

U.S. Fish and Wildlife Service
Klamath Field Office
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February 21, 1989

TO: Interested Parties Management Council
FROM: Ron Iverson
SUBJECT: Klamath Fishery Management Council Meeting 2/1-2/89

Enclosed are the minutes for the Klamath Fishery Mangement Council meeting of
February 1-2, 1989.

KLAMATH FISHERY MANAGEMENT COUNCIL

PROCEEDINGS OF THE MEETING HELD 1-2 FEBRUARY 1989, EUREKA, CALIFORNIA

Chairman Fletcher convened the meeting at 9:10 a.m. on February 1, with a quorum present (see attendance roster, Attachment 1). Minutes of the last meeting were revised to indicate that Keith Wilkinson is the Klamath Council representative of both ocean commercial and ocean sport fishers of Oregon.

Mr. Fletcher announced his pending resignation from the California Department of Fish and Game, and indicated the Department has nominated Spike Naylor to be Klamath Council representative. After commending Bob for his accomplishments and expressing pleasure in working with him, the Council elected Charley Fullerton as new chairperson, effective after the current meeting.

Report on legislation. Bruce Taylor reported that the President's budget proposal for Fiscal Year 1990 contains \$12.2 million for Trinity River fish and wildlife restoration, and \$1 million for Klamath River anadromous fish restoration. Responding to a question about Federal authorizations for fish restoration in the Eel River basin, Bruce said this would probably not happen until planning for fish restoration in the Russian River basin gets underway...with lack of clear Federal responsibility for fish restoration in the Eel being one of the issues.

Law enforcement. Leonard Masten reported that BIA law enforcement officers regulated an increased number of nets in 1988...about \$5500 in fines were imposed, and 2200 pounds of fish confiscated. Most arrests were for violation of fishing closure periods, or fishing by non-enrolled persons. There was very little illegal shipment of fish.

Report of the Technical Advisory Team. Bob Fletcher complimented the Team for their informative analysis of harvest allocation options (Attachment 4). Turning to Attachment 2, Team chair Scott Boley pointed out the following highlights:

1988 chinook landings. The first table of Attachment 2 displays 1988 chinook landings in the Klamath Management Zone (KMZ), with special fisheries separated out. Contribution of Klamath fish to the KMZ chinook landings is not yet available...should be analyzed by late February.

Trends in KMZ chinook harvest are shown on page 2 of Attachment 2. Note the marked decline in troll chinook landings since the El Nino event and subsequent quota management.

Page 3 of Attachment 2 updates the analysis of inriver runs to include 1988. Note the drop in inriver sport catch from the high levels of 1986-87...for unknown reasons. A more detailed analysis of escapements (Attachment 3) shows that escapement to the Trinity river and Bogus Creek, and escapements to both Trinity and Iron Gate Hatcheries, were again strong in 1988...but natural spawning escapements to the Scott and Shasta were not large. Nat Bingham suggested that concern about low chinook spawning

escapement to the Shasta be conveyed to the Klamath Task Force.

Analysis of harvest management options is displayed in Attachment 4, the Team report dated December 29. Options the Team looked at included:

Status quo management conditions prevailing in 1986-87: quota in KMZ, seasonal management in outside areas, and substantial uncertainty in ocean stock size estimates for Klamath, Sacramento, and Rogue chinook stocks. The Team found that errors of +/- 50% in estimates of other stocks have little impact on catch of Klamath chinook under the present management regime...but similar errors in estimating Klamath stocks lead to large discrepancies between predicted and actual catch and escapement of Klamath fish (Attachment 4, page 8).

PCFFA proposal for seasonal management in KMZ The Team concluded that the PCFFA proposal to use 4 days fishing/3 days off to dampen and distribute fishing effort would have little effect on harvest (Attachment 4, pp. 13-14, and Appendix 1 to Att. 4). A reduction in fishing effort to 3 days fishing/4 days off would, in contrast, probably significantly reduce harvest (see Attachment 2, page 8). Nat Bingham said that part-week closures of 4 or more days could adversely affect small boats that are more subject to weather.

Varying ocean/inriver allocation ratios for varying ocean stock sizes. This analysis, requested by Bob Fletcher, is displayed in Table 5 of Attachment 4.

Discussion. Inriver and ocean harvester representatives indicated that flexible allocation ratios are not of interest to them.

Reshaping ocean harvest to provide more fish to KMZ.

Responding to a request by Jim Martin, the Team looked at ways to increase KMZ harvest while holding total ocean impacts on Klamath stocks constant. The KOHM model indicated that KMZ chinook harvest could be nearly doubled by reductions of about one-third in the Fort Bragg June landings, and in Coos Bay July landings. Impacts on harvest of other stocks would be small (see Attachment 4, pp. 8-12). These results come about because Klamath chinook contribution rates are comparable in KMZ/Ft. Bragg in June, and in KMZ/Coos Bay in July. The analysis of harvest tradeoffs between ocean areas is developed further in the graph on page 11 of Attachment 2, showing how the early Fort Bragg fishery and the late Coos Bay fishery must be dampened in order to provide various levels of KMZ harvest, while holding overall ocean impact on Klamath stocks to .325. For a KMZ harvest of zero, the .325 target could be met by holding the early Fort Bragg harvest to 40% of the 1986-87 average, and dampening the July Coos Bay catch to 50% of recent average...for both fisheries, this would require block closures of about two weeks. These results assume no transfer of effort from KMZ to outside areas. If effort shift is factored in, the dampening in outside areas must be even more severe.

Discussion Nat Bingham said that the hard tradeoffs between ocean areas shown by this analysis illustrate why an ocean harvest rate of .325 is unacceptable: to provide a reasonable KMZ harvest, adjacent ocean fisheries must be severely restricted. To provide a harvest of 100,000 chinook in the KMZ, early Fort Bragg/late Coos Bay fisheries would have to be reduced about 80%. Team members explained that the "tradeoff" graph (Att. 4, p.11) is

derived from 1986 and 1987 data, and slopes may be somewhat changed by addition of 1988 information...but probably not by much. Jim Martin said the tradeoff graph illustrates how competitive the Coos Bay, KMZ, and Fort Bragg fisheries have become in harvesting Klamath chinook, because of the increased fishing effort in recent years.

Klamath impacts of April/May ocean sport fishery. Responding to Bob Hayden's request, the Team looked at potential for an early sport season opening in the KMZ. There is little historic record of KMZ sport catches before about mid-May, but troll catches landed in Eureka in May have included a high percentage of marked Klamath chinook (Attachment 4, Figure 4). Boley speculated that, if springtime conditions make chinook available to sport anglers in the KMZ, enough Klamath fish might be harvested to impact the desired Memorial Day-Labor Day, two-fish bag season.

Discussion More information should be developed on the apparent difference in contribution rate of Klamath chinook to troll and to sport harvests, which may result from different fish size limits, or differences in fish distribution inshore and offshore. One means of getting such data might be test fishing in closed areas. This might provide management measures to allow harvest while avoiding Klamath fish. There is speculation that an early inshore sport fishery wouldn't take many Klamath fish, but the inshore special fishery off the Rogue had a high Klamath contribution rate.

Redlining, with discussion of specific dampening measures. Boley explained that the red line management concept, as used in chinook and coho fisheries in British Columbia, involves identifying a total harvest target, establishing a function of cumulative catch across time (the "red line"), monitoring catch data through the season to compare actual cumulative catch with expected red line values, and applying (or relaxing) dampening measures to bring actual cumulative catch back to the red line function. Actual control of total catch achieved by red line management is generally less than is achieved with quotas, and greater than seasonal management. The Canadians also use a green line function, to serve as a floor for cumulative harvest...so that cumulative harvest is kept between the green and red lines. Deviation of observed from expected cumulative catch could be caused by over/underestimate of size of the target stock, or by shifts in effort or availability...there is no way to distinguish these variables without an accurate estimate of stock size. Canadians update their cumulative catch records weekly, using a "soft" dataset from interviews of boats on the water, and a less timely "hard" data set of landings receipts.

The Team prepared a theoretical example of red line management for application to Klamath chinook management (Attachment 4, pp.16-21). They also analyzed specific dampening measures (Attachment 2, pp.7-10). Regarding days per week closures, it appears that closures of 4 or more days per week are required to limit harvest.

The team also looked at block time closures of two or more weeks. The 1988 block closure in the Coos Bay fishery appears to have reduced harvest of Klamath fish by 28%. There was a comment that effectiveness of block closures needs to be tested by test fisheries.

The Team considered trip limits within the KMZ. Assuming a KMZ catch target of 100,000 chinook, the Team found that trip limits of 50 or more fish/boat would

not be effective in meeting the target without additional dampeners, but limits of <25 fish/boat would be effective, and would favor day boats. Trip limits can be effective because about 70% of fish are landed by about 10% of the boats, and these are the boats that will move in response to trip limits.

The Team emphasized that analysis of dampening measures required many simplifying assumptions.

Discussion. Question: Wouldn't all this fine-tuned dampening be expensive and cumbersome? Answer: Team didn't look at economics...but the red line technique looks usable. About 2-3 management actions per month might be required. Inseason catch data is being collected anyway.

Comment: A dampener was imposed on the KMZ sport fishery last year in form of one fish bag limit...this was unpopular because it was unexpected. PFMC will have to identify effective dampening measures for the sport fishery, because of greatly increased effort. Ocean user meetings will be held again this year to discuss potential measures. If dampening measures are known and agreed to pre-season, ill feelings should be reduced.

Confidence limits for preseason estimates of ocean abundance
Appendix 2, pp.4-7 contains a discussion of confidence limits and the issue of apparent bias in preseason estimates of Klamath stock abundance. Given the wide confidence limits for point estimates of abundance of 3-year-old fish (App. 2, p.7), recent preseason predictions can be considered unbiased, as they all fall within the 95% confidence interval. Consider that ocean stock size is being estimated for Klamath chinook with greater accuracy than for other major chinook stocks.

Discussion Comment: The innate variability in the Klamath stock abundance will continue to make preseason predictions of stock size quite unreliable. For that reason, we need management concepts that do not depend on these numbers. Comment: Given the low reliability of preseason stock size estimates, how about looking for some other indicator of ocean abundance for management purposes - like catch per unit of effort? Response: We must manage by preseason abundance estimate...because we are held to harvest rate concept.

Discussion of inriver issues Council members expressed desire to have the Technical Team look at various biological and harvest questions in-river. Questions included:

Q: What is the biological effect of apparent net selectivity that is causing escapement of smaller chinook into the Trinity?

A: Selectivity is a common occurrence in salmon fisheries, but we haven't looked at specific Klamath fisheries.

Q: Is there overescapement of natural stocks in Klamath Basin?

A: On the whole, no...some natural runs are very depressed.

Q: Are hatcheries overescaped?

A: Egg needs of both hatcheries are being exceeded...typical of mixed-stock situations.

Comment: That excess return to hatcheries should be harvested.

Q: But aren't some of those excess hatchery spawners using natural spawning areas?

A: Many Iron Gate fish are spawning in Bogus Creek...so many that spawning habitat is being overused. Marked spawners have been found up to 30 miles below Trinity Hatchery.

Q: If ocean harvest rate had been held to .325 instead of about .5 in recent years, would there have been overescapement?

A: Spawning escapement under that circumstance can be estimated by multiplying postseason stock abundance estimate by .35.

Comment: Inriver harvest could be adjusted to take some of this excess.

Q: What is done with excess hatchery spawners?

A: People take them for food, and carcasses are also sold to rendering works. Some eggs are taken from marked females at the Bogus Creek weir for use in the reservoir fishery program.

Q: If ocean harvest of Klamath chinook is more tightly controlled, this will lead to reduced harvest of other stocks. Will that lead to waste of spawners?

A: Rogue fall chinook are natural spawners, and there appears to be no need for increased spawning escapement. The upper Sacramento fall chinook run is well above levels most people thought could be achieved...and it appears there is scope for further increasing the natural run. Likewise, the San Joaquin appears to have capacity for many more fall chinook spawners than it typically receives.

Report of the Harvest Allocation Committee took the form of a discussion of management options by the entire Council. Topics included:

Basic concepts of harvest allocation. Given the lack of consensus on harvest rate and harvest allocation, Lisle Reed asked for some review of the basic issues that had been successfully negotiated to produce the Five - year agreement. Items identified included:

- o Rebuilding of Klamath spawning escapements
- o Recognition of legitimacy of inriver net fishery
- o Maximum access of ocean fishery to non-Klamath stocks
- o Tribal long-term objective of 50% of harvest
- o Maintain traditional seasons

Seasonal management option Nat Bingham distributed memos from PCFFA arguing for substitution of seasonal management for quota management in the KMZ (Attachments 5 and 6). Other comments:

- o Seasonal management appears promising, but a target ocean

harvest rate must be agreed to as the management objective.

o Question: How will the PCFFA seasonal management proposal keep total harvest at 65%?

o Answer: Days-per-week dampener would be applied in times and areas where Klamath fish are expected to be abundant. This will tend to distribute effort and harvest more equitably inside/outside the KMZ.

Option of increased ocean harvest rate Comments:

o Any change in ocean harvest rate must be made at the expense of the inriver fall chinook harvest, since PFMC is bound to 65% total harvest in 1989.

o The .325 ocean harvest rate came within three days of destroying the KMZ troll fishery in 1988.

o Contribution rate of Klamath stocks to ocean sport harvest is small...not worth all the constraints ocean anglers are placed under.

o We (PCFFA) endorse the spirit of the Hoopa tribe's allocation proposal, which legitimizes the ocean harvest rate of recent years - which has been about 0.5.

o Total harvest cap of .65 is too low in abundant years.

Option of including other stocks in harvest allocation Comments:

o We need to consider other stocks to provide a basis for negotiation

o If inriver users must include other stocks than fall chinook in their allocation, why not the same for ocean harvesters, who are fishing on several stocks?

o Harvest, in recent years, has shifted from ocean to inriver...but trollers feel this has gone too far, so inriver harvesters should look to other, underutilized stocks so as to free up more fall chinook for ocean harvest.

o Inriver users have been asked to negotiate away other stocks, but no proposal has been formulated that shows how total inriver harvest would be impacted.

Option of flexible KMZ boundaries Comment:

o (L. Reed): If the present ocean harvest of Klamath stocks is about 50%, and it appears that could be reduced to, say, 45% without significantly reducing harvest of other stocks, why not just expand the boundaries of the KMZ to cause that reduction? Or, shrink the boundaries if it were desired to increase harvest of Klamath stocks?

o Answer: In theory you are right, but the ocean fishery has ability to increase its efficiency to override management measures like this.

Effect of increasing fishing effort Comments:

o A big variable we haven't considered much is the flood of commercial fishing power into Fort Bragg and Coos Bay fisheries. We might get ocean harvest rate on Klamath chinook down from .5 to .45, but how long will it be before increased fishing power drives it up again...

o PCFFA doesn't feel effort will increase that much, given limited entry.

Hoopla proposal, presented at 20 Jan meeting of Allocation Committee

o (Lyle Marshall): I no longer wish to offer our proposal for consideration...it is no longer relevant.

ODFW proposal . User group representatives, unable to reach consensus, invited agency representatives to present their ideas. In response, Jim Martin made the following proposal, quickly labeled "the strawman":

Assumptions

- o Term of allocation agreement would be short...maybe 3 yrs
- o Best available information would be used to project size of Klamath and other stocks
- o The 35% escapement goal is retained
- o Harvest would be allocated by agreement...Jim suggested rates of .38 for the ocean, and .39 inriver.
- o Harvest rates for Klamath chinook would be a PFMC and state commitment for Fort Bragg, KMZ, and Coos Bay ocean fisheries, and a state, Interior Department, and tribal commitment for inriver fisheries.
- o Reduced fall chinook harvest inriver would be offset by making hatchery spring chinook and coho available to inriver fisheries.

Following is an estimate of harvests expected using the ODFW management option. Assumed: Klamath ocean stock size will be 340,000 and total ocean chinook stocks will be 1,700,000.

OCEAN HARVEST	UNDER CURRENT ALLOCATION (.325)	UNDER PROPOSED ALLOCATION (.38)	DIFFERENCE
Klamath 1989	101,900	119,100	+17,200
Klamath 1988 actual	130,000		
All stocks 1989	731,000	848,000	+117,000
All stocks 1988 actual	832,000		
INRIVER HARVEST	UNDER CURRENT ALLOCATION (.525)	UNDER PROPOSED ALLOCATION (.39)	DIFFERENCE
Total fall chin. 1989	67,300	50,000	-17,300
Net fishery 1989 (75%)	50,500	37,500	-13,000
Net fishery 1988 actual	51,700		
Sport fishery (25%)	16,800	12,500	-4,300
Sport fishery 1989	15,800		
ESCAPEMENT 1989	85,300	85,300	

Comments on ODFW proposal

Q: Why should we expect the ocean fishery won't exceed the .38 harvest rate, as they have exceeded the present .325 target?

A: PFMC now has a harvest rate objective for Klamath stocks...can adopt redlining measures.

Q: Do we have a means to track harvest toward the .38 target?

A: Landings are monitored on a weekly basis.

Q: What if trollers make their usual assertions about fish being more abundant than forecast?

A: PFMC is required to pursue an ocean harvest rate that will lead to 35 % escapement.

Report of the Bureau of Reclamation

With about 1/2 of the water year gone (see Attachment 7), BR predicts Central Valley runoff of about 9 million acre-feet (MAF)...about like 1987-88. Inflow to Shasta will be about 2.9 MAF, a fairly dry year. BR expects to be able to deliver about 3/4 of their contracted water, and the State Water Project will deliver about 3/5. The Department of Water Resources reports to the Legislature in mid-February on the likelihood and severity of a drought in 1989, and State actions would follow from that report.

Carryover storage is predicted to continue to decline, but is still much greater than in the 1977 drought (Att. 7). If drought conditions continue into 1990, storage will fall no lower than 1977. The Bay area and Sierra foothill communities are expected to have water shortages.

Responding to questions about expected impacts of the 1988-89 water year on salmon, BR representatives said they anticipate a dry - year regimen in Trinity River, but hope to finesse some flows for fish above the minimum requirement.

Don Paff distributed an executive summary of the draft water marketing EIS. The no-action alternative is to maintain existing water contract deliveries. The proposed action is to increase contracts by 1.5 MAF, including 1.1 MAF of firm yield, which will be available in all but very dry years, with the remainder being conditional water, which requires non-CVP delivery systems, and intermittent water, which is available in wet years and supplanted with ground water in dry years. The draft EIS examines seven alternatives, estimating impacts at site, service area, and overall area levels.

Besides water contracts, BR has commitments to Delta water quality, and Trinity and American river flows. BR will always provide at least 140 MAF to the Trinity...if needed, this can be done by reducing carryover storage.

It was decided by consensus that the Council will write to BR expressing continued concern about Trinity River flows.

Public comment

Several members of the public submitted written material to the Council. This is grouped here as Attachment 8.

Discussion of next meeting

It was decided to meet in Eureka on February 22, in order to provide recommendations to the Salmon Advisory Subpanel. The Technical Team will meet in advance of the Council. Chairman Fullerton asked members to have their comments on the ODFW proposal, and any proposals of their own, ready for discussion on February 22.

ATTACHMENT 1

KLAMATH FISHERY MANAGEMENT COUNCIL

Attendance Roster, February 1 and 2, 1989 meeting.

