MEMORANDUM

TO: Council, AP, and SSC Members

FROM: Clarence G. Pautzke
Executive Director

DATE: January 14, 1993

SUBJECT: Rockfish Rebuilding

ACTION REQUIRED

a) Determine target biomass to serve as a rebuilding goal.
b) Determine alternative harvest rates to be analyzed.

BACKGROUND

In December, the Council requested that the Plan Team develop options available to rebuild depleted rockfish stocks, particularly Pacific ocean perch (POP). Alternatives to be considered should achieve various target levels of biomass of all rockfish species within a specified time frame. The Council recommended that biological, sociological, and economic consequences of various alternatives be considered. In addition, Objective 6 of the GOA FMP states: "rebuilding stocks to commercial or historical levels will be undertaken only if benefits to the United States can be predicted after evaluating the associated costs and benefits and the impacts on related fisheries."

Four steps in the rebuilding process have been outlined for the Council in the attached document (D-4(a)(1). The steps are: (1) Define species for rebuilding; (2) Define rebuilding goals; (3) Define and evaluate alternatives; and (4) Evaluate sociological and economic consequences. Unfortunately, data on historical catches are limited for species other than POP, thus limiting the rebuilding objective to POP at this time. The suggested target biomass level is B35%, which is 35% of the female spawning biomass of an unfished stock. The Council will need to determine the time frame for rebuilding and an acceptable level of uncertainty and risk after evaluating the associated costs, benefits, and impacts on related fisheries. For the B35% target, the suggested alternative harvest strategies to be compared are the following:

Alternative 1. Harvest POP as bycatch only.

Alternative 2. Harvest POP at the natural mortality rate, adjusted by each year's level of spawning biomass.

Alternative 3: Harvest POP at the F35% level, adjusted by each year's level of spawning biomass.

Alternative 4. Harvest POP at the constant F35% level.

D-4(a)(2) summarizes Council action on rebuilding rockfish in the Gulf of Alaska. D-4(a)(3) contains stock projections for POP.

Options for Rebuilding Rockfish Stocks in the Gulf of Alaska

The following four steps need consideration in developing a rebuilding program.

1) Define species for rebuilding. Given that POP has been identified as a candidate for a rebuilding program the first step in this process is to determine which other rockfish species are candidates for rebuilding. Current abundance levels relative to historical levels need to be determined to decide which other species need rebuilding. Unfortunately, construction of models that enable evaluation of current stock levels relative to historical levels may not be possible because data on historical catches (prior to 1980) are limited for most species other than POP. For POP, current female spawning biomass (68,000 mt) is estimated to be only 20% of the historical unfished level in 1960 (338,000 mt). To the extent possible, analysis of available survey and fishery data may help identify the other species that need rebuilding.

2) Define goals. The second step in this process is to determine the goals of a rebuilding program. Ideally, this goal should define a target biomass, a time frame, and the level of uncertainty and risk that is acceptable. For example, a goal may be that POP spawning biomass be rebuilt to B35% in 25 years with a 50% probability. Several alternatives may be considered for defining a target biomass level. A spawning biomass that is in the range of 20-60% of the unfished level has been shown to produce 75% of maximum sustainable yield for a typical demersal fish stock (Clark 1991). In Heifetz et al (1992) a target biomass level within this range (i.e. B35%) was used to evaluate stock projections. For an average demersal fish species, B35% provides sufficient spawning biomass to sustain yields near MSY (Clark 1991). Depending on growth, maturity, and recruitment schedules, a higher or lower level of spawning biomass may serve as rebuilding target. In future analyses, the target biomass will be refined based on biological parameters specific to POP in the Gulf of Alaska. Whereas a target level may be defined based on biological analysis, definition of a time frame and an acceptable level of uncertainty and risk is a decision that will need to be made by the Council after evaluating the associated costs and benefits and impacts on related fisheries.

3) Define and evaluate alternatives. The third step is to evaluate harvest strategies to rebuild the spawning biomass of POP to a target level. For the B35% target, a preliminary analysis was presented at the December meeting (Heifetz et al. 1992). This analysis was presented only as an example of biological modeling and used one of many possible stock-recruitment relationships. The alternative harvest strategies compared were:

> Alternative 1. Harvest POP as bycatch only, which corresponds to an exploitation rate of 0.023. Under this alternative, achieving the B35% level with a 50% probability will occur in 13 years.
>
> Alternative 2. Harvest POP at the natural mortality rate, adjusted by each year's level of spawning biomass. Under this alternative, achieving the B35% level with a 50% probability will occur in 21 years.
>
> Alternative 3. Harvest POP at the F35% level, adjusted by each year's level of spawning biomass. Under this alternative, achieving the B35% level with a 50% probability will occur in 27 years.
>
> Alternative 4. Harvest POP at the constant F35% level. Under this alternative, achieving

the B35% level with a 50% probability will not occur for at least 30 years, and there is a relatively high risk of spawning biomass falling below 65,000 mt.

This type of analysis will be repeated for a range of possible recruitment models. In addition, depending on the goals defined in step (2), the most desirable alternative may lie somewhere between the above alternatives. For example, if the goal is to reach B35% in 25 years, there may be a particular exploitation rate that achieves this goal with an acceptable level of risk and uncertainty.

4) Sociological and economic consequences. Rebuilding a fish stock which has been depleted over time may involve reducing the fishing mortality on that species, including directed fishing for that species and/or fishing for other species, with which the species of concern is incidentally caught. Management objectives for reducing the amount of allowable catch available in the short term might be to allow a larger catch of the depleted species at some later time, or to provide some other ecological benefit, which might or might not accrue directly to the fishing industry. In either case, current and near-future benefits associated with harvesting fishery resources are traded for more-distant future benefits associated with a larger stock size. In this context, it is important to assess whether the future benefits of attempting to rebuild a stock exceed the costs, measured in terms of foregone current benefits from continuing the present management of the fishery.

Ideally, analysis of this type would evaluate changes in the net benefits -- for example, profits within the fishing and processing sectors -- generated by the rebuilding schedule of allowable harvests. Such an analysis would include the effects of effort displaced from fisheries where allowable harvest is reduced in order to rebuild the depleted stock(s). However, a thorough analysis of this type requires considerable information, such as operational costs for various fisheries and levels of stock abundance, and also assumptions regarding the redistribution of displaced fishing effort. As a first step towards incorporating economic information into the assessment of rebuilding alternatives, it is suggested that the ex-vessel revenue generated by the projections of yields over time be used as a representation of economic benefit. In this analysis, appropriate size-dependent prices and alternative discount rates, for calculating the present value of revenue, would be used to evaluate the likelihood of positive economic prospects for stock rebuilding under various recruitment scenarios and agency strategies for managing the resources in the future. In recognition of the simplifying nature of this 'gross revenue' approach, potential sources and direction of bias in the estimates would be identified, to the extent possible.

Literature Cited

Clark, W.G. 1991. Groundfish exploitation rates based on life history parameters. Can. J. Fish. Aquat. Sci. 48:734-750.

Heifetz, J., J.T. Fujioka, and J.N. Ianelli. 1992. Stock projections of Pacific ocean perch in the Gulf of Alaska based on different harvest strategies (unpublished report available from the North Pacific Fishery Management Council, P.O. Box 103136, Anchorage AK 99510).

Brief History of Council Action on Rebuilding Rockfish in the Gulf of Alaska

Pacific Ocean Perch (POP) and other rockfish in the Gulf of Alaska were fished up by foreign trawl vessels prior to the inception of the Magnuson Fishery Conservation and Management Act. Landings declined from 344,700 mt in 1965 to 8,176 mt in 1978. Japanese trawl CPUE for POP also declined drastically during this period. CPUE in the Southeastern and Yakatat Districts of the Eastern Regulatory Area declined from 4.16 mt/hr and 6.22 mt/hr in 1968 to only 1.50 mt/hr and 0.53 mt/hr in 1978, respectively (Rigby 1981).

In 1982, the Council reduced the POP ABC in the Eastern Regulatory Area from 29,000 mt to 875 mt, and let OY = ABC in an effort to rebuild POP stocks. This action was included in Amendment 10. In 1985, under Amendment 14, the POP OY's were reduced in the Western Regulatory Area (from 2,700 to 1,302 mt) and Central Regulatory Area (from 7,900 to 3,906 mt). Amendment 14 also reduced the OY for Other Rockfish from 7,600 mt to 5,000 mt. In 1986, the Council again reduced the total Gulf OY for the POP complex to only 3,702 mt as the data indicated that the stocks remained depressed.

After 1986, the Council made no specific recommendations regarding rockfish rebuilding. However, in the following years, many changes occurred that affected rockfish management; the fisheries became fully Americanized, the POP and rockfish complexes were regrouped, and management strategies were changed. In 1987, the Total Quota (TQ) for POP in the Eastern Regulatory Area was increased to 2,000 mt, as it was felt that this amount was needed to support domestic industry.

In 1988, changes to the plan greatly affected rockfish management. Amendment 15 established a single OY range for the Gulf of Alaska, which allowed the Council to change individual TAC's without a Plan amendment. Three categories of rockfish species were established: Slope, Pelagic Shelf, and Demersal Shelf rockfish. ABC's for rockfish categories were set as the sum of the ABC's of individual species comprising each category, and Rockfish TAC's were set to ABC levels for the first time. Based on these changes in management, along with updated survey data, the Council increased the TAC for the POP complex (Slope rockfish) to 16,800 mt in 1988. The TAC for Slope rockfish was again increased in 1989 to 20,000 mt. In 1992, TAC for the three Slope rockfish groups (POP, Shortraker/Rougheye, and Other Slope rockfish) totaled 21,750 mt, of which 5,730 mt was POP.

At the December 1992 meeting, the Council requested that a rebuilding plan for rockfish be developed. To initiate rebuilding, the Council set TAC's for three Slope rockfish groups below the ABC levels. For example, the 1993 TAC for POP is 2,560 mt, which is significantly less than the 5,560 mt ABC. The 1993 TAC's for all Slope Rockfish groups, including Northern Rockfish, total 15,467 mt.

DRAFT

Stock Projections of Pacific Ocean Perch in the Gulf of Alaska Based on Different Harvest Strategies

By

Jonathan Heifetz, Jeffrey T. Fujioka
National Marine Fisheries Service
Alaska Fisheries Science Center
Auke Bay Laboratory
11305 Glacier Highway
Juneau, AK 99801

and

James N. Ianelli
National Marine Fisheries Service
Resource Ecology and Fisheries Management
Alaska Fisheries Science Center
7600 Sand Point Way
Seattle, WA 98115

November 1992

Introduction

In this analysis we use a simple Monte Carlo simulation with a stochastic stock-recruitment relationship to project stock size and yield for Pacific ocean perch in the Gulf of Alaska. Different harvest strategies are compared to evaluate their effectiveness in rebuilding the depleted stock to a desirable level. While no strategy can guarantee that the stock will rebuild to a desirable level within a specified time interval, this analysis should help managers make an informed decision on whether to establish a stock rebuilding program, the time frame for rebuilding, and the expected yields and risks for each strategy. Similar analyses have been used to provide management advice for overfished stocks in the northwest Atlantic ocean (Overholtz et al. 1986; Rosenberg and Brault 1990).

