	8.79%	32.37%	56.83%	1.78%	0.24%
TOTAL SPAWNER ESCAPEMENT	6.28%	34.01%	57.15%	2.40%	0.15%
Angler Harvest					
Klamath River (below US 101 br)	24.41%	47.75%	27.41%	0.43%	0.00%
Trinity River (above Willow Ck)	4.14%	49.39%	45.13%	1.34%	0.00%
Balance of Klamath System	24.41%	47.75%	27.41%	0.43%	0.00%
Subtotal	17.63%	48.30%	33.34%	0.73%	0.00%
Indian Net Harvest					
Klamath River (below US 101 BR)	0.69%	14.07%	79.15%	6.04%	0.05%
Klamath River (US 101 to Trin.R.)	0.99%	23.62%	71.32%	3.99%	0.08%
Trinity River	1.37%	28.76%	67.05%	2.82%	0.00%
Subtotal	0.93%	20.64%	73.76%	4.62%	0.06%
TOTAL IN-RIVER HARVEST	5.23%	27.76%	63.35%	3.62%	0.04%
TOTALS					
In-River Harvest and Escapement	5.83%	31.33%	59.82%	2.93%	0.10%
Angling Mortality (2% of Harvest)	17.63%	48.30%	33.34%	0.73%	0.00%
Net Mortality (8% of harvest)	0.93%	20.64%	73.76%	4.62%	0.06%
TOTAL IN-RIVER RUN	5.73%	31.10%	60.10%	2.96%	0.10%

12-Feb-92

Table 5. Age composition of 1991 Klamath River fall chinook run based on scale analysis and coded wire tag data.

		Age Class			
		2	3	4	5 & 6
Scale	#	1,894	10,278	19,864	1,013
	%	5.73%	31.10%	60.10%	3.07%
Coded Wire Tag	#	1,307	11,366	20,304	71
	%	3.95%	34.39%	61.44%	0.21%

Table 6. Age composition of 1991 Klamath River fall chinook run.
(Using jack estimates from the Megatable and adult age composition data from scale analysis).

	Age					
	2	3	4	5	6	Total
Hatchery Spawners						
Iron Gate Hatchery	65	1,147	2,659	197	0	4,067
Trinity River Hatchery	179	1,967	542	10	0	2,698
Subtotal	244	3,114	3,200	207	0	6,765
Natural Spawners						
Trinity River (above Willow Ck)	52	2,548	2,329	69	0	4,998
Salmon River	211	231	1,242	30	26	1,740
Scott River	111	409	1,077	47	0	1,645
Shasta River	20	78	618	10	0	726
Bogus Creek	23	364	857	37	0	1,281
Main Stem Klamath River	27	70	318	9	2	426
Misc Klamath Tributaries	18	102	460	12	3	596
Reservation Tributaries	0	76	83	0	0	160
Subtotal	462	3,879	6,984	215	32	11,572
TOTAL SPAWNER ESCAPEMENT	706	6,993	10,184	422	32	18,337
Angler Harvest						
Klamath River (below US 101 br)	14	195	112	2	0	323
Trinity River (above Willow Ck)	36	595	544	16	0	1,191
Balance of Klamath System	474	992	570	9	0	2,045
Subtotal	524	1,783	1,225	27	0	3,559
Indian Net Harvest						
Klamath River (below US 101 BR)	7	554	3,109	237	2	3,909
Klamath River (US 101 to Trin.R.)	25	1,197	3,614	203	4	5,041
Trinity River	30	373	871	36	0	1,310
Subtotal	62	2,124	7,594	476	6	10,260
TOTAL IN-RIVER HARVEST	586	3,907	8,819	503	6	13,819
TOTALS						
In-River Harvest and Escapement	1,292	10,900	19,003	925	38	32,156
Angling Mortality (2% of Harvest)	10	36	25	1	0	71
Net Mortality (8% of harvest)	5	170	607	38	0	821
TOTAL IN-RIVER RUN	1,307	11,105	19,635	964	39	33,048

Table 7. Age composition (percentages) of 1991 Klamath River fall chinook run. (Using jack estimates from the Megatable and adult age composition data from scale analysis).

	Age 2	3	4	5	6
Hatchery Spawners					
Iron Gate Hatchery	1.60%	28.19%	65.37%	4.84%	0.00%
Trinity River Hatchery	6.63%	72.92%	20.08%	0.36%	0.00%
Subtotal	3.61%	46.03%	47.31%	3.06%	0.00%
Natural Spawners					
Trinity River (above Willow Ck)	1.04%	50.98%	46.59%	1.39%	0.00%
Salmon River	12.13%	13.27%	71.38%	1.70%	1.52%
Scott River	6.75%	24.89%	65.49%	2.87%	0.00%
Shasta River	2.75%	10.77%	85.06%	1.42%	0.00%
Bogus Creek	1.80%	28.42%	66.90%	2.89%	0.00%
Main Stem Klamath River	6.34%	16.50%	74.59%	2.02%	0.54%
Misc Klamath Tributaries	3.02%	17.09%	77.23%	2.09%	0.56%
Reservation Tributaries	0.00%	47.58%	52.12%	0.30%	0.00%
Subtotal	3.99%	33.52%	60.35%	1.86%	0.28%
TOTAL SPAWNER ESCAPEMENT	3.85%	38.14%	55.54%	2.30%	0.18%
Angler Harvest					
Klamath River (below US 101 br)	4.33%	60.43%	34.69%	0.55%	0.00%
Trinity River (above Willow Ck)	3.02%	49.96%	45.66%	1.36%	0.00%
Balance of Klamath System	23.18%	48.53%	27.86%	0.44%	0.00%
Subtotal	14.72%	50.09%	34.43%	0.76%	0.00%
Indian Net Harvest					
Klamath River (below US 101 BR)	0.18%	14.17%	79.53%	6.06%	0.05%
Klamath River (US 101 to Trin.R.)	0.50%	23.75%	71.69%	4.03%	0.08%
Trinity River	2.29%	28.48%	66.45%	2.77%	0.00%
Subtotal	0.60%	20.70%	74.01%	4.64%	0.06%
TOTAL IN-RIVER HARVEST	4.24%	28.27%	63.82%	3.64%	0.04%
TOTALS					
In-River Harvest and Escapement	4.02%	33.90%	59.10%	2.88%	0.12%
Angling Mortality (2% of Harvest)	14.72%	50.09%	34.43%	0.76%	0.00%
Net Mortality (8% of harvest)	0.60%	20.70%	74.00%	4.64%	0.06%
TOTAL IN-RIVER RUN	3.96%	33.60%	59.41%	2.92%	0.12%

Table 8. Age composition of 1991 Klamath River fall chinook run based on jack estimates from the Megatable with adult age composition from scale analysis and coded wire tag data.

		Age Class			
		2	3	4	5 & 6
Scale	#	1,307	11,105	19,635	1,002
	%	3.96%	33.60%	59.41%	3.03%
Coded Wire Tag	#	1,307	11,366	20,304	71
	%	3.95%	34.39%	61.44%	0.21%

2/19/92

TO: Klamath Fishery Management Council

FROM: KRTAT

SUBJECT: Spring chinook run size projection - 1992.

A complete assessment of the utility of the Klamath River spring chinook projection methodology utilized in 1990 and 1991 was not possible at this time because some of the necessary data (harvest and escapement for 1991) are not available at this time. Comparing the pre- and postseason estimates for 1990 and 1991 (from data currently available), it is obvious that projecting returns and harvest using average return rates for hatchery releases and average harvest and escapement rates does not accurately predict returns to the river. Because of this, the KRTAT chooses not to make a projection of the 1992 spring chinook run. Based on the depressed status of most salmon stocks along the west coast, there is little reason to expect a large return of spring chinook to the Klamath basin.

Table 1. Pre-season and post-season estimates of Klamath River spring chinook runs for 1990 and 1991.

	1990		1991	
	Preseason	Postseason	Preseason	Postseason
Trinity River Hatchery	3462	2411	5054	725
Trinity Natural Esc.	8340	2975	10996	N/A
Angler Harvest	1764	796	2394	N/A
Junction City Weir	13566	6182	18414	N/A
Hoopa Harvest	1362	865	1862	263
Lower Trinity Nat. Esc.	462	218	627	N/A
Run at mouth of Trinity	15400	7265	20904	N/A
Upper Klamath Nat. Esc.	314	148	427	190
Run at Weitchpec	15714	7413	21331	N/A
Yurok Harvest	1446	1413	1963	290
Run at Mouth of Klamath	17161	8826	23294	N/A

KLAMATH BASIN SPAWNER ESCAPEMENT

		MAY, AND JUNE RELEASES	TOTAL
1978	90,105	1,470013	4,171,620
1979	42,255	3,491.882	8,211,613
1980	57,683	3,406,599	5,958,917
1981	56,333	17,022,798	19,857,376
1982	67,076	17,524,433	19,936,644
1983	47,966	10,993,732	12,487,534
1984	30,375	15,002,461	18,003,220
1985	104, 487	9,586,697 + 167,035 = W	11,457,487
1986	180,263		
1987	143,890		
1988	130,249		
1989	72,288		
1990	22,633		
1991	17,631		

Klamath Management Zone Fisheries Coalition

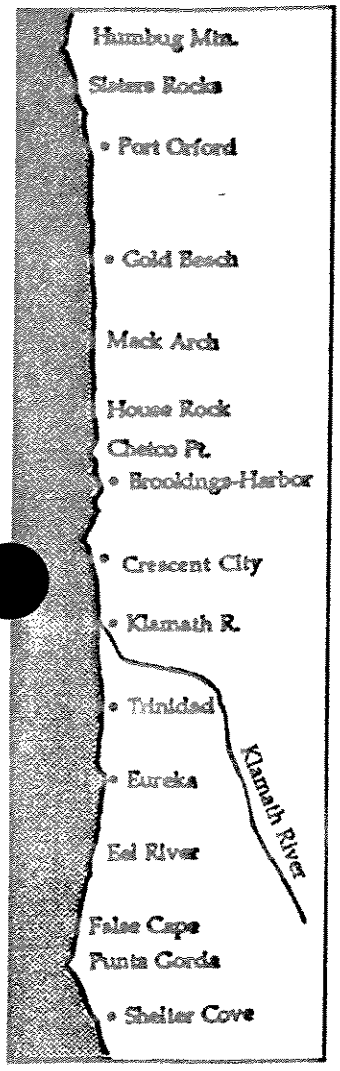
Russ Craltree, Chairman
Rich Taylor, Co-Chairman

Oregon Representative:
• Howard Teague, Gold Beach

California Representative:
• Ken Neel, Trinidad

101 Citizen's Dock Road • Crescent City, CA 95531
(707) 464-6174

March 3, 1992



Port of Port Orford
Port of Gold Beach
Port of Brookings Harbor
Crescent City Harbor District
Trinidad Bay
Humboldt Bay Harbor District
Trinidad Chamber of Commerce
Brookings-Harbor
Chamber of Commerce

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

Councilors:

The Klamath Management Zone Fisheries Coalition is extremely concerned about the social and economic impacts that will most likely be the direct result of this year's harvest and allocation process. The Coalition is acutely aware of the low projections of Klamath Chinook stock abundance. For this reason innovative measures must be taken to minimize to the extend possible the social and economic impact to Klamath Management Zone Communities.