Management Council Members

Nat Bingham	California Commercial salmon fishing industry
Virginia Bostwick	In-river sport fishing community
Robert Fletcher	California Department of Fish and Game
E.C. Fullerton	National Marine Fisheries Service
Robert Hayden	Offshore recreational fishing industry
Lyle Marshall	Hoopla Indian Tribe
James Martin	Oregon Department of Fish and Wildlife
Susan Masten	Non-Hoopla Indians residing in Klamath area
Lisle Reed	Department of Interior
Richard Schwarz	Pacific Fishery Management Council
Keith Wilkinson	Oregon commercial salmon fishing industry

Others Attending

Richard Miller	Vivian Simpson
Roy Ghara	Del Robinson
Douglas McCallory	Jim Smith
Gene Elmer	Chuck Lane
Connie Elmer	Floyd Damoth
Peter Lawson	Bruce Taylor
Mike Orcutt	Bill Leavitt
Karen Kenfield	Jack Anderson
John Saostak	Mary Kay Bush
Bill Matson	Tom Leskiw
Steve Surgee	Jim Johnson
Jene McCovey	Walter Lara
Mollie Reuid	Karole Overburg
Fred Schutt	Sam L. Jones Jr.
Richard Taylor	Richard Miller
Bryce Kenny	W. Duncan
Richard Haberman	Jared Williams
Bonnie Glantz	Michael Maahs
David O'Neill	Bill Maahs
Keith Hatch	

ATTACHMENT 2

Klamath River fishery Management Council
Meeting of Feb. 1,2, 1989
Eureka, CA

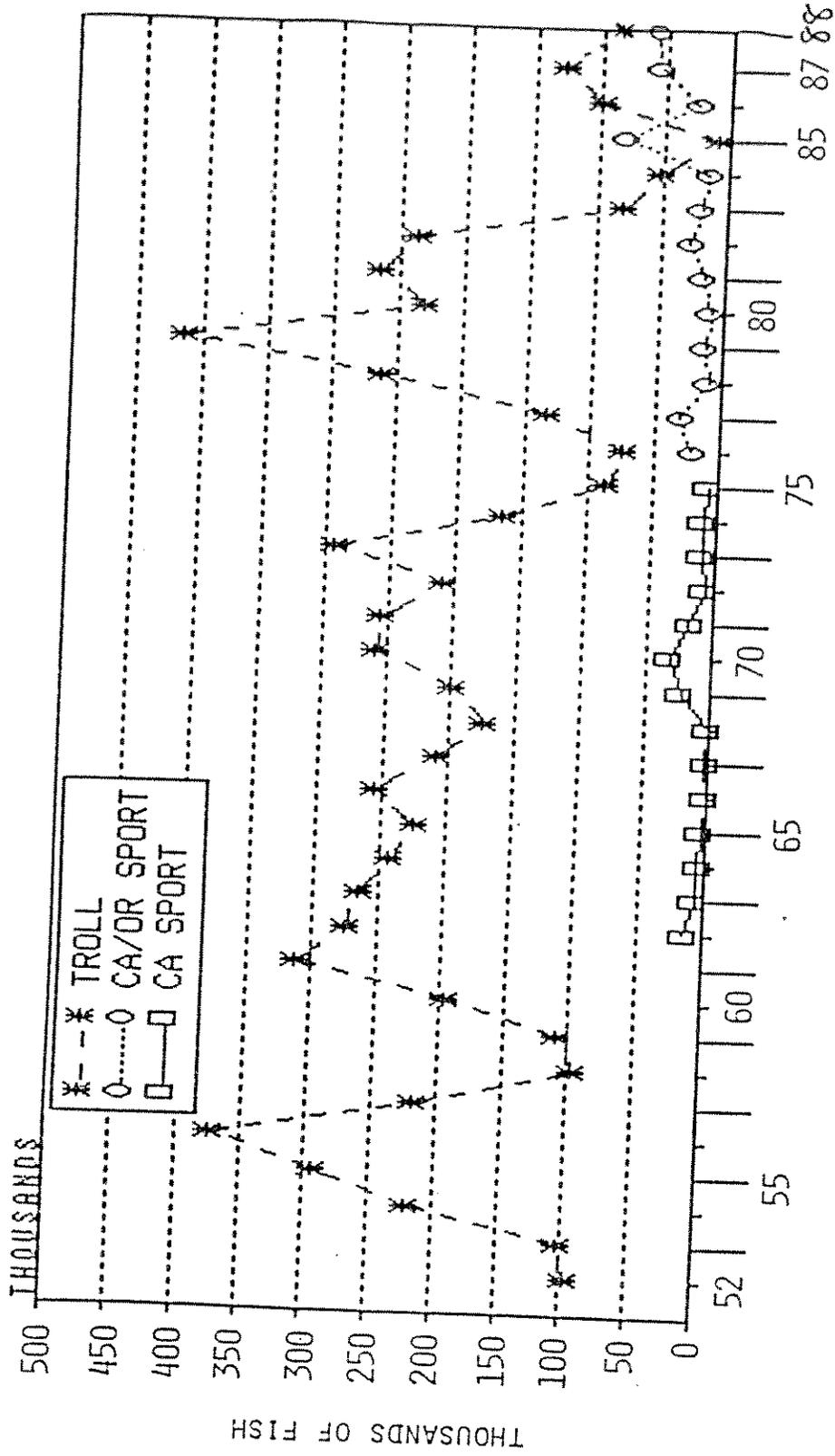
Page

- 1 Summary of 1988 chinook landing and sport effort in the KMZ.
- 2 Ocean Chinook harvest in the KMZ, 1978 - 88.
- 3 Klamth River adult inriver run size, escapement and harvest, 1978 - 88.
- 4,5 and 6 Confidence intervals for preseason estimates of ocean abundance - discussion.
- 7 - 10 Tools to dampen harvest rates.
- Discussion
- Days/week closures
 - Block Closures - weeks/months
 - Trip limits
- 11 The effect of 0.325 Harvest Rate on Coos Bay and Fort Bragg seasons. (graphs).

Summary of 1988 chinook landings and sport effort in the KMZ.

Fishery	Chinook Landings a/									
	Troll		Sport				Sport Angler Trips			
	California	Oregon	Subtotal	California	Oregon	Subtotal	Total	California	Oregon	Total
Rogue River (May)	727	8,148	8,875	No Fishery	No Fishery	8,875	8,875	No Fishery	No Fishery	
General Area	38,644	20,260	58,904	31,231	21,698	52,929	111,833	75,798	53,055	128,853
Rogue River (Sept)	0	123	123	No Fishery	No Fishery	123	123	No Fishery	No Fishery	
Eel River	18,543	0	18,543	280	0	280	18,823	855	0	855
Elk River	0	2,297	2,297	0	0	0	2,297	0	0	0
Total	57,914	30,828	88,742	31,511	21,698	53,209	141,951	76,653	53,055	129,708

a/ Landings are shown by state where landed.



Ocean chinook harvest from the KMZ, 1952-1988. (California commercial harvest for 1952-1985 and Oregon commercial harvest for 1952-1979 are by port of landing while all other harvest is by area of catch from Point Delgada to Cape Blanco.)

Klamath River adult inriver fall chinook run size, spawning escapement, sport catch, and Indian net harvest in numbers and percent of the total inriver run size, 1978-1988.

Year	Spawning Escapement		Inriver Sport Catch		Indian Net Catch		Inriver Run Size
	Numbers	%	Numbers	%	Numbers	%	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 ^{a/}	113,600	63	15,800	9	51,700	28	181,100

a/ Preliminary estimates

Prepared by KRTAT 1/31/89

MEMORANDUM

To: Klamath Fishery Management Council
From: Klamath Technical Advisory Team
Subject: Confidence intervals for preseason estimates of
ocean abundance of Klamath River fall chinook
salmon
Date: 31 January 1989

METHODS

We used estimated age 2 (jack) and age 3 returns to the Klamath River system for the period 1979-1986, and estimated age 3 and age 4 (preseason) ocean abundance for the period 1980-1987 to derive linear regression relations relating (1) age 3 ocean abundance to the previous year's age 2 river returns, and (2) age 4 ocean abundance to the previous year's age 3 river returns. We then used these regression relations to predict preseason ocean abundance of age 3 and age 4 fish in 1988 and 1989 based on the previous year's river returns of age 2 and age 3 fish. Data used for these calculations were the same as those presented in Table II-3 of the 1988 PFMC Preseason Report *except that for 1987 we used an updated figure of 18.9 thousand age 2 fish for river returns (Table II-3 reports 24.3 thousand).*

For each prediction of preseason abundance, we then constructed 95% confidence intervals for the estimated number of age 3 or age 4 fish using formulas appropriate for prediction of an *individual* value of a dependent variable given a particular value of an independent variable (here age 2 or age 3 river returns). Details for construction of such intervals can be found in most basic statistics references (e.g. Snedecor and Cochran 1977, p. 155, eqn. 6.12.1).

RESULTS

Below we present a table of the preseason prediction (expected value) of age 3 or age 4 ocean abundance in 1988 and 1989 based on regression relations established from river return data for the 1979-1986 period only. For each prediction (PRED.), we also present the lower (LOWER) and upper (UPPER) bounds for constructed 95% confidence intervals.

ESTIMATED PRESEASON ABUNDANCE AND 95% LIMITS
(in thousands of fish)

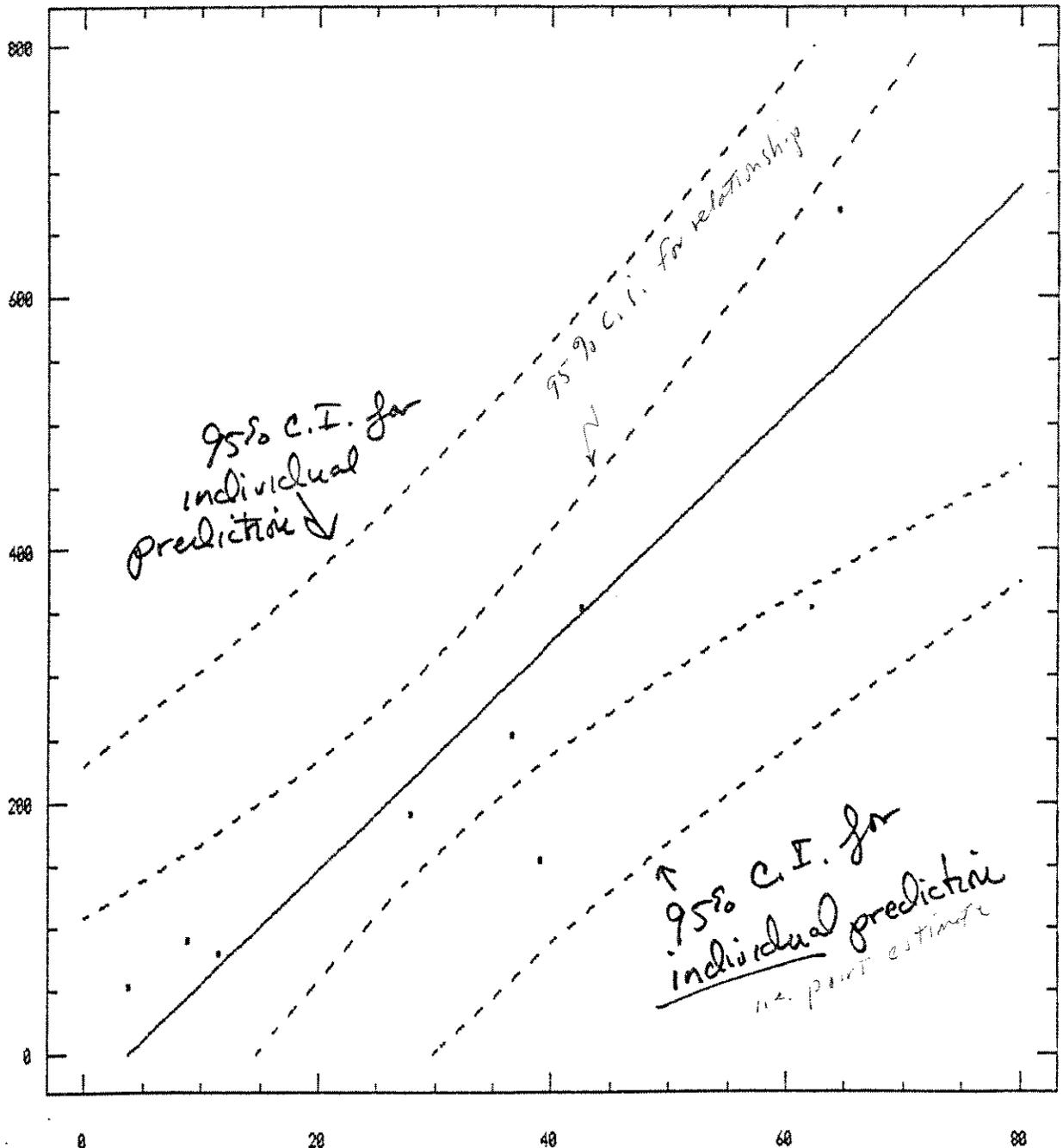
YEAR	AGE 3			AGE 4		
	LOWER	PRED.	UPPER	LOWER	PRED.	UPPER
1988	0	136.64	375.45	91.05	149.08	207.12
1989	0	173.66	410.31	105.39	164.84	224.29

DISCUSSION

As you will observe from the above table, our ability to predict age 3 ocean abundance based on existing data is extremely poor, whereas our ability to predict age 4 ocean abundance is moderately good (at least comparatively). Much has been made of the "apparent" tendency of existing methods to consistently "underestimate" actual ocean abundance of age 3 fish. We note that, according to the above analysis, any postseason estimate of age 3 abundance for 1988 that falls within the interval of 0-375,450 fish would be judged consistent with our predictive ability at this time. Only if the postseason estimate fell outside this interval would there be valid statistical grounds for a conclusion of likely "bias" in existing predictive methods. Also, we note that the above constructed 95% confidence intervals are entirely consistent with the generally good relation between our preseason estimates of age 4 abundance and corresponding postseason estimates, and with the generally poor relation between our preseason estimates of age 3 abundance and corresponding postseason estimates.

Graph illustrating 95% Confidence Interval of stock size Prediction equation

Regression of OCEAN3 on RIVER2



Tools To Dampen Harvest Rates

The Council has several tools available to try to reduce harvest rates on Klamath Chinook. The KTAT has discussed these tools, and has tried to quantify where possible the effectiveness of certain actions.

1. Closing a certain number of days/week

Based on the results of 1988, and on the opportunity of fishermen to adapt their schedules to limited time openings, it appears that a relationship as shown in the figure below best describes the results that would occur from a certain number of days/week closed. At the upper end of the graph, where few days/week are open, weather and effort shifts to adjacent ports can play an increasingly important part, and could potentially cause a greater reduction than that shown.

2. Block closures or weeks/month

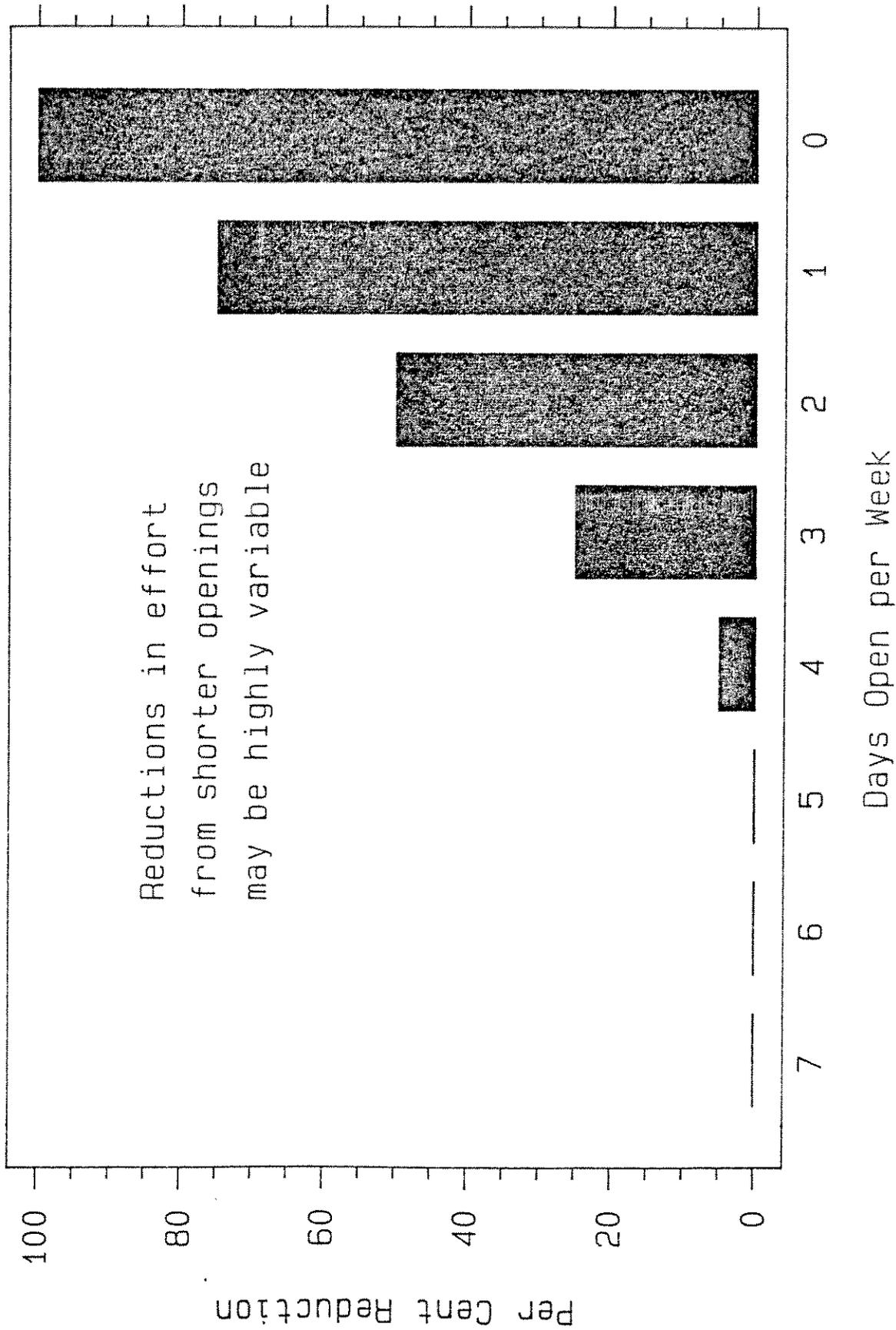
We did not consider block closures shorter than two weeks. The team feels that shorter closures probably lose effectiveness for many of the same reasons that cause short closures during the week to be ineffective in reducing catch or harvest rate.

The methodology that we applied is essentially the same as used by the STT in 1988, i.e., if you close an area (cell) for 15 days of a 31 day month, this results in a 15/31 reduction in exploitation rate for that month. The only difference in this approach is that for the Coos Bay cell, where only part of the cell is closed, we added an additional factor to account for the difference in Klamath contribution rate North and South within a cell. (This factor is 44% from 1988 data).

The end result is that a 15 day closure in Fort Bragg might be expected to result in a 48% reduction (or .52 of base exploitation rate) while the same closure in Coos Bay would result in only a 43% reduction (or 0.57 of base). Looking at results of 1988 confirms that the apparent result of the two week closure from Cape Arago to Port Orford in July, during the expected peak landing period, did result in a reduction in harvest of approximately 64,000 chinook, and a 28% reduction in the Klamath harvest rate for that cell. This agrees with results the KOHM gives for a .56 scaling of 86-87 base exploitation rate for Coos Bay in July.

Again, the block closures can be affected by weather, and may result in a greater reduction than this approach gives.

Effect of Part-week Closures on Fishing Effort



TRIP LIMITS IN THE KMZ

Table 1. Chinook salmon per delivery for Eureka and Ft. Bragg by vessel length.

Eureka

Vessel Length	1986	1987	1988	86/87 Avg. Delivery
<26'	7.0	4.6	5.8	344
26 - 36'	26.3	21.9	24.1	449
>36'	64.9	51.4	58.2	777
				<u>1570</u>

Ft. Bragg

Vessel Length	1986	1987	1988	Avg. Delivery
<26'	8.2	3.8	6.0	3797
26 - 36'	19.0	12.6	15.8	5078
>36'	43.2	26.3	34.8	4082
				<u>12957</u>

OBJECTIVES

1) Limit opportunity within the KMZ in order that the primary effort be provided by vessels based in the KMZ.

2) Limit daily catch in order to extend the season when using a quota.

or

3) Limit catch in lieu of a quota.

ASSUMPTIONS

1) Estimated deliveries for KMZ: 1986 - 3000
 1987 - 4800
 Avg. - 3900

2) KMZ catch target = 100,000

ANALYSIS OF TRIP LIMIT ALTERNATIVES

LIMIT = 10

1. Would require a minimum of 10,000 trips to land 100,000 fish (KMZ average for 86/87 was 3900 trips).
2. Would certainly limit effort to day vessels.
3. Would be unlikely for total catch to exceed 100,000.

LIMIT = 25

1. Would require a minimum of 4000 trips to land 100,000 fish.
2. Would provide some significant opportunities for vessels based in the KMZ.
3. Probably would not attract larger boats to KMZ.
4. Possible, but unlikely for catch to exceed 100,000.

LIMIT = 50

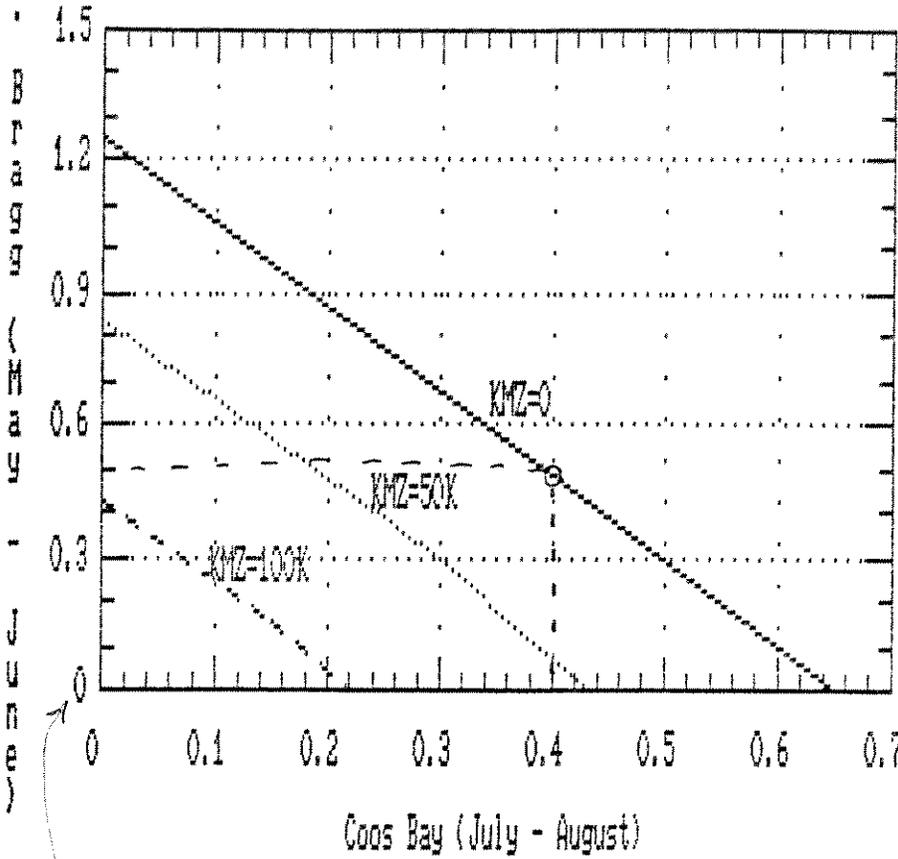
1. Would require a minimum of 2000 trips to land 100,000 fish.
2. Could attract some larger boats to KMZ depending on catch rates in adjacent areas.
3. Unconstrained effort could result in exceeding 100,000 catch target.