Balsiger et al. (1985) investigated rebuilding rates, long term yields, and economic consequences of applying different fishing rate strategies to Pacific ocean perch in the Gulf of Alaska. Their study was based on virtual population analysis and stock reduction analysis. Based on different assumed stock-recruitment relationships, they concluded that fishing mortality rates of less than 0.02 are needed for adequate rebuilding of Pacific ocean perch stocks. We update this analysis by using results of an age-structured model (stock synthesis) and a non-parametrically derived stock recruitment relationship.

Methods

The fishery selectivity pattern, biological parameters of growth, natural mortality and maturity, and the 1986 age specific stock structure from Heifetz and Ianelli's (1992) stock synthesis model 2 are used to project the population into the future. 1986 represents the last year where year class strength can be adequately estimated. Projections from 1987-1992 include observed catch for this time period. For projections starting in 1993, four different harvest strategies are compared.

The first strategy is the currently recommended F35% strategy adjusted by a reference level. In this case, given the current spawning biomass Bc, the spawning biomass corresponding to 35% of the unfished level B35%, F35% for the fully selected age group, natural mortality M, selectivity at age s(a), maturity at age m(a), numbers at age N(a), and weight at age W(a), the catch biomass Y in a given year is

$$Y = \frac{Bc}{B35\%} \sum_{age=1}^{nages} W(a)\,C(a) \quad for\ Bc < B35\% \quad (1)$$

$$Y = \sum_{age=1}^{nages} W(a)\,C(a) \quad for\ Bc \geq B35\% \quad (2)$$

$$where, \quad C(a) = N(a)\,\frac{Fs(a)}{Fs(a)+M}\,(1-\exp(-Fs(a)-M)) \quad (3)$$

This first strategy is a variable rate fishing strategy that adapts to information on current abundance and provides increased caution when the stock is at low levels.

The second strategy is a constant F35% strategy (ie equation 2 for all spawning biomass levels). The third strategy is a constant harvest rate, defined as catch biomass divided by exploitable biomass. The harvest rate is set equal to M (0.05) and adjusted by a reference level when Bc is less than B35%. This third strategy is similar to the strategy that has been used in past to determine ABC. In the fourth strategy, F is set equal to the level that results from classification of Pacific ocean perch into a bycatch only fishery. A bycatch only fishery would result in a catch of approximately 2,000 mt in 1993 (personal communication, J. Gharrett, NMFS Regional Office). This catch equates with a fully selected F of 0.023.

Incoming recruitment is determined by the fixed interval method of Evans and Rice (1988). This method does not assume any functional form to the stock-recruitment relationship but instead relies on past observations of stock size and resulting recruitment. The spawning stock axis is divided into a chosen number of intervals each containing nearly the same number of past observations. We then assume that only past observations of recruitment in a spawning stock interval are possible, and they are all equally probable. For our application, estimates of spawning stock size and recruitment from the stock synthesis model are used as the "observations". We have 34 observations of stock size and recruitment that are divided into three intervals (Figure 1). The current spawning stock biomass is 68000 mt and is in the first interval. A spawning stock biomass of 85000 mt is needed to enter the second interval where there is an increase in the probabilty of a strong year class.

Given that Pacific ocean perch are long lived and slow growing, rebuilding will obviously require a long time. However, short term results may be useful for management. Time horizons of 1 to 30 years are used to represent a range of short to long term horizons. Two hundred replications of each harvest strategy were performed.

To evaluate the effects of different harvest policies we compared yields, the probability that the mature female biomass reaches the B35% level, and the probability that mature female biomass goes below 65000 mt. Probabilities were computed from the proportion of the 200 replicates that fell within a specific category.

Mature female biomass is an index of reproductive value. The measure of maturity at age m(a) is obviously an important life history characteristic in this computation. We converted data on length at 50% maturity and full maturity from Chikuni (1975) to age at maturity using the von Bertallanfy age-length relationship. M(a) values shown in Figure 2.

Leaman (1991) reports variability in m(a) for Pacific ocean perch values in relation to exploitation history and location. Thus, other m(a) values may prove more appropriate in the future. In addition, other reproductive value indices have been considered by Leaman (1991) that incorporate fecundity at age, generation time, and other life history characteristics. For our analysis, we only considered mature female biomass.

Results and Discussion

As expected, results from this study indicate that fishing mortality and recruitment are important in determining the future of this stock. For most of the strategies, substantial recovery can only occur if the spawning stock enters interval 2 where the probabilty of getting strong year classes is increased.

Figure 3 shows the distribution of female spawning biomass for the 200 replications over 5, 10, 15, and 30 year time horizons. There were only slight increases in stock size for the constant F35% policy. For the other strategies, not until 10-15 years are substantial increases in stock size seen. At 30 years there was substantial overlap in the projected biomass for the F35% adjusted, 5% adjusted, and bycatch strategies.

The probability that the stock will reach the desired B35% level was greatest for the bycatch strategy followed by the 5% adjusted strategy and the F35% adjusted strategy, which performed similarly (Fig. 4). For the constant F35% strategy, there was little chance ($P < 0.2$ at 30 years) of stock reaching B35% primarily because catches cause the stock to remain in the first interval where there is a low probability of a strong year class. Only for the constant F35% strategy was there a substantial chance that the stock would decline to less than 65000 mt (P=0.35 by 20 years; Fig. 5).

For all strategies, annual catches increased over time (Fig. 6).

After 15 years, the F35% adjusted and 5% adjusted performed similarly surpassing the other strategies. For these two strategies, slight losses in short term yields, compared to a constant F35% strategy, are later recouped by increases in the stock size. The bycatch strategy, as expected, had the lowest yields. This result may be somewhat misleading because once the stock has been rebuilt to a desirable level it will probably be reclassified into a directed fishery with higher fishing mortality rates.

As with any simulation study, there are several caveats which are important in interpreting results (also see Rosenberg and Brault 1991). We modeled recruitment based on past observations and assumed that once the spawning stock reaches 85000 mt the probability of strong year classes greatly increases. This assumption may result in an optimistic picture of the rebuilding program. In addition, recruitment was the only source of uncertainty associated with our analysis. All the other information on the stock was assumed to be known without error.

Obvious from the results, is that reductions in harvest rates with the bycatch strategy will rebuild the spawning stock biomass more quickly at the expense of short term yields. An assumption of the bycatch strategy is that the catch of Pacific ocean perch will only increase as the stock increases. The bycatch of Pacific ocean perch was based on results of the 1992 fishery. Changes in fishing patterns can have an impact in the amount of bycatch. For example, a substantial portion of the TAC of other slope rockfish and flatfish was not taken in 1992. If these species become more desirable, the bycatch of Pacific ocean perch will probably increase. Thus the rate of stock increase with the bycatch strategy may be over optimistic.

In summary, these results may provide the basis for determining the most appropriate time frame and harvest strategy for a rebuilding program. In making a decision on a harvest strategy, it is important to examine several measures of stock rebuilding as well as impacts on other fisheries. We have presented results for yields and the degree of stock rebuilding for different strategies. Similar to Balsiger et al (1985), future analyses may want to consider economic consequences and effects on other fisheries.

Literature Cited

Balsiger et al. (1985) Biological and economic assessment of Pacific ocean perch (*Sebastes alutus*) in waters of Alaska. NOAA Tech. Memo. NMFS F/NWC-72.

Evans, G.T. and Rice, J.C. 1988. Predicting recruitment from stock size without the mediation of a functional relation. J. Cons. int. Explor. Mer, 44:111-122.

Chikuni S. 1975. Biological study on the population of Pacific ocean perch in the North Pacific. Far Seas Fish. Res. Lab., Shimizu, Japan. Bull. 12: 1-119.

Leaman, B.M. 1991. Reproductive styles and life history variables relative to exploitation of *Sebastes* stocks. Env. Biol. Fish. 30:253-271.

Mayo, R.K. 1987. Recent exploitation patterns and future stock rebuilding strategies for acadian redfish, *Sebastes fascitus* Storer, in the Gulf of Maine-Georges Bank region of the Northwest Atlantic. Proc. Int. Rockfish Symp.

Overholtz, W.J., Sissenwine, M.P., and Clark, S.H. 1986. Recruitment variability and its implication for managing and rebuilding the Georges Bank haddock (*Melanogrammus aeglefinus*) stock. Can. J. Fish. Aquat. Sci. 43:748-753.

Rosenberg, A.A. and Brault, S. 1991 Stock rebuilding strategies over different time scales. NAFO Sci. Coun. Studies. 16: 171-181.

Figures

Figure 1. Estimated stock and recruitment from the stock synthesis model.

Figure 2. Maturity at age estimated from Chikuni's (1975) length maturity data.

Figure 3. Distribution of female spawning biomass for the 200 replications over 5, 10, and 30 year time horizons.

Figure 4. Probability that the mature female biomass will be greater than the B35% level for four different harvest strategies.

Figure 5. Probability that the mature female biomass will be less than 65000 mt for four different harvest strategies.

Figure 6. Yields for the four harvest strategies.