The communities within the Klamath Management Zone have suffered economic disaster with the elimination of the commercial troll and the very restrictive sportfishing season last year. Businesses have reported a 50 percent reduction in revenues and, as we all know, the road to recovery does not happen in one or two years. To restrict this year's sport season even more than last year would prove to be catastrophic for the small businessman within the Klamath Management Zone for quite sometime.

Last year's restrictive season with the August block closure proved to be the end for many businesses within the Zone. From my personal knowledge, the Brookings Harbor community saw three Charter operations and several small businesses close for good. Not to mention, the Port itself realized a net loss of over $100,000.00 which would have been more if services were not eliminated and maintenance deferred to a future date. Economic gains that have been made in the past are now lost; let's stop the decline.

In our opinion, social and economic impacts should be the major consideration factor as the allocation process takes shape over the next three days. In the past, social and economic impacts have just been an add-on in the harvest and allocation process. The communities in the Klamath Management Zone cannot afford the continued excessive motherhood policies that have been the regulatory council's continued practices during this process.

In the states of Oregon and California, the economic impacts of fishing closures are just beginning to be analyzed and the preliminary results that indicate the current digression of harvest and allocation will expedite negative economic impacts that will be staggering, if not totally unmeasurable.

The Coalition strongly urges the Klamath Management Council to achieve mutual consensus and develop options that will minimize to the extent possible, the social and economic impacts to Klamath Management Zone Ports and Communities.

Thank you for the opportunity to comment.

Sincerely,

Russ Crabtree
Chairman, KMZFC

RC/mem

c: Oregon Congressional Delegation
California Congressional Delegation
Curry County Board of Commissioners
Del Norte County Board of Supervisors
Humboldt County Board of Supervisors
Pacific Fishery Management Council

Oregon

ECONOMIC
DEVELOPMENT
DEPARTMENT

2P

March 3, 1992

Mr. Russ Crabtree
Port of Brookings Harbor
PO Box 848
Brookings, OR 97415

Dear Russ:

The Ports Division shares your Coalition's position regarding negative economic impacts from restrictive sports seasons.

We strongly feel that the sport fishing element is vital to successful coastal communities. Any further reduction in the revenues that sport fishing generates to Oregon coastal ports will undoubtedly put these ports in serious financial conditions.

From a macro economic perspective, it is most important that a balanced mix of economic activity (sport fishing, commercial fishing, tourism, recreation, etc.) be maintained along Oregon's coast. Without such a mix, there is real question whether ports and their communities will continue to be major contributors to Oregon's economy.

Sincerely,

Tom Notos
Ports Division

BARBARA ROBERTS
Governor

One World Trade Center
121 SW Salmon Street
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Portland, OR 97204, U.S.A.
(503) 229-5625
Telex: 821480
FAX (503) 222-5050

Evaluation of the Escapement Goal for the Klamath Basin

prepared by Robert Kope (NMFS), Feb. 6, 1992
(Reviewed by Klamath River Technical Advisory Team)

Last winter we were asked to evaluate a proposed change in the escapement policy for the Klamath Basin that involved a partial ceiling on spawning escapement. Under this modified escapement goal, if the projected number of adult fish spawning outside of the hatcheries were forecast to be greater than 70,000, half the excess would be allocated to harvest and half would be allowed to spawn. This proposal was evaluated using the Klamath River Harvest Rate Model (HRM). The analysis indicated that an increase of approximately 2% in harvest could be achieved with this modified goal if the target harvest rate was decreased for years in which the ceiling was not exceeded. This analysis was criticized because the original proposal did not include any decrease of harvest rates, and we have again been asked to analyze the proposed modification to the escapement goal.

Part of the difficulty in evaluating this proposal is that the HRM relies on Monte Carlo simulations. This means that the model runs the analysis over and over again using different sequences of random outcomes, and then computes the mean and standard deviation of the set of random trials. Because each run contains a different sequence of random outcomes, repeated runs using the same escapement goal will never produce the same average harvest and spawning escapement. Even with large numbers of runs the outcomes can be quite variable, making it difficult to compare small differences in the merits of different management goals.

To make the comparisons more equitable, the HRM was modified to start each run with the same seed for the random number generator. Therefore, as long as two runs contain the same number of years of data and the same number of trials, each run will contain exactly the same sequence of "random" outcomes, and we can directly compare their results. The HRM was run for 200 trials for 50 years with and without the partial ceiling to compare the results again. The HRM indicates that we could achieve an increase in total landings of about 1% (0.93% in these runs) with a decrease in the variability of spawning escapement of about 18% (17.86% decrease in the standard deviation) by modifying the escapement goal (Table 1).

A major problem with this analysis is that it assumes that we can predict how many fish are in the ocean, and that we can regulate the harvest to precisely achieve the targeted harvest rates. Both of these are questionable assumptions. To see what happens when these assumptions are violated, a model was constructed to simulate the dynamics, forecasting, and management of the natural stock of fall chinook in the Klamath Basin. Basic features of the model include:

- The population model operates in continuous time with monthly time step.

- The population is fished by ocean commercial, ocean sport, and river fisheries.

- Vulnerability to ocean fisheries depends on minimum size limits.

- Maturation rate depends on size.

- Fisheries were managed for .325 and .525 ocean and river harvest rates, and seasons managed for these harvest rates were considered to have "full fishing".

- Random variability is included in growth rate, maturation rate, mortality rates, estimation of total catch and escapement, estimation of age composition, spawner-recruit relationship.

- Recruitment is governed by a Ricker spawner-recruit relationship.

- Stock assessment is done by cohort reconstruction.

- Forecasting is done by linear regression reconstructed abundance on estimated in-river run size (zero intercept regression was used if the slope of the regression line or the forecast abundance was negative).

- Ocean fisheries are managed by regulating effort, river fisheries are managed by quota.

- Priorities for allocation were escapement, subsistence river harvest, other ocean and river harvest.

These were also Monte Carlo simulations and always used the same seed for the random number generator. Because these runs were intended to simulate naturally produced fish rather than naturally spawning fish, The escapement floor was set at 30,000 adults and the ceiling at 60,000 adults (Figure 1). The floor and the ceiling were both reduced by 5,000 and 10,000 respectively to account for hatchery fish spawning naturally. Results of the analysis suggest that the modification in the escapement goal would have little effect on landings or escapement (Table 2). We could expect ocean landings to increase slightly, and escapement to decrease somewhat more. The magnitude of the changes depends on how often the harvest rates are increased. However, in the simulations, most of the time when harvest rates were increased, the number of spawners turned out to be less than the ceiling, and often the harvest rates were not increased when the ceiling was exceeded. The latter would have, in fact, been the case in the recent years (1986, 1987, and 1988) of unprecedented spawning escapements,when forecasts underestimated the run size sufficiently that harvest rates and quotas would have remained unchanged with the proposed change in the escapement goal.

Table 1. Estimated landings from CDFG's Harvest Rate Model with and without a ceiling of 70,000 above which 1/2 of additional spawners are allocated to harvest. Underlined values represent harvest rate combinations producing the highest yields without the escapement ceiling.

Estimated total landings without escapement ceiling

Ocean Harvest Rate	Terminal Harvest Rate 0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70
0.15	78492	84996	91877	99299	104875	107665	115550	118500	118872
0.20	89504	95043	101561	107037	110077	117876	118318	120979	121372
0.25	97656	106060	106870	116591	117985	123407	118525	124086	117657
0.30	110762	111544	115091	117640	121014	122858	121534	120200	117753
0.35	111081	118687	118399	120165	121920	122439	119610	117660	115800
0.40	121506	119260	124826	124069	121235	120492	121666	115678	113628
0.45	126109	123875	119833	122886	116603	116977	115553	107656	110978
0.50	126847	123528	121207	118802	116133	112147	111927	111510	107620
0.55	125282	116671	119199	117951	113055	110182	106367	98802	102102

Estimated total landings with escapement ceiling

Ocean Harvest Rate	Terminal Harvest Rate 0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70
0.15	111168	111792	114939	117113	118211	116041	121321	121068	119934
0.20	116280	117036	119117	120165	118912	124630	121487	122184	121790
0.25	117044	123656	118160	126349	124090	126812	119847	124672	117805
0.30	126844	123470	122818	121976	123744	123852	121713	120763	117804
0.35	118407	125807	122006	122182	123213	122353	119726	117761	115905
0.40	127059	121914	126874	124480	120860	120608	121765	115651	113632
0.45	128888	124935	120042	122694	116389	116917	115326	107735	110978
0.50	127866	123887	121036	118844	116202	112138	111943	111506	107620
0.55	124727	117266	119147	118068	113049	110188	106356	98802	102101

Standard deviation of escapement without escapement ceiling

Ocean Harvest Rate	Terminal Harvest Rate 0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70
0.15	22537	25647	22591	19734	21270	18756	17971	16565	14338
0.20	22392	24520	22984	19173	20266	18602	15777	14801	13175
0.25	20904	21199	19019	19125	17705	16317	14716	13325	11332
0.30	20174	20211	18335	18193	15728	14389	12997	12246	11029
0.35	19699	17623	15291	16966	14674	12810	12945	12613	12470
0.40	18377	15280	14936	12735	12803	12497	12094	13217	17724
0.45	15388	13861	14274	13402	14926	12704	16567	20079	21921
0.50	13664	13197	12381	13004	15597	18303	19326	21841	24142
0.55	12124	13530	14790	17967	19286	24649	25462	29496	25374