LIMIT = 100

1. Would require a minimum of 1000 trips to land 100,000 fish.
2. Would very possibly attract larger boats to KMZ.
3. Unconstrained effort would probably result in catches above 100,000.

Effect of 0.325 Ocean Harvest Rate on
Coos Bay and Ft. Bragg Seasons

.325 / .525



← 20 of 86/87 base
will incorporate 33 into next
month

DEC. 15 1988

STATE OF CALIFORNIA—THE RESOURCES AGENCY

GEORGE DEUKMEJIAN, Governor

DEPARTMENT OF FISH AND GAME

416 NINTH STREET

P.O. BOX 944209

SACRAMENTO, CALIFORNIA 95814-2090

(916) 445-8231



December 14, 1988

Mr. Ron Iverson
U.S. Fish and Wildlife Service
Klamath Field Office
1312 Fairlane Road
Yuba, CA 96097

Dear ^{Ron} Mr. Iverson:

Enclosed for your information is a copy of the 1988 update of our annual table titled, "Klamath River Basin Fall Chinook In-river Run Size, Harvest and Spawner Escapements Estimates, 1978-1988".

Please note that all figures for years, 1978 through 1987, are now final; 1988 figures are preliminary, and subject to revision.

Sincerely,

A handwritten signature in cursive script that reads "Paul M. Hubbell".

Paul M. Hubbell, Supervisor
Klamath-Trinity Program

Attachment

KLAMATH RIVER BASIN FALL CHINOOK SALMON RUN-SIZE, HARVEST
AND SPAWNER ESCAPEMENT--1988 SEASON a/

The 1988 fall chinook salmon run into the Klamath River system has exceeded preseason projections. It is the third largest (behind 1986 and 1987) since 1978, when the Department of Fish and Game began generating annual basin-wide figures.

Last spring, as part of efforts to formulate 1988 season fishing regulations, fisheries scientists projected that 132,300 adult fall chinook salmon would return to the Klamath River this fall. Based on this projection, 67,300 adults were allocated for harvest by the in-river fisheries, with the remaining 65,000 dedicated to natural and hatchery spawning escapements. The following table presents, in abbreviated form, 1988 preseason adult harvest and spawner escapement projections, along with corresponding postseason estimates.

	Preseason projection	Postseason estimate (*)
<u>Harvest</u>		
Indian Net	51,725	51,651(99.9)
Angler	15,575	15,805(101.5)
Subtotals	<u>67,300</u>	<u>67,456(100.2)</u>
<u>Spawner Escapement</u>		
Natural	50,700	81,119(160.0)
Hatchery	14,300	32,525(227.4)
Subtotals	<u>65,000</u>	<u>113,644(174.8)</u>
TOTALS	132,300	181,100(136.9)

* Percent of projected figures in parenthesis.

Complete run-size, harvest and spawner escapement figures for both adults and grilse for years, 1978-1988, are presented in the accompanying table.

a/ Prepared December 8, 1988, by California Department of Fish and Game, Klamath-Trinity Program.

1978 1979 1980

	Grilse	Adults	Totals	Grilse	Adults	Totals	Grilse	Adults	Totals
SPANNER ESCAPEMENT									
HATCHERY									
Iron Gate Hatchery	915	6,325	7,840	257	2,301	2,558	451	2,112	2,863
Trinity River Hatchery	1,325	6,034	7,359	964	1,335	2,299	2,256	4,099	6,355
Subtotals	2,240	12,959	15,199	1,221	3,636	4,857	2,707	6,511	9,218
NATURAL									
Trinity River basin Cabove Willow Creek, excluding TRH)	4,712	31,052	35,764	3,936	8,028	11,964	16,837	7,700	24,537
Salmon River basin	1,400	2,600	4,000	150	1,000	1,150	200	800	1,000
Scott River basin	1,909	3,423	5,332	428	3,396	3,824	2,245	2,032	4,277
Sheste River basin	6,707	12,024	18,731	1,040	7,111	8,151	4,334	3,762	8,096
Bogus Creek basin	651	4,928	5,579	494	5,444	5,938	1,749	3,321	5,070
Main stem Klanth River (excluding Iron Gate Hatchery)	300	1,700	2,000	466	1,190	1,656	867	2,468	3,335
Misc. Klanth tributaries (Cabove Hoopa Reservation)	735	2,765	3,500	147	1,068	1,215	500	1,000	1,500
Hoopa Reservation tributaries	b/	b/	b/	100 c/	400 c/	500 c/	250 c/	400 c/	650 c/
Subtotals	16,414	58,492	74,906	6,761	30,637	37,398	26,982	21,483	48,465
TOTAL SPANNER ESCAPEMENT	18,654	71,451	90,105	7,982	34,273	42,255	29,689	27,994	57,683
IN-RIVER HARVEST									
ANGLER HARVEST									
Klanth River below Highway 101 bridge	122	854	976	216	484	700	835 d/	727 d/	1,562 d/
Trinity River basin above Willow Creek	e/	e/	e/	765	1,157	1,922	2,456	998	3,454
Balance of Klanth system	1,960	840	2,800	1,200	500	1,700	2,600 d/	2,771 d/	5,371 d/
Subtotals	2,082	1,694	3,776	2,181	2,141	4,322	5,891 d/	4,496 d/	10,387 d/
INDIAN NET HARVEST									
Klanth River below Highway 101 bridge	-	-	-	-	-	-	495	9,605	10,100
Klanth River - 101 to Trinity mouth	-	-	-	-	-	-	272	1,528	1,800
Trinity River (Hoopa Square)	-	-	-	-	-	-	220	880	1,100
Subtotals	1,800	16,200	20,000	1,350	13,650	15,000	987	12,019	13,000
TOTAL IN-RIVER HARVEST	3,882	19,894	23,776	3,531	15,791	19,322	6,878 d/	16,509 d/	23,387 d/
IN-RIVER RUN									
TOTAL IN-RIVER RUN	22,536	91,345	113,881	11,513	50,064	61,577	36,567 d/	44,503 d/	81,070 d/

(continued on next page)

	1981			1982			1983		
	Grilse	Adults	Totals	Grilse	Adults	Totals	Grilse	Adults	Totals
SPAWNER ESCAPEMENT									
HATCHERY									
Iron Gate Hatchery	540	2,055	2,595	1,833	8,353	10,186	514	8,371	8,885
Trinity River Hatchery	1,004	2,370	3,374	4,235	2,058	6,293	271	5,494	5,765
Subtotals	1,544	4,425	5,969	6,068	10,411	16,479	785	13,865	14,650
NATURAL									
Trinity River basin (above Hillow Creek, excluding IRID)	5,906	15,340	21,246	8,149	9,274	17,423	853	17,284	18,137
Salmon River basin	450	3,750	4,200	300	1,000	1,300	75	1,200	1,275
Scott River basin	3,409	9,147	6,556	4,350	5,826	10,176	170	3,398	3,568
Shasta River basin	1,330	7,890	12,220	1,922	6,533	8,455	753	3,119	3,872
Bogus Creek basin	912	2,730	3,642	2,325	1,818	7,143	335	2,713	3,048
Main stem Klamath River (excluding Iron Gate Hatchery)	1,000	3,000	4,000	1,000	3,000	4,000	200	1,800	2,000
Misc. Klamath tributaries (above Hoopa Reservation)	500	1,000	1,500	600	1,500	2,100	140	1,270	1,410
Hoopa Reservation tributaries	b/	b/	b/	b/	b/	b/	b/	b/	b/
Subtotals	16,507	33,857	50,364	18,646	31,951	50,597	2,526	30,784	33,310
TOTAL SPAWNER ESCAPEMENT	18,051	38,282	56,333	24,714	42,362	67,076	3,311	44,649	47,960
IN-RIVER HARVEST									
ANGLER HARVEST									
Klamath River below Highway 101 bridge	536	1,714	2,250	1,252	3,539	4,791	60	750	810
Trinity River basin above Hillow Creek	1,456	3,174	4,630	2,554	2,321	4,875	116	2,360	2,476
Balance of Klamath system	5,260	1,095	6,355	8,678	2,479	11,157	175	1,125	1,300
Subtotals	7,252	5,983	13,235	12,484	8,339	20,823	351	4,235	4,586
INDIAN NET HARVEST									
Klamath River below Highway 101 bridge	912	23,097	24,009	290	4,547	4,837	12	800	812
Klamath River - 101 to Trinity mouth (Hoopa Square)	1,104	8,405	9,509	1,195	8,424	9,619	121	5,700	5,821
Trinity River (Hoopa Square)	449	1,531	1,980	314	1,511	1,825	30	1,390	1,420
Subtotals	2,465	33,033	35,498	1,799	14,482	16,281	163	7,890	8,053
TOTAL IN-RIVER HARVEST	9,717	59,016	48,733	14,283	22,821	37,104	514	12,125	12,639
IN-RIVER RUN									
TOTAL IN-RIVER RUN	27,768	77,298	105,066	38,997	65,183	104,180	3,825	56,774	60,599

(continued on next page)

	Grilse	Adults	Totals	Grilse	Adults	Totals	Grilse	Adults	Totals
HATCHERY									
Iron Gate Hatchery	764	5,330	6,094	2,159	19,951	22,110	1,461	17,096	18,557
Trinity River Hatchery	766	2,166	2,932	18,166	2,583	20,749	3,609	15,795	19,404
Subtotals	1,530	7,496	9,026	20,325	22,534	42,859	5,070	32,891	37,961
NATURAL									
Trinity River basin Ceboue Willow Creek, excluding IRHD	3,416	5,654	9,070	29,454	9,217	38,671	20,459	92,548	113,007
Salmon River basin	216 g/	1,226 g/	1,442 g/	905	2,259	3,164	949	2,716	3,665
Scott River basin	358	1,443	1,801	1,357	3,051	4,408	4,865	3,176	8,041
Shasta River basin	480	2,362	2,842	2,227	2,897	5,124	683	3,274	3,957
Bogus Creek basin	465	3,039	3,504	1,156	3,491	4,647	1,184	6,124	7,308
Main stem Klamath River (excluding Iron Gate Hatchery)	200	1,350	1,550	156	468	624	196	603	799
Misc. Klamath tributaries Ceboue Hoopa Reservation)	150	990	1,140	646	4,214	4,860	606	4,919	5,525
Hoopa Reservation tributaries	b/	b/	b/	50 h/	80 h/	130 h/	b/	b/	b/
Subtotals	5,285	16,064	21,349	35,951	25,677	61,628	28,942	113,360	142,302
TOTAL SPANNER ESCAPEMENT	6,815	23,560	30,375	56,276	48,211	104,487	34,012	146,251	180,265
ANGLEER HARVEST									
Klamath River below Highway 101 bridge	175	548	723	1,179	2,427 i/	3,906	704	2,456	3,160
Trinity River basin above Willow Creek	393	736	1,129	5,442	154 i/	5,596	3,438	12,039	15,477
Balance of Klamath system	384	2,056	2,440	4,274	1,001 i/	5,275	5,266	6,532	11,798
Subtotals	952	3,340	4,292	11,195	3,582 i/	14,777	9,408	21,027	30,435
INDIAN NET HARVEST									
Klamath River below Highway 101 bridge	132	11,878	12,010	132	5,700	5,832	191	15,286	15,477
Klamath River - 101 to Trinity mouth	183	5,622	5,805	476	3,925	4,401	377	5,033	5,410
Trinity River (Hoopa Square)	140	1,170	1,310	947 j/	1,941 j/	2,888 j/	286	4,800	5,094
Subtotals	455	18,670	19,125	1,555	11,566	13,121	854	25,127	25,981
TOTAL IN-RIVER HARVEST	1,407	22,010	23,417	12,750	15,148	27,898	10,262	46,154	56,416
IN-RIVER RUN									
TOTAL IN-RIVER RUN	8,222	45,570	53,792	69,026	63,359	132,385	44,274	192,405	236,679

(continued on next page)

1987 1988

	Grilse	Adults	Totals	Grilse	Adults	Totals
HATCHERY						
Iron Gate Hatchery	1,025	15,109	17,014	609	16,106	16,715
Trinity River Hatchery	2,453	13,934	16,387	4,059	16,419	20,478
Subtotals	4,278	29,123	33,401	4,668	32,525	37,193
NATURAL						
Trinity River basin Cabove Willow Creek, excluding TRH)	5,949	71,920	77,869	10,558	47,169	57,727
Scott River basin	118	3,832	3,950	327	3,273	3,600
Shasta River basin	797	7,769	8,566	473	4,727	5,200
Bogus Creek basin	398	4,299	4,697	256	2,506	2,842
Main stem Klamath River (excluding Iron Gate Hatchery)	1,208	9,748	10,956	225	16,215	16,440
Misc. Klamath tributaries (Cabove Hoopa Reservation)	65	863	928	164	2,982	3,146
Hoopa Reservation tributaries	237	3,286	3,523	418	1,167	4,585
	b/	b/	b/	b/	b/	b/
Subtotals	8,772	101,717	110,489	12,421	81,119	93,540
TOTAL SPANNER ESCAPEMENT	13,050	130,840	143,890	17,089	113,644	130,733
ANGLE HARVEST						
Klamath River below Highway 101 bridge	146	2,455	2,601	124	3,367	3,491
Trinity River basin above Willow Creek	923	9,433	10,356	2,248	4,640	6,888
Balance of Klamath system	4,367	8,281	12,648	2,994	7,798	10,792
Subtotals	5,436	20,169	25,605	5,366	15,805	21,171
INDIAN NET HARVEST						
Klamath River below Highway 101 bridge	36	39,978	40,014	198	36,914	37,052
Klamath River - 101 to Trinity mouth	117	8,136	8,253	173	9,667	9,840
Trinity River (Hoopa Square)	262	4,982	5,244	267	5,070	5,337
Subtotals	415	53,096	53,511	578	51,651	52,229
TOTAL IN-RIVER HARVEST	5,851	73,265	79,116	5,944	67,456	73,400
IN-RIVER RUN						
TOTAL IN-RIVER RUN	18,901	204,105	223,006	23,033	181,100	204,133

(continued on next page)

- a/ Prepared December 8, 1988. All figures are California Department of Fish and Game counts/estimates unless otherwise indicated. All figures for Iron Gate and Trinity River hatcheries represent counts of fish entering those facilities. All spawner escapement figures for the Shasta River basin for 1978-1987, plus those for the Bogus Creek basin for 1980-1988 are based on counts made at counting stations located near the mouths of those streams. All remaining spawner escapements and all harvest figures are estimates developed from data obtained through ongoing field investigations in the Klamath-Trinity system. Figures for years through 1987 are final; 1988 figures are preliminary, subject to revision.
- b/ Figure not available.
- c/ U. S. Fish and Wildlife Service estimate.
- d/ Figure shown here differs from previously published table prepared December 10, 1984; previous figure incorrect.
- e/ In 1978, the Klamath River system sport salmon fishing season was closed August 25. There was essentially no sport harvest of fall chinook in the Trinity River basin in 1978.
- f/ U. S. Fish and Wildlife Service estimates for years through 1982; 1983 through 1988 estimates jointly made by USFWS and Hoopa Valley Business Council Fisheries Department.
- g/ U. S. Forest Service estimate.
- h/ Hoopa Valley Business Council Fisheries Department estimate. Estimate for streams on Square portion of Hoopa Valley Indian Reservation only.
- i/ In 1985, the Klamath River system sport salmon fishing season was closed to the taking of all salmon below the U. S. Highway 101 bridge from September 9 through December 31; the Klamath from the U. S. Highway 101 bridge to Iron Gate Dam and the Trinity River from its mouth to Lewiston Dam were closed to the taking of salmon 22 inches and longer from September 23 through December 31, 1985.
- j/ Estimates for Square portion of Hoopa Valley Indian Reservation (=947 grilse and 1,941 adults) are of catch occurring during open fishing periods only.

JAN 03 1989



Klamath Fishery Management Council

Working to Restore Anadromous Fish in the Klamath River Basin

December 29, 1988

California Commercial Salmon
Fishing Industry

California Department of
Fish and Game

California Offshore Sport Fishery

Hoopa Valley Business Council

Klamath In-River Sport Fishery

National Marine Fisheries Service

Non-Hoopa Indian Representative

Oregon Commercial Salmon
Fishing Industry

Oregon Department of
Fish and Wildlife

Klamath Fishery Management
Council

U.S. Department of the Interior

Memorandum

To: Klamath Fishery Management Council

From: Klamath Technical Advisory Team

**Subject: Requests for Technical Analysis To Support
Efforts of the Allocation Workgroup**

Enclosed are reports and technical analyses that were requested by members of the Council at the November 2nd meeting in Eureka. The technical team met for 3 days on December 6th, 7th, and 8th, and was able to address most, but not all of the specific requests. In most cases the results are not definitive, but are attempts to identify likely consequences of management actions or approaches. The numbers in these analyses should be used with caution, as the data-base may be revised in the future as a result of partitioning, and absolute values could change, however the relative values should be similar in comparing the risks and consequences of different management approaches.

Klamath Technical Advisory Team

Response to

Allocation Committee Requests for Technical Analysis

December 27, 1988

Background

At the Klamath Fishery Management Council meeting on November 2, 1988 a number of requests for technical analysis were made. The goal of these analyses would be to give guidance to the Council and allocation workgroup concerning possible effects or consequences of several management approaches. In general, most requests could be placed into three broad categories:

- a) to analyze the probable results of maintaining a **status quo** approach to fisheries management for Klamath chinook
- b) to analyze the **seasonal approach** developed by PCFFA, and
- c) to look at **other** approaches or blends of approaches to fisheries management for Klamath chinook, including a sliding scale, different allocation ratios, or catch dampening based on the rate of catch in-season (the red-line approach).

We were not able to complete work on all specific requests, both because of lack of time, and also due to an inability to quantify some parameters due to lack of recent data and changing patterns of catch and effort. We were able to complete significant work in each of the three general areas.

1. We looked at the status quo in terms of the effect of continued significant errors in the preseason prediction of various stock sizes. We used the ocean harvest model to analyze what result 50% errors would have on

- Klamath In-river run size,
- total ocean chinook landings, and
- ocean landings of Klamath origin chinook.

For these analyses the status quo was defined as the average condition for 1986-87, a troll quota of 107,000 chinook in the KMZ, with a seasonal approach outside the KMZ. The Klamath Ocean Harvest Computer Model (KOHM) developed last year was used for this analysis.

Draft
Please review
carefully. Respond
by 1-6-89
JLB

2. We looked at the specific suggestion by PCFFA for a seasonal approach consisting of 4 days fishing and 3 days off. We were able to somewhat quantify the amount of reduction this would achieve for a specific area, assuming no changes from the base period, and to gain some insight into what the relationship might be with regards to catch vs days per week fished. In the more general sense, we were not able to quantify the result of a seasonal approach in terms of predicting total coastwide landings. While it is obvious that increased time within the KMZ will increase landings within the zone, it will also likely reduce effort outside the KMZ. The extent which the two factors do or do not counterbalance is probably not quantifiable at this time.

3. We also looked at other regimes and allocation shares. We
- Used three different Klamath chinook stock sizes, low, medium, and high abundance, and three different ocean/in-river sharing arrangements. For these situations we again used the KOHM computer model, as well as the harvest rate model to estimate ocean harvest of Klamath chinook, in-river harvest, and escapement
 - Estimated what effect placing greater harvests within the KMZ might have on total coastwide landings
 - Modeled the effect of increasing the quota area to include the Coos Bay and Ft. Bragg areas, in comparison to the status quo and with a 50% error in the preseason estimation of stocks other than Klamath
 - Developed an example of how the red-line concept could be applied to management of Klamath chinook fisheries.
 - Drafted a report on known information that might pertain to an April-May sport fishery
 - Developed background information identifying times and areas of the highest proportion of Klamath chinook in the troll harvest

Specific reports and information relating to each of the topics listed above follow. Again, caution is urged in using the specific numbers, as the data base may change as a result of partitioning or other future analysis.

Proportion of Klamath Origin chinook in the Troll Harvest

This is not new information, but is very important to keep in mind. The following graphics and tables 1-3 illustrate when and where the highest proportions of Klamath fall chinook are harvested. As can be seen, the proportion of Klamath chinook in the harvest is similar between the Ft Bragg area and the KMZ for May, June, and to a lesser extent July. Comparing the Coos Bay area and the KMZ, July and August have similar proportions.