Fig 1

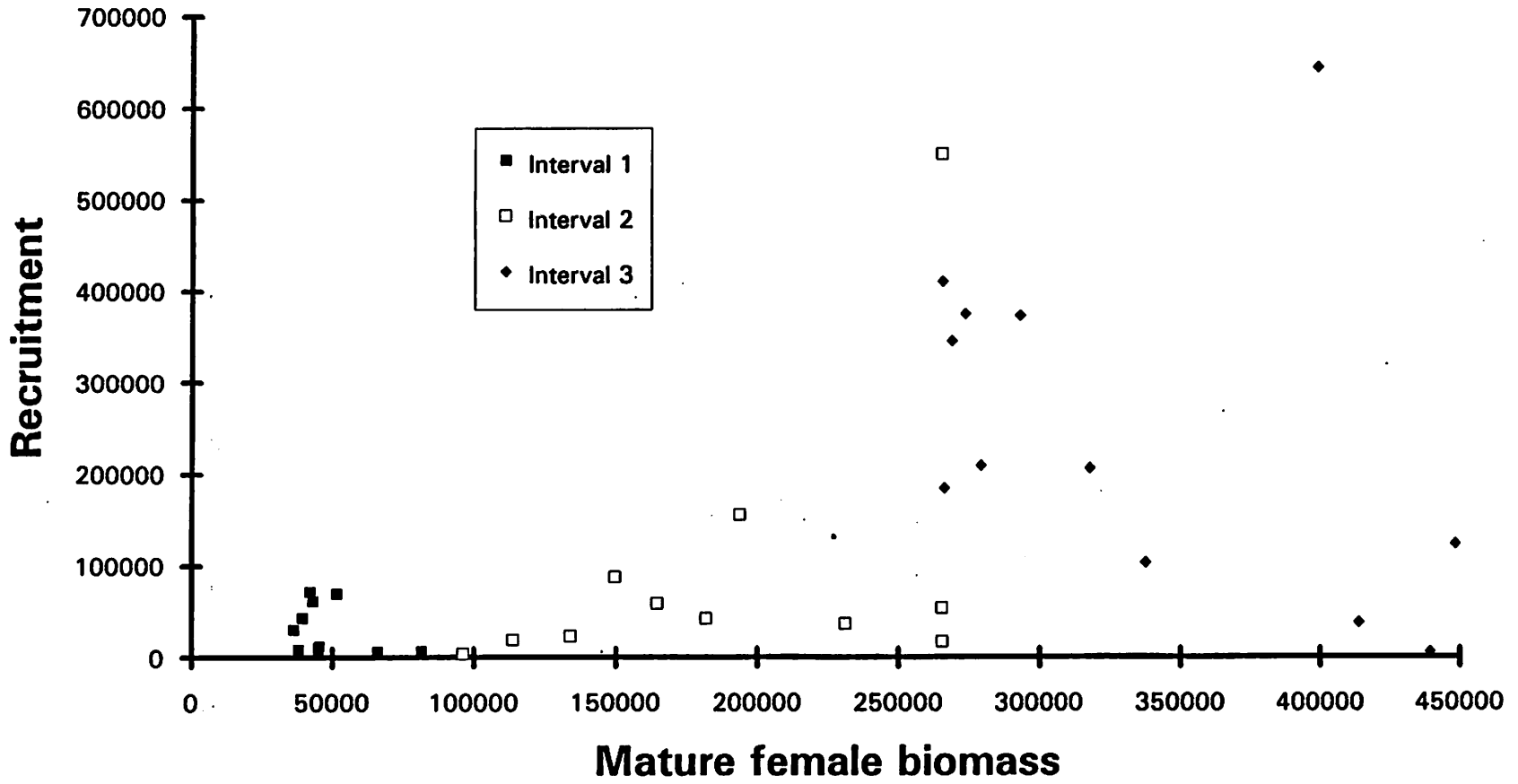

700000
600000
500000
400000
300000
200000
100000
0
Recruitment
Interval 1
Interval 2
Interval 3
0
50000
100000
150000
200000
250000
300000
350000
400000
450000
Mature female biomass

Fig 2

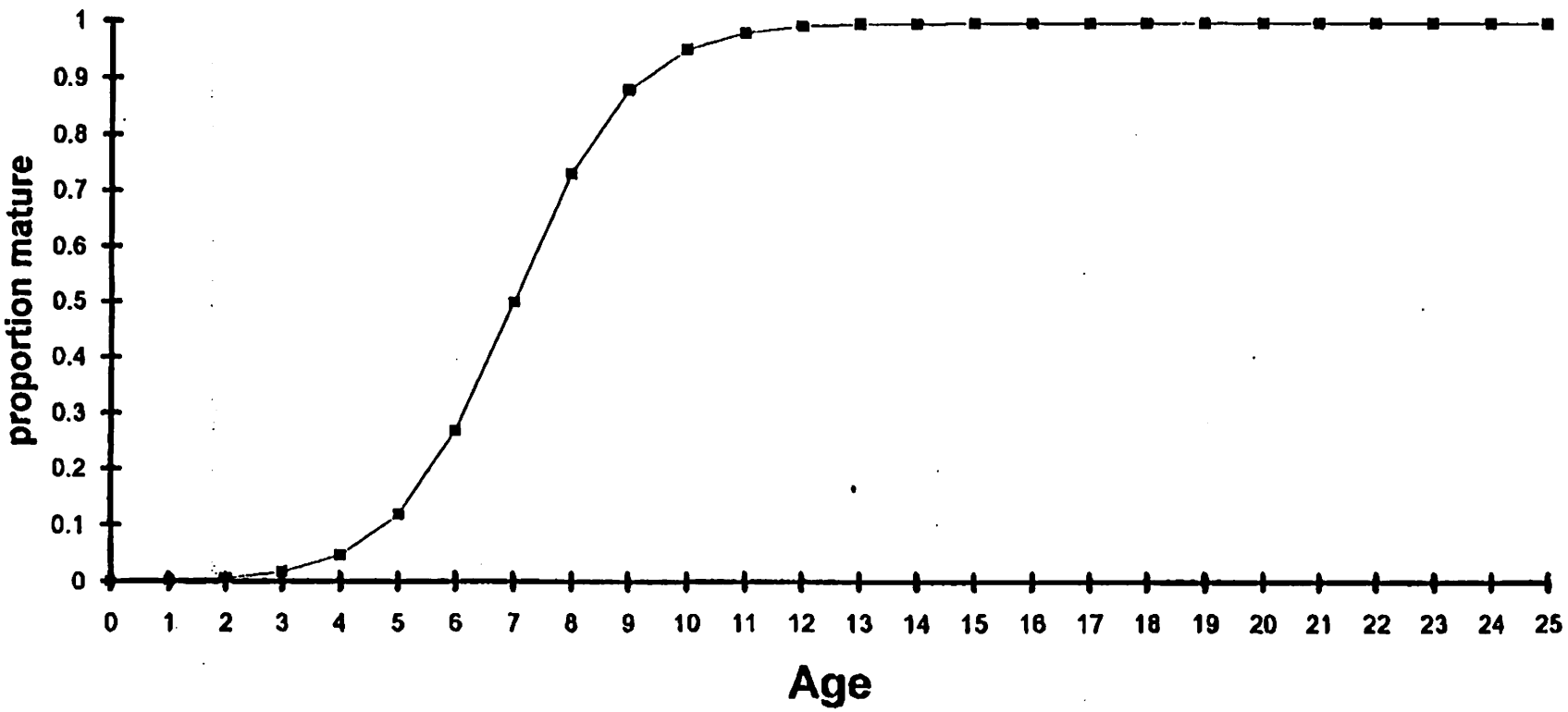
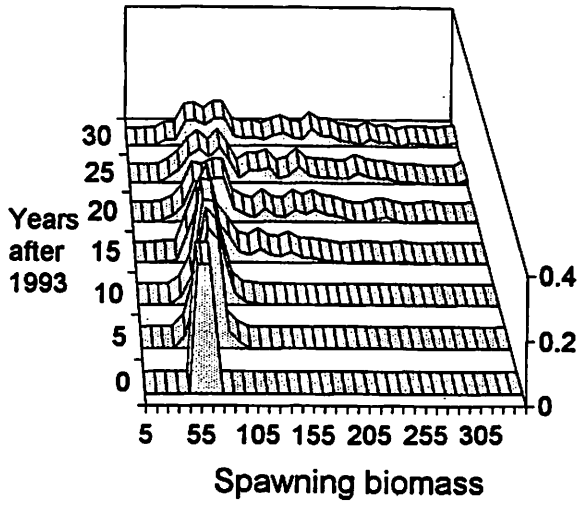
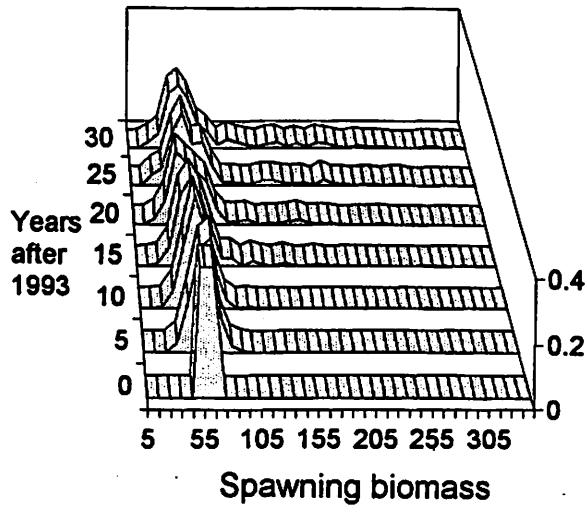