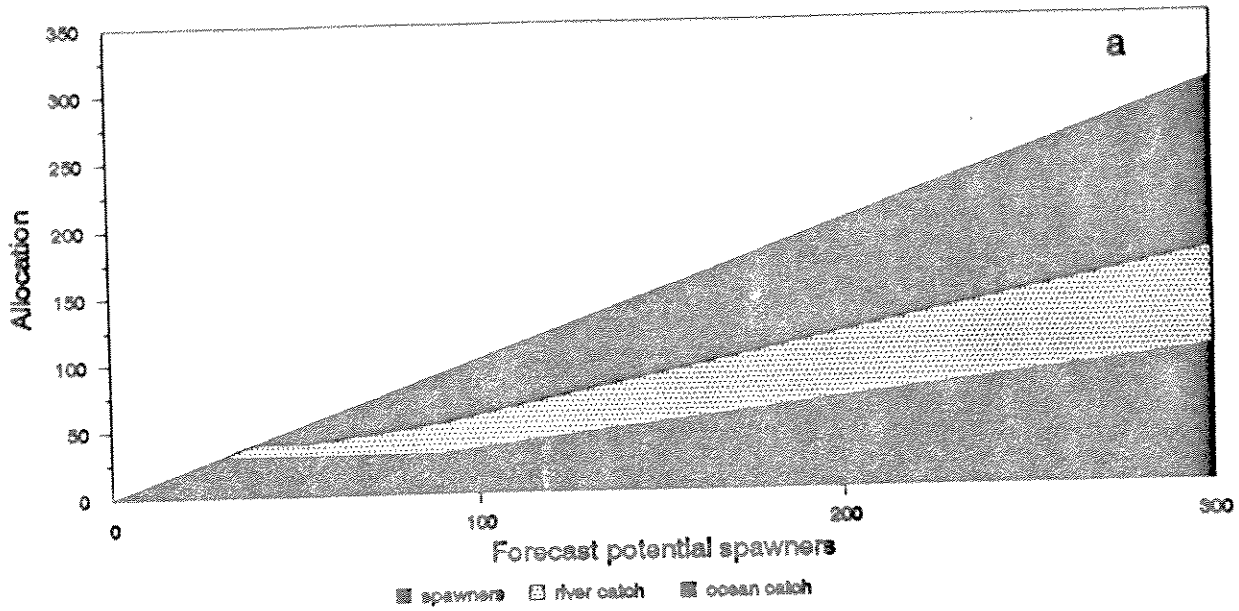
Standard deviation of escapement with escapement ceiling

Ocean Harvest Rate	Terminal Harvest Rate 0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70
0.15	11296	12560	11404	9972	11371	11177	11327	11925	11792
0.20	10893	12197	11867	10272	12191	11657	10973	11436	11556
0.25	10945	11024	10771	10980	11311	11081	11907	11378	10844
0.30	10582	11603	11716	11774	11320	10880	11321	11155	10822
0.35	12216	10950	10342	12831	11846	11297	12327	12381	12336
0.40	11881	11206	11109	10830	11920	11873	11856	13214	17715
0.45	11251	11468	12654	12578	14687	12666	16458	19995	21921
0.50	11366	12108	12026	12817	15470	18286	19314	21841	24142
0.55	11762	13072	14698	17877	19290	24643	25463	29496	25374

Table 2. Results of 500 trials with 15 years data and an escapement floor of 30,000 adult spawners, with and without an escapement ceiling of 60,000 spawners, above which, 1/2 of the additional spawners are allocated to harvest.

escapement ceiling	none		60.0	
100,000 equil. spawners	mean	st. dev.	mean	st. dev.
commercial troll catch	41.04	23.06	41.57	23.93
ocean sport catch	12.27	6.65	12.44	6.88
river catch	28.59	14.98	28.57	15.27
adult spawning escapement	43.10	24.26	42.41	23.63
trials without full fishing:		115		115
trials with no ocean fishing:		4		4
trials below minimum escapement:		165		165
trials with less fishing and spawning:		38		36
trials when overfishing was prevented:		12		12
trials with increased harvest rate:		0		81
trials with ceiling exceeded:		0		83
trials with extra spawners and harvest:		0		25

escapement ceiling	none		60.0	
150,000 equil. spawners	mean	st. dev.	mean	st. dev.
commercial troll catch	61.34	30.97	62.45	33.25
ocean sport catch	18.51	8.95	18.89	9.60
river catch	40.60	19.87	40.56	20.74
adult spawning escapement	55.92	35.09	53.00	32.15
trials without full fishing:		31		34
trials with no ocean fishing:		1		1
trials below minimum escapement:		105		111
trials with less fishing and spawning:		4		5
trials when overfishing was prevented:		1		2
trials with increased harvest rate:		0		196
trials with ceiling exceeded:		0		157
trials with extra spawners and harvest:		0		93



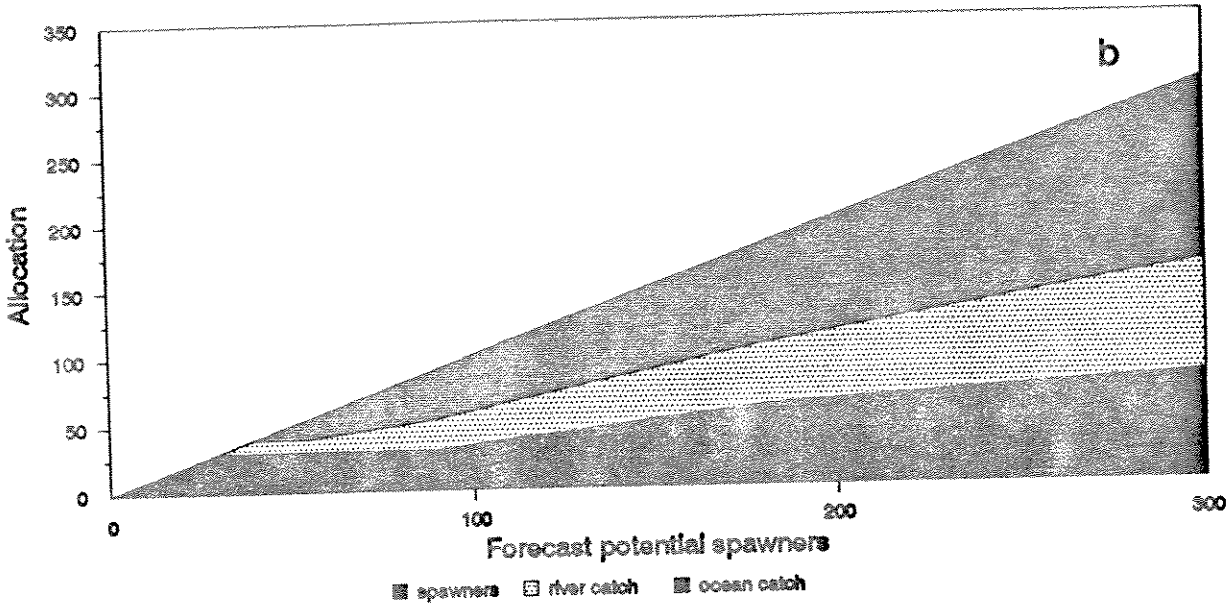
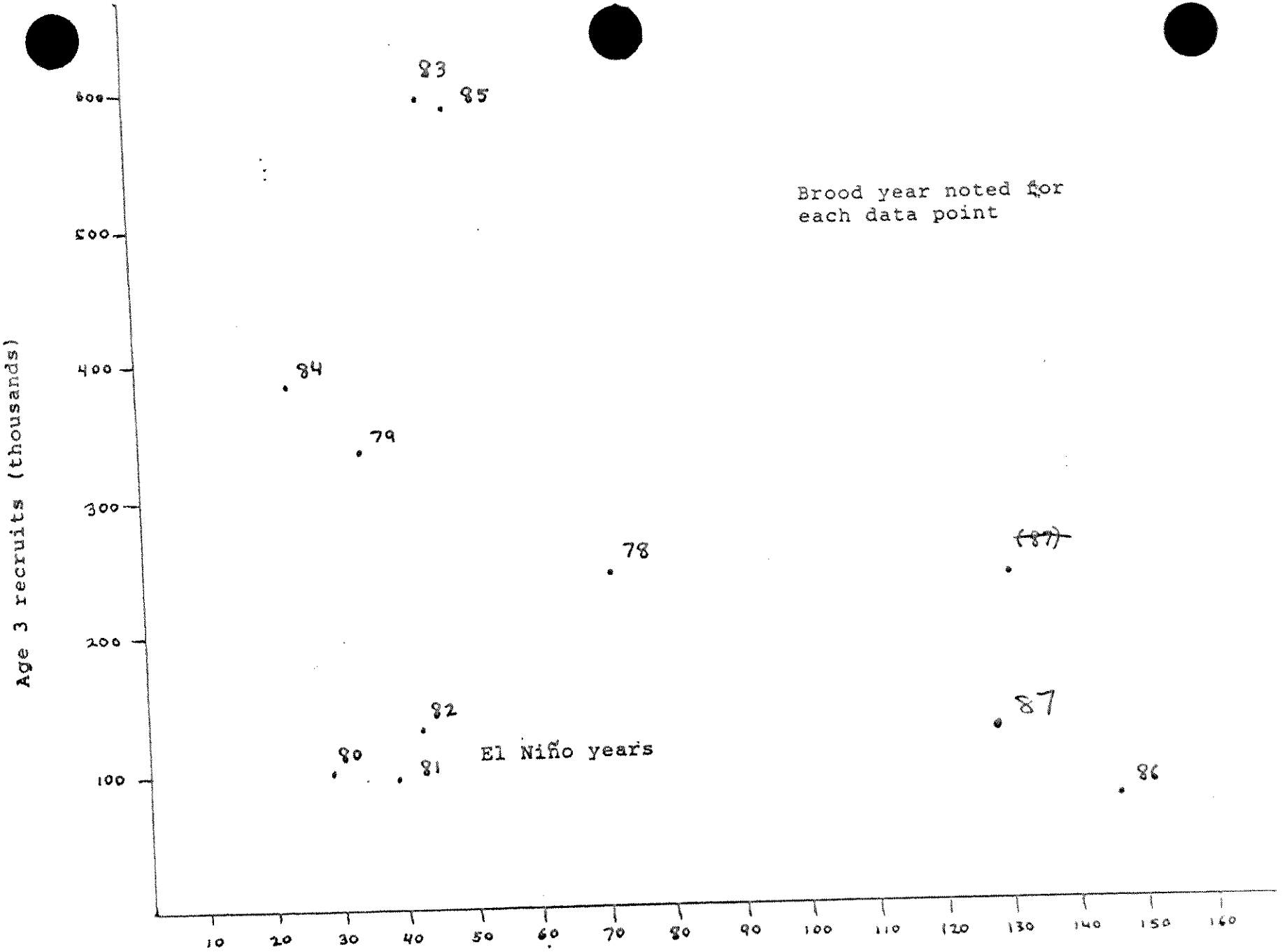


Figure 1. Schematic representation of the allocation of forecast spawner equivalents: (a) under the current escapement goal and (b) with the proposed partial escapement ceiling. Units on the axes are thousands of adult equivalents.