Table 1. PER CENT AGE 3+4 KLAMATH FALL CHINOOK IN CATCH

AGE 3+4	MAY	JUNE	JULY	AUGUST
NOR	1	1	8	7
CSB	5	12	38	36
KMZ-T	29	42	50	37
KMZ-S	15	13	20	32
FTB	25	39	28	13
SOC	5	20	15	10

Figure 1. Contribution Rate, Klamath Fall Chinook Age 3 and 4, 1986/87 Base Period

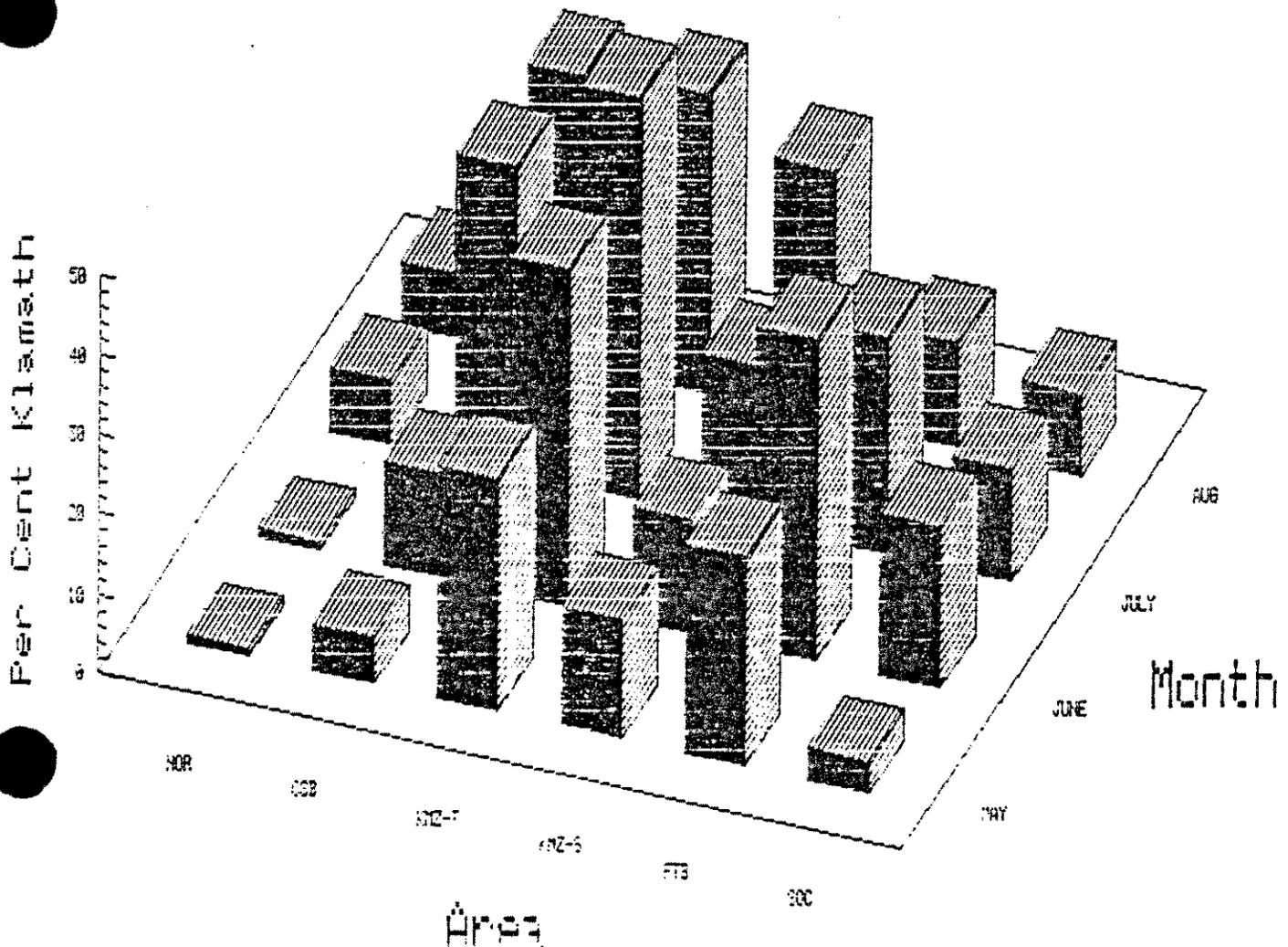


Table 2. PER CENT AGE 4 KLAMATH FALL CHINOOK IN CATCH

	MAY	JUNE	JULY	AUGUST
NOR	1	0	2	2
CSB	3	3	12	5
KMZ-T	14	10	15	7
KMZ-S	6	3	6	9
FTB	11	10	4	2
SOC	2	5	2	1

Figure 2. Contribution Rate, Klamath Fall Chinook Age 4, 1986/87 Base Period

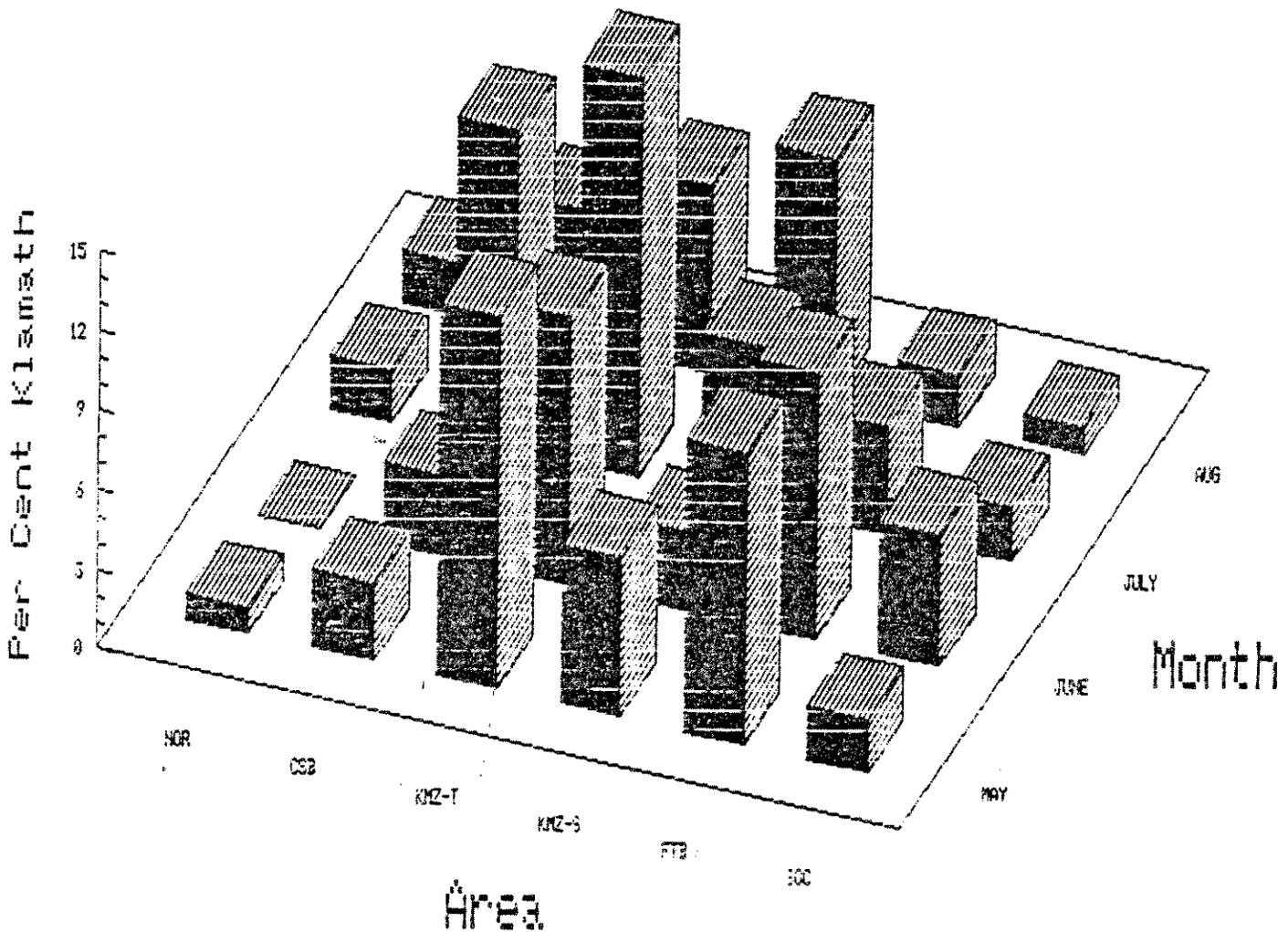
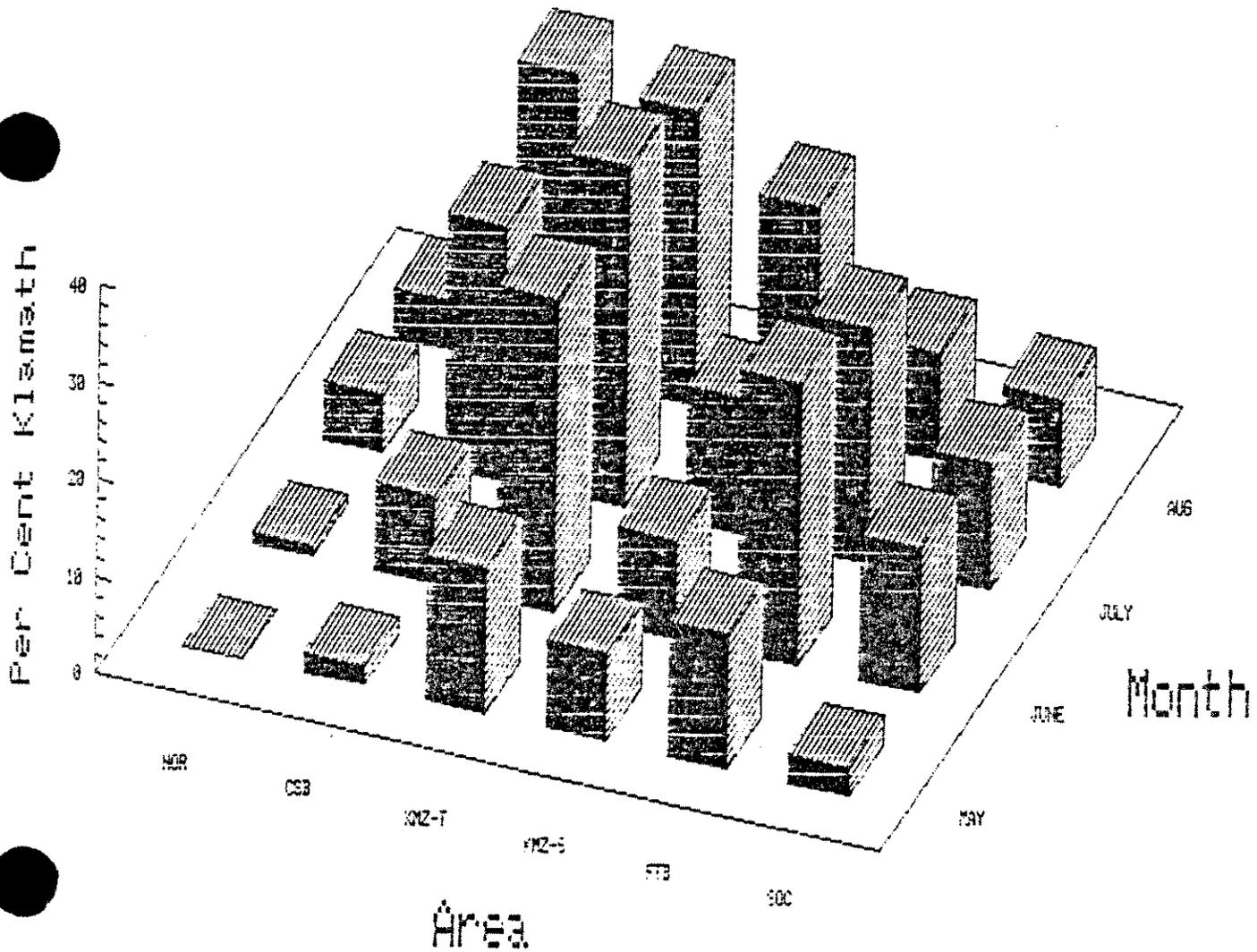


Table 3. PER CENT AGE 3 KLAMATH FALL CHINOOK IN CATCH

	MAY	JUNE	JULY	AUGUST
NOR	0	1	6	5
CSB	2	9	26	31
KMZ-T	15	32	35	30
KMZ-S	9	10	14	23
FTB	14	29	24	11
SOC	3	15	13	9

Figure 3. Contribution Rate, Klamath Fall Chinook Age 3, 1986/87 Base Period



The Effect of Error in Pre-Season Predictions Relative to Status Quo Management of the Ocean and River Fisheries

The advisory team attempted to assess the effects on Klamath spawning escapement and fishery harvests when stock size estimates were in error. In this assessment, it was assumed that ocean fishery regulations would be similar to that which have occurred the past three seasons, where the KMZ area was limited by a quota while the outside area fisheries were regulated by seasonal constraints only. Our conclusions are based upon the KOHM computer model.

The team ran the KOHM model allowing both the Klamath and "Other" stock components to vary 50% in either direction from the actual average 1986-87 base period. The results of this analysis are shown the matrix of Table 4. The base period results are shown in the upper left corner. Here the total ocean (Oregon + California) average catch for 1986-87 is 1.2 million chinook with landings of Klamath origin stock of 285,000 chinook. The inriver run size was 195,000. The second column shows what effect a 50% underestimate of "other"¹ stocks might have on total ocean harvest, inriver run size, and ocean harvest of Klamath stocks. The third column is where the "other" stocks are overestimated by 50%. The bottom two rows follow a similar pattern, but by showing the results of under and over-estimating the abundance of Klamath River stocks.

Results

The Klamath in-river run size was not significantly affected by errors in the prediction of "other" stocks under **status quo** management. An error of 50% resulted in only slight changes in ocean catch and in-river run size of Klamath chinook. However, if a different management regime were in place, such as a quota for total harvest from Ft Bragg to Coos Bay, then errors in the prediction of "other stocks became very important. For instance, if the landings in Coos Bay, the KMZ, and Ft Bragg were limited to 660,000 chinook (the ave. 86-87 base catch), and the abundance of "other" stocks was underpredicted by 50%, the total ocean landings would be reduced by 234,000 chinook while in-river run size would increase by 24,000 chinook, as compared to the status quo of a quota in only the KMZ.

1) "Other stocks as modeled combine the Sacramento, Eel, Rogue, Smith, and all other stocks contributing to the California and Oregon chinook fishery into one category. Relative changes between Sacramento and the northern componets could alter the model results to some degree.

Errors in Klamath stock abundance however, affected significantly both harvest of Klamath chinook and in-river run size. If The actual Klamath stock size was 50% greater than expectations, the ocean harvest of Klamath stock increased by 47% while in-river run size increased by 52%. On the other hand, if stock size estimates had been overpredicted by 50%, then in-river run sizes would be only 49% and ocean landings 51% of expectations.

Conclusions

Errors in preseason estimates of Klamath stock size have been, and can be expected to be, as high as 50%. It is possible that the partitioning of the Klamath River basin production may bring about improvements in the predictive capability, but the degree to which this may occur is uncertain. With the present limits in predictability, and under the status quo type of management, the Klamath **in-river** run size may vary by at least 50% from that which is expected preseason. With a quota fishery operating within the river, spawning escapement would vary to a greater degree.

There is at present no method to predict ocean abundance of the "other" stocks that would be better than using a historical average level of abundance. This is not as crucial as the Klamath stock abundance predictor unless the area under a quota is expanded. If the quota area is expanded with the predictive ability for "other" stocks we have at present, then significant impacts on total ocean harvest, harvest of Klamath stocks, and in-river run size can occur.

Table 4. Analysis of the effect of error in preseason prediction of chinook stock abundance, modeled under average base conditions for 1986-87 (status quo)

		Preseason Estimates of "Other" Stocks		
		Accurate Estimate	Estimate 50% low	Estimate 50% high
Accurate	ocean land Kl. Ch.	285,000	278,000	298,000
Klamath	total ocean land.	1,243,000	1,722,000	796,000
Estimate	Kl. in-river run	195,000	199,000	188,000
<hr/>				
Klamath	ocean land Kl. Ch.	420,000	412,000	433,000
Estimate	total ocean land.	1,364,000	1,812,000	968,000
50% low	Kl. in-river run	297,000	302,000	290,000
<hr/>				
Klamath	ocean land Kl. Ch.	147,000	141,000	158,000
Estimate	total ocean land.	1,161,000	1,640,000	682,000
50% high	Kl. in-river run	95,000	98,000	89,000

Ocean/in-river allowable catches of Klamath River fall chinook under various sharing scenarios and stock abundances.

This analysis relates to a request by Jim Martin. The stock sizes selected to represent low, medium, and high abundances were 200,000, 500,000 and 700,000 chinook. The harvest rate model was then run with three different sharing scenarios. As a note, the ocean/ in-river harvest rate combinations were slightly different than those suggested, with the changes made to reflect sharing combinations that would achieve a 35% escapement goal, or a 65% total harvest rate. The results of the model run are in Table 5.

The second part of the request was to evaluate the effect on total ocean landings of allowing significantly greater harvests within the KMZ, would this lower the total ocean landings? To evaluate this we used the KOHM

computer model again. The base calibration run allows a harvest of 107,000 chinook within the KMZ, and total landings of 1,243,000 chinook, with ocean impacts of 285,000 Klamath origin fish landed. We increased the allowable landings in the zone to 200,000 chinook, placing the increased harvest in the month of June. However, we kept the total Klamath impacts the same as in the calibration run by only allowing 65% of base landings in the Ft. Bragg area in June and in the Coos Bay area in July. The results are that there is only a slight change in total ocean landings of chinook for the same amount of Klamath impacts, an increase from 1,243,000 to 1,249,000 chinook. This is a reflection of the similarity in stock proportions in these areas for these months, as shown in Table 1. The computer outputs for these model runs are shown in figures 6- 8.

TABLE 5. Ocean/in-river allowable catches of Klamath River fall chinook under various sharing scenarios and stock abundances.

Stock Size	Ocean/In-river Harvest Rate	Klamath Ocean Harvest	In-river	Escapement
200,000	.325/.525	51,100	32,000	46,200
500,000	.325/.525	127,900	80,100	115,600
700,000	.325/.525	179,000	112,100	161,900
200,000	.38/.39	59,800	22,000	51,400
500,000	.38/.39	149,500	55,100	128,600
700,000	.38/.39	209,300	77,200	180,000
200,000	.44/.30	69,200	15,600	52,500
500,000	.44/.30	173,100	39,000	131,300
700,000	.44/.30	242,400	54,600	183,900

Figure 4. O chinook in KMZ TROLL

InputEnter new exploitation rate scaling factVERSION: 2.4
 1988 OPTION # FINAL RUN DATE: 12-14-8 TIME: 14:30

EXPLOITATION RATE CHANGE FROM BASE PERIOD a(.jk)						
	FALL	MAY	JUNE	JULY	AUGUST	88 TOT
NOR	1.00	1.00	1.00	1.00	1.00	1.00
CSB	1.00	1.00	1.00	1.00	1.00	1.00
KMZ-T	1.00	0.00	0.00	0.00	0.00	0.00
KMZ-S	1.00	1.00	1.00	1.00	1.00	1.00
FTB	1.00	1.00	1.00	1.00	1.00	1.00
SOC	1.00	1.00	1.00	1.00	1.00	1.00
TOTAL	1.00	0.83	0.83	0.83	0.83	0.83

	KLAMATH STOCK SIZE			FISHERY IMPACTS May-Aug		
	1 MAY	END AUG	ESCAPE	LANDINGS	ALLOW	L-A
AGE 3	511850	315777	135784	187001	147400	39601
AGE 4	161050	88378	78656	64426	52300	12126
TOTAL	672900	404154	214440	251427	199700	51727

KLAMATH LANDINGS - ESTIMATES L(ijk)						
	FALL	MAY	JUNE	JULY	AUGUST	TOTALS
AGE 3	167	39	78	2356	1262	3902
NOR	77	437	1536	45238	21342	68629
CSB	38	0	0	0	0	38
KMZ-T	77	136	916	2169	2792	6090
FTB	0	9992	25000	26361	4256	65608
SOC	115	5255	21801	12994	3040	43206
TOTAL	473	15859	49332	89119	32691	187474
	FALL	MAY	JUNE	JULY	AUGUST	TOTALS
AGE 4	954	147	23	960	616	2699
NOR	8743	595	525	21214	3796	34873
CSB	421	0	0	0	0	421
KMZ-T	55	91	279	959	1084	2467
FTB	24	7924	8653	4042	863	21506
SOC	111	2792	7970	1623	271	12767
TOTAL	10307	11548	17450	28799	6629	74733
GRAND TOT	10780	27407	66782	117918	39321	262207

CATCH PROJECTIONS BASED ON EXPLOITATION RATE SHIFTS a(.ij)*C(.i)						
	FALL	MAY	JUNE	JULY	AUGUST	TOTAL
NOR	19350	14897	10520	38236	23043	86696
CSB	22400	17998	16404	163467	64552	262421
KMZ-T	4370	0	0	0	0	0
KMZ-S	1231	1536	8747	14536	11467	36286
FTB	3124	69010	84866	104760	36250	294886
SOC	10301	178935	149262	95687	32384	456268
TOTAL	60776	282376	269799	416686	167696	1136557

Figure 5. 100,000 CHINOOK IN KMZ
(Base Calibration Run)

InputEnter new exploitation rate scaling factVERSION: 2.4
1988 OPTION # FINAL RUN DATE: 12-14-8 TIME: 14:29

EXPLOITATION RATE CHANGE FROM BASE PERIOD a(.jk)						
	FALL	MAY	JUNE	JULY	AUGUST	88 TOT
NOR	1.00	1.00	1.00	1.00	1.00	1.00
CSB	1.00	1.00	1.00	1.00	1.00	1.00
KMZ-T	1.00	1.00	1.00	1.00	1.00	1.00
KMZ-S	1.00	1.00	1.00	1.00	1.00	1.00
FTB	1.00	1.00	1.00	1.00	1.00	1.00
SOC	1.00	1.00	1.00	1.00	1.00	1.00
TOTAL	1.00	1.00	1.00	1.00	1.00	1.00

	KLAMATH STOCK SIZE			FISHERY IMPACTS May-Aug		
	1 MAY	END AUG	ESCAPE	LANDINGS	ALLOW	L-A
AGE 3	511850	288716	124148	212448	147400	65048
AGE 4	161050	79967	71171	72837	52300	20537
TOTAL	672900	368683	195319	285285	199700	85585