Fig 3

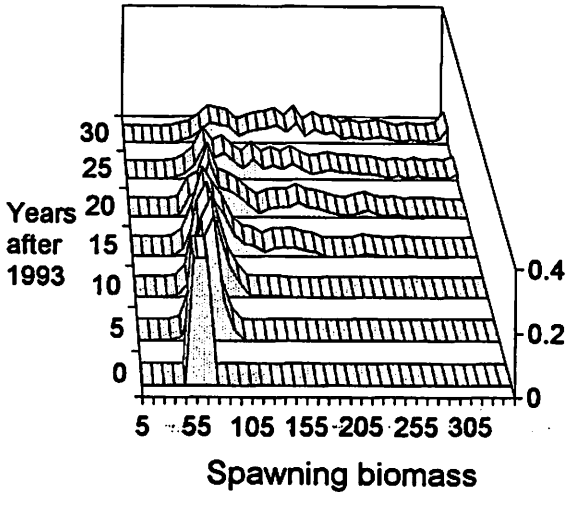
F35% Adjusted



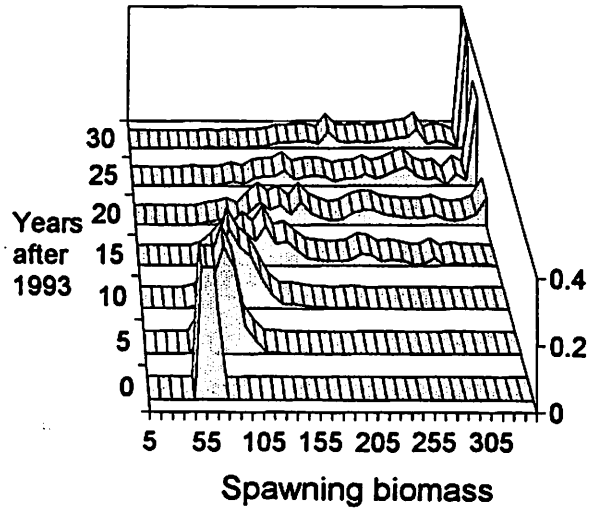
F35%



5% Harvest rate adjusted



Bycatch



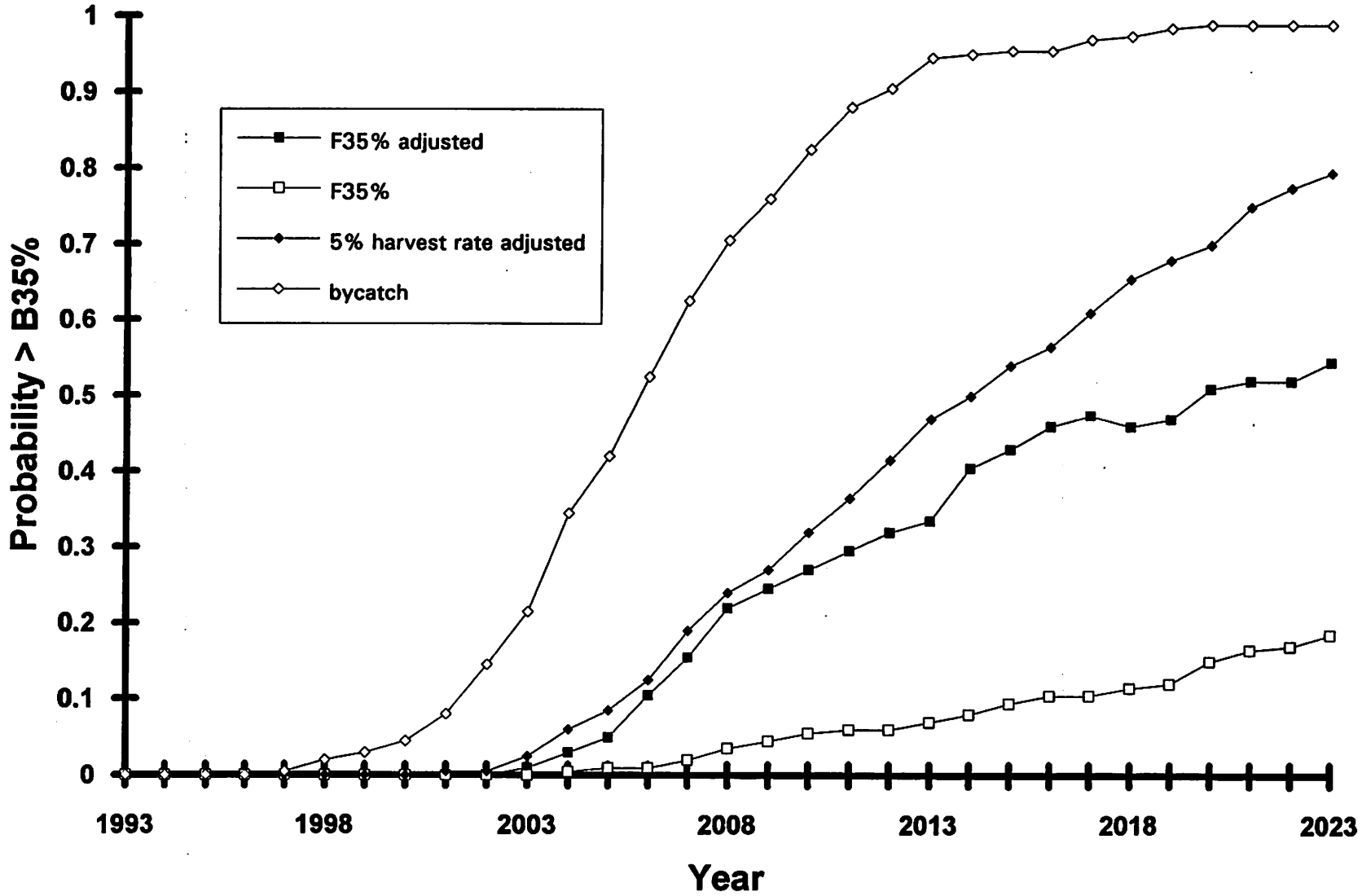


Figure 4. Probability that mature female biomass will be greater than the b35% level for four different harvest strategies.

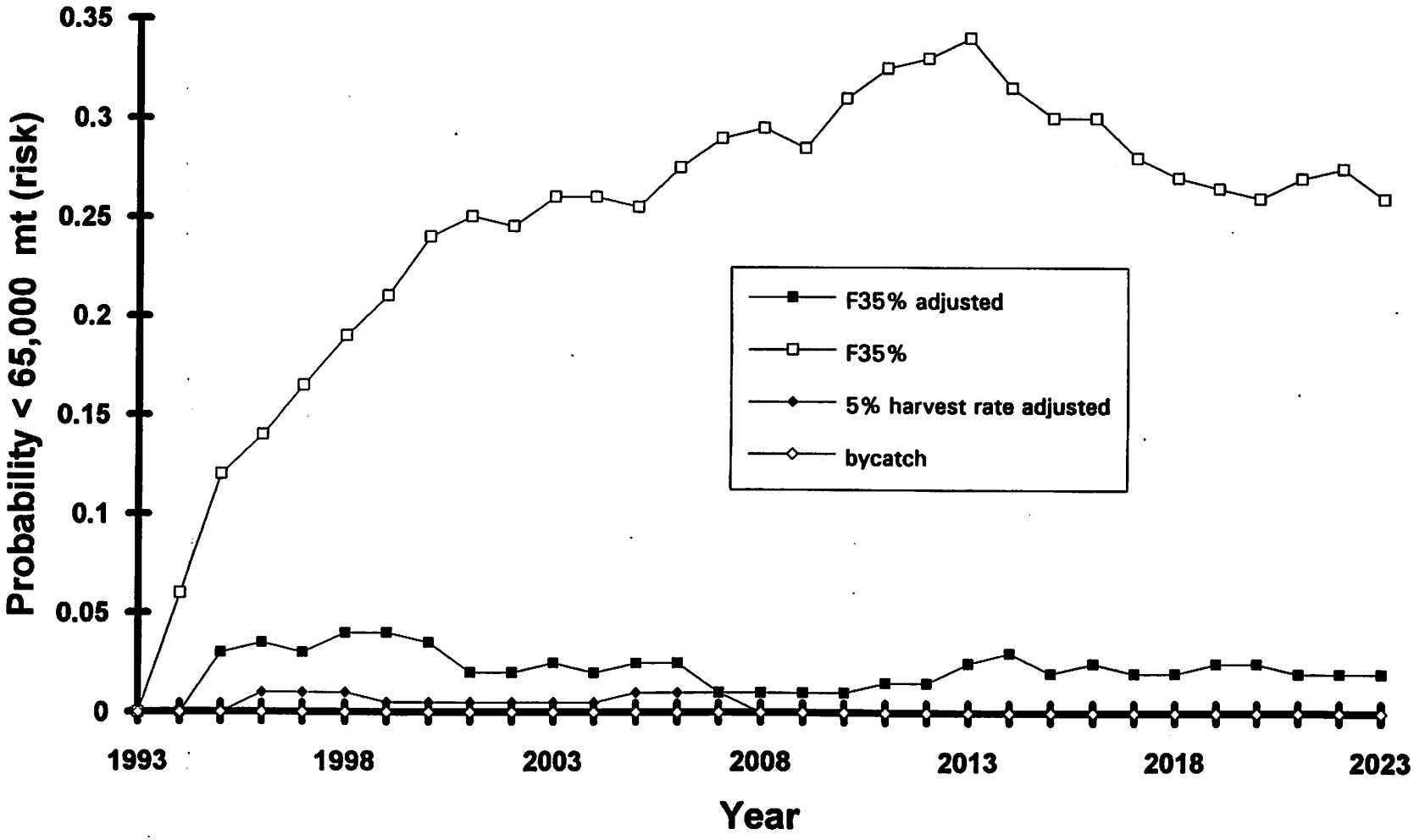


Figure 5. Probability that the mature female biomass will be less than 65,000 mt for four different harvest strategies.

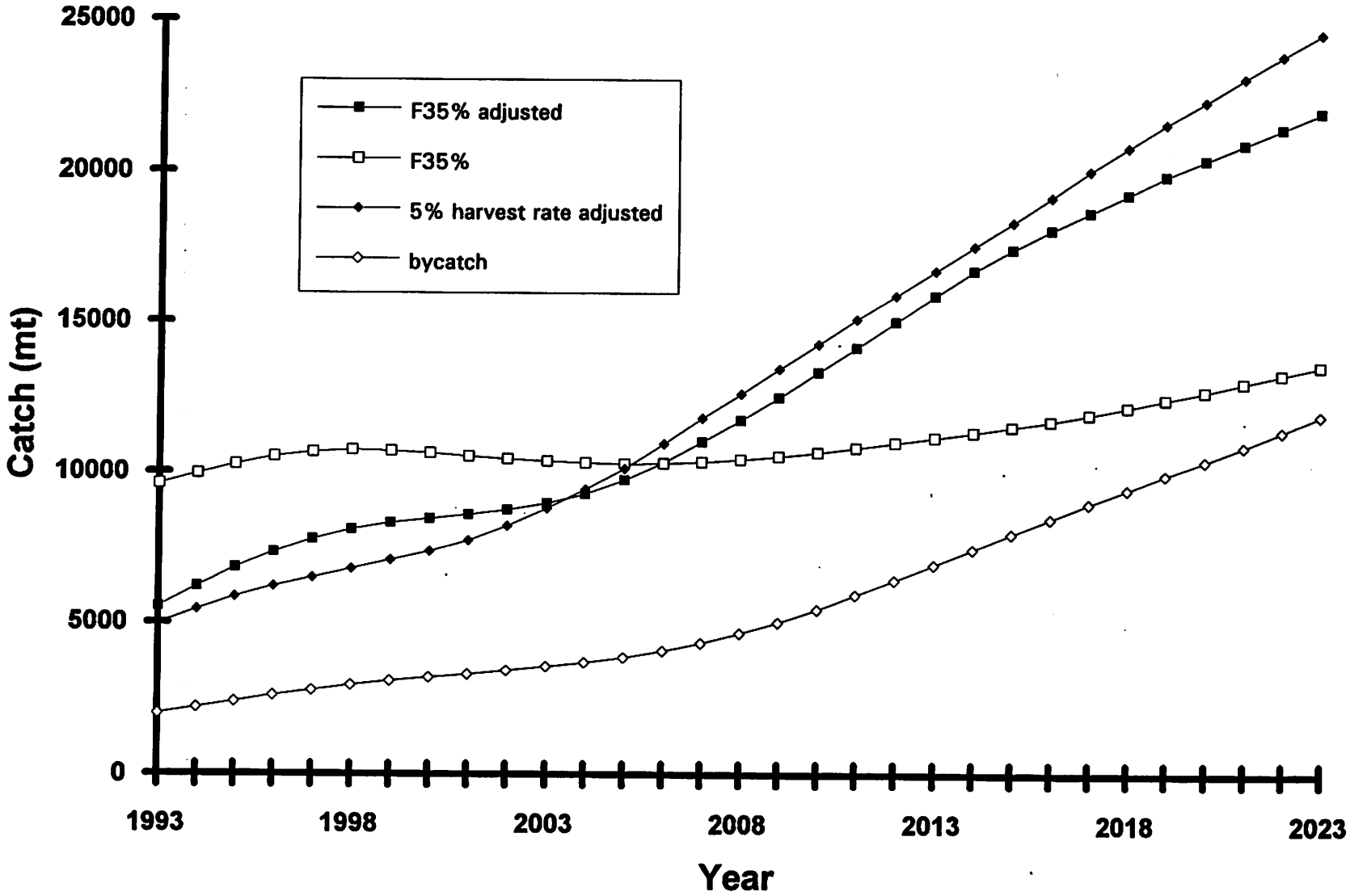


Figure 6. Yields for the four harvest strategies.

January 15, 1993
NMFS Alaska Region

Discussion on Directed Fishing Standards for Trawl Gear in the Pacific Ocean Perch Fishery in the Gulf of Alaska

Background

Regulations implementing the Fishery Management Plans (FMP) for Groundfish of the Gulf of Alaska (GOA) and the Groundfish Fishery of the Bering Sea and Aleutian Islands (BSAI) at 50 CFR Parts 672 and 675, respectively, provide the basis for management of groundfish resources in the EEZ off Alaska. The regulations define directed fishing for groundfish species and species groups by establishing the minimum amounts of groundfish retained on board harvester vessels (during specified time periods) that constitute directed fishing (§ 672.20(g) and § 675.20(g), respectively).