SPAWNERS vs. RECRUITMENT, KLAMATH RIVER SYSTEM (1978-89)

Sources: Review of 1988 Fisheries, 1989 Preseason Report I, PFMC

ATTACHMENT 10

ATTACHMENT 11
(COMMENTS FROM DAVE MACKETT)

Revised Comment Digest

January 1992

KFMC - OUR REVIEW OF NOTES FROM THE JUNE AND NOVEMBER (1991) MEETINGS INDICATES YOU HAVE NOT DISCUSSED THE FOLLOWING PUBLIC/AGENCY COMMENTS.

General

- The KFMC has produced very little to justify the time, money, frustration, and stress that have gone into it. Technical staff have been unsuccessful at predicting ocean abundances and a pattern of Klamath stock contribution rates in the ocean catch for a specific upcoming year. The under- and over-predictions have had major adverse effects on Klamath fisheries. (02).

- The plan needs a cohesive statement of philosophy to aid the public in understanding how the eight categories of the proposed plan go together. (03)

- Protection against the incidental harvest of steelhead should be addressed more directly. (03)

- There is a need to address issues concerning wild stocks. The council needs to recognize and include in the plan that native adaptive strengths of wild fish are fundamental to the successful restoration of the Klamath fishery. Without this essential acknowledgement of the need for wild fish, the plan is incomplete and unconvincing that it will accomplish its goals. (03)

- The KFMC planning process has been seriously flawed because of lack of public scoping prior to drafting of the Plan. (04)

- The Plan is not understandable nor highly useful in its current form. The selected options broadly address critical topics but do not provide substantive solutions to the problems. In many cases, the options are contradictory and there is no indication as to how the conflicting objectives will be resolved. (04)

- The Council should defer from setting goals for artificial production to the Task Force. The Task Force should be assessing habitat capabilities of the river and its tributaries and prescribing appropriate levels of supplementation. (04)

- Several options call for selectively harvesting hatchery fish, but no actions have been taken to date to insure that this will occur. If the KFMC does not move decisively to demonstrate that it can adequately protect Klamath River salmon populations that are at risk, listing some of the populations as endangered may be the only avenue of preventing their extinction. We strongly suggest that the final Plan language clearly define what specific actions will be taken to protect severely depressed anadromous fish stocks from harvest to insure that populations are not lost. We suggest that the only apparent method to protect salmon stocks at risk is by implementing selective harvest of hatchery fish in commercial troll harvest and ocean and in-river sport fisheries. (04)

- The KFMC should also specifically state management strategies to minimize impacts of the Indian net harvest on depressed salmon stocks. (04)

- The KFMC should focus some of its energy on gathering information on green sturgeon and formulating a management plan. If overfishing is occurring on this species, the population loss would not occur until 15 years from now. (04)

- Some attention should also be given to the possible decline of eulachon and coastal cutthroat trout. (04)

- The Klamath harvest plan should accommodate the needs of both the Trinity and Klamath River Restoration Programs. (F3)

- I feel that this plan is more or less an experiment, and in any experiment you need a base or control to establish guidelines. This plan is based on natural stocks. If so, where is your base or control? Salmon are known to stray, and since there has been hatchery involvement on the Klamath for 50 years, I feel that a genetic wild salmon is going to be hard to come by to establish your base or control. Since there are no self-sustaining runs of pinks or chums, they must be strays. Low water years increase the chances of intermixing stocks. (I1)

- It should be noted that this strategic plan is amendable, and will have a schedule for revisions to occur. (05) [ad hoc committee: need schedule and authority]

- Bickering and fighting will not work to restore the fish runs. The only real solution to this problem is to put back into the river more than you take out. Perhaps a large hatchery could be built jointly by Indians, commercial fishermen, and sports fishermen using government grants. This hatchery is the only solution to this problem, which will never get better on regulations only. Above all, don't fight with the Indians. Work together, hand in hand to overcome this problem. (I3)

Chapter 1 ok

Chapter 2 ok

Chapter 3

- ... The process outlined on p. 20 is obviously a reduction of a previous brainstorming session on goals and objectives. It seems very cumbersome and has still great redundancy. I believe all those stated could be further summarized into 7 or 8 major goals that would still cover all that was intended by the 26 that have been included. How the KFMC goes about its work is part of the management process not goals and objectives. I suggest the following summarized goals:

1. To allocate resources in an equitable manner giving consideration to user needs in order to provide a viable fishery for each user group.
2. To insure that escapement levels are adequate to resource re-building and are not allowed to jeopardize the MSY target.
3. To structure MSY, escapement, and harvest allocation on the basis of preservation and propagation of natural stocks.
4. Insure coordination with the Klamath and Trinity restoration programs

encourage work on habitat that will allow escapement growth and a resultant increase in MSY.
5. To obtain the best available technical support for biologically sound recommendations.
6. Insure that harvest regulations are promulgated in a timely manner and are enforced.
7. To provide for efficient and orderly management of the overall process. 8. To encourage and make available time and location for public participation. (L1)

Chapter 4
- Add options: 2.3 - 5.6. (I1)

- Delete options: 3.8 - 7.5 (I1)

- re: the 8 categories of options: Once again 2 should be 8. 3, 5, 6 and need to occur so there will be a need for 2 and 7. (I5)

Chapter 5
- ...Option 7.2 (alternate): suggested language change. "(1) Pursuant to their trust responsibility to Indian Tribes, appropriate federal agencies, in coordination with Tribal representatives, shall establish the reserved Tribal harvest share based on an understanding of current and developing Tribal requirements, and in accordance with Federal law." (U1)

CATEGORY 1: ok
CATEGORY 2: ok

CATEGORY 3:
- Add one Option to provide for in-river law enforcement (refer to law enforcement problems on p.9) (O1).

- Option 3.4 needs to have specific actions to achieve this goal. The KFMC should devote more attention to coho salmon management, specifically to protecting and restoring native strains. The KFMC should also gather more information on Klamath Basin steelhead stocks and help to guide management so that this species can also be restored. (O4)

- Option 3.7 is not supported. Off site releases of hatchery fish may greatly increase straying of these fish (Royal 1972). Mixing of hatchery and wild fish may cause loss of genetic diversity in the Klamath Basin and decrease fitness of locally adapted stocks (Riggs 1990). Transplanting Iron Gate Hatchery fish in pond rearing programs that transfer fish far downstream, where they may be poorly adapted, may have already had such detrimental effects. (O4)

- Option 3.8. It is difficult to believe that live, unharmed capture techniques for ocean harvesters can be developed. (F1)

- Option 3.8: Insert "non-lethal" between "new" and "sorting". (F3)

- Option 3.8: How do you capture and release live non-target fish with a

gillnet? (I1)

CATEGORY 4a ok

CATEGORY 4b

- Rewrite Option 4.7 to delete the term "flyers" and replace it with the term press releases. The comment questions remaining consistent with Department of Interior procedures. (O1)

- A direct conflict of interest has recently arisen of the KFMC. The DOI representative was advised by the Secretary of the Interior to support the Native American position - in spite of the knowledge that to prioritize the 12,000 Klamath salmon would require total closure of the OR and Ca commercial salmon industries. (O5)

- Include Option 4.5 in the Plan. (O1)

- Support for Option 4.10. The KFMC and the Task Force must function more as a team if the fisheries resources of the Klamath River Basin are to be restored. (See comment for details.) The specific mechanism for interaction between these two advisory committees should be clearly defined in the plan. (O4)

CATEGORY 5

- Option 5.1 needs to have "natural sub-population" defined (e.g. Indian Creek, S.Fk. Indian Creek or mid-Klamath tributaries) to allow better implementation. (F2)

- Option 5.1: Insert "natural" between "produce" and "maximum". (F3)

- Rewrite Option 5.3 to read: "Recommend management measures for ocean and in-river fisheries that impact Klamath Basin salmon to provide for natural spawning Klamath Basin stocks."(O1)

- Option 5.6 should be included, a ceiling also needs to be established (O1).

CATEGORY 6

Option 6.4: How about writing a corresponding option for "all river activities". (FY)

CATEGORY 7

- Option 7.3 is questionable. What is intended? (O1)

- Option 7.3 is unclear. The option needs to be rewritten to increase the specificity and clarify the meaning. (O2)

- Option 7.3: I doubt that the KFMC has the authority or that it seeks the authority to dilute the responsibility for management of the Klamath River System. The impact of a significant user group sitting as a co-manager of a resource they are impacting does not seem realistic or practical. Its like leaving the fox to guard the chicken coop - with the other user groups being the chickens. (I4)

CATEGORY 8

- Options 8.1-8.3 give the impression that the Klamath Fishery will be managed for maximum hatchery production and that native fish are to be of secondary concern. We are concerned that over reliance on hatchery production as the tool to restore fish runs will lead to further depletion of wild stocks which in our view are essential to the health of the fishery. We believe that identification of all hatchery stocks is a necessary condition before increasing hatchery production. Fifty years of hatchery production have not reversed the decline of the fishery and has only marginally mitigated for the loss of habitat due to the construction of dams. (O3)

Comments spoken at public meetings on the draft plan:

- Category 4.a, the term "organizational approach" is used. I suggest "Council size" I would like to see the council expanded to include habitat managers from the private and public sectors. (BR)

- I heard tonight, what we've known for awhile. The Klamath River stock is the weak stock on the coast. Why are the Klamath River stocks weak? I think the Plan should address this question. Citizens should be told what the experts in the field think is the reason. (FP)

- My immediate concern is the spring chinook. What does this plan do for them? In the South Fk. Trinity River, this stock is extinct. The New River stock is just hanging on and the Salmon River stock is threatened. How does this plan address this issue? Many organization, along with local fishing groups, will look to the council in the short run to take action to protect these stocks at eminent risk. [ad hoc: Has the council given enough emphasis to the obvious threats to spring chinook? coho?] (FP)

- Option 7.3: meaning is unclear. Does it mean that the tribes will be managers on the reservations, or is some broader authority implied -- like co-management of Iron Gate Hatchery? (DB)

- Option 6.4: How about writing a corresponding option for "all river activities". (FY)

- The public wants the KFMC to decide on their definition of "Traditional Methods".

ATTACHMENT 12
(Excerpts from Draft #2 of the KFMC Plan)

DRAFT #2 -- WORKING COPY
November 1991

The Klamath Fishery Management Council Strategic Plan for Management of Harvest of Anadromous Fish Populations of the Klamath River Basin

prepared by

The Klamath Fishery Management Council
P.O. Box 1006
Yreka, California 96097-1006

Additions to the public review draft are noted with underlining, deletions are noted with ~~strike-out~~.