KLAMATH LANDINGS - ESTIMATES L(ijk)						
	FALL	MAY	JUNE	JULY	AUGUST	TOTALS
AGE 3						
NOR	167	39	78	2222	1179	3684
CSB	77	437	1533	42649	19942	64637
KMZ-T	38	988	22824	2834	6157	32840
KMZ-S	77	136	914	2045	2609	5781
FTB	0	9992	24944	24852	3977	63765
SOC	115	5255	21753	12251	2841	42214
TOTAL	473	16846	72046	86852	36703	212921
AGE 4						
NOR	954	147	23	896	567	2587
CSB	8743	595	521	19811	3496	33166
KMZ-T	421	976	7335	1225	1424	11381
KMZ-S	55	91	277	896	998	2316
FTB	24	7924	8593	3775	794	21111
SOC	111	2792	7915	1516	250	12583
TOTAL	10307	12524	24664	28119	7530	83144
GRAND TOT	10780	29370	96711	114971	44233	296065

CATCH PROJECTIONS BASED ON EXPLOITATION RATE SHIFTS a(.ij)*C(.i)						
	FALL	MAY	JUNE	JULY	AUGUST	TOTAL
NOR	19350	14897	10520	38236	23043	86696
CSB	22400	17998	16404	163467	64552	262421
KMZ-T	4370	6759	71652	8084	20236	106731
KMZ-S	1231	1536	8747	14536	11467	36286
FTB	3124	69010	84866	104760	36250	294886
SOC	10301	178935	149262	95687	32384	456268
TOTAL	60776	289135	341451	424770	187932	1243288

Figure 6. 200,000 CHINOOK IN KMZ

InputEnter new exploitation rate scaling factVERSION: 2.4
 1988 OPTION # FINAL RUN DATE: 12-14-8 TIME: 14:26

EXPLOITATION RATE CHANGE FROM BASE PERIOD a(.jk)						
	FALL	MAY	JUNE	JULY	AUGUST	88 TOT
NOR	1.00	1.00	1.00	1.00	1.00	1.00
CSB	1.00	1.00	1.00	0.65	1.00	0.91
KMZ-T	1.00	1.00	2.30	1.00	1.00	1.33
KMZ-S	1.00	1.00	1.00	1.00	1.00	1.00
FTB	1.00	1.00	0.65	1.00	1.00	1.00
SOC	1.00	1.00	1.00	1.00	1.00	1.00
TOTAL	1.00	1.00	1.16	0.94	1.00	1.03

	KLAMATH STOCK SIZE			FISHERY IMPACTS May-Aug		
	1 MAY	END AUG	ESCAPE	LANDINGS	ALLOW	L-A
AGE 3	511850	286135	123038	214283	147400	66883
AGE 4	161050	81431	72474	71373	52300	19073
TOTAL	672900	367566	195512	285656	199700	85956

KLAMATH LANDINGS - ESTIMATES L(ijk)						
AGE 3	FALL	MAY	JUNE	JULY	AUGUST	TOTALS
NOR	167	39	78	2103	1168	3555
CSB	77	437	1533	26237	19764	48047
KMZ-T	38	988	52496	2682	6101	62305
KMZ-S	77	136	914	1936	2586	5648
FTB	0	9992	16214	23522	3941	53668
SOC	115	5255	21753	11595	2815	41533
TOTAL	473	16846	92988	68074	36375	214756
AGE 4	FALL	MAY	JUNE	JULY	AUGUST	TOTALS
NOR	954	147	23	845	578	2547
CSB	8743	595	521	12150	3560	25569
KMZ-T	421	976	16871	1156	1450	20873
KMZ-S	55	91	277	845	1016	2284
FTB	24	7924	5586	3562	809	17905
SOC	111	2792	7915	1430	254	12502
TOTAL	10307	12524	31192	19989	7667	81680
GRAND TOT	10780	29370	124180	88063	44043	296436

CATCH PROJECTIONS BASED ON EXPLOITATION RATE SHIFTS a(.ij)*C(.i)						
	FALL	MAY	JUNE	JULY	AUGUST	TOTAL
NOR	19350	14897	10520	38236	23043	86696
CSB	22400	17998	16404	106254	64552	205208
KMZ-T	4370	6759	164800	8084	20236	199879
KMZ-S	1231	1536	8747	14536	11467	36286
FTB	3124	69010	55163	104760	36250	265183
SOC	10301	178935	149262	95687	32384	456268
TOTAL	60776	289135	404896	367557	187932	1249519

Evaluation of PCFFA Seasonal Approach

PCFFA has proposed a seasonal approach to fishery management which would allow increased fishing time and harvest within the KMZ by equalizing fishing time between the zone and the Coos Bay and Ft. Bragg areas when Klamath contribution rates are likely to be similar. The specific proposal calls for extended periods of 4 days on and 3 days off fishing. We were not able to evaluate the proposal in terms of predicting the outcome of such a season in total chinook landings, or in Klamath impacts. We were able to evaluate however the relative impact of 4 days on and 3 days off fishing compared to effort and landings from completely open fishing, and gain some insight into the relationship that might prevail under situations where a certain number of days per week are closed.

Two approaches were used. In one approach, data from fishermen log books were used and the number of hours fished per **2 weeks** under no closure situations was compared to the total number of hours available and to the number of hours fished in a 4 on/3 off situation. It was found that for the data available:

- with no closures there are 210 hours available, but fishermen fish only 80 hours average
- with a 4 on/3 off situation, there are 112 hours available, with fishermen fishing and average of 76 hours, a reduction of only 5% from the no closure situation.

What appears to be happening in that fishermen just rearrange their schedules under a 4on/3off situation, to take advantage of open periods. However, if additional days /week were closed, you could expect a greater reduction in effort, as fishermen would not have this flexibility, there would just not be enough hours available. Further data and explanation is given in Appendix I. "Effort Response to a 4 on/3 off Fishery"

In the second approach, landings at Ft. Bragg were compared to landings at San Francisco, in order to determine if the 4on/ 3 off closures at Ft. Bragg reduced the rate of landings compared to an area that did not have such closures. Again, the effect of the 4 on/3 off fishing periods appeared to have a very small, if any, effect on landings in the area, consistent with the effort analysis.

Conclusion

Analyses of catch and effort data from the 1988 season indicates that 4on/3off periods were not very effective in reducing either effort or landings. Periods of longer closure, or more days per week closed would be necessary to significantly affect landings and effort. The broader question of a seasonal approach across the entire area from Ft. Bragg to Coos Bay and the effect this would have, was not able to be quantitatively analyzed. From the analyses of status quo and the modeling of a quota over a broad area, it is clear that with stock predictors of uncertain accuracy, quota management poses considerable risks to ocean fisheries and can lead to problems of equitable harvest between areas. However, from the results of 1988 and fishery restrictions having much less effect than anticipated, it is also clear that a seasonal approach with the choice of the "wrong" season, a season that did not achieve the desired level of dampening, could pose serious problems for in-river fishermen and escapement.

Review of April and May KMZ Sport Season

No systematically collected sport data from prior years exists to analyze the effect of opening the KMZ to sport fishing in April and May. Historically, almost no catch or effort occurred prior to late May in the KMZ, although the season opened in mid-February.

Commercial fishing in the KMZ in May occurred prior to 1983, and CWT data from that fishery indicated a high contribution of Klamath fish in the catch, especially in the Eureka port area (Figure 9). It is possible these catches may have occurred well offshore, outside the reach of most sport anglers, but this is not certain.

An "assured season" for KMZ sport anglers has been provided in recent years spanning the Memorial Day to Labor Day period, and has resulted in chinook catches exceeding 50,000 fish. (This relates to catches in early years (1980-84) of approximately 16,000 sport caught chinook in the KMZ) Catches, and therefore Klamath chinook impacts, would increase if the KMZ sport season were open in April and May, the magnitude of that increase being difficult to assess. Effort would not likely be very high in the early season period unless fish were available near shore and weather was good. However, if that were the case, extension of the sport season through Labor Day would be at risk or the allocation to other ocean users would need to be reduced.

Figure 7.

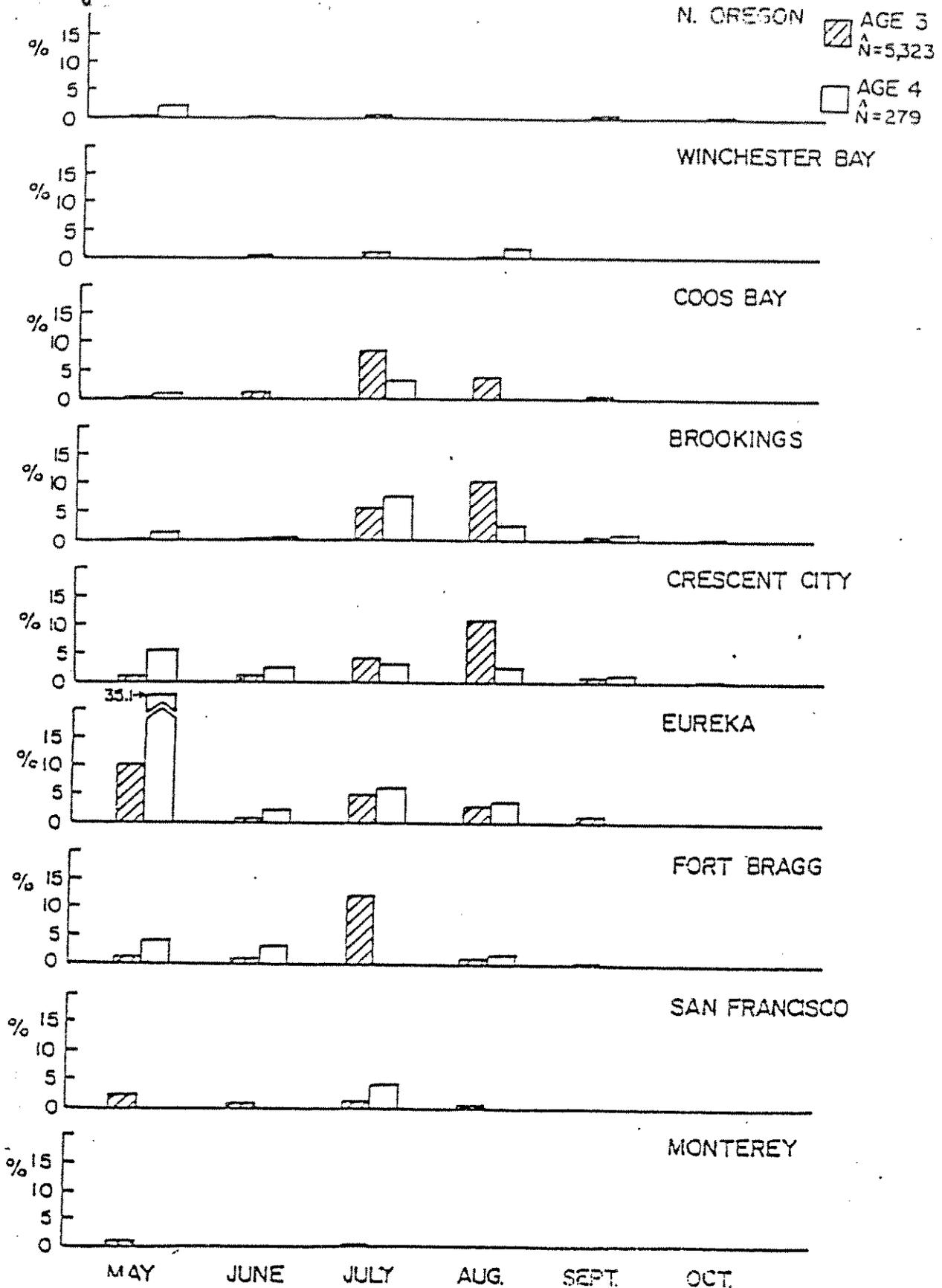


Figure 4. Ocean commercial landings during 1980-1982 of Klamath River hatchery CWT fall chinook of the 1977-1979 broods released as fingerlings in percent by age class, area landed and month.

An Example of the Red line Concept

This approach is in response to a specific request, and also responds in part to a general request to try and develop some approach which would modify the status quo, or would blend the quota and seasonal approaches.

It is an approach that can be used with or without a quota, that has an expectation of some specific total catch as a goal, but also looks at how fast the harvest is progressing during the season. It is used in some Canadian troll fisheries, specifically the West coast of Vancouver Island Chinook and Coho fisheries. An example of a Canadian "red line" harvest rate for WCVI chinook is shown in Figures 8 and 9.

Based on preseason expectations or predictions of abundance and fishing effort, an expected catch rate would be established for an area. During the season, if actual catches at any time exceeded the expected rate by too much, crossed the "red line", then management measures could be taken to dampen, or slow down, the catch rate.

The types of management measures that could practically be put in place to slow down the harvest if necessary are:

- additional days of no fishing
- additional areas closed to fishing, or
- chinook trip limits or delivery limits

Under PMFC ocean salmon management rules, the dampening measures and the trigger criteria would all have to be specified preseason, so that it was exactly clear what management actions would be taken for certain harvest levels.

An Example of this Approach Applied to Klamath Chinook Management

First, it should be stressed that the following is just an **example**. It was chosen to be somewhat realistic and applicable to the areas under discussion, but is not intended to prejudice the discussions or should it be inferred that such a scenario is acceptable to any users. This example is simply to illustrate the concept.

In this example the red line concept was applied to two overlapping areas, the KMZ and Ft. Bragg area combined, and the KMZ and Coos Bay area combined. **Assume** that preseason expectations of harvest for the troll

Figure 8. Canadian Red line Chinook Harvests, WCVI, 1986

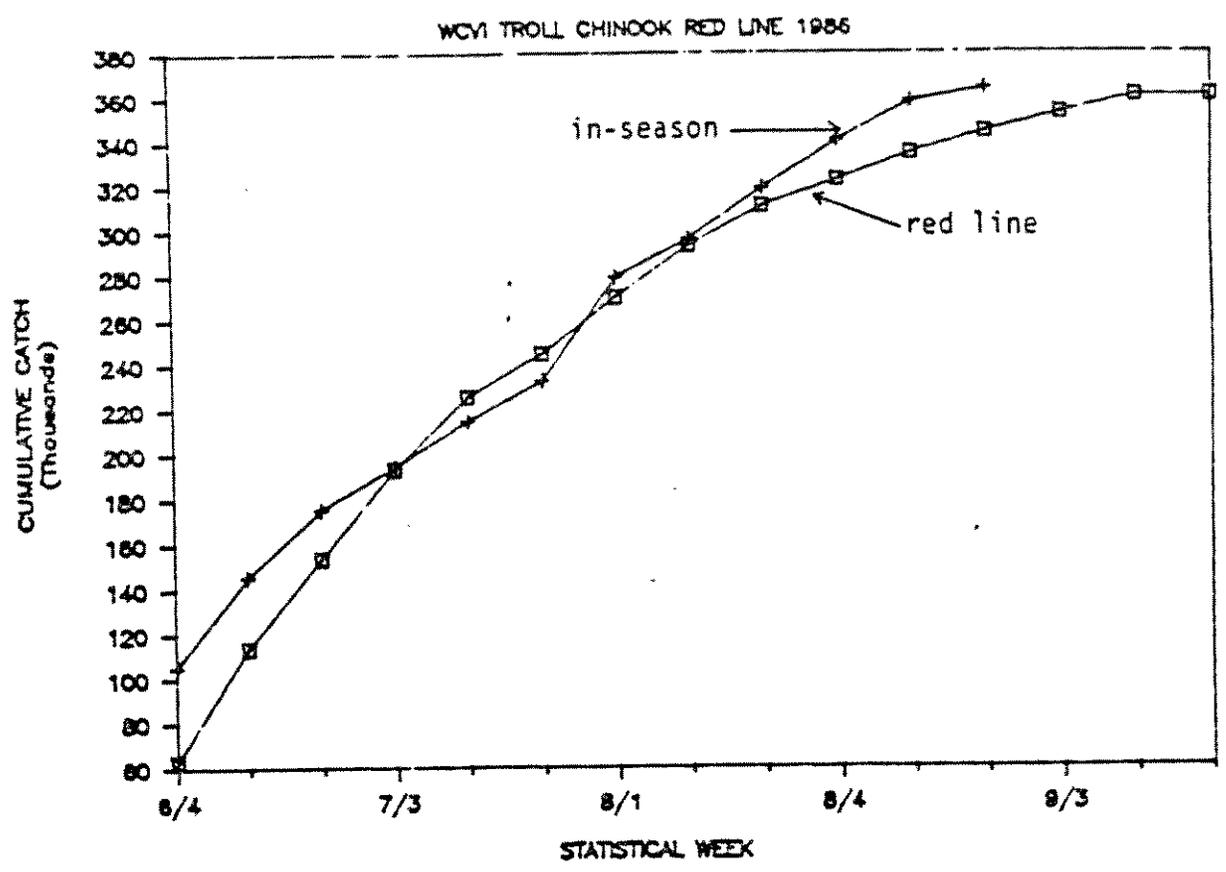


Figure 4. Comparison of cumulative weekly in-season and red line troll catches for West Coast Vancouver Island chinook in 1986.

Figure 9. Canadian Red line Coho Harvests,
WCVI, 1986

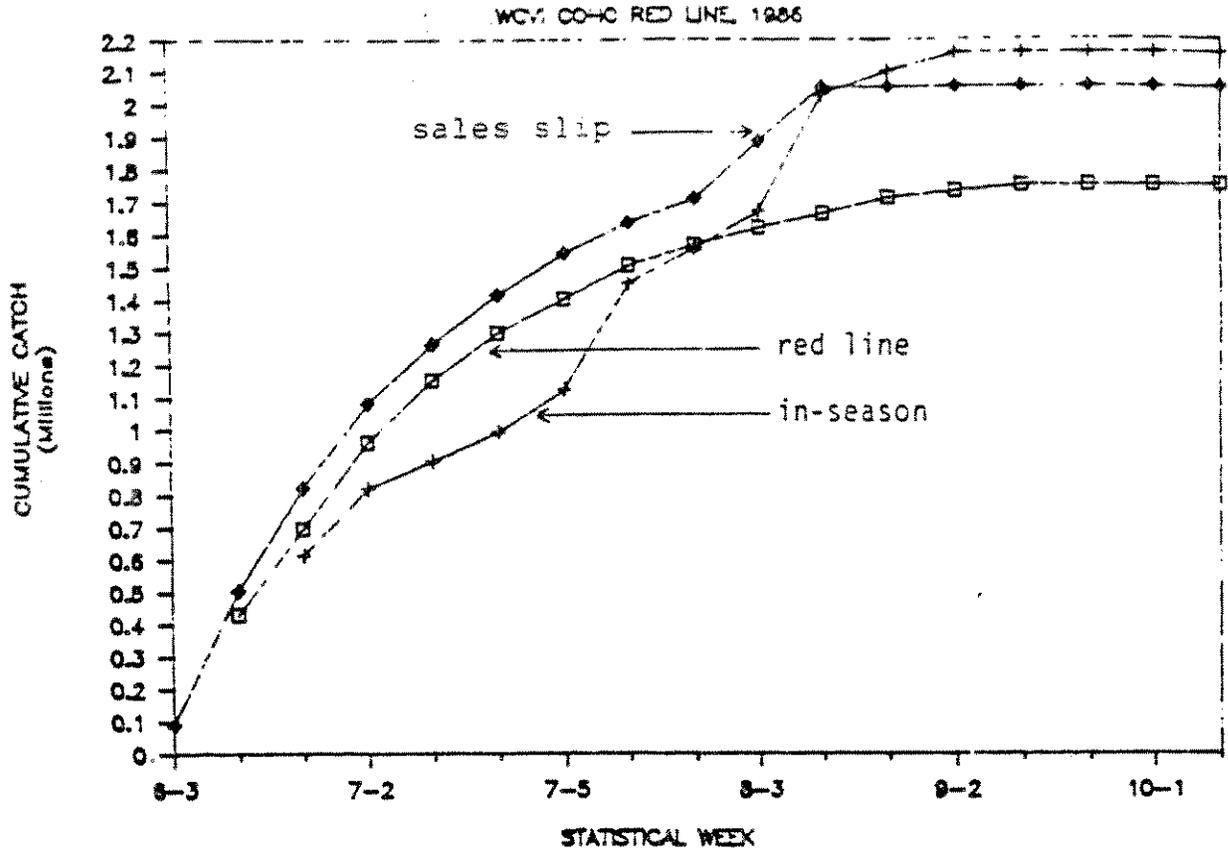


Figure 6. Comparison of in-season and sales slip troll catches with the red line catch for West Coast Vancouver Island coho in 1986.

fishery in the Ft. Bragg and KMZ areas combined were 409,000 chinook through July. (Shown in the computer output of Figure 6. for the 200,000 KMZ chinook harvest case.)

To accomplish this, assume that preseason, it was decided that a season consisting of 7 days fishing out of every 14 days for 6 weeks during June and July would occur, regulations being the same for both the Ft. Bragg and KMZ areas, very similar to the PCFFA proposal. A red line for harvest up to the end of July could be established as shown in Figure 10.