Groundfish regulations provide that the status of the fishery for a particular species group may be "open", during which any amount of the species group may be retained; "closed to directed fishing", ("bycatch only"), during which amounts retainable are limited under directed fishing standards; or "prohibited", during which no amount of the species group may be retained. Regulations allow that the Regional Director of the National Marine Fisheries Service (NMFS) may establish an amount of the total allowable catch (TAC) for a species group that will be available for harvest in a directed fishery, the balance of that specified TAC is available for accrual of incidental bycatches in anticipated groundfish fisheries during the rest of the fishing year. When the catch of a species group reaches the specified TAC, the Secretary of Commerce (Secretary) must require that the species group be prohibited, and all further catch returned to the sea regardless of condition.

The primary purposes of directed fishing standards are: (1) to prevent additional targeting on a species group for which harvest has approached the TAC, (2) reduce waste by allowing limited retention of that species group caught incidentally during fishing operations targeting on other types of groundfish, and (3) to provide a benefit to harvesters by allowing such limited retention.

Council Action on GOA Rockfish

In the GOA, rockfishes of the genera Sebastes and Sebastolobus, particularly the Pacific Ocean perch (POP) are currently sought

after primarily by the offshore factory trawl fleet. To a lesser degree, harvesters using hook-and-line and jig gear participate, mainly in nearshore fisheries (demersal shelf rockfish; shortraker/rougheye rockfish (SR/RE); and pelagic shelf rockfish, either by targeting, or through bycatch in other groundfish or non-groundfish fisheries.

At its December, 1992 meeting, the North Pacific Fisheries Management Council (NPFMC) expressed concern about the depressed status of POP biomass relative to pre-exploitation levels, uncertainties about stock survey methodologies and current biomass estimates, high historical exploitation rates, and potential susceptibility of rockfishes to overexploitation due to their unique biology and life history (low fecundity, poor recruitment, high longevity, etc.). As a means to immediately reduce catches of POP in GOA groundfish fisheries, the Council recommended a 1993 TAC for POP of 2,560 metric tons (mt), about half the acceptable biological catch (ABC) of 5,560 mt or the TAC for 1992 (5,200 mt). Discussion indicated that this was intended to reduce catches of POP while not limiting remaining trawl fisheries for other groundfish species.

Bycatch of POP in GOA Trawl Fisheries

NMFS staff had earlier reported to the Council estimates of the bycatch of POP that could be expected to occur in GOA trawl fisheries in 1993 under different bycatch and groundfish harvest scenarios (NMFS 1992). These estimates were calculated from NMFS Weekly Processor Reports (WPR) of: (1) amounts of groundfish retained by trawlers in 1992 or increased amounts expected to occur, and (2) bycatch rates of POP in trawl fisheries calculated while POP was either in "bycatch only" status (subject to current directed fishing standards), or was not retainable ("neutral" bycatch rates). The WPR bycatch rates of POP were calculated for each groundfish target, but are based on 1992 groundfish retained catches and data pooled across regulatory areas and vessels that may have different fishing practices and market demands. Data indicate, however, that when POP was not retainable, the incidence of catch of POP was substantially lower than current directed fishing standards allow for. Further, when POP was "bycatch only", amounts of POP reported in the same target fisheries tended to increase, an indication of covert targeting or "topping off" that can occur when directed fishing standards are liberal and a species of high value is in short supply and closed to directed fishing.

The NMFS estimate of the amount of POP that would be unavoidable bycatch in GOA trawl fisheries was based on retained catches for 1992 with some increase allowance for expanded flatfish and rockfish fisheries and on "neutral" bycatch rates observed in 1992. This amount was 2,043 mt, within the TAC recommended by the Council for POP. The same amounts of retained groundfish could, under the most extreme conditions of each trawler "topping off" to current directed fishing standards, result in a total

bycatch of POP in excess of the TAC. In reality, "topping off" behavior is restricted because retention of POP when in bycatch status is relative to a percent of other groundfish retained during a "trip" which ends at least each fishing week. In any case, on attainment of TAC, POP would become prohibited and the fleet would continue to accrue POP bycatch but at the lower, "neutral" rates. After TAC is reached, the additional accrual would be discarded. Since POP brought to the surface are considered to be dead, this additional discard would be lost both to the population, and to commercial interests.

Conclusions

The NMFS analysis indicates that some current directed fishing standards for POP may be too liberal and may be contributing to lack of predictability in management and harvests in excess of those desired in recent years. "Topping off" is to a large extent limited by regulations defining a "trip". Establishing bycatch rates at levels that reflect unavoidable bycatch would result in an increased distinction between fisheries that are "open" and those in "bycatch only" status, and help decrease the possibility of TAC overruns during a fishing year.

A comparison of bycatch rates of POP in GOA trawl fisheries is presented in table 1. Although estimates, these data could provide the basis for selecting appropriate bycatch rates for POP in 1993. NMFS observer data for 1991 is currently available, although examination of those data is incomplete.

References

National Marine Fisheries Service (NMFS). 1992. Estimated Bycatch of Pacific Ocean Perch (POP) and Shortraker/Rougheye Rockfishes (SR/RE) in 1993 Gulf of Alaska (GOA) Trawl Fisheries. Staff report presented to the North Pacific Fisheries Management Council, December 1992. NMFS Alaska Region, Juneau Alaska. December 7, 1992.

Table 1. Comparison of Bycatch Rates of Pacific Ocean Perch (POP) in 1992 Groundfish Fisheries of the Gulf of Alaska (GOA), for Trawl Gear. Values are in metric tons (mt) of total POP bycatch per mt of retained target groundfish species. Targets are based on the species group of maximum retained tons in each NMFS Weekly Production Report (WPR). Calculated rates apply to data pooled across regulatory areas and processors reporting trawl catch for the entire GOA. Data are in alphabetical order by target. A "-" indicates that no WPR were assigned to that target.

Target	POP Rate[1] 1	POP Rate 2	POP Rate 3
Arrowtooth Flounder	0.05	-	0.00
Deep water flatfish	0.15	0.05	0.05 —
Demersal shelf rockfish	0.15	-	-
Flathead sole	0.15	0.00	0.00
Other (slope) rockfish	0.15	0.26	0.07 —
Other species[2]	0.05	0.01	0.00
Pacific cod	0.05	0.00	0.00
Pelagic shelf rockfish	0.15	0.14	0.23 — small sample size
Pollock	0.05	0.00	0.00
Sablefish	0.15	0.00	0.00
Shallow water flatfish	0.15	0.00	0.00
Shortraker/ rougheye rockfish	0.15	0.37	0.03 —
Thornyhead rockfish	0.15	-	0.00

Recommend 7% directed fishing std.

Footnotes:

[1] POP Rate 1 = the bycatch rate of POP for trawl gear in the GOA under current directed fishing standards at 50 CFR § 672.20(g).
POP Rate 2 = the bycatch rate of POP for trawl gear in the GOA calculated from NMFS 1992 Weekly Production Reports during times when POP was closed to directed fishing and in "bycatch" status.
POP Rate 3 = the bycatch rate of POP for trawl gear in the GOA calculated from NMFS 1992 Weekly Production Reports during times when POP was not retainable, the "neutral" or "unavoidable" bycatch rates.

[2] Data are based on Atka mackerel target.

MEMORANDUM

TO: Council, AP, and SSC Members

FROM: Clarence G. Pautzke
Executive Director

DATE: January 14, 1993

SUBJECT: Groundfish Issues

ACTION REQUIRED

(b) Review Terra Marine request for an experimental fishing permit.

BACKGROUND

In September 1992, the Council reviewed a draft request for an experimental fishing permit from Terra Marine Research and Education. The Council outlined some concerns they had with the proposal and provided feedback to the proposers so that they could finalize their application to the Regional Director. If granted, the permit would allow for a limited pilot study to retain PSC species for distribution to need persons through a network established by Terra Marine.

At the December Meeting, the permit was still under review by NMFS, which needs to be completed before Council review and recommendation. Terra Marine has been in contact with NMFS, and Item D-4(b)(1) is a letter from NMFS AKR initiating consultation with the Council on this permit request. The complete application will be made available to you at the meeting.

The Council can consider the application, receive public testimony on this request, and make a recommendation to NMFS as to whether an experimental permit should be granted.

UNITED STATES DEPARTMENT
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

January 12, 1993

Clarence G. Pautzke
Executive Director
North Pacific Fishery Management Council
P.O. Box 103136
Anchorage, Alaska 99501

Dear Clarence,

We have received an application for an experimental fishing permit from Terra Marine Research and Education, Inc (TMRE). If awarded, this permit would authorize an experiment in which salmon and halibut caught as bycatch in directed groundfish fisheries conducted in the Bering Sea and Aleutian Islands area would be processed, delivered, and distributed via food banks without charge to disadvantaged individuals. Issuance of experimental fishing permits is authorized by the Fishery Management Plan (FMP) for Groundfish of the Gulf of Alaska and its implementing regulations at 50 CFR § 672.6.

These regulations require the Regional Director, in consultation with the Alaska Fisheries Science Center (AFSC), to review each application for an experimental fishing permit, and to make a preliminary determination whether the application contains all the information necessary to determine if the proposal constitutes a valid fishing experiment appropriate for further consideration.

We have consulted with the AFSC. We have determined that the proposal warrants further consideration, although we may need certain additional information to make the application sufficiently complete. Nonetheless, I am initiating consultation with the North Pacific Fishery Management Council (Council) by forwarding the application to you as required by regulations. You should notify the applicant of a meeting, e.g. the January 1993 meeting, at which the Council will consider the application and invite the applicant to appear in support of the application if the applicant desires.

We are publishing a notice of receipt of the application in the Federal Register with a brief description of the proposal. Attached is a copy of the TMRE application. Also attached is a copy of regulations governing the issuance of experimental fishing permits for your information.

Sincerely,

Steven Pennoyer,
Director, Alaska Region

Attachments

National Marine Fisheries Service
Alaska Region
Juneau, Alaska

REGULATIONS GOVERNING EXPERIMENTAL FISHING PERMITS

GULF OF ALASKA

§ 672.6 Experimental fisheries.

(a) General. For limited experimental purposes, the Regional Director may authorize, after consulting with the Council, fishing for groundfish in a manner that would otherwise be prohibited. No experimental fishing may be conducted unless authorized by an experimental fishing permit issued by the Regional Director to the participating vessel owner in accordance with the criteria and procedures specified in this section. Experimental fishing permits will be issued without charge and will expire at the end of a calendar year unless otherwise provided for under paragraph (e) of this section.