3.4 Determine potential production of each species stock in the basin.

3.6 Develop a method to immediately identify hatchery fish.

3.7 Improve harvestability of hatchery fish by using methods such as altering stocks, release locations, and marking by (fin clipping or other less damaging mark). See also the methods proposed in the Task Force's long-range plan pages 4-44, 4-45, 5-29 and 5-30.

3.8 Develop new sorting and harvest methods.

3.9 Institute a coast-wide Genetic Stock Identifier ocean landing sampling program to determine stock composition of ocean-caught landings.

3.10 Assess and monitor all anadromous species in the Klamath Basin.

3.11 Improve or establish cooperative resource assessment and monitoring by all the agencies involved.

Category 4a. Organizational Approach

4.2 Maintain status quo organization.

4.3 Upon election of the Yurok Interim Council, the title of non-Hoopa representative will be changed to the Yurok representative.

~~4.4 Add seat to the Council for Karuk Representative.~~

Category 4b. Communication

4.7 Produce Newsletters and Flyers.

4.8 Vary locations of meetings.

4.9 Improve or establish communications with fishery management authorities on the Klamath in order to carry out our legal responsibilities.

4.10 Establish a coordination mechanism between the Klamath Fishery Management Council, and the Klamath River Basin Fisheries Task Force and the Trinity River Restoration Task Force.

Category 5. Escapement Policy

5.1 ~~Manage~~ Recommend that escapement be managed to produce maximum sustained yield for each Klamath River native stock group run while ~~preventing extinction~~ protecting locally adapted stocks of any Klamath River

tributary natural sub-population.

5.2 Develop optimum escapement levels for fall run chinook salmon through harvest rate management.

5.3 ~~Manage~~ Recommend that all ocean and in-river fisheries that impact Klamath River stocks be managed in a manner consistent with Klamath River natural production.

5.5 Establish a threshold for natural stock productivity below which the KFMC will re-examine ~~management methods~~ harvest strategies for natural stocks.

Category 6. Habitat

6.1 Require water flows adequate to achieve optimal productivity of the basin.

6.2 Mandate by law minimum habitat standards.

6.3 Seek the establishment of law that mandates minimum stream-flow standards.

6.4 Manage all ocean activities consistent with Klamath River natural production.

6.6 Council to make recommendations to task force and management authorities on habitat issues as they arise.

Category 7. Allocation Strategies

7.2 Establish a two-tiered allocation system:

1) Determine minimum needs for each user group;

2) Allocate the remaining harvestable surplus to optimize the social and economic benefits in a fair and equitable manner as determined by the KFMC.

~~** 7.2 (Alternate) Establish a two-tiered allocation system:~~

~~(1) Pursuant to their trust responsibilities to Indian tribes, federal agencies on the KFMC, in coordination with tribal representatives, shall establish the harvest share allocable to tribal reserved fishing rights, based on an understanding of current and developing tribal requirements;~~
~~(2) Allocate remaining allocable harvest among remaining user groups to optimize social and economic benefits in a fair and equitable manner as determined by the KFMC.~~

~~** Presented by the Hoopa Valley Tribal Council as alternative language to replace option 7.2. This option has not been unanimously approved by the Council. The Council will choose to retain the original option 7.2 or the alternate option 7.2 after hearing public comment.~~

Category 7. Allocation Strategies

7.1 Make four interim and one long-term allocation.

This option would require a study of the mix of each species occurring within the Klamath River Basin's different areas, inventory the allocation mixes that are possible, and then make allocations on how to get this mix. This would provide the biologically and physically best mix that emphasizes wild fish. The intent would be to set a long-term allocation target, and a series of interim allocations to get there.

**** **7.2 Establish a two-tiered allocation system: 1) Determine minimum needs for each user group; 2) Allocate the remaining harvestable surplus to optimize the social and economic benefits in a fair and equitable manner as determined by the KFMC.**

The intent of the allocation strategy would be to meet minimum needs for each user group first. These needs will be determined by the KFMC based on information and justifying rationale supplied by the user groups. A balance in meeting minimum needs will be ensured by a full public review of rationale with all parties and input from the public.

If additional harvestable surplus exists after meeting the minimum needs of all user groups, the surplus will be added to users' allocations based on a strategy to optimize social and economic benefits. The KFMC will determine the optimization strategy based on social and economic impacts analysis, input from the user group and agency/tribal representatives, input from the general public and will be consistent with the standards of the Magnuson Act, other applicable federal, state, and tribal laws. The allocation strategy must be deemed by the KFMC as fair and equitable.

7.2 (ALTERNATE) Establish a two-tiered allocation system: 1) Pursuant to their trust responsibilities to Indian tribes, federal agencies on the KFMC, in coordination with tribal representatives, shall establish the harvest share allocable to tribal reserved fishing rights, based on an understanding of current and developing tribal requirements;
2) Allocate remaining allocable harvest among remaining user groups to optimize social and economic benefits in a fair and equitable manner as determined by the KFMC.

This alternative language to option 7.2 was presented by the Hoopa Valley Tribal Council. The Klamath Fishery Management Council did not unanimously agree to replace the original option language, but agreed to present it here for the public review process. A final decision, on which version of this option to include in the plan, will be made after the Council's review of public comment. Council reviewed public comment and decided to remove this option from consideration at their June 27-28, 1991, meeting.

ATTACHMENT 13
(Excerpt from Draft #3 of the KFMC Plan)

Draft #3
January 1992

The Klamath Fishery Management Council Strategic Plan for Management of Harvest of Anadromous Fish Populations of the Klamath River Basin

Prepared by:

The Klamath Fishery Management Council
P.O. Box 1006
Yreka, California 96097-1006

Additions to this draft are noted with underlining, deletions are noted with ~~strike-out~~.

The KFMC recognizes that harvest management issues are closely linked to habitat protection and enhancement. The KFMC has previously discussed habitat alteration and water management practices as they impact harvest plans and will continue to provide the task force and other management authorities with recommended actions deemed necessary to protect Klamath Basin anadromous fish.

Category 7. Allocation Strategies

7.1 Make four interim and one long-term allocation.

This option would require a study of the mix of each species occurring within the Klamath River Basin's different areas, inventory the allocation mixes that are possible, and then make allocations on how to get this mix. This would provide the biologically and physically best mix that emphasizes wild fish. The intent would be to set a long-term allocation target, and a series of interim allocations to get there.

****7.2 **Establish a two tiered allocation system that is consistent with the legally defined harvest share allocable to tribal reserved fishing rights and allocate the non-tribal share to optimize social and economic benefits.**

~~7.2 Establish a two tiered allocation system: 1) Determine minimum needs for each user group; 2) Allocate the remaining harvestable surplus to optimize the social and economic benefits in a fair and equitable manner as determined by the KFMC.~~

KFMC - THE FOLLOWING CLARIFYING LANGUAGE DOES NOT RELATE VERY WELL TO THE REVISED OPTION 7.2

The intent of the allocation strategy would be to meet minimum needs for each user group first. These needs will be determined by the KFMC based on information and justifying rationale supplied by the user groups. A balance in meeting minimum needs will be ensured by a full public review of rationale with all parties and input from the public.

If additional harvestable surplus exists after meeting the minimum needs of all user groups, the surplus will be added to users' allocations based on a strategy to optimize social and economic benefits. The KFMC will determine the optimization strategy based on social and economic impacts analysis, input from the user group and agency/tribal representatives, input from the general public and will be consistent with the standards of the Magnuson Act, other applicable

federal, state, and tribal laws. The allocation strategy must be deemed by the KFMC as fair and equitable.

~~7.2 (ALTERNATE) Establish a two tiered allocation system: 1) Pursuant to their trust responsibilities to Indian tribes, federal agencies on the KFMC, in coordination with tribal representatives, shall establish the harvest share allocable to tribal reserved fishing rights, based on an understanding of current and developing tribal requirements;~~
~~2) Allocate remaining allocable harvest among remaining user groups to optimize social and economic benefits in a fair and equitable manner as determined by the KFMC.~~

~~This alternative language to option 7.2 was presented by the Hoopa Valley Tribal Council. The Klamath Fishery Management Council did not unanimously agree to replace the original option language, but agreed to present it here for the public review process. A final decision, on which version of this option to include in the plan, will be made after the Council's review of public comment. Council reviewed public comment and decided to remove this option from consideration at their June 27-28, 1991, meeting.~~

****** 7.3. All fishery management authorities will be given equal credence and co-management status by Klamath Fishery Management Council.**

This option requires that the Klamath Fishery Management Council will give full and equal credence and co-management status to all state, federal, and tribal management authorities.

7.4 Institute an Individual Transferable Quota (ITQ) system for KMZ troll salmon.

This option was based a management tool that might be used in the future -- the concept of Individual Transferable Quotas (ITQ's). ITQ's consist of an allotment of fish -- Klamath chinook for example -- to a group or individual for a particular zone that could be transferred to another party in another zone. Additional characteristics could be added; for example, when used in an area outside the original zone, the ITQ could be "worth" a different number of fish. In the KMZ, ITQ's would be "worth" more fish when used outside the KMZ than when used inside the KMZ (based on the expected lower contribution of Klamath fish when trolling outside the KMZ.

ATTACHMENT 14

SHASTA RIVER

COORDINATED RESOURCE MANAGEMENT

PLAN

February 15, 1992

To: The Klamath River Fishery Management Council
From: The Shasta River CRMP

Through the Shasta River CRMP, progress is being made in the restoration of the Shasta River.

Among the many people involved in this effort, there is concern that in spite of the headway made, factors beyond local control will determine the success of their efforts. Harvest management is such a factor, and is of great interest because of its central role in the recovery effort and future status of the fishery. A number of questions have been raised with regard to the present management.

1) When a quota is adopted for Klamath stocks, what will be the rate of harvest as applied to Shasta River stocks?

2) Will the harvest plan take into account the ocean migration patterns and run timing of specific stocks such as Shasta River fall chinook?

3) What is the method for determining when the pre-set harvest rate has been achieved for Shasta River stocks, and then what is the mechanism for insuring that over-harvest does not occur?

Your response to these questions would be greatly appreciated as management is something of a mystery to those of us located so far from the ocean.

Shasta River fall chinook have been identified by the American Fisheries Society as being at high risk of extinction. Also, an investigation by the California Department of Fish and Game is underway to determine if filing for protection under the Endangered Species Act is warranted for Shasta River stocks. It is our view that neither land owners in the Shasta Valley nor in-river and ocean user groups would benefit from such action. It is our hope that a coordinated approach that involves all users of the resource in the recovery of Shasta River stocks will make such action unnecessary.