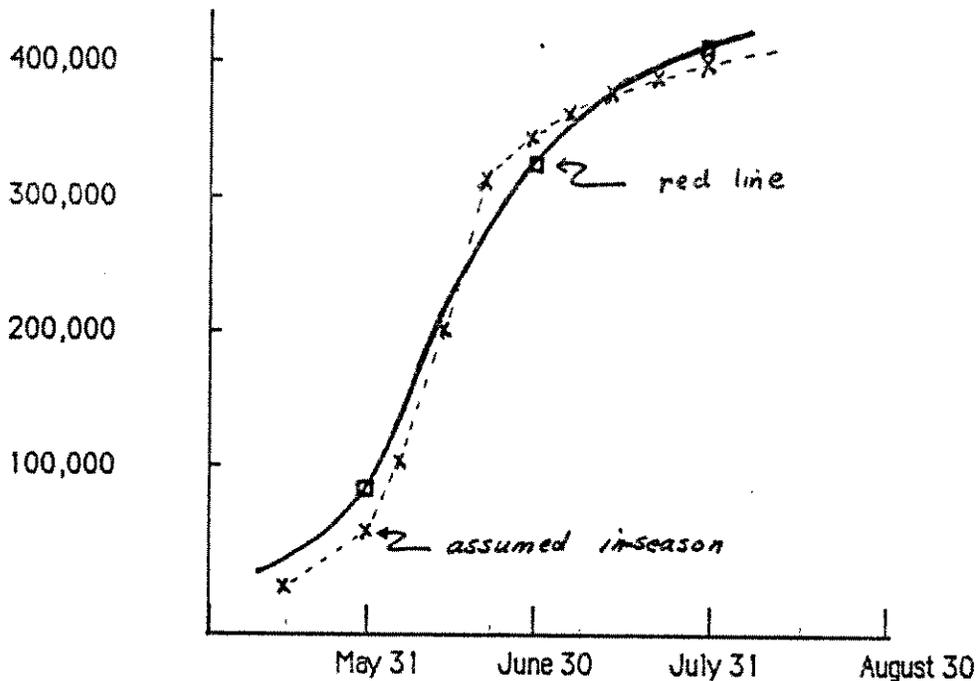


Figure 10. Example of Projected Red Line Harvests, Ft. Bragg and KMZ Combined

Further, say that harvests during in the season exceeded the red line harvest significantly, as shown by the black squares. At this point you could further restrict the fishery, perhaps by closing one more day per week. If this action appeared to be successful (i.e., dampened harvests enough to bring total catch below the redline) then no further action would be required. If it was not sufficient to successfully dampen catch rates, then further action could be taken. This would be action agreed to preseason, such as closing additional areas, additional time, or instituting a delivery limit for chinook salmon.

If the management actions taken caused the harvest to fall significantly below the red line, then the restrictions could be lifted, with the fishing time returned to the original 7 days open out of 14 scenario.

The same type of redline approach would be developed for the combined Coos Bay and KMZ areas for the period through August, with 6 weeks of 7 days open out of 14 during the period of July and August. Again, the expected catch would be a total of 405,000 chinook for both areas, with a red line established as shown below in Figure 11. If catches exceeded the red line, the same types of management actions would be taken as before in the combined Ft. Bragg and KMZ area, only this time the actions would apply to the combined Coos Bay and KMZ area.

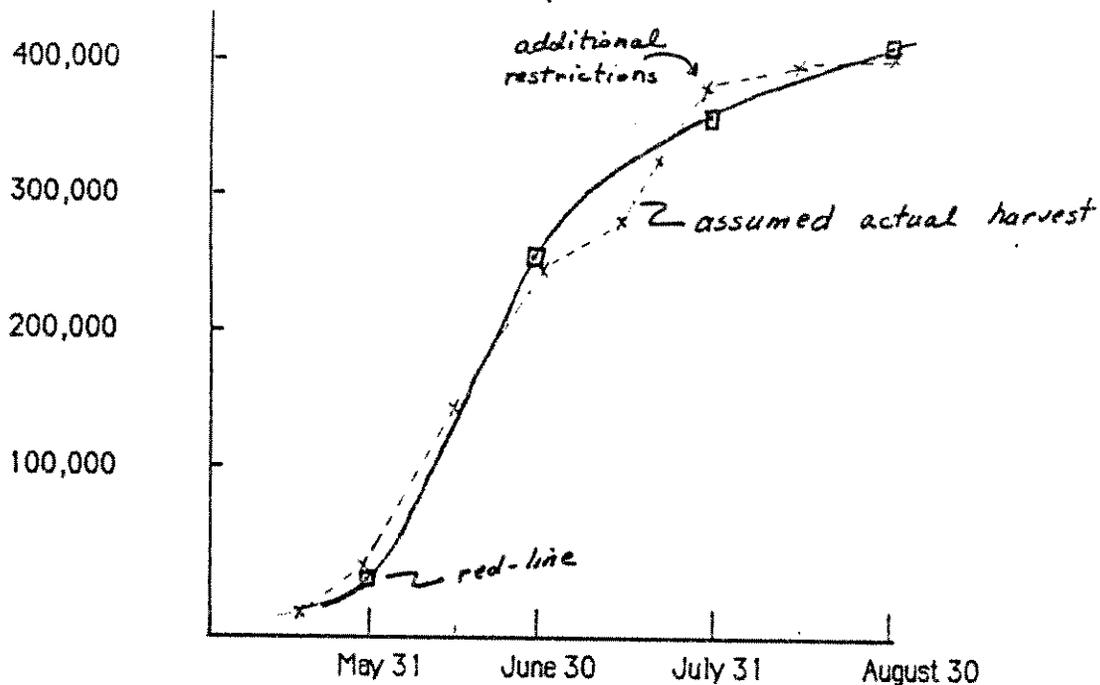


Figure 11. Example of Projected Red line Harvests, Coos Bay and KMZ Combined

Under the above example, both Ft. Bragg and Coos Bay would have 6 weeks of restricted fishing during periods when Klamath chinook made up a larger proportion of the catch, the degree of restriction depending upon catch rate. The KMZ would have 12 weeks of restricted fishing, exclusive of special target fisheries. Again, this is just an example to illustrate the concept.

During a season, if harvest exceeded the redline, you would not know whether this was because of an error in prediction of stock abundance, i.e. just more fish than you thought there would be, or whether you had

underestimated the affect of the fishing season that was chosen preseason. This concept allows predetermined actions to be taken to futher dampen harvest if catches exceed the red line, but falls short of closing the fishery as would occur under a simple quota. Depending upon what fishery restrictions would be applied if catches exceeded the red line, the concept could be nearly as restrictive as a quota, or it could be only somewhat more restrictive than a seasonal approach. The concept could be tailored depending upon the confidence in preseason predictions, to somewhat protect ocean fisheries from drastic effects of those errors, and still provide greater assurance to in-river fishermen than a pure seasonal approach.

Obviously, there are many pertabations to this concept that could be applied, and probably unanswred questions. However, unless there is deemed to be further interest in this approach, it is not productive at this time to continue further. A report prepared by the Canadian Department of Fisheries and Oceans containing more information on their application of the approach is available for those interested.²

2) Pacific Salmon Commission, Southern Panel- Canadian Section; "Preliminary review of 1986 Fisheries and Prospects for 1987", A.D. Anderson, November 14, 1986.

Appendix I.

TO: KLAMATH RIVER TECHNICAL ADVISORY TEAM

FROM: Michael Maahs

SUBJECT: EFFORT RESPONSE TO A 40N/30FF FISHERY

Data was collected from several fishing vessels during the past several fishing seasons. Most of this information was from boats that fished primary in the Fort Bragg area. This information is not from a random sample, but more reflects Fort Bragg "full time" fishermen.

The actual number of hours fished by four boats (the same four fishermen throughout) in 1988, 1987 and 1986 (May 1 through July 30) is shown in Table 1. The area fished is also shown. The data here is separated into semi-monthly periods. From here on, the number of hours refer to the number of hours per semi-monthly period per boat (averaged for the four boats surveyed).

The potential number of hours (weather exclusive) during a 15 day period (full openings) is 210. The actual number of hours ranged from (from May thru July 1988-1986) 46 to 123, averaging 80. From the potential 8 days or 112 hours under the 40n/30ff, the actual number of hours ranged from 58 to 97, averaging 76. The overall effect was about a 5 percent reduction in effort due to the the 40n/30ff restriction. Some of this effort occurred in areas south of Point Arena. Most all the effort that occurred south occurred just south of the border area. There didn't appear to be any significant shift into the south area during the 40n/30ff restriction, but it is highly subjective to try to determine what was or was not a response to regulations.

There was a significant effort shift to the KMZ when open. About 75 percent of the effort was in the KMZ when both areas were open in 1988. In the first half of June 1987, 55 percent of the effort was in the KMZ. In the later half of June 11 percent of the effort was in the KMZ (5 less fishing days in this area).

This information suggests that only a small amount of effort reduction occurred due to the 40n/30ff restriction. The overall effect on effort was probably somewhat greater than this information would suggest. The "day boat fleet" was probably affected to a greater degree because they are more limited by the weather and do not take days off to deliver or "regroup" as does the more mobil fishermen. There was certainly some reduction in the number of "southern" boats

that fished north of Point Arena due to the 40n/30ff fishery. The small effort reduction could have been due in part to "better than normal" weather conditions. In any event, the effort reduction was not as significant as I or other fisherman expected.

TABLE 1. NUMBER OF HOURS FISHED BY FOUR BOATS FISHING FORT BRAGG IN 1988, 1987, AND 1986 BY AREA FISH

AREA	40N/30FF PERIOD					
	MAY	MAY	JUNE	JUNE	JULY	JULY
1988						
SOUTH	125	28	78	28	3	0
FT. BRAGG	198	234	200	225	228	383
KMZ	0	0	111	0	0	0
TOTAL	323	262	389	253	231	383
FB-KMZ	125	234	311	225	228	383
1987						
SOUTH	95	81	87	35	0	0
FT. BRAGG	320	160	117	361	216	300
KMZ	0	0	146	44	0	0
TOTAL	415	241	350	440	216	300
FB-KMZ	320	160	263	405	216	300
1986						
SOUTH	0	45	52	36	0	73
FT. BRAGG	270	448	260	13	187	373
KMZ	0	0	0	133	0	0

Nathaniel S. Bingham
President
David N. Danbom
Vice President
John Szostak
Secretary
William Matson
Treasurer

PACIFIC COAST FEDERATION
OF FISHERMEN'S ASSOCIATIONS
INCORPORATED

W.F. "Zeke" Grader, Jr.
Executive Director
J. William Yeates
Counsel
Elizabeth M. Stewart
Administrative Coordinator
Michael Maahs
Resources Biologist

Reply to:

3000 Bridgeway
P.O. Box 1626
Sausalito, CA 94966
(415) 332-5080

331 "F" Redwood Avenue
P.O. Box 2014
Fort Bragg, CA 95437
(707) 961-1869

909 12th Street, Suite 110
P.O. Box 1896
Sacramento, CA 95809
(916) 448-5617

Telefax: (415) 331-CRAB

February 1, 1989

Mr. Robert Fletcher,
Chairman
Klamath Fishery Management Council

RE: PCFFA's proposed seasonal management approach
to harvesting salmon within the KMZ

Dear Mr. Fletcher;

The Pacific Coast Federation of Fishermen's Associations (PCFFA) has developed a seasonal management structure for the Klamath Management Zone (KMZ) as an alternative to the current quota management structure. It should be made very clear why PCFFA and the local marketing associations within and immediately adjacent to the KMZ are calling for a new management structure.

1) A seasonal management approach can be designed to reduce impacts on the Klamath Fall run salmon; protect the inriver users allocations; and, provide necessary spawning escapement for the Klamath River.

a) A seasonal management approach recognizes the natural fluctuation within the anadromous resource. Essentially, in years when the resource is abundant the ocean troll fleet, the inriver users, and spawning escapement will all benefit. When the anadromous resource is limited or scarce (historical records demonstrate that the resource fluctuates) all the users will have limited seasons. The total harvest will be down reflecting the scarcity of the resource.

The actual relative abundance of the resource in the ocean and within the river will control the fisheries with as much accuracy and control as a preseason predictor. That is how the resource has operated historically.

2) The "experimental" pre-season prediction/quota management approach has proven to be extremely inaccurate and for the past three years has placed an unfair hardship on the commercial ocean troll fleet within the KMZ. The continuation of this

unpredictable, therefore by definition arbitrary and capricious, management program that has not benefitted the anadromous resource, but, which has placed severe adverse social and economic impacts on California's north coast fishing communities within and immediately adjacent to the KMZ, would be an abuse of the federal fisheries management program. For example:

a) The 1988 prediction for spawner escapement within the Klamath River was 65,000 adult salmon; the actual number was 113,644 adults. The prediction was off almost 175%. All previous predictions have been as extremely inaccurate.

b) The inaccuracy of the preseason predictor coupled with strict adherence to an unrealistic allocation agreement places additional economic hardships on the commercial troll industry. Such problems are set forth in the enclosed analysis by PCFFA's biologist, Mike Maahs.

c) Just a review of the historic landings points out the inequitable cuts that that local KMZ ports have taken under the quota management regime. According to the PFMC's "Review of 1987 Ocean Salmon Fisheries" (Appendix A, pp. A-2 & A-3), Crescent City averaged 44.3 thousand chinook landings and 72.1 thousand coho landings from 1976 through 1980; in 1986 the chinook landings were down to 16.9 thousand and in 1987 the chinook landings were 34.9 thousand; coho landings were incredibly reduced to 6.3 and 6.0 thousand in 1986 and 1987 respectively. That same document shows that Eureka averaged 166.3 thousand chinook landings and 90.0 thousand coho landings from 1976 through 1980; in 1986 the chinook landings were down to 47.4 thousand and in 1987 the chinook landings were 73.2 thousand; coho landings were even reduced more dramatically to 5.2 thousand and 12.3 thousand in 1986 and 1987 respectively.

3) A seasonal approach allows the fishery managers to more equitably spread out openings and closures throughout the season in order to reduce fishing effort on the natural Klamath River stocks. Based on actual landing data, not on a highly speculative and unreliable jack predictor (which was off 175% last season), the fishing effort within and outside the KMZ can be modified annually.

a) Conversely, quota management within the KMZ creates a "gold rush" mentality within the ocean fishery. This concentrated fishing effort hardly benefits the resource, places tremendous pressure on the local fishermen and economies, and puts many fishermen and their boats at risk during bad weather conditions in order to take advantage of the limited opening or "allowable window" within the KMZ.

b) Under the quota management approach the only way to eliminate the gold rush effect and further dampen impacts just outside the KMZ is to expand the KMZ. This only further restricts the ocean troll fishery. Such an expansion must be considered extremely capricious, since it is based upon such speculative predictions. Any expansion further restricts the commercial salmon troller from accessing non-Klamath stocks.

4) The return of additional salmon that could have been commercially taken by the troll industry has not translated into more spawners and therefore, a greater abundance of salmon in the ocean. Large escapements in either the Sacramento, San Joaquin, or the Klamath river systems have not translated into greater abundance in the ocean. (The Framework Plan for the Sacramento River recognizes that there are unnatural, man-made impediments for natural spawners.)

As noted in PCFFA's supporting documentation for its proposed seasonal approach, there is no correlation between high escapement and ocean abundance. In fact, a better argument could be made that smaller escapements have created greater ocean abundance, based upon a review of recent years' data.

For the past three seasons the KMZ's ocean troll fishery has been selectively managed to the point of economic ruin. The quota management system with its highly untested, speculative, and unreliable pre-season predictor has singled out the KMZ-based ocean troller for incredible management restrictions.

Based upon a zealous need to reach an unrealistic escapement goal for the Klamath River system, the managers enforced a quota management program on KMZ-trollers that had immense negative socio-economic impacts on the fishing community. While the newly recognized in-river commercial harvest has doubled the level of inriver catch, the ocean catch has been reduced to last season's three day effort.

The facts demonstrate that the KMZ-ocean troller has been singled out arbitrarily and capriciously as a result of the fishery managers attempt to carry out an untested and obviously unreliable management approach. Furthermore, a reiview of the history of managing the fishery demonstrates the managers unwillingness even stubbornness to adhere to poicies, methods, or procedures that have unnecessarily impacted the KMZ-toller. How can the managers continue to ignore the fact that years of relatively low Klamath River spawning escapements have produced record numbers of salmon within the ocean.

Page 4

Pursuant to PCFFA's proposed seasonal approach, the fishery managers maintain the ability and opportunity to adjust the season in order to protect Klamath stocks and the escapement goal pursuant to the newly enacted harvest rate management approach that has been amended into the Framework Plan. PCFFA is ready and willing to work and modify this approach to meet the goals of the Magnuson Act and the Framework Plan, but the extension of any quota management is absolutely unacceptable to our membership. Implementation of any future quotas, based upon unreliable data and predictions, we believe is a violation of the Magnuson Act.

Sincerely,



J. William Yeates,
Counsel

cc: KFMC Members
PCFFA Board

Nathaniel S. Bingham
President
David N. Danbom
Vice President
John Szostak
Secretary
William Matson
Treasurer

PACIFIC COAST FEDERATION
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Telefax: (415) 331-CRAB

February 1, 1989

TO: Klamath Fisheries Management Council

From: Mike Maahs, PCFFA

RE: Impact of the .325 Harvest Allocation on the
ocean troll industry.

PCFFA has attempted to come to reach an agreement on how to share the harvest of Klamath River salmon stocks. We listed various reasons why the present situation is unacceptable to the ocean troll industry as an attachment to PCFFA's proposed seasonal ocean fishery management.

PCFFA has avoided directly trying to re-negotiate the harvest sharing formula because the allocation agreement is considered by many to be a necessary part of the current management process that relies on a pre-season stock abundance prediction. This predictive methodology has proven to be extremely inaccurate and in our minds meaningless. We have come to the conclusion that further negotiations must be based upon the needs of the users and not based upon arbitrary numbers derived from mathematical formulas that have little relationship to reality.

The fact is that our needs vary depending upon how outside impacts affect Klamath stocks. For example, an ocean share of 0.325 may have been acceptable when outside impacts were considered quite low, but not acceptable from 1986 through 1988 when impacts outside were above the 0.325 figure.

The following analyses is an attempt to clarify our concerns for the 0.325 ocean harvest share and the ocean regulations that would be dictated by strict compliance. The following is an example of how compliance to the 0.325 ocean harvest rate would have affected the 1986 and 1987 season:



1986 SEASON

	ACTUAL LANDINGS	LANDINGS TO MEET 0.325
COOS BAY	239,000	144,000
KMZ TROLL	99,000	60,000
KMZ SPORT	26,800	27,000
FT BRAGG	274,000	190,000
KLMTH 4'S	29,960	19,700

MINIMUM REDUCTION IN LANDINGS IN 1986: 219,000 FISH

1987 SEASON

	ACTUAL LANDINGS	LANDINGS TO MEET 0.325
COOS BAY	331,000	103,300
KMZ TROLL	122,000	122,000
KMZ SPORT	48,000	48,000
FT BRAGG	322,000	236,800
KLMTH 4'S	142,000	85,000

MINIMUM REDUCTION IN LANDINGS IN 1987: 313,000 FISH

These losses were derived by taking catch away from the areas and times which had the highest Klamath contribution rate. Some gains could be made the following year due to the increased availability of fish (probably 5 to 10 percent of the loss).

Additionally, these estimates of loss are those that would have occurred if the actual stock size and contribution rates were known and the ocean fishery was held to 0.325. Had preseason predictions of abundance and contribution been used, the reductions in catch would have been greater. The following analysis is based on the 1988 season where preseason estimates of abundance and contribution were used to hold the Klamath harvest rate to 0.325:

1988 SEASON

	ACTUAL LANDINGS	REQUIRED LANDINGS
COOS BAY	269,000	178,000
KMZ TROLL	89,000	55,600
KMZ SPORT	50,000	37,000
FT BRAGG	404,000	167,000
KLMTH 4'S	?	48,500

MINIMUM REDUCTION IN LANDINGS IN 1988: 374,000 FISH

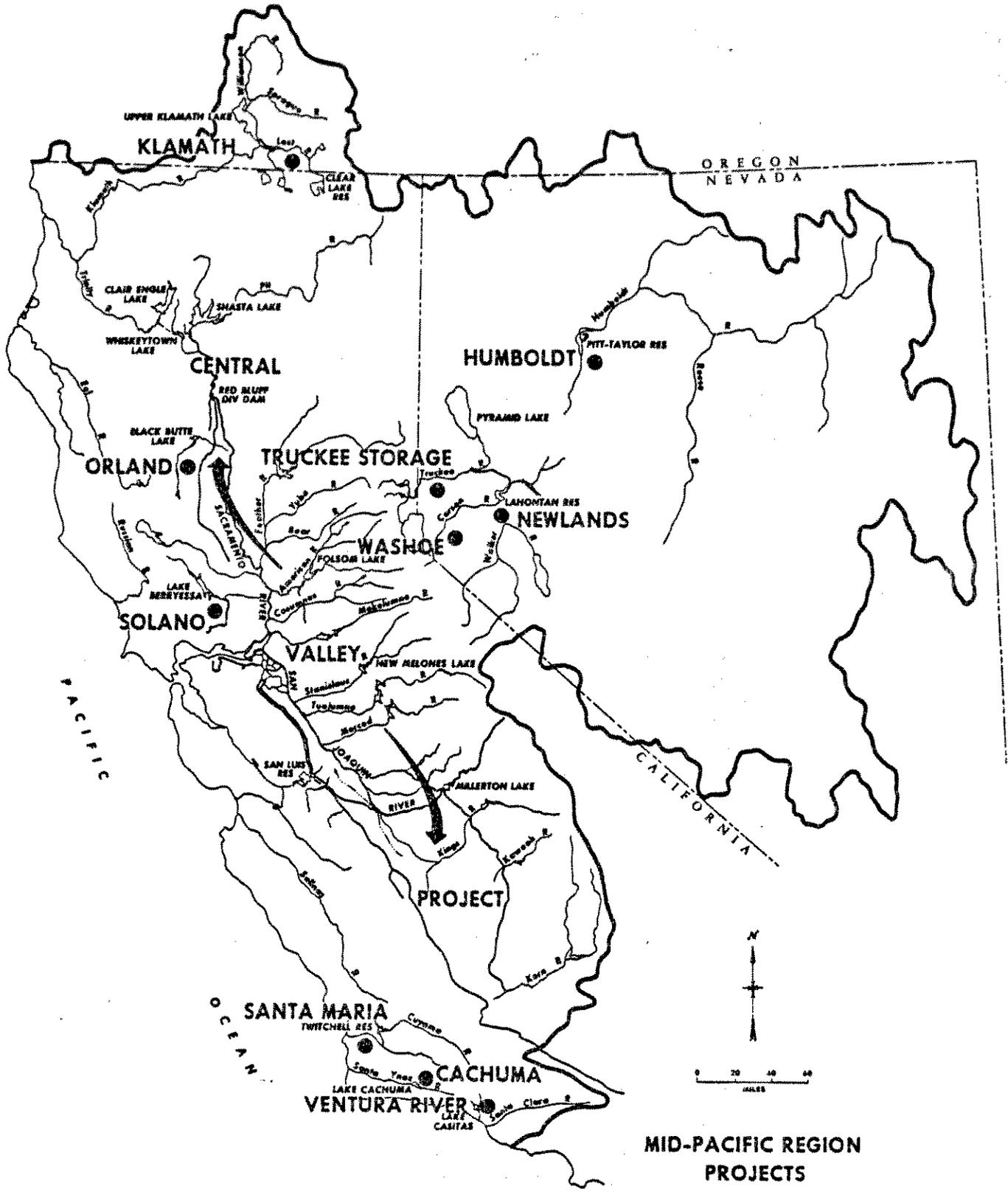


Page 3

It is PCFFA's position that the inriver net fishery could meet its needs in 1989 by concentrating more effort on stocks other than Fall chinook. In the past few years Iron Gate and Klamath wild fall run stocks have been impacted heavily by the Klamath River gill net fishery, while impacting Trinity Fall, Trinity Spring, jack and coho runs only slightly. We do not believe it is appropriate or equitable to expect the ocean troll fishery within or immediately adjacent to the KMZ to forego 200,000 to 400,000 salmon in order to allow an expanded commercial net fishery in the Klamath River, while these other runs go underutilized.