(b) Application. An applicant for an experimental fishing permit shall submit to the Regional Director, at least 60 days before the desired effective date of the experimental fishing permit, a written application including, but not limited to, the following information:

(1) The date of the application;

(2) The applicant's name, mailing address, and telephone number;

(3) A statement of the purpose and goal of the experiment for which an experimental fishing permit is needed, including a general description of the arrangements for disposition of all species harvested under the experimental fishing permit;

(4) Technical details about the experiment, including:

(i) Amounts of each species to be harvested that are necessary to conduct the experiment, and arrangement for disposition of all species taken;

(ii) Area and timing of the experiment;

(iii) Vessel and gear to be used;

(iv) Experimental design (e.g., sampling procedures, the data and samples to be collected, and analysis of the data and samples); and

(v) Provision for public release of all obtained information, and submission of interim and final reports;

(5) The willingness of the applicant to carry observers, if required by the Regional Director, and a description of accommodations and work space for the observer(s);

(6) Details for all coordinating parties engaged in the experiment and signatures of all representatives of all principal parties;

(7) Information about each vessel to be covered by the experimental fishing permit, including:

(i) Vessel name;
(ii) Name, address, and telephone number of owner and master;
(iii) U.S. Coast Guard documentation, State license, or registration number;
(iv) Home port;
(v) Length of vessel;
(vi) Net tonnage;
(vii) Gross tonnage;
(8) The signature of the applicant; and
(9) The Regional Director may request from an applicant additional information necessary to make the determinations required under this section. Any application that does not include all necessary information will be considered incomplete. An incomplete application will not be considered to be complete until the necessary information is provided in writing. An applicant for an experimental fishing permit need not be the owner or operator of the vessel(s) for which the experimental fishing permit is requested.

(c) Review procedures. (1) The Regional Director, in consultation with the Alaska Fishery Science Center, will review each application and will make a preliminary determination whether the application contains all the information necessary to determine if the proposal constitutes a valid fishing experiment appropriate for further consideration. If the Regional Director finds any application does not warrant further consideration, the applicant will be notified in writing of the reasons for the decision.
(2) If the Regional Director determines any application is complete and warrants further consideration, he will initiate consultation with the Council by forwarding the application to the Council. The Council's Executive Director shall notify the applicant of a meeting at which the Council will consider the application and invite the applicant to appear in support of the application if the applicant desires. If the Regional Director initiates consultation with the Council, the Secretary will publish a notice of receipt of the application in the Federal Register with a brief description of the proposal.

(d) Notifying the applicant. (1) The decision of the Regional Director, after consulting with the Council, to grant or deny an experimental fishing permit is the final action of the agency. The Regional Director shall notify the applicant in writing of the decision to grant or deny the experimental fishing permit and, if denied, the reasons for the denial, including:
(i) The applicant has failed to disclose material information required, or has made false statements as to any material fact, in connection with the application;
(ii) According to the best scientific information available, the harvest to be conducted under the permit would detrimentally affect living marine resources, including marine mammals and birds, and their habitat in a significant way;

(iii) Activities to be conducted under the experimental fishing permit would be inconsistent with the intent of this section or the management objectives of the FMP;

(iv) The applicant has failed to demonstrate a valid justification for the permit;

(v) The activity proposed under the experimental fishing permit could create a significant enforcement problem;

(vi) The applicant failed to make available to the public information that had been obtained under a previously issued experimental fishing permit; or

(vii) The proposed activity had economic allocation as its sole purpose.

(2) In the event a permit is denied on the basis of incomplete information or design flaws, the applicant will be provided an opportunity to resubmit the application, unless a permit is denied because experimental fishing would detrimentally affect marine resources, be inconsistent with the management objectives of the FMP, create significant enforcement problems, or have economic allocation as its sole purpose.

(e) Terms and conditions. The Regional Director may attach terms and conditions to the experimental fishing permit that are consistent with the purpose of the experiment, including but not limited to:

(1) The maximum amount of each species that can be harvested and landed during the term of the experimental fishing permit, including trip limitations, where appropriate;

(2) The number, sizes, names, and identification numbers of the vessels authorized to conduct fishing activities under the experimental fishing permit;

(3) The time(s) and place(s) where experimental fishing may be conducted;

(4) The type, size, and amount of gear that may be used by each vessel operated under the experimental fishing permit;

(5) The condition that observers be carried aboard vessels operated under an experimental fishing permit;

(6) Reasonable data reporting requirements (OMB Approval No. 0648-0206);

(7) Such other conditions as may be necessary to assure compliance with the purposes of the experimental fishing permit and consistency with the FMP objectives; and

(8) Provisions for public release of data obtained under the experimental fishing permit.

(f) Effectiveness. Unless otherwise specified in the experimental fishing permit or a superseding notice or regulation, an experimental fishing permit is effective for no longer than 1 calendar year, but may be revoked, suspended, or modified during the calendar year. Experimental fishing permits may be renewed following the application procedures in paragraph (b) of this section.

BERING SEA AND ALEUTIAN ISLANDS AREA

§ 675.6 Experimental fisheries.

Issuance of experimental fishing permits issued under this section is governed by provisions set forth in § 672.6(a) through (g).

AGENDA D-4(b)
JANUARY 1993
Supplemental

ARCTIC ICE

ARCTIC ALASKA FISHERIES CORPORATION

Mr. Steven Pennoyer
Regional Director
Alaska Region
NOAA/NMFS
P.O. Box 21668
Juneau, Alaska 99802 - 1668

RE: Terra Marine's Application for Experimental Fishing Permit

Dear Mr. Pennoyer,

The purpose of this letter is to express our support for the experimental fishing permit being requested by Terra Marine. Solutions to the problem of waste are long overdue and this proposed project is a step in the right direction. It could lead to a sensible alternative to the mandatory discard of dead prohibited bycatch.

If fishermen are forced to retain and process prohibited bycatch without compensation, then it becomes a greater cost to them than just discarding it overboard. This will serve as a disincentive to excessive bycatch.

Due to its limited scope of 30 metric tons each of halibut and salmon, Terra Marine's proposed study imparts minimal risk to the resource. We view this as an opportunity to reduce bycatch of halibut and salmon rather than a request for any special allocation from one gear group to another. It is for this reason that the IPHC should amend the Halibut Act to allow for experimental retention of trawl caught halibut. If given the opportunity, Terra Marine's proposed experiment could help pave the way for reduced bycatch, reduced waste and would help to feed hungry people with limited means. There is little to lose by granting this request and there is an enormous amount to gain.

Thank you for your consideration in this matter,

Sincerely,

David Benson

Capt. David Benson
Asst. Dir. Govt. Affairs
Arctic Alaska Fisheries Corp. / Tyson Seafoods Group

cc: Dr. William Fox, Jr.
Richard Lauber
Donald A. McCaughran

Fishermen's Center, Fishermen's Terminal
P.O. Box 79021 Seattle WA 98119
Phone: (206) 282-3445 Telex 559783

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

AGENDA D-4(b)
JANUARY 1993
Supplemental

January 12, 1993

Clarence G. Pautzke
Executive Director
North Pacific Fishery Management Council
P.O. Box 103136
Anchorage, Alaska 99501

FAX CONFIRMATION
Sent____ Rec'd 1/12

Dear Clarence,

We have received an application for an experimental fishing permit from Terra Marine Research and Education, Inc (TMRE). If awarded, this permit would authorize an experiment in which salmon and halibut caught as bycatch in directed groundfish fisheries conducted in the Bering Sea and Aleutian Islands area would be processed, delivered, and distributed via food banks without charge to disadvantaged individuals. Issuance of experimental fishing permits is authorized by the Fishery Management Plan (FMP) for Groundfish of the Gulf of Alaska and its implementing regulations at 50 CFR § 672.6.

These regulations require the Regional Director, in consultation with the Alaska Fisheries Science Center (AFSC), to review each application for an experimental fishing permit, and to make a preliminary determination whether the application contains all the information necessary to determine if the proposal constitutes a valid fishing experiment appropriate for further consideration.

We have consulted with the AFSC. We have determined that the proposal warrants further consideration, although we may need certain additional information to make the application sufficiently complete. Nonetheless, I am initiating consultation with the North Pacific Fishery Management Council (Council) by forwarding the application to you as required by regulations. You should notify the applicant of a meeting, e.g. the January 1993 meeting, at which the Council will consider the application and invite the applicant to appear in support of the application if the applicant desires.

We are publishing a notice of receipt of the application in the Federal Register with a brief description of the proposal. Attached is a copy of the TMRE application. Also attached is a copy of regulations governing the issuance of experimental fishing permits for your information.

Sincerely,

Steven Pennoyer,
Director, Alaska Region

Attachments

NOTE: ONLY THE UPDATED APPLICATION AND LETTERS FROM PARTICIPANTS HAVE BEEN COPIED; OTHER MATERIAL REMAINS UNCHANGED FROM THE MATERIAL DISTRIBUTED IN DECEMBER.

APPLICATION CONTENTS

TERRA MARINE RESEARCH & EDUCATION

7052 New Brooklyn Rd.
Bainbridge Island, WA 98110
(206) 842-3609 Phone & Fax

Northwest Chapter

INTRODUCTION

This application represents the hopes of a broad coalition of fishing industry and fisheries management constituents who have recognized the need to explore and develop means to improve resource utilization and reduce waste. This experiment is unique in that it has united individuals from all sides of the fisheries political spectrum in a common purpose, in some cases at significant expense to themselves or their companies. This purpose is to lay the groundwork for a durable change in management policy which would allow presently discarded prohibited species bycatch, a public resource, to serve the needs of the disadvantaged in our society in a way that would enhance other resource protection measures.

Whether voluntary or mandatory, a permanent program would undoubtedly be at the expense of the companies and individuals that catch and process the fish. This confers an implicit disincentive on any long or short term PSC retention program. Terra Marine Research and Education has simply been a catalyst for those who have felt the need for a more rational approach to the PSC waste problem. Those individuals and companies who have chosen to participate in this experiment do so out of a willingness to share the wealth of the fisheries rather than throw it away. This represents a spirit of cooperation that extends from the company presidents all the way to the processors on the line who depend on a crew share for their livelihood. None of them will see anything for their efforts other than the satisfaction of contributing to a sound solution for a troubling fisheries management dilemma.

The substance of this proposal has also been corroborated by the efforts of many individuals at National Marine Fisheries Service, International Pacific Halibut Commission, NMFS Observer Program, and North Pacific Fishery Management Council who have answered questions, faxed and mailed information, participated in meetings, and generally shown interest and concern for the progress of our endeavor. These individuals have not necessarily endorsed our plan but they have contributed greatly to its design for which Terra Marine wishes to express deep gratitude.

This application is an appeal to those who are responsible for the management of the fisheries, on behalf of the public to whom they belong. It is an appeal that we be allowed to begin the process of rational utilization of discard. It is an appeal from those who have taken it upon themselves to feed the hungry and are horrified at the millions of pounds of fish that are thrown away, by law, each year. This experiment will attempt to undo many of the speculative questions surrounding the enforceability of PSC retention and distribution and provide information upon which to base future management decisions.

Finally, at the request of members of the Advisory Panel and of the North Pacific Fishery Management Council, this experiment will provide an opportunity for a much needed salmon biological sampling project under the direction of the Fisheries Research Institute, University of Washington.