KLAMATH RIVER AND KLAMATH MANAGEMENT ZONE

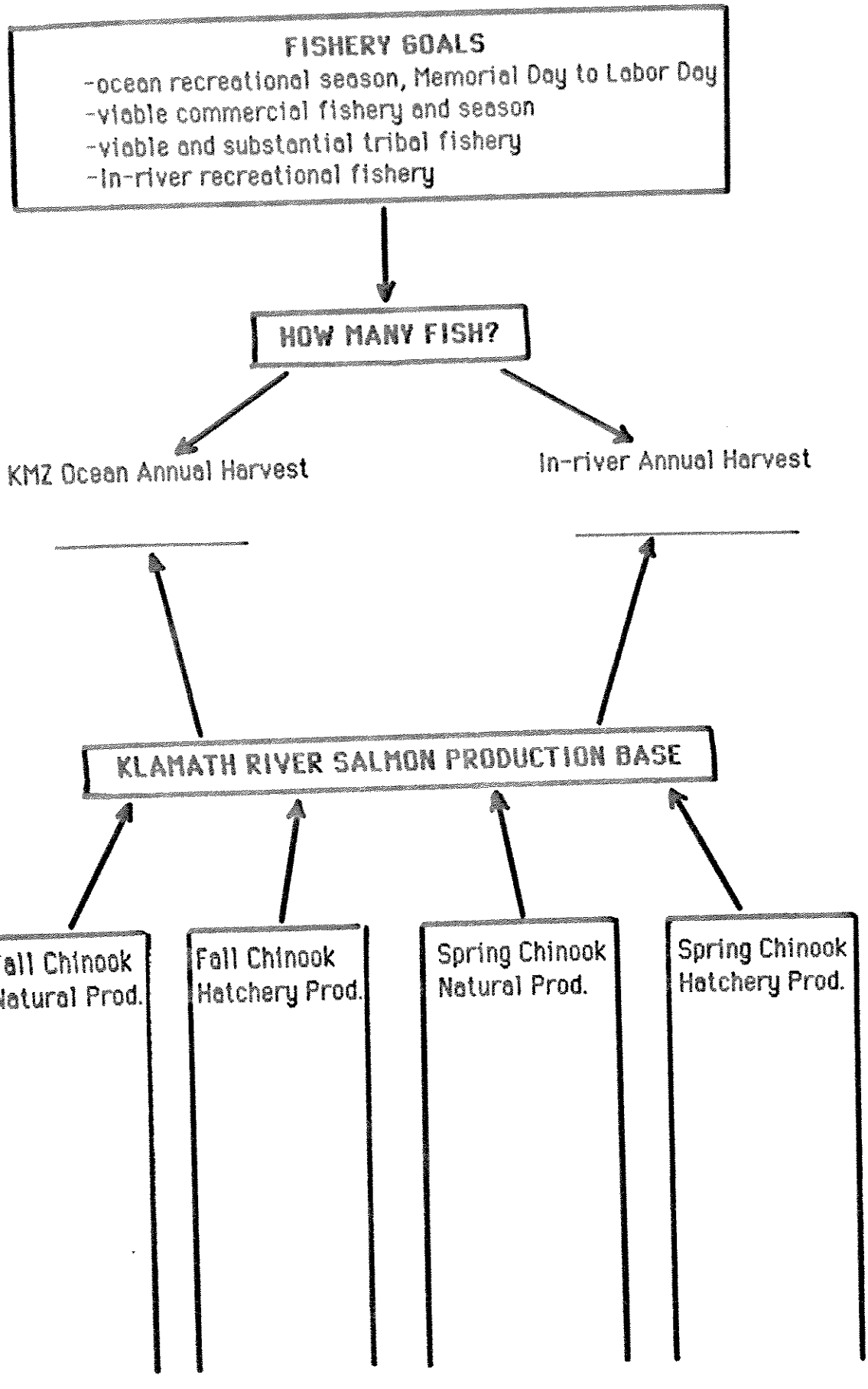


Figure 1. 1986-1990 Average Fishery Contribution Rates of Age 3 and Age 4 Klamath Fall Chinook. Total chinook harvest of all stocks for season in parentheses (X 1000).

AREA		MONTH M	J	J	A	AVG
NOR (109)	AGE 3	0.2	0.7	4.4	7.6	3.1
	AGE 4	2.2	0.7	2.7	1.9	2.6
CSB (256)	AGE 3	2.5	6.3	16.5	28.6	14.8
	AGE 4	10.8	8.2	9.8	6.6	9.0
KMZ-T (116)	AGE 3	8.9	28.0	6.8	25.4	19.6
	AGE 4	10.2	9.0	0.7	2.5	5.6
KMZ-S (49)	AGE 3	22.1	16.9	12.2	20.1	15.1
	AGE 4	6.3	4.2	10.5	7.9	8.2
FTB (253)	AGE 3	13.9	18.8	22.4	7.6	17.2
	AGE 4	6.8	6.6	6.1	3.9	5.9
SOC (498)	AGE 3	2.7	9.2	9.0	3.5	6.0
	AGE 4	1.5	2.9	1.5	0.7	1.8

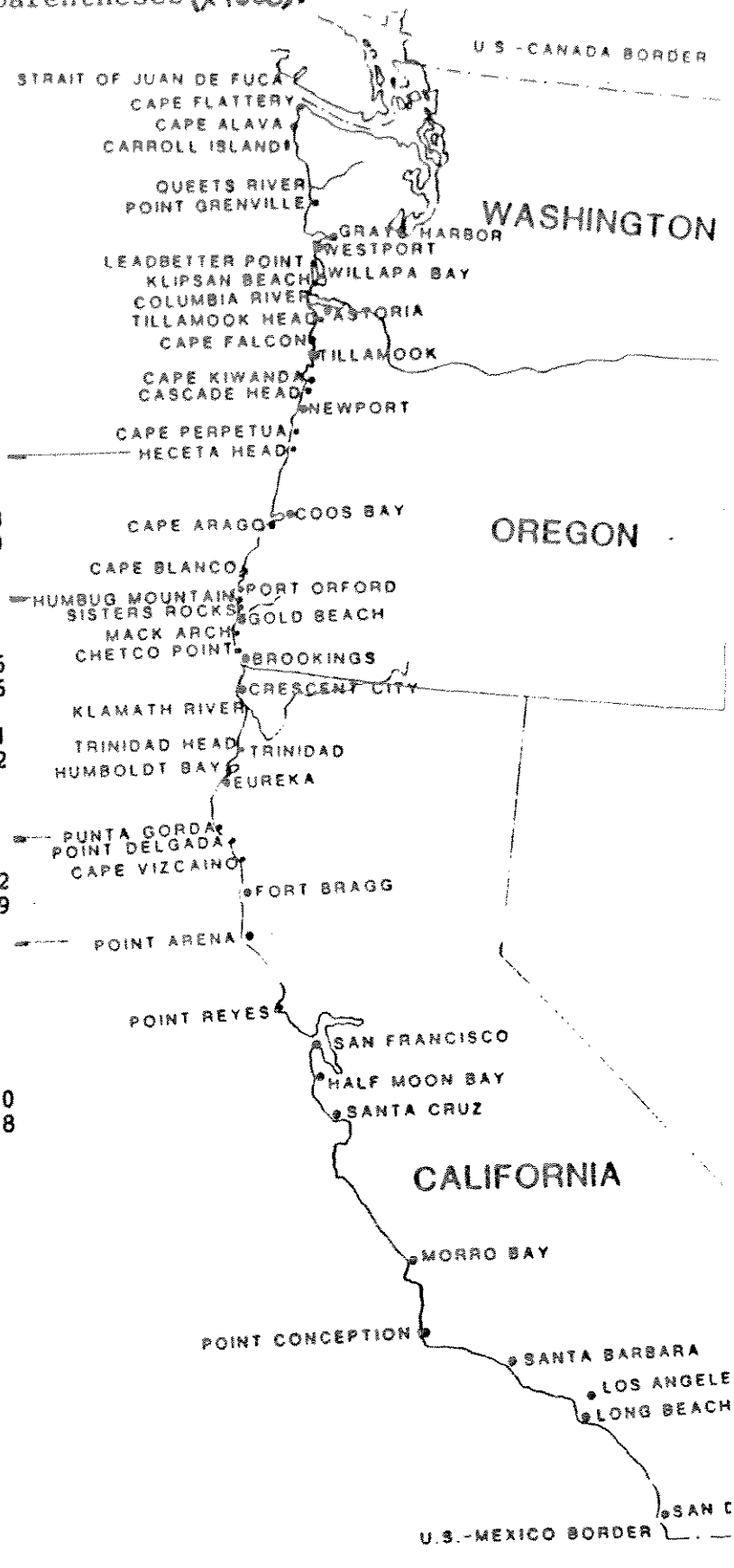


Table A. Klamath Fall Chinook Ocean Harvest Rates and the Effect on 1992 Spawning Escapement. a/

Ocean harvest rate b/	Ocean catch c/	Total spawning escapement	Natural spawning escapement
0.0	0	43,000	31,800
0.02	1,400	42,100	31,200
0.04	2,800	41,300	30,600
0.06	4,300	40,500	30,000
0.08	5,700	39,700	29,400
0.10	7,100	38,900	28,800
0.12	8,500	38,100	28,200

a/ Initial stock size of 438,800 age 2, 25,000 age 3, 34,800 age 4 (1,000 age 4 fish harvested in the fall of 1991), and 1,000 age 5 fish.

b/ As determined in HRM, ocean rate expressed as fraction of initial population of fully vulnerable age 4 and 5 fish.

c/ Catch of Klamath fish, all ages combined.

Table AA. Klamath Fall Chinook River Harvest Rates and the Effect on 1992 Spawning Escapement. a/

River harvest rate b/	River catch c/	Total spawning escapement	Natural spawning escapement
0.0	0	43,000	31,800
0.02	800	42,200	31,200
0.04	1,600	41,400	30,600
0.06	2,300	40,600	30,000
0.08	3,100	39,800	29,500
0.10	3,900	39,100	28,900
0.12	4,700	38,300	28,300

a/ Initial stock size of 438,800 age 2, 25,000 age 3, 34,800 age 4 (1,000 age 4 fish harvested in the fall of 1991), and 1,000 age 5 fish.

b/ As determined in HRM, river harvest rate expressed as fraction of fully vulnerable age 4 fish entering the river.

c/ Catch of Klamath fish, ages 3, 4, and 5 only.