The ocean troll fishery has reduced its harvest rate of Klamath fully vulnerable stocks, according to CWT data, from about 70% historically to around 45% to 50% the last several years. Our ability to reduce this rate further while maintaining a fishery within the KMZ, as well as harvesting nonKlamath stocks is extremely limited. With increased knowledge regarding ocean migration patterns some decreases may be feasible. Our seasonal approach is intended to utilize this information in order to reduce impacts on fully vulnerable stocks. Possibly, a hatchery marking program would provide some additional protections.

Clearly, however, the current predictive management structure coupled with strict adherence to a 0.325 ocean harvest allocation places unreasonable burdens on the ocean troll fishery.



MID-PACIFIC REGION PROJECTS

**U.S. BUREAU OF RECLAMATION
MID-PACIFIC REGION**

Federal Building
2800 Cottage Way
Sacramento California 95825-1898

David Houston, Regional Director
Public Affairs 916 / 978-4919

FIELD OFFICES

LAHONTAN BASIN PROJECTS OFFICE

705 Plaza Street
Carson City NV 89701
702 / 882-3436

PROJECT MANAGER: Franklin Dimick

Mail to: PO Box 640
Carson City NV 89702

FOLSOM OFFICE

7794 Folsom Dam Road
Folsom CA 95630
916 / 988-1707

PROJECT SUPERINTENDENT: Larry Boll

FRESNO OFFICE

Federal Building, Room 2215
1130 O Street
Fresno CA 93721
209 / 487-5116

PROJECT SUPERINTENDENT: Dan Fuhs

KLAMATH PROJECT OFFICE

6600 Washburn Way
Klamath Falls OR 97603
503 / 883-6935

PROJECT MANAGER: Kirk Rodgers

LAKE BERRYESSA RECREATION OFFICE

5520 Knoxville Road
Napa CA 94558
707 / 966-2111

RECREATION MANAGER: Vern Smith

Mail to: PO Box 9332
Spanish Flat Station
Napa CA 94558

SHASTA OFFICE

Shasta Dam
Redding CA 96003
916 / 275-1554

PROJECT SUPERINTENDENT: J. Paul Capener

TRACY OFFICE

Mountain House
Celso Road
Tracy CA 95376
209 / 836-6201

PROJECT SUPERINTENDENT: Andrew Farrar

Mail to: PO Box 1209
Tracy CA 95378.

TRINITY RIVER BASIN OFFICE

No.3 Horse Shoe Square
Weaverville CA 96093
916 / 623-2508

PROJECT MANAGER: Edward Solbos

Mail to: PO Box 1450
Weaverville CA 96930

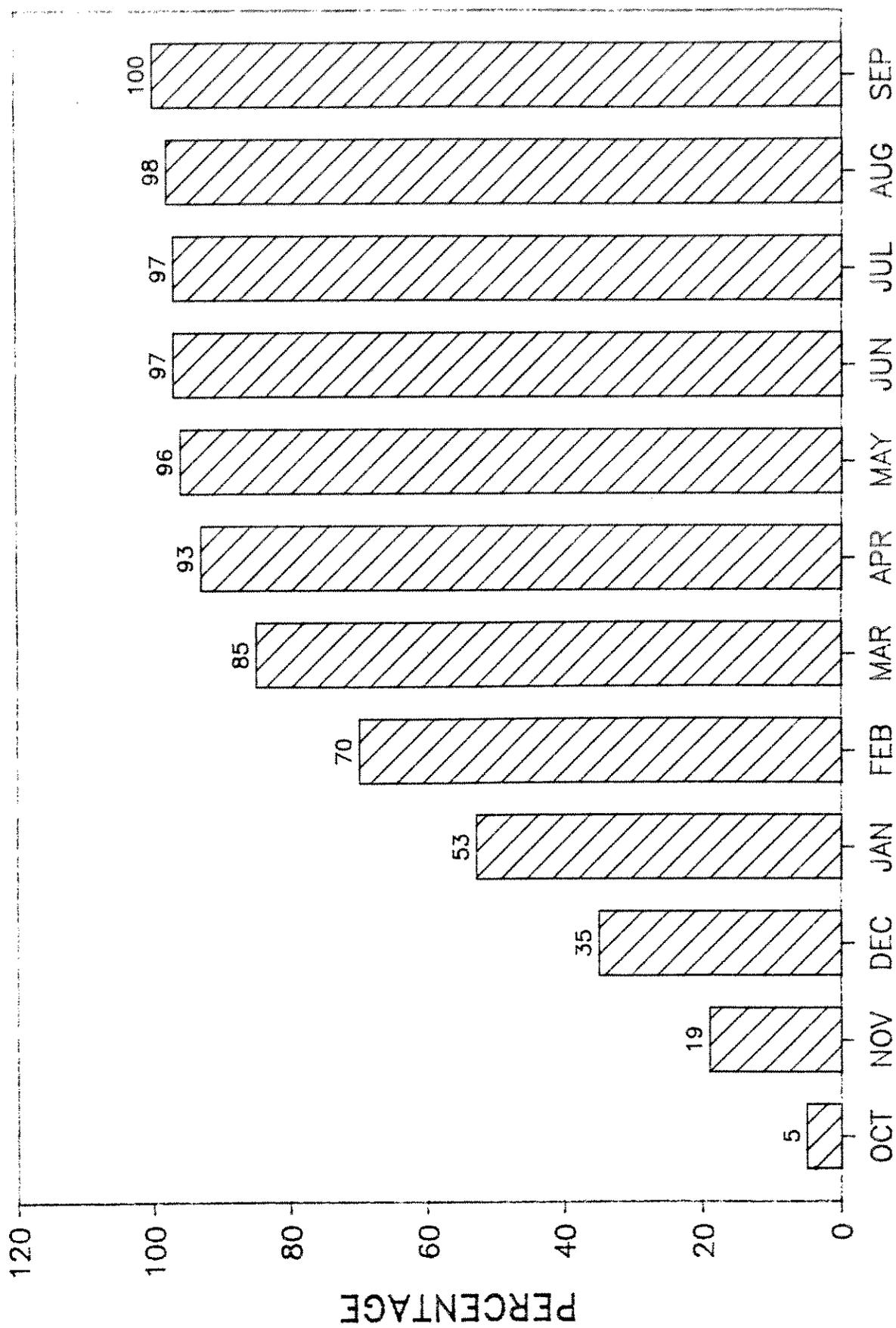
WILLOWS OFFICE

1140 West Wood Street
Willows CA 95988
916 / 934-7066

PROJECT SUPERINTENDENT: Lowell Ploss

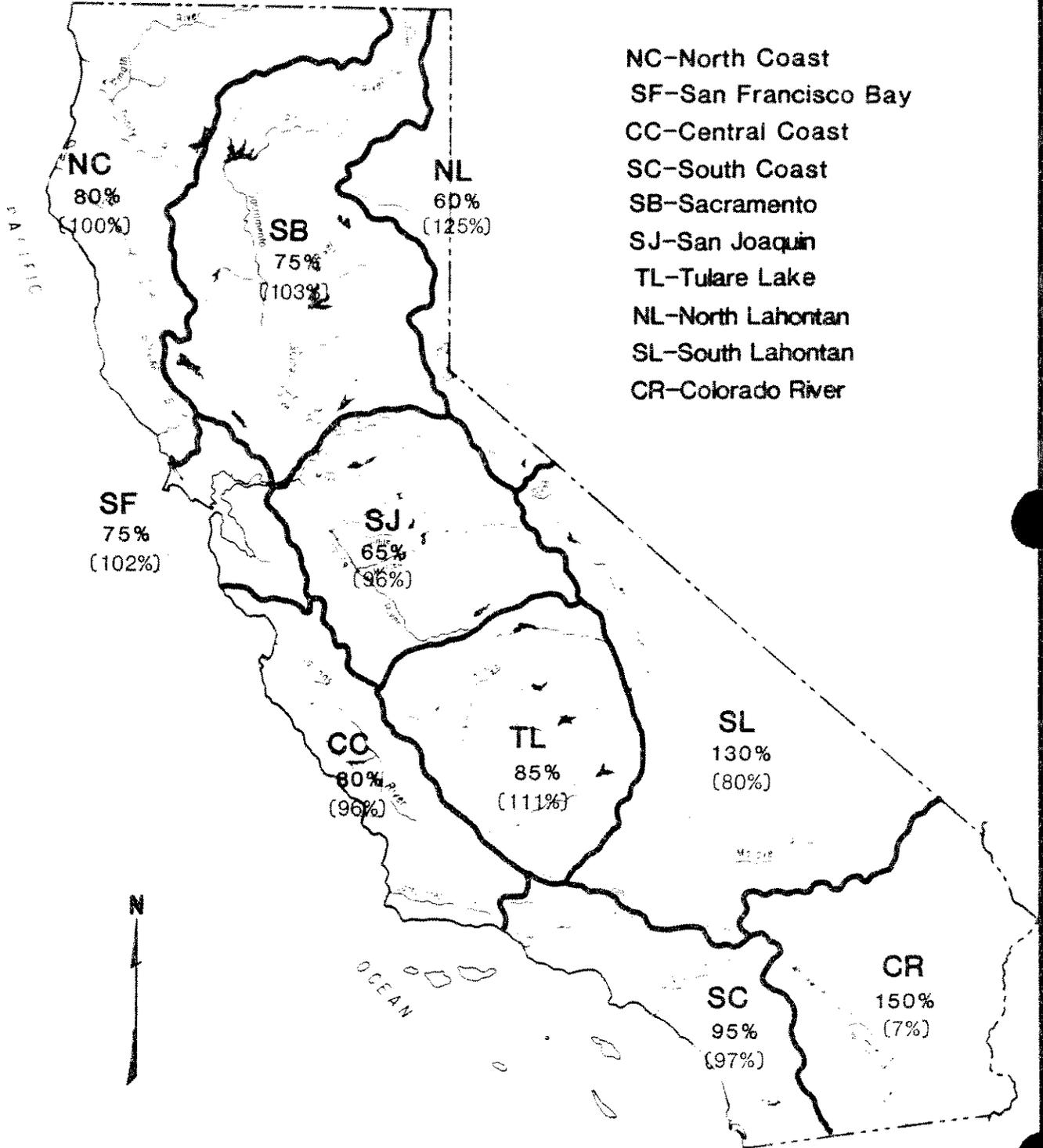
Mail to: PO Box 988
Willows CA 95988-0988

TYPICAL PATTERN OF PRECIP ACCUMULATION CENTRAL VALLEY - CALIFORNIA



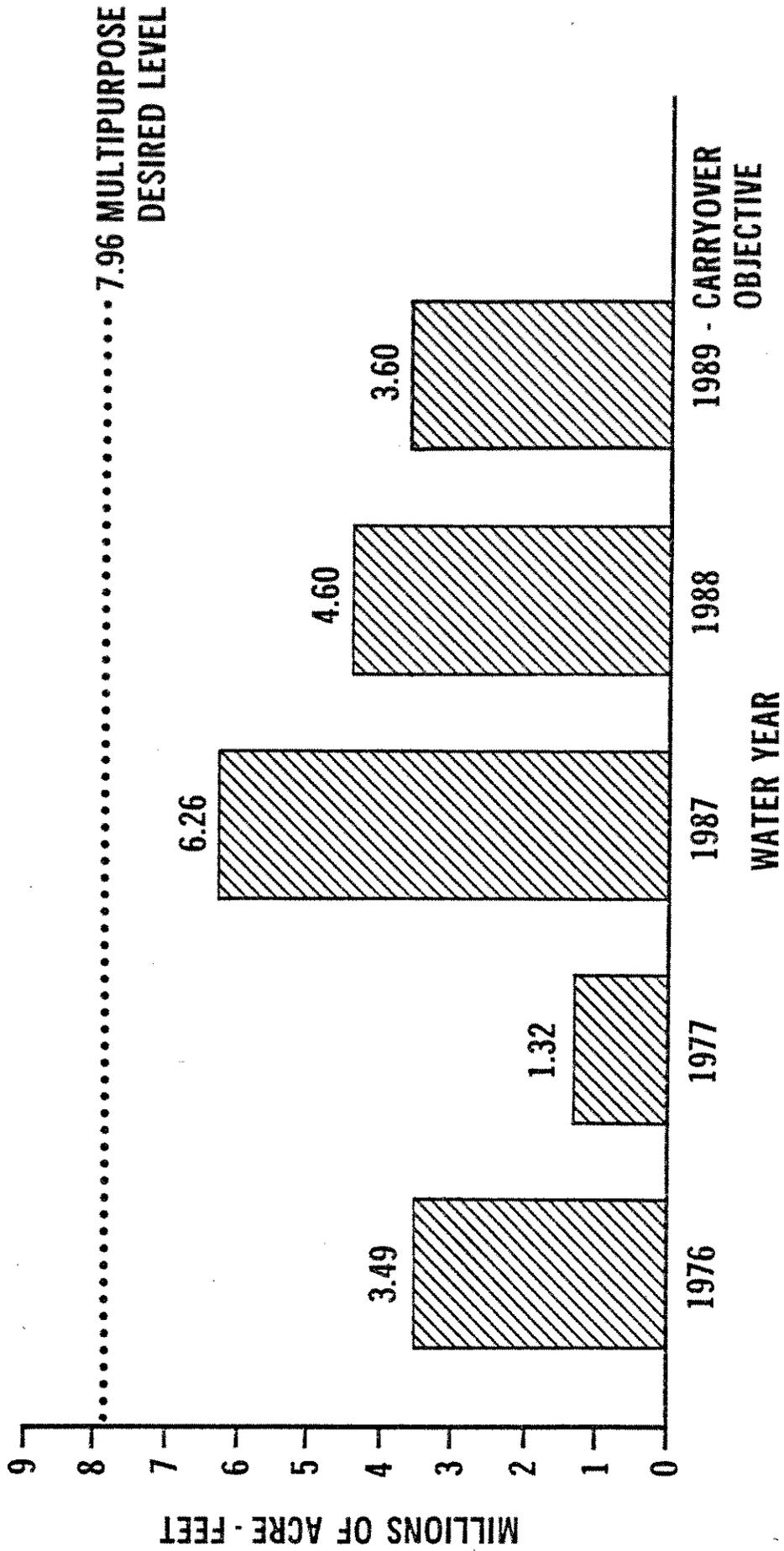
SEASONAL PRECIPITATION IN PERCENT OF AVERAGE TO DATE

OCTOBER 1, 1987 To SEPTEMBER 30, 1988
OCTOBER 1, 1988 To DECEMBER 31, 1988: in ()

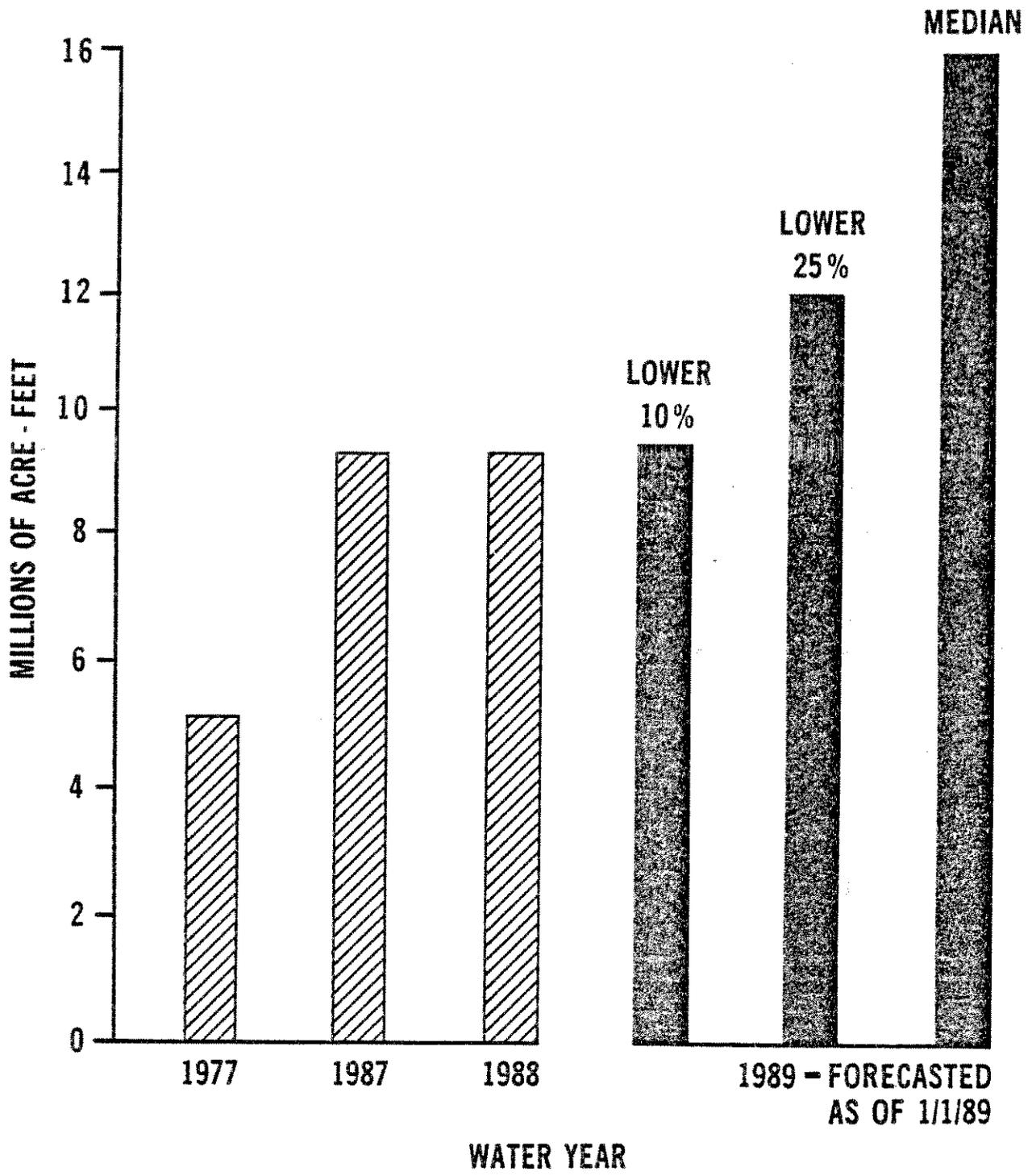


RESERVOIR STORAGE ON OCTOBER 1

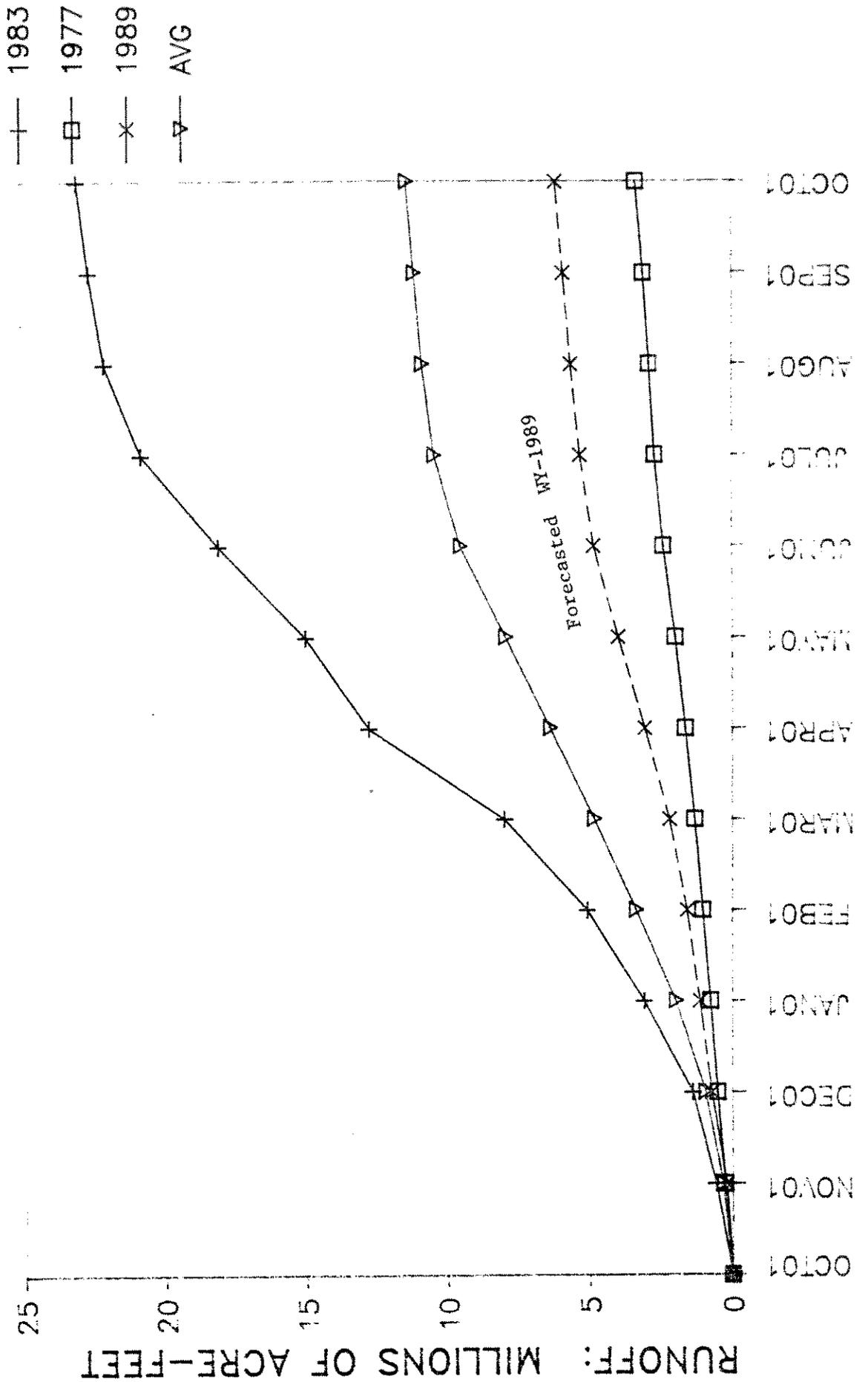
CENTRAL VALLEY PROJECT



SACRAMENTO BASIN INDEX



WATER YEAR ACCUMULATED RUNOFF CVP RESERVOIRS



ATTACHMENT 8

T.C. "TOM" COCHRAN
President

ROY C. MAGNUSON
Secretary

J.M. "MIKE" CHAMBERS
Director

RAY W. DUNHAM
Director

SHIRLEY C. RICHCREEK
Director

Board of Harbor Commissioners

of the

Crescent City Harbor District

101 Citizens Dock Road Phone 707 464-6174
Crescent City, California 95531

RICHARD D. TAYLOR
Chief Executive Officer

LINDA S. BUZZINI
Office Manager

JOSEPH H. DUSENBURY
Harbor Master



January 30, 1989

Chairman Robert Fletcher
Pacific Fisheries Management Council
Metro Center, Suite 420
2000 S. W. First Avenue
Portland, Oregon 97201

Dear Chairman Fletcher:

The commercial and recreational fishermen in our area have suffered in order to restore the stocks of salmon in the Klamath River System. Now that healthy salmon runs are projected for the river, it seems only fair that the commercial and recreational fishermen be permitted to return to traditional seasons.