TERRA MARINE RESEARCH & EDUCATION

7052 New Brooklyn Rd.
Bainbridge Island, WA 98110
(206) 842-3609 Phone & Fax

Northwest Chapter

APPLICATION TO EXPERIMENTALLY RETAIN SALMON AND HALIBUT PROHIBITED SPECIES BYCATCH IN THE BERING SEA AND ALEUTIAN ISLANDS

APPLICATION DATE: NOVEMBER 19, 1992
REVISED APPLICATION DATE: January 7, 1993

APPLICANT:

TERRA MARINE RESEARCH AND EDUCATION, NORTHWEST CHAPTER
7052 NEW BROOKLYN RD.
BAINBRIDGE ISLAND, WA 98110
PHONE AND FAX 206 842-3609

EXPERIMENTAL PURPOSE AND GOALS

The purpose of the experiment is to develop and test a plan, consistent with the intent of all existing fisheries regulations, with the Observer Plan, and with present enforcement procedures, which would enable prohibited species bycatch (PSC) to be diverted into the nonprofit food distribution network of the United States in a manner that would effectively reduce such bycatch.

The goals of the experiment are to lay the groundwork for a bycatch reduction effort that would also reduce the tremendous waste resulting from the present practice of discarding dead prohibited species bycatch. Further, in association with scientists from the Fisheries Research Institute, University of Washington, the experiment will provide an opportunity to perform a salmonid biological sampling project. The intent of this project is to collect scale samples which will be used to determine species composition, age composition, and stock of origin of salmonids in the trawl bycatch. See attached description.

The experiment is designed to measure the costs and effort associated with either voluntary or mandatory retention and to test enforcement and distribution procedures which would assure compliance with existing fisheries regulations. It will measure the enforcement effort required to manage a retention program, as well as the costs associated with value added processing, shipping, storage, and delivery to qualified end users. The experiment will also assess the logistical difficulties of retention, including those involving determination of fish condition, handling, and verification. The product distributer will be Second Harvest. The end users will be needy Americans who are sustained by the availability of food, free of charge, from the nation's foodbanks. See attached description of product delivery guidelines and examples of all transfer documents.

AMOUNT OF SPECIES TO BE RETAINED

Prohibited Species Bycatch

The amount of prohibited species species to be retained will depend on the actual bycatch rates of the participating vessels. The experimental design calls for the use of a representative from each of the three major processing modes (Catcher/Processor, Mothership, and Shoreplant). Each one will retain and process, for a narrowly defined period of time, all of the dead halibut and salmon prohibited species bycatch which is delivered to their facility, by either their own trawl operations or their catcher boats, up to a MAXIMUM OF 30 METRIC TONS OF HALIBUT AND 30 METRIC TONS OF SALMON FOR ALL THREE PROCESSING COMPONENTS COMBINED.

Target Species

Prior to the start of fishing the applicant will provide the Regional Director with an estimate of the total amount of target species to be processed by each participating component. Target species will be pollock. If the experiment continues in the winter/spring fishery, 1994, target species will include cod. The applicant is unable to determine exact start and stop dates for each component before receiving notice of the necessary regulatory changes which would enable this experimental fishery to proceed in compliance with the Halibut Act. Without knowing the specific dates and duration of the participants' involvement the amount of target species to be processed by each component cannot be accurately estimated but should remain unaffected by this experiment and estimates will be based on past years performance.

Non-Prohibited Species

Prior to the start of fishing the applicant will provide the Regional Director with an estimate of the total amount of non-prohibited species bycatch to be harvested by each participating component and the prospective disposition of each type.

ARRANGEMENT AND DISPOSITION OF ALL SPECIES HARVESTED UNDER THE EXPERIMENTAL FISHING PERMIT

I. Harvesting and Processing

Prohibited Species

a. All prohibited species retained will be processed according to the attached document specifying the processing and freezing criteria for Salmon and Halibut.

b. All retained prohibited species will be packaged or tagged with the name TERRA MARINE and the words, "PROHIBITED SPECIES BYCATCH-NOT FOR SALE", as well as color coded to minimize confusion between commercial product and PSC. All packages will be marked with the date, name of the processing facility, the contents, and the package weight.

c. The applicant requests from NMFS, for the purposes of this experiment, the use of a product code to be used in all Daily Fishing Logs and Cumulative Production Logbooks which will be defined as Prohibited Species Bycatch - Experimentally Retained". This will enable accurate and timely documentation of all experimentally retained species in a manner entirely consistent with present reporting procedures. It will provide a ready means by which quantities and disposition of all experimentally retained PSC can be verified.

Target Species

All target species will be processed in the customary manner for the participating processors. Pollock will be processed to produce surimi, fillets, and mince, and fishmeal.

II. Distribution

Prohibited Species

a. All PSC product will be delivered by Terra Marine Research and Education to Second Harvest for distribution to foodbanks. Foodbanks are nonprofit centers for the dispensation of food, free of charge, to the needy. Second Harvest is a charitable organization supplying food to 182 foodbanks nationwide. See attached description of Second Harvest.

b. Appropriate receipts and cargo manifests describing contents and weight will be maintained for all PSC product shipped from each processing facility. See attached samples.

c. Receipts from the product distributor, Second Harvest, will be kept on file available for inspection as well as distribution documents and all records of value added processing and subsequent distribution. See attached samples of Distribution Documents.

d. Reprocessing will be carried out, as required for handling and distribution, under the direction of Second Harvest. Detailed records of all reprocessed product, and the subsequent disposition of all reprocessed product, will be maintained and available for inspection.

Target Species

All target species will be distributed through the customary commercial distribution channels.

AREA AND TIMING OF THE EXPERIMENT

The area of the experiment will be the Bering Sea, Aleutian Island area. The exact timing of the experiment will be determined by the timing of the regulatory changes required to enable this experiment to comply with the Halibut Act. The timing will coincide with the "B" pollock season and with the 1993 CDQ fishery. Due to the limitations

imposed on this proposed experimental fishery by the unavoidable delay in finalizing the necessary regulatory changes, the applicant requests that the permit be granted for twelve consecutive months from the date of those changes instead of the customary calender year. The applicant will provide the Regional Director with an interim report by December 1, 1993; in time for the Regional Director to review the progress of the experiment and make his recommendations. If the amount of PSC requested for retention in this application has not been reached, the applicant, in consultation with the Regional Director, would like to extend the dates of participation into the 1994 "A" pollock season, CDQ fishery, and the winter trawl cod fishery in order to satisfy the requirements of this experiment as originally proposed.

VESSELS AND GEAR TO BE USED

See attached list of all participating vessels with complete vessel information. Gear type will be pelagic trawl in the pollock fishery and bottom trawl in the 1994 cod fishery if the permit is in effect in 1994.

EXPERIMENTAL DESIGN

The limited size and scope of this experiment render it unsuitable as a definitive measure of the effectiveness of retention as a disincentive to catching prohibited species. Instead, this experiment is designed to assess the feasibility of a broader retention program by determining the enforcement effort involved, evaluating means to verify legal compliance, and measuring the costs to the participants of the entire processing and storage effort. Retention without any commercial prospects appears to be a costly effort. It is inconvenient, it takes processors away from the commercial processing line, it requires frozen storage space, it requires both materials and labor for packaging, and it takes additional time for handling and documentation. These factors pose a potentially effective disincentive to catching PSC; possibly far greater than a fine. Whether as a voluntary or mandatory program it appears that retention of PSC for charitable purposes might deter fishermen from catching prohibited species were they to assume the burden of those expenses and were they to be compelled by the processing companies to limit the PSC catch. This experiment is designed to assess those factors.

The Retention and Distribution Experiment is designed to quantify effort in 3 areas.

1. The enforcement effort will be measured in hours per ton. A detailed log will be maintained at the point of sorting which will document the sorting time required by the observer, beyond the time requirements of their routine duties. The time required for any other scientific sampling done at the time of sorting will also be logged. In addition, the time required to adequately monitor offloading, handling, and processing of the PSC will be documented. Present observer logging procedures allow for the inclusion of the above information.

2. The processing effort will be measured in hours per ton. The processing facility will keep a detailed log to document the time required for heading, gutting, cleaning, packaging, quality control, and handling of the PSC. Strict quality assurance requirements will be maintained.

3. The delivery efort will be measured in two ways. First, the proportion of PSC determined to have reached qualified end users. Documentation will include end user distribution by processing date, weight, species, and processing facility. Details will include description of all value added processing (canning, vacuum wrapping, etc.) Strict quality control records will be maintained and made available for inspection. Drafts of all documents to be provided by Second Harvest. Second, Cost of delivery will be documented including all storage and handling costs, and packaging costs.

QUALITY ASSURANCE

Strict quality assurance guidelines have been defined (see attached document) and will be maintained and monitored in compliance with generally accepted health and quality standards for these products.

DATA ANALYSIS

The data will be analyzed to determine the following:

1. Cost effectiveness compared to commercially available product.

2. The overall success of delivery will be measured as a ratio of the amount of product processed to the amount received in good condition by qualified end users.

3. The enforcement effort will be analyzed to determine the time required, per ton of halibut and per ton of salmon, to effectively monitor an ongoing retention and distribution program. The enforcement criteria will be as follows:

a. That all retained PSC be traceable from the point of sorting to qualified end users, and that no interested party realize a profit from the experimentally retained species.

b. That strict quality control standards be maintained.

c. That exeprimental PSC retention in no way hinders existing enforcement operations.

4. The retention effort will be analyzed to determine whether a voluntary or mandatory PSC retention plan could be implemented, at the expense of the fishing vessel or processing facility, that would effectively reduce bycatch as well as greatly increase the utilization of this public resource. The following concerns will be considered:

a. The effort required, in hours per ton, to process and package both the salmon and halibut in a processing environment not normally suited to either of those processes.

b. The impact of frozen storage demands. Percentage of space required for retained PSC vs. commercial product and vs. unused space.

c. The overall impact on routine commercial fishing and processing operations. A subjective appraisal, based on continuity of PSC processing, managers' reports, observers' reports, logbook comments, etc., of the effects of PSC retention and processing on general operations including morale and willingness to participate.

THE SALMONID BIOLOGICAL SAMPLING PROJECT

In conjunction with the primary project, the Salmonid Biological Sampling project will be undertaken for the benefit of the Fisheries Research Institute (FRI), University of Washington School of Fisheries under the guidance of Kate Myers. Observers are already required to collect snouts from wire-tagged salmonids. FRI feels that the scale sampling would enhance that program by allowing a re-examination of the salmonids at the same time for the missing adipose fin which identifies the wire-tagged fish. A complete description of sampling procedures and samples to be collected is attached. Analysis of the data would be performed by FRI. A report on their findings will be made upon completion of the analysis.

This sampling project is consistent with existing observer duties and would not adversely affect their ability to carry out their present assignments.

RELEASE OF INFORMATION

All obtained information will be released in a final report to the Regional Director, NMFS Alaska Region no later than sixty days from the last day of experimental fishing. An interim report will be available upon request from the Regional Director regarding any aspect of the experiment, but in no case later than December 1, 1993.

OBSERVER COVERAGE

The experiment will have observer coverage to the full extent required by the laws regulating the vessels and target fisheries represented. The entire experiment will be carried out in consultation with the Observer Program, with the International Pacific Halibut Commission, and with the observer contractors representing each of the principal participants. Present observer recording procedures allow for complete documentation of observer participation in this experiment.

Observer Program form titled "Form 9US - Biological Sampling Form" will be used to document the entire salmonid biological sampling project. Form 3US, section titled, "Other calculations; comments" will be used to record the observer task effort.