KLAMATH OCEAN HARVEST MODEL: EXPLTN. RATE VERSION: CAL_91
BASE YEAR 1991
KLAMATH IMPACTS - ESTIMATES: L(ijk)

AGE3-AREA	FALL-90	MAY-91	JUNE-91	JULY-91	AUG-91	TOTAL
NOR	0	0	0	0	114	114
CSB	0	0	0	457	724	1182
KMZ-T	0	0	0	0	0	0
KMZ-S	0	0	1220	953	76	2249
FTB	0	0	0	0	1715	1715
SOC	0	0	305	648	686	1639
TOTAL	0	0	1525	2059	3317	6900
AGE4-AREA	FALL-90	MAY-91	JUNE-91	JULY-91	AUG-91	TOTAL
NOR	109	44	0	0	109	261
CSB	87	0	65	174	305	631
KMZ-T	87	0	0	0	0	87
KMZ-S	0	0	783	0	0	783
FTB	522	0	0	0	1305	1827
SOC	109	587	957	435	522	2611
TOTAL	914	631	1806	609	2241	6200
AGE 3+4	914	631	3330	2668	5557	13100

BASE YEAR 1991
CATCH PROJECTIONS WITH EXPLOITATION RATE SHIFTS: a(.ij)*C(.ij)

AREA	FALL-90	MAY-91	JUNE-91	JULY-91	AUG-91	TOTAL
NOR	5600	3400	7500	6500	8100	31100
CSB	6700	1	5200	9000	3900	24801
KMZ-T	2100	1	1	1	1	2104
KMZ-S	50	100	11800	7100	100	19150
FTB	2400	1	1	1	34300	36703
SOC	2800	81100	87800	48800	30300	250800
TOTAL	19650	84603	112302	71402	76701	364658

KLAMATH CONTRIBUTION RATE-AGE 3

AREA	FALL-90	MAY-91	JUNE-91	JULY-91	AUG-91
NOR	0.0%	0.0%	0.0%	0.0%	1.4%
CSB	0.0%	0.0%	0.0%	5.1%	18.6%
KMZ-T	0.0%	0.0%	0.0%	0.0%	0.0%
KMZ-S	0.0%	0.0%	10.3%	13.4%	76.2%
FTB	0.0%	0.0%	0.0%	0.0%	5.0%
SOC	0.0%	0.0%	0.3%	1.3%	2.3%

KLAMATH CONTRIBUTION RATE-AGE 4

AREA	FALL-90	MAY-91	JUNE-91	JULY-91	AUG-91
NOR	1.9%	1.3%	0.0%	0.0%	1.3%
CSB	1.3%	0.0%	1.3%	1.9%	7.8%
KMZ-T	4.1%	0.0%	0.0%	0.0%	0.0%
KMZ-S	0.0%	0.0%	6.6%	0.0%	0.0%
FTB	21.8%	0.0%	0.0%	0.0%	3.8%
SOC	3.9%	0.7%	1.1%	0.9%	1.7%

KLAMATH OCEAN HARVEST MODEL VERSION: 92.2
RUN DATE: 3-4-92 TIME: 12:12

EXPLOITATION RATE CHANGE FROM BASE PERIOD: a(.jk)

	FALL-91	MAY-92	JUNE-92	JULY-92	AUG-92
NOR	1.00	2.35	1.49	1.40	1.04
CSB	1.00	0.06	0.13	0.17	0.13
KMZ-T	1.00	0.00	0.00	0.00	0.00
KMZ-S	1.00	0.16	0.75	0.71	0.03
FTB	1.00	0.04	0.04	0.04	1.00
SOC	1.00	1.04	0.53	0.59	1.00

1992 WITH 1991 FISHERY STRUCTURE

KLAMATH ADULT OCEAN LANDINGS	9700
KLAMATH INRIVER HARVEST	0
KLAMATH SPAWNING ESCAPEMENT	35900
AGE 4 KLAMATH HARVEST RATE	18%

KLAMATH LANDINGS - ESTIMATES: L(ijk)

AGE 3	FALL-91	MAY-92	JUNE-92	JULY-92	AUG-92	TOTAL
NOR	0	0	10	190	160	360
CSB	0	0	20	410	360	790
KMZ-T	0	0	0	0	0	0
KMZ-S	0	10	220	250	0	480
FTB	0	10	40	70	280	400
SOC	0	300	450	310	90	1150
AGE3 TOT	0	320	740	1230	890	3180
AGE 4	FALL-91	MAY-92	JUNE-92	JULY-92	AUG-92	TOTAL
NOR	0	110	70	460	130	770
CSB	420	40	80	970	350	1860
KMZ-T	80	0	0	0	0	80
KMZ-S	80	0	140	420	10	650
FTB	420	40	90	80	320	950
SOC	0	780	830	340	70	2020
AGE4 TOT	1000	970	1210	2270	880	6330

CATCH PROJECTIONS BASED ON EXPLOITATION RATE SHIFTS

	FALL-91	MAY-92	JUNE-92	JULY-92	AUG-92	92 TOT
NOR	17900					
CSB	12400					
KMZ-T	5100	0	0	0	0	0
KMZ-S	600	100	3000	4400	100	7600
FTB	1200					
SOC	6400					
TOTAL	43600					

KLAMATH CONTRIBUTION-AGE 3+4 COMBINED

AREA	FALL-91	MAY-92	JUNE-92	JULY-92	AUG-92
NOR	0.0%	1.3%	1.0%	4.4%	5.2%
CSB	3.4%	6.7%	7.7%	19.4%	27.3%
KMZ-T	1.6%	0.0%	0.0%	0.0%	0.0%
KMZ-S	13.3%	10.0%	12.0%	15.2%	10.0%
FTB	35.0%	6.3%	7.6%	8.3%	3.4%
SOC	0.0%	1.0%	3.3%	2.5%	0.9%

KLAMATH OCEAN HARVEST MODEL VERSION: 92_2
RUN DATE: 3-4-92 TIME: 12:6

EXPLOITATION RATE CHANGE FROM BASE PERIOD: a(.jk)

	FALL-91	MAY-92	JUNE-92	JULY-92	AUG-92
NOR	1.00	2.35	1.49	1.40	1.04
CSB	1.00	0.06	0.13	0.17	0.13
KMZ-T	1.00	0.00	0.00	0.00	0.00
KMZ-S	1.00	0.00	0.00	0.00	0.00
FTB	1.00	0.04	0.04	0.04	1.00
SOC	1.00	1.04	0.53	0.59	1.00

1992 WITH 1991 FISHERY STRUCTURE
(Same as 1991 but no fishing in KMZ)

KLAMATH ADULT OCEAN LANDINGS	8700
KLAMATH INRIVER HARVEST	0
KLAMATH SPAWNING ESCAPEMENT	36600
AGE 4 KLAMATH HARVEST RATE	16%

KLAMATH LANDINGS - ESTIMATES: L(ijk)

AGE 3	FALL-91	MAY-92	JUNE-92	JULY-92	AUG-92	TOTAL
NOR	0	0	10	200	170	380
CSB	0	0	20	420	370	810
KMZ-T	0	0	0	0	0	0
KMZ-S	0	0	0	0	0	0
FTB	0	10	40	70	280	400
SOC	0	300	450	320	90	1160
AGE3 TOT	0	310	520	1010	910	2750
AGE 4	FALL-91	MAY-92	JUNE-92	JULY-92	AUG-92	TOTAL
NOR	0	110	70	460	130	770
CSB	420	40	80	980	360	1880
KMZ-T	80	0	0	0	0	80
KMZ-S	80	0	0	0	0	80
FTB	420	40	90	80	330	960
SOC	0	780	830	340	70	2020
AGE4 TOT	1000	970	1070	1860	890	5790

CATCH PROJECTIONS BASED ON EXPLOITATION RATE SHIFTS

	FALL-91	MAY-92	JUNE-92	JULY-92	AUG-92	92 TOT
NOR	17900					
CSB	12400					
KMZ-T	5100	0	0	0	0	0
KMZ-S	600	0	0	0	0	0
FTB	1200					
SOC	6400					
TOTAL	43600					

KLAMATH CONTRIBUTION-AGE 3+4 COMBINED

AREA	FALL-91	MAY-92	JUNE-92	JULY-92	AUG-92
NOR	0.0%	1.3%	1.0%	4.5%	5.4%
CSB	3.4%	6.7%	7.7%	19.7%	28.1%
KMZ-T	1.6%	0.0%	0.0%	0.0%	0.0%
KMZ-S	13.3%	0.0%	0.0%	0.0%	0.0%
FTB	35.0%	6.3%	7.6%	8.3%	3.5%
SOC	0.0%	1.0%	3.3%	2.5%	0.9%

EXPLOITATION RATE CHANGE FROM BASE PERIOD: a(.jk)

	FALL-91	MAY-92	JUNE-92	JULY-92	AUG-92
NOR	1.00	2.35	1.96	1.79	1.87
CSB	1.00	0.03	0.03	0.03	0.03
KMZ-T	1.00	0.00	0.00	0.00	0.00
KMZ-S	1.00	0.00	0.00	0.00	0.00
FTB	1.00	0.04	0.04	0.04	0.04
SOC	1.00	1.12	0.53	0.59	1.38

1992 WITH 1991 FISHERY STRUCTURE
(No commercial fishing from N of Florence to Pt Arena and no fishing in KMZ)

KLAMATH ADULT OCEAN LANDINGS	6800
KLAMATH INRIVER HARVEST	0
KLAMATH SPAWNING ESCAPEMENT	37900
AGE 4 KLAMATH HARVEST RATE	13%

KLAMATH LANDINGS - ESTIMATES: L(ijk)

AGE 3	FALL-91	MAY-92	JUNE-92	JULY-92	AUG-92	TOTAL
NOR	0	0	20	250	310	580
CSB	0	0	10	70	90	170
KMZ-T	0	0	0	0	0	0
KMZ-S	0	0	0	0	0	0
FTB	0	10	40	70	10	130
SOC	0	300	450	320	130	1200
AGE3 TOT	0	310	520	710	540	2080
AGE 4	FALL-91	MAY-92	JUNE-92	JULY-92	AUG-92	TOTAL
NOR	0	110	90	590	250	1040
CSB	420	20	20	170	90	720
KMZ-T	80	0	0	0	0	80
KMZ-S	80	0	0	0	0	80
FTB	420	40	90	80	10	640
SOC	0	780	830	340	100	2050
AGE4 TOT	1000	950	1030	1180	450	4610