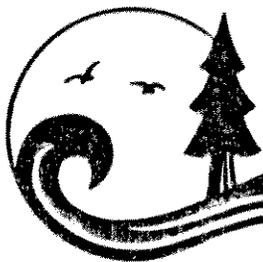
This community has always been dependent on fishing for an important part of its economic base. Continued restraints place an unreasonable economic burden on the community and on its recreational and commercial fishermen. Therefore, the Harbor Commission requests further study of the technical data which indicates the need for restrictive options during years of projected high abundance in the Klamath River System.

The Board of Harbor Commissioners, on behalf of the community it represents, supports increased commercial and recreational seasons, along with a complete review of the methodology used to develop the regulatory options.

Sincerely,

RAY W. DUNHAM, President
BOARD OF HARBOR COMMISSIONERS

1b



Crescent City - Del Norte County
CHAMBER OF COMMERCE

P.O. BOX 246 1001 FRONT STREET CRESCENT CITY, CALIFORNIA 95531 707/464-3174

January 30, 1989

Chairman Robert Fletcher
Pacific Fisheries Management Council
Metro Center, Suite 420
2000 S.W. First Avenue
Portland, OR 97201

Honorable Chairman Fletcher:

As you well know, our community's economy is based largely on the fishing industry, both commercial and recreational. In the past few years the community has accepted necessary cutbacks in catches of the Chinook salmon. However, now that healthy salmon runs are projected for the river systems we believe all affected groups be permitted to return to the traditional seasons.

The Board of Directors for the Crescent City - Del Norte County Chamber of Commerce, on behalf of the community it represents, supports increased recreational and commercial seasons, along with a complete review of the methodology used to develop all regulatory options.

Sincerely,

Mimi Mitchell Reed, President
Chamber of Commerce

MMR/tb



January 30, 1989

Chairman Robert Fletcher
Pacific Fisheries Management Council
Metro Center, Suite 420
2000 S. W. First Avenue
Portland, Oregon 97201

Dear Chairman Fletcher:

The commercial and recreational fishermen within the Klamath River Management Zone have suffered the burden of conservation in order to restore the stocks of Chinook salmon in the Klamath and Trinity Rivers. Now that healthy salmon runs are projected for the river, it seems only equitable that the commercial and recreational fishermen be permitted to return to traditional seasons.

This community is dependent upon fishing for an important contribution to our economic base. As you are aware, our community cannot tolerate continuing economic constraints. Therefore, the City considers a thorough review of the technical data which indicates the need for restrictive options during years of projected high abundance in the Klamath River System more than timely.

The City of Crescent City, on behalf of the entire community, supports expanded recreational and commercial seasons and requests a thorough review of the methodology used to develop any and all regulatory options.

Sincerely,

Darrell Maple
CITY MANAGER

DGM:km

CC: City Council

February 1, 1989

Sue Masten
Klamath Fishery Management Council

RE: 1989 Allocation of salmon within the KMZ

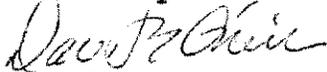
As a representative on the Yurok Klamath River Advisory Board I am adamantly opposed to the drastic reduction in the in-river commercial allocation that has been proposed to the Klamath Fishery Management Council. The Indian people of the Klamath River have cooperated over the past two years by accepting and fishing within the limits of the Klamath Fishery Management Council's annual proposed allocations. The Indian people are expected to absorb the largest percentage of reduction in their 1989 allocation over their 1988 allocation.

Now we are asked to accept cuts of more than 30% while other user groups have been allowed to fish over their annual allocation during previous years. This is not acceptable. The bottom line is that hundreds of low income families will experience a sharp reduction in their income as a result of this proposed cut. The Indian people of the Klamath River are among the most economically disadvantaged families in the United States and the least capable of experiencing a sharp drop in income.

During this past year the Hoopa-Yurok Settlement Act was passed by Congress. The Senate Select Committee on Indian Affairs received testimony that the Yurok Indians had a commercial fish operation that exceeded one million dollars annually. Based on this premise, the Yurok Indians lost the right to a timber industry with a annual revenue of more than three million dollars. Now we are asked to take a cut in our commercial fish operations that will create a severe economic hardship on our people.

You have been accused of being confrontational by members of the KMZ. It is questionable how else you are suppose to react to such discriminatory proposals for allocating the fish harvest.

Sincerely



David E. O'Neill



CHAMBER OF COMMERCE

February 2, 1989

Klamath Fishery Management Council
Klamath Field Office
1312 Fairlane Road
Yreka, California 96097

Dear Council Members:

The 1988 commercial and sport salmon season was one that resulted in confusion and severe economic hardship for communities located within the management zone. In order to prevent a repeat of this situation in 1989 and beyond, we are compelled (out of a sense of urgency to protect the economies within the zone that are impacted by the salmon fishery), to ask that you change your methods for setting quotas on Klamath stock within the zone.

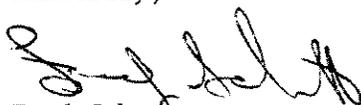
Our objection to the present system for setting quotas on Klamath stock within the management zone is based on the issue of equality. Or, perhaps more appropriately, the lack of equality and fairness as it pertains to quotas on Klamath stock. We fail to see any justification for the strict quotas placed on user groups of the fishery within the zone while at the same time Klamath stock are allowed to be harvested with virtually no restrictions outside of the zone.

If the objective of setting quotas is to preserve the Klamath stock in sufficient numbers to satisfy the needs of all user groups and to provide for the necessary escapement numbers, a concept we have no quarrel with, then why aren't all user groups of the Klamath stock, both inside and outside of the management zone, required to abide by quotas determined on the basis of fairness and not by geographical location?

The inequality of the present quota-setting system is, in our opinion, unacceptable. It will be a gross injustice to all fishermen, businesses and communities within the management zone to implement the same management policies on Klamath stock again this year.

Thank you for accepting public comment on this subject.

Sincerely,


Fred Schutt
President


Terry S. Connolly
Manager

HOW IMPORTANT IS FISHING TO THE BROOKINGS HARBOR AREA?

1. WHAT TYPE OF BUSINESS DO YOU HAVE?
RETAIL 23 WHOLESALE 6 SERVICES 58 MANUFACTURING 6 = 93. MORE THAN 8 IN TYPE
2. HOW MANY YEARS HAVE YOU BEEN IN BUSINESS? 1.2 AV. 98% RESP.
3. HOW MANY FULL AND PART TIME EMPLOYEES DO YOU HAVE?
FULL TIME 7 PART TIME 4 99% HAVE EMPLOYEES
46% HAVE BOTH FT & PT
4. WHAT IS THE AVERAGE ANNUAL GROSS SALES OF YOUR BUSINESS?
35% \$100,000 OR LESS 21% \$100-250,000 20% \$250-500,000 24% \$500,000+ 85.
5. DOES OCEAN SPORT FISHING CONTRIBUTE TO YOUR BUSINESS?
YES 77% NO 23% 4.9 NR.
6. DOES COMMERCIAL FISHING CONTRIBUTE TO YOUR BUSINESS?
YES 69% NO 31% 2.4% NR.
7. DOES RIVER SALMON AND STEELHEAD FISHING CONTRIBUTE TO YOUR BUSINESS? YES 77% NO 23% 5 NR.
8. WHAT PERCENT OF YOUR BUSINESS IS A RESULT OF THE FISHING IN THE AREA? 33 % 15% NR.
9. DOES YOUR BUSINESS BENEFIT DIRECTLY OR INDIRECTLY FROM FISHING DOLLARS? DIRECT 24% INDIRECT 50% BOTH 26% 2% NR.
10. HOW MANY DOLLARS A YEAR COMES TO YOUR BUSINESS, DIRECTLY OR INDIRECTLY FROM FISHING IN THE AREA? \$ 117,000 40% NR.
1. WHAT PERCENT OF YOUR BUSINESS COMES FROM OUT OF TOWN? 114 % 7% NR.
2. WHAT PERCENT OF YOUR BUSINESS COMES FROM OUT OF STATE? 29 % 9% NR.
3. WHAT PERCENT OF YOUR BUSINESS COMES FROM LOCAL RESIDENTS? 46 % 2.4% NR.
4. WHAT PERCENTAGE OF THE PEOPLE THAT COME TO VISIT THIS AREA DO YOU BELIEVE COME FOR THE FISHING? 46 % 10.9% NR.
5. WHAT DOES THE AVERAGE CUSTOMER SPEND IN YOUR BUSINESS? \$ 19392 28% NR.
5. WHAT PERCENT OF YOUR BUSINESS IS FROM RETIRED PERSONS? 47 % 10% NR.
7. IS ONE OF THE MAJOR REASONS PEOPLE BUY A HOME AND RETIRE HERE BECAUSE OF THE FISHING? YES 65% NO 35% 10% NR.
3. DO YOU FISH YOURSELF? YES 70% NO 30% 3% NR.
1. IF YES, HOW MANY DOLLARS A YEAR DO YOU SPEND ON FISHING? \$ 26180
from 4 commercials. \$ 452 5%

(OVER PLEASE)

20. WERE YOU IN BUSINESS IN THIS AREA IN 1984? YES 85% NO 15% 2% N/R
21. IF YES, DID YOU EXPERIENCE A DECREASE IN YOUR BUSINESS AS A RESULT OF THE CLOSURE IN THE SALMON SEASONS? YES 20% NO 30% 20% N/R
22. IF YES, HOW MUCH OF A DECREASE DID YOU EXPERIENCE? 25 & 46 N/R
23. IS THE PORT OF BROOKINGS VITAL TO THE ECONOMY OF THE BROOKINGS HARBOR AREA? YES 100 NO _____
24. DOES THE COMMERCIAL FISHING INDUSTRY MAKE A SIGNIFICANT CONTRIBUTION TO THE ECONOMY OF THE AREA? YES 88% NO 12% 7% N/R
25. SHOULD MORE EFFORT BE PLACED ON INCREASING COMMERCIAL FISH PROCESSING AT THE PORT OF BROOKINGS? YES 81% NO 19% 10% N/R
26. IS THE MONEY SPENT BY THE CHAMBER TO HAVE REPRESENTATIVES AT FISHERY MEETINGS A GOOD INVESTMENT? YES 100% NO _____ 6% N/R
27. WHAT CAN THE CHAMBER DO TO INCREASE DOLLAR INCOME TO THE BROOKINGS HARBOR AREA FROM SPORT AND COMMERCIAL FISHING?

1. More advertising.
2. Port development
3. "Fishing Hot Line"

(FOLD HERE)

P.O. BOX 940
BROOKINGS, OR 97415

| PUT
| STAMP
HERE

BROOKINGS HARBOR CHAMBER OF COMMERCE
P.O. BOX 940
BROOKINGS, OR 97415

Oregon
South
Coast
Fishermen

P.O. Box 2709 - Harbor, OR 97415

February 2, 1989

Dear Council Members:

The Oregon South Coast Fishermen wish to express our strong support for the attached resolution by the City of Brookings which addresses the need to assure economic stability and promote the general health and welfare of the people and of the Klamath River Chinook salmon populations.

We believe that changes must be made in the management policies for the Klamath management zone in order to avoid a reoccurrence of the problems that arose within the management zone in 1988. To that extent, our organization, which is comprised of 235 members, is willing to work with you to solve these management problems.

Sincerely,

Bill Tamm

RESOLUTION NO. 434

A RESOLUTION TO ASSURE ECONOMIC STABILITY AND PROMOTE THE GENERAL HEALTH AND WELFARE OF THE PEOPLE AND OF THE KLAMATH RIVER CHINOOK SALMON POPULATIONS.

WHEREAS, the economic stability of Pacific coastal communities and states are inextricably linked to successful fishing, and

WHEREAS, the perpetuation of Klamath River chinook salmon stocks is necessary to secure the future of the salmon fishing industry in northern California and southern Oregon, and

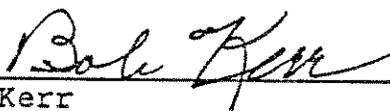
WHEREAS, the propagation of Klamath River salmon requires a necessary escapement of spawning fish, and

WHEREAS, the determination of numbers necessary for escapement, harvest and natural mortality must derive from accurate analyses of ocean fish populations, and

WHEREAS, dissension has been created and is being perpetuated between states and among fishing classes, deriving from the imprecise and incorrect population inventories used by state and federal management agencies;

NOW, THEREFORE, BE IT RESOLVED by the governments, associations and groups which are dependent upon fish populations and which are signatory hereto, that the governments of the states of California, Oregon, Washington, the Klamath Indian Tribe, California and Oregon congressional delegates and the government of the United States are hereby petitioned to require a more precise accounting of actual numbers of spawning fish populations as the basis for quota apportionment, and that a flexible and responsive method of adjusting fish harvests to actual populations be applied to seasons and limits during the fishing seasons, to the end of assuring economic stability and promoting the general health and welfare of the people and of the Klamath River chinook salmon populations.

PASSED by the Council and signed by the Mayor this 8th day of August, 1988.



Bob Kerr
Mayor

ATTEST: ;



Beverly S. Shields
Recorder/Treasurer



7-10-1988
SEP 21 1988

September 19, 1988

Roy Rainey
City Manager
City of Brookings
898 Elk Drive
Brookings, OR 97415

RE: Resolution No. 1988 - 57

Dear Mr. Rainey:

Enclosed, please find a copy of Resolution No. 1988 - 57,
RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CRESCENT CITY
URGING THE ASSURANCE OF ECONOMIC STABILITY AND THE PROMOTION OF
THE GENERAL HEALTH AND WELFARE OF THE PEOPLE AND OF THE KLAMATH
RIVER CHINOOK SALMON POPULATIONS as adopted by the City Council
of the City of Crescent City on September 6, 1988.

If you should have any questions regarding this City Council
resolution, please contact me.

Sincerely,

Kathryn F. Mathews
DEPUTY CITY CLERK

KFM:

RESOLUTION NO. R-8889-02

A RESOLUTION TO ASSURE ECONOMIC STABILITY AND PROMOTE THE GENERAL HEALTH AND WELFARE OF THE PEOPLE AND OF THE KLAMATH RIVER CHINOOK SALMON POPULATIONS.

WHEREAS, the economic stability of Pacific coastal communities and states are inextricably linked to successful fishing, and

WHEREAS, the perpetuation of Klamath River chinook salmon stocks is necessary to secure the future of the salmon fishing industry in northern California and southern Oregon, and

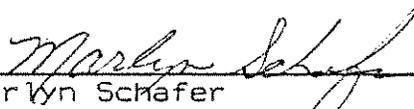
WHEREAS, the propagation of Klamath River salmon requires a necessary escapement of spawning fish, and

WHEREAS, the determination of numbers necessary for escapement, harvest and natural mortality must derive from accurate analyses of ocean fish populations, and

WHEREAS, dissension has been created and is being perpetuated between states and among fishing classes, deriving from the imprecise and incorrect population inventories used by state and federal management agencies;

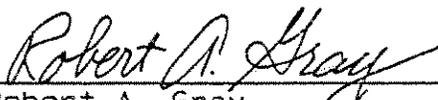
NOW, THEREFORE, BE IT RESOLVED by the governments, associations and groups which are dependent upon fish populations and which are signatory hereto, that the governments of the states of California, Oregon, Washington, the Klamath Indian Tribe, California and Oregon congressional delegates and the government of the United States are hereby petitioned to require a more precise accounting of actual numbers of spawning fish populations as the basis for quota apportionment, and that a flexible and responsive method of adjusting fish harvests to actual populations be applied to seasons and limits during the fishing seasons, to the end of assuring economic stability and promoting the general health and welfare of the people and of the Klamath River chinook salmon populations.

PASSED by the Council and signed by the Mayor this 16th day of August, 1988.



Marlyn Schafer
Mayor of Gold Beach

ATTEST:



Robert A. Gray
City Administrator

Port Orford Chamber of Commerce

POST OFFICE BOX 637 • PORT ORFORD, OREGON 97465
Most Westerly Incorporated City In The Contiguous U.S.A.



8-12-88

Terry S. Connolly
Brookings-Harbor Chamber of Commerce
P.O. Box 940
Brookings, Oregon 97415

Dear Terry:

The Board of Directors of the Port Orford Chamber of Commerce has voted unanimously to support the resolution in regard to the quotas on salmon, drafted by the City of Brookings and as presented in the copy you sent to me.

Please keep us informed on further developments.

Sincerely,

Willie O'Dell
President, Port Orford Chamber of Commerce

RESOLUTION NO. 1988 - 57

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF
CRESCENT CITY URGING THE ASSURANCE OF ECONOMIC
STABILITY AND THE PROMOTION OF THE GENERAL HEALTH
AND WELFARE OF THE PEOPLE AND OF THE KLAMATH RIVER
CHINOOK SALMON POPULATIONS

WHEREAS, the economic stability of Pacific coastal communities and states is inextricably linked to successful fishing; and

WHEREAS, the perpetuation of Klamath River chinook salmon stocks is necessary to secure the future of the salmon fishing industry in northern California and southern Oregon; and

WHEREAS, the propagation of Klamath River salmon requires a necessary escapement of spawning fish; and

WHEREAS, the determination of numbers necessary for escapement, harvest and natural mortality must derive from accurate analyses of ocean fish populations; and .

WHEREAS, dissension has been created and is being perpetuated between states and among fishing classes, deriving from the imprecise and incorrect population inventories used by state and federal management agencies.

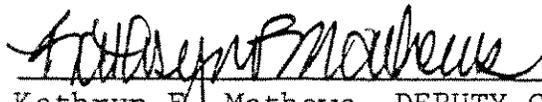
NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Crescent City that the governments of the states of California, Oregon, Washington, the Klamath Indian Tribe, California and Oregon congressional delegates, and the government of the United States are hereby petitioned to require a more precise accounting of actual numbers of spawning fish populations as the basis for quota apportionment.

BE IT FURTHER RESOLVED that a flexible and responsive method of adjusting fish harvests to actual populations be applied to seasons and limits during the fishing seasons, to the end of assuring economic stability and promoting the general health and welfare of the people and of the Klamath River chinook salmon populations.

PASSED AND ADOPTED by the City Council of the City of
Crescent City on this 6th day of September, 1988, by the following
vote:

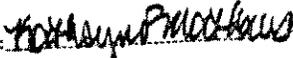
AYES: Cain, Chase, Mann, Scavuzzo, Seligman
NOES: None
ABSTAIN: None
ABSENT: None

ATTEST:



Kathryn F. Mathews, DEPUTY CITY CLERK

THIS INSTRUMENT IS A CORRECT COPY
OF THE ORIGINAL ON FILE IN THE
CITY CLERK'S OFFICE.

BY:  DEPUTY

DATE: September 19, 1988