CATCH PROJECTIONS BASED ON EXPLOITATION RATE SHIFTS

	FALL-91	MAY-92	JUNE-92	JULY-92	AUG-92	92 TOT
NOR	17900					
CSB	12400					
KMZ-T	5100	0	0	0	0	0
KMZ-S	600	0	0	0	0	0
FTB	1200					
SOC	6400					
TOTAL	43600					

KLAMATH CONTRIBUTION-AGE 3+4 COMBINED

AREA	FALL-91	MAY-92	JUNE-92	JULY-92	AUG-92
NOR	0.0%	1.3%	1.0%	4.4%	5.5%
CSB	3.4%	6.7%	10.0%	20.0%	30.0%
KMZ-T	1.6%	0.0%	0.0%	0.0%	0.0%
KMZ-S	13.3%	0.0%	0.0%	0.0%	0.0%
FTB	35.0%	6.3%	7.6%	8.3%	2.9%
SOC	0.0%	1.0%	3.3%	2.5%	0.9%

EXPLOITATION RATE CHANGE FROM BASE PERIOD: a(.jk)

	FALL-91	MAY-92	JUNE-92	JULY-92	AUG-92
NOR	1.00	0.05	0.05	0.05	0.05
CSB	1.00	0.03	0.03	0.03	0.03
KMZ-T	1.00	0.00	0.00	0.00	0.00
KMZ-S	1.00	1.00	1.00	1.00	1.00
FTB	1.00	0.04	0.04	0.04	0.04
SOC	1.00	0.20	0.20	0.20	0.20

1992 WITH 1991 FISHERY STRUCTURE
(No commercial fishing from Cape Falcon to US/Mex, sport fisheries in all areas.

KLAMATH ADULT OCEAN LANDINGS	5700
KLAMATH INRIVER HARVEST	0
KLAMATH SPAWNING ESCAPEMENT	38700
AGE 4 KLAMATH HARVEST RATE	11%

KLAMATH LANDINGS - ESTIMATES: L(ijk)

AGE 3	FALL-91	MAY-92	JUNE-92	JULY-92	AUG-92	TOTAL
NOR	0	0	0	10	10	20
CSB	0	0	10	70	90	170
KMZ-T	0	0	0	0	0	0
KMZ-S	0	50	300	360	130	840
FTB	0	10	40	70	10	130
SOC	0	300	170	110	20	600
AGE3 TOT	0	360	520	620	260	1760
AGE 4	FALL-91	MAY-92	JUNE-92	JULY-92	AUG-92	TOTAL
NOR	0	0	0	20	10	30
CSB	420	20	20	170	90	720
KMZ-T	80	0	0	0	0	80
KMZ-S	80	20	190	610	250	1150
FTB	420	40	90	80	10	640
SOC	0	780	310	120	10	1220
AGE4 TOT	1000	860	610	1000	370	3840

CATCH PROJECTIONS BASED ON EXPLOITATION RATE SHIFTS

	FALL-91	MAY-92	JUNE-92	JULY-92	AUG-92	92 TOT
NOR	17900					
CSB	12400					
KMZ-T	5100	0	0	0	0	0
KMZ-S	600	300	4000	6200	2100	12600
FTB	1200					
SOC	6400					
TOTAL	43600					

KLAMATH CONTRIBUTION-AGE 3+4 COMBINED

AREA	FALL-91	MAY-92	JUNE-92	JULY-92	AUG-92
NOR	0.0%	0.0%	0.0%	6.0%	6.7%
CSB	3.4%	6.7%	10.0%	20.0%	30.0%
KMZ-T	1.6%	0.0%	0.0%	0.0%	0.0%
KMZ-S	13.3%	23.3%	12.3%	15.6%	18.1%
FTB	35.0%	6.3%	7.6%	8.3%	2.9%
SOC	0.0%	1.0%	3.3%	2.6%	0.8%

RATE CHANGE FROM BASE PERIOD: a(.jk)

	FALL-91	MAY-92	JUNE-92	JULY-92	AUG-92
NOR	1.00	0.05	0.05	0.05	0.05
CSB	1.00	0.03	0.03	0.03	0.03
KMZ-T	1.00	0.00	0.00	0.00	0.00
KMZ-S	1.00	0.00	0.00	0.00	0.00
FTB	1.00	0.04	0.04	0.04	0.04
SOC	1.00	0.20	0.20	0.20	0.20

1992 WITH 1991 FISHERY STRUCTURE
(No commercial fishing from Cape Falcon to US/Mex and no fishing in KMZ)

KLAMATH ADULT OCEAN LANDINGS	3800
KLAMATH INRIVER HARVEST	0
KLAMATH SPAWNING ESCAPEMENT	40000
AGE 4 KLAMATH HARVEST RATE	8%

KLAMATH LANDINGS - ESTIMATES: L(ijk)

AGE 3	FALL-91	MAY-92	JUNE-92	JULY-92	AUG-92	TOTAL
NOR	0	0	0	10	10	20
CSB	0	0	10	80	90	180
KMZ-T	0	0	0	0	0	0
KMZ-S	0	0	0	0	0	0
FTB	0	10	40	70	10	130
SOC	0	300	170	110	20	600
AGE3 TOT	0	310	220	270	130	930
AGE 4	FALL-91	MAY-92	JUNE-92	JULY-92	AUG-92	TOTAL
NOR	0	0	0	20	10	30
CSB	420	20	20	180	90	730
KMZ-T	80	0	0	0	0	80
KMZ-S	80	0	0	0	0	80
FTB	420	40	90	90	10	650
SOC	0	780	310	120	10	1220
AGE4 TOT	1000	840	420	410	120	2790

CATCH PROJECTIONS BASED ON EXPLOITATION RATE SHIFTS

	FALL-91	MAY-92	JUNE-92	JULY-92	AUG-92	92 TOT
NOR	17900					
CSB	12400					
KMZ-T	5100	0	0	0	0	0
KMZ-S	600	0	0	0	0	0
FTB	1200					
SOC	6400					
TOTAL	43600					

KLAMATH CONTRIBUTION-AGE 3+4 COMBINED

AREA	FALL-91	MAY-92	JUNE-92	JULY-92	AUG-92
NOR	0.0%	0.0%	0.0%	6.0%	6.7%
CSB	3.4%	6.7%	10.0%	21.7%	30.0%
KMZ-T	1.6%	0.0%	0.0%	0.0%	0.0%
KMZ-S	13.3%	0.0%	0.0%	0.0%	0.0%
FTB	35.0%	6.3%	7.6%	8.9%	2.9%
SOC	0.0%	1.0%	3.3%	2.6%	0.8%

SHASTA RIVER SALMON COUNTS

FALL CHINOOK

YEAR	JACKS	ADULTS
1978	6,707	12,024
1979	1,040	7,111
1980	4,334	3,762
1981	4,330	7,890
1982	1,922	6,533
1983	753	3,119
1984	480	2,362
1985	2,227	2,897
1986	683	3,274
1987	398	4,299
1988	256	2,586
1989	137	1,440
1990	118	415
(1991)	20	706

George Jewell
624 "Q" Street
Fortuna, CA 95540

ATTACHMENT 19

February 5, 1992

Dear Sir:

Please be advised that the true California Sport Fishermen who fish the California ocean waters north of Point Delgada will gladly accept one Salmon per day for the ocean Salmon sport fishery this coming year 1992. Especially if we can have a full season from June to September. If it is deemed necessary in the middle of the season to reduce the catch downward then close from 1 to 5 days each week but keep the season open all year.

As a writer of a fishing column for many years in Northern California I receive many telephone and written comments and by far the most agree that they would rather have a reduced season over a total closure. Last year in the months of July and August the ocean sport Salmon fishery lost many millions of dollars to the surrounding economy.

I know the party boat people say they cannot survive on one Salmon per day but they said the same thing when we were cut from 3 to 2 Salmon per day. Many of the party boat people are also commercial fishermen for Crab & Cod with long line & rod & reel & have incomes of $60,000 to $100,000 per year. When we understand that the party boats take 50 to 90 percent of all ocean sport caught Salmon then the place to reduce the catch is the party boats not the small sport fishing boats who spend a hundred or so dollars for each Salmon he catches & is the one who spends millions of dollars in this area each year just to come up to Humboldt to fish for a Salmon for 2 or 3 months.

Yes, I do believe that the tourist will come back to Humboldt Bay to fish Salmon in our ocean even with a one Salmon per day limit. On the off days they could fish Black Snappers, Sand Dabs, etc. Remember, not every sport fisherman is just after the meat, some are really out there for the enjoyment of it.

Sincerely,

George A. Jewell

George A. Jewell

BOARD OF SUPERVISORS
COUNTY OF HUMBOLDT
825 5TH STREET
EUREKA, CALIFORNIA 95501-1172 PHONE (707) 445-7471

March 5, 1992

Chairman
Klamath Fishery Management Council
Red Lion Inn
Eureka, CA 95501

Dear Mr. Chairman and Council Members:

I am unable to attend your public comment period today due to a conflicting meeting. I would, however, wish to have my comments read into your record.

My father fished the salmon troller, Lavona, off the North Coast for many years during the 1960's, so I am familiar with the problems faced by our salmon fisherman both commercial and sport.

I am aware that the choices before the Council will be difficult this year, ranging all the way from no season, to at best a reduced season. I also know that those involved with the fishing industry on the North Coast have a deep and abiding concern, as do I, for the conservation, protection and enhancement of our coastal fishery resources. I know equally as well that the economic impact of reduced seasons to those involved personally with the industry, and all of us on the North Coast, has been enormous in the past few years.

Your job is not an easy one! I ask you, however, to give strong consideration to the further economic devastation that would come to this area as the result of an entirely closed season. Please give your support to a season that would allow our friends in the fishing and related industries a chance to survive.

I will present a resolution to our Board of Supervisors on Tuesday, March 10, asking for their support for a salmon fishing season which will help maintain a viable industry here on the North Coast. We will provide a copy to your Council for presentation to the PFMC meeting in Seattle next week.

Sincerely,

Stan Dixon

STAN DIXON, Chairman
First District Supervisor

BOARD OF SUPERVISORS
COUNTY OF HUMBOLDT
825 5TH STREET
EUREKA, CALIFORNIA 95501-1172 PHONE (707) 445-7471

March 5, 1992

Paul Kirk
% Klamath Fishery Management Council
Red Lion Inn
Eureka, CA 95501

Dear Paul:

I won't be able to get away from this Air Quality meeting this morning, but would ask that you read my letter at "Public Comment". I'll wait for your information to put a resolution of support on the Board's agenda Tuesday.

Good luck,

Stan

STAN DIXON, Chairman
First District Supervisor