ENFORCEMENT

All participants will comply with existing fisheries regulations. All records will be made available to NMFS Enforcement upon request. All PSC which are alive will be returned to the sea immediately. Condition of halibut, as defined by the International Pacific Halibut Commission will be recorded. At all times the PSC retained for the project will be verifiable and will be recorded in a manner consistent with present NMFS recording procedures. Please see GENERAL OPERATIONS below.

INTERNATIONAL PACIFIC HALIBUT COMMISSION (IPHC)

The following is a response to the memo received by Terra Marine from the IPHC staff:

The applicant has made every attempt to design an experiment which does not conflict with the mandate of the IPHC. The IPHC has certain concerns about our proposed study and we attempt to address these concerns.

Terra Marine appeals to the IPHC to consider the importance of this study as a means of evaluating a long-term bycatch disincentive policy, as well as its significance to the general public as a source of food for the poor. The entire experiment is designed to determine whether these goals can be accomplished without impacting halibut stocks, without overburdening enforcement efforts, and without any halibut PSC reaching the commercial market. The experiment itself should have no impact on halibut stocks.

The designation of dead halibut will be determined by IPHC guidelines. This experiment presently targets only the Bering Sea, Aleutian Islands winter-spring trawl fisheries where halibut mortality is highest. TMRE recognizes that a certain percentage of trawl caught halibut classified as dead actually survive and that an unknown percentage of halibut classified as viable actually die following the trauma of the codend and trawl deck. We feel that the significance of these unknowns is outweighed by their balancing force on one another and by the importance of improved utilization of the estimated 15 to 18 million pounds of dead halibut which are discarded in the Bering Sea, Aleutian Islands area.

There are two reasons a person might have a vested interest in misclassifying halibut condition aboard a vessel. The first, that they wish to avoid the effort of retention and processing and would therefore discard would not, in effect, be any different than the status quo at this time. The second, that they wish to keep live halibut as part of an illegal operation is no more likely than under present conditions. Any vessel found to have retained halibut without authorization would be violating the law and any vessel which has authorization must be able show the quantity and status of all retained halibut PSC; all in a verifiable manner. This experiment is designed to test whether or not these are reasonable expectations.

The concern for the potential for illegal marketing will be addressed with verifiable documentation from sorting to final delivery. See attached sample receipting documents.

TMRE shares the IPHC concern regarding requests to sell halibut to offset expenses. We agree that in order for a long-term or short-term program to succeed the halibut must not be sold under any circumstances, that it would be unmanageable, and that it would ultimately compromise the commercial sector.

THE COORDINATING PARTIES

Terra Marine Research and Education, a nonprofit corporation registered in the states of Alaska, Washington, and California is the applicant for this experimental fishing permit and will be the primary coordinator. Tuck Donnelly, a Director of Terra Marine Research and Education is project director.

Other coordinating parties include:
Owners of catcher vessels for Excellence (Supreme Alaska Seafoods)
- Frank Bohannon
- Supreme Alaska Seafoods, Inc.
- Horizon Trawlers, Inc.

Natural Resource Consultants, Steve Hughes: Project Advisors
Jim Harmon: Logistical support
Morningstar Fisheries, Jim Brennan: Science and Observer Plan Coordinator
Emerald Resource Management, Greg Small: QC Advisor
Food Lifeline: Funding support for product transportation

PRINCIPAL PARTIES

Terra Marine Resource and Education: Applicant
Owners of catcher vessels for UniSea: Participants
- Tynes Enterprises et al
- Aleutian Spray Fisheries
- Blue Boats Corp.
- Dutch Harbor Seafoods
- Venture Pacific Marine
- Ildhuso Fisheries
- Alyeska Ocean, Inc.
- Sea Dawn Fisheries
- Alsea Fisheries
- Rondys inc.

UniSea: Participant
Golden Age Fisheries: Participant
Supreme Alaska Seafood: Participant
Second Harvest: Product Distributor
NMFS Observer Program: Enforcement, scientific sampling
Fisheries Research Institute, UW: Salmonid Biological Sampling

Attached is a signed letter from representives of each principal party.

PROJECT ADVISORS

International Pacific Halibut Commission: Bob Trumble
NMFS Observer Program: Russ Nelson

PARTICIPATING VESSELS (See attached list)

The experimental design requires the participation of twenty two vessels. One of the vessels (Browns point) is a catcher processor and one of the vessels (Excellence) is a mothership processor. The remainder of the vessels are catcher vessels for either the shoreplant component (UniSea) or the mothership. As the catcher vessels for the shoreplant will be bringing fish aboard for delivery to the shoreplant, and in some cases sorting the fish aboard, they have been identified as principal participants in this application. The catcher vessels for the mothership will at no time bring fish aboard and have therefore been identified as coordinating participants. All fish will be transfered to the mothership in the codend. Supreme Alaska Seafoods anticipates using six catcher vessels for their mothership operation of which only four have yet been confirmed. As it does not materially alter any of the details of this application, Terra Marine requests that they be allowed to provide a final list of the catcher vessels for the mothership at a later date, but in no case later than two weeks prior to the start date of the proposed experimental fishery.

Because many of the crew rotations have not been decided at this early date, Terra Marine also requests that they be allowed to provide at a later date the list of the participating vessel captains, with their names, addresses, and phone numbers as required. In no case will this information be provided to NMFS less than two weeks prior to the start date of the proposed experimental fishery.

GENERAL OPERATIONS

1. Shoreside Component

The shoreplant will take deliveries of fish both from vessels which sort their catch before delivery and from vessels unable to sort at sea.

a. Vessels which sort at sea will separate both salmon and halibut PSC during their routine sorting operation. After all live PSC have been immediately thrown back into the sea and documented (following the traditional practice) the dead PSC will be stored, iced, in totes. The retained dead PSC will be counted and recorded in the Daily Fishing Logbook under PART I, "PSC NO." "SPECIES CODE" AND "PRODUCT CODE". The product code will be a code assigned to the experiment by NMFS to designate PSC experimentally retained. This procedure will enable any enforcement official to verify and account for PSC aboard the vessel.

At the dock the PSC will be weighed and documented in the SHORESIDE PROCESSOR DAILY CUMULATIVE PRODUCTION LOGBOOK in PART I-B and PART I-C,

using the species codes and the experimental product code. After recording, the observer will carry out the salmon scale sampling and the PSC will be processed, packaged, and frozen according to the criteria defined above. The finished product will be documented in the SHORESIDE DAILY CUMULATIVE PRODUCTION LOGBOOK, PART II using the respective species codes and the experimental product code.

Terra Marine will recieve the finished product at the plant and it will be stored in a freezer container to await shipping to Seattle or other port as requested by Second Harvest. The container will contain no commercial product in order to eliminate confusion between commercial and PSC product. Receipts, Bills of Lading, manifests etc. will be available for inspection at any time. Terra Marine will continue to use the NMFS species code and experimental product code on shipping documents until the product is received by Second Harvest or their representative foodbank.

b. Vessels which cannot sort at sea will offload the unsorted catch at the dock where the PSC will be sorted before being weighed and documented as described in (a), above. All subsequent procedures will then be the same.

2. Catcher/Processor Component

Catcher/Processors will sort the salmon and halibut PSC during their routine sorting operations, discarding and recording any viable fish in the traditional manner. All dead salmon and halibut will be counted and separated and logged in the Catcher/Processor Daily culmlative Production Log (DCPL) under "Discarded Species" using an appropriate species codes and an experimental product code to be defined as "Prohibited Species Bycatch - Experimentally Retained. Though it is in the Discarded Species section of the Log, it will be unambiguous for the purposes of this limited experiment because of the product coding. It allows for ready accountability.

The retained halibut and salmon will then be processed and packaged as described in the attached "Processing and Freezing Criteria for Halibut and Salmon". Finished product will then be logged in the DCPL under "Finished Product Information" using the appropriate species codes and the same experimental product code. This system will allow for an ongoing means of verifying the amount of product onboard.
Terra Marine will receive the finished product at the offload and provide a signed receipt, continuing to use the species codes and the experimental product code to eliminate confusion. Terra Marine will store the PSC product in a facility separate from commercial product to enable verification and eliminate confusion. The product will be shipped to Second Harvest or their designee and all Bills of Lading, manifests, receipts will be available for inspection upon request.

3. Mothership Component.

The general operations of the mothership component, as it pertains to this project, will be identical to the general operations of the catcher/processor component.

OPERATIONS AREA

Dutch Harbor, Alaska will be the central operations area and a representative of Terra Marine Research and Education will be in Dutch Harbor, as required, for the duration of the experiment. Terra Marine's registered address in Alaska is: Terra Marine Research and Education, Inc., c/o Sunmar Shipping, Unisea Mall, P.O. Box 594, Dutch Harbor, AK 99692.

ALYESKA OCEAN, INC.

Anacortes Marina Building • 2415 T Avenue
P.O. Box 190 • Anacortes, Washington 98221
Tel (206) 293-4677 Fax (206) 293-4241

November 12, 1992

Julie Cisco
Unisea Inc.
15400 Northeast 90th st.
Redmond, WA 98073-9719

Dear Julie,

I am writing to you on behalf of the fishing vessels Aurora and Auriga in regards to Terra Marine Research project. Both vessels would like to participate in this program, as described in Terra Marine Research and Education, Northwest Chapter application for permit to experimentally retain salmon and halibut in the bering sea and aleutian islands, application date: November 21, 1992.

We are currently using Frank Orth and Associates as our observer contractor for the Aurora and Auriga. Enclosed you will also find a copy of both vessels last application for Federal Fisheries permits. The Aurora's Federal Fisheries permit number is AK922888A. The Auriga's Federal Fisheries permit number is AK922889A.

If you need anymore information for this program don't hesitate to contact myself or one of the other captains of the vessels.

Regards,

Tod Hendricks
Captain F/V Aurora

VENTURE PACIFIC MARINE INC.

14313 143d S.E. RENTON, WA. 98059 OFFICE (206) 226-7830 FAX (206) 226-6222

UNISEA
STEVE STUBBE
P.O.BOX 97019
REDMOND, WA. 98073-9719

OCTOBER 20, 1992.

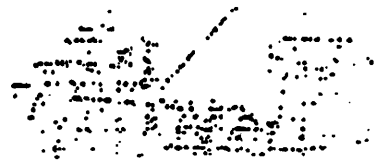
Venture Pacific Marine grants permission to TERRA MARINE RESEARCH AND EDUCATION to apply for the experimental permit for our vessel, The Pacific Monarch.

Sincerely,

Dan Stabbert
Venture Pacific Marine Inc.
President

FRED A. YECK, President
(503) 867-3911

F/V Seadawn Fisheries, Inc.
P.O. Box 352 • Newport, Oregon 97365
Fax (503) 867-3913



F/V Seadawn

11/14/92

to: Julie Cisco
VNISEA
Fax 206-882-1660

I received the info re the terra. Marine research program for retaining prohibited species. I consent to the SEADAWN being included as long as VNISEA supports the program.

Info re SEADAWN —
Length — 110 FT
O N — 548685
Fed permit No — AK 922059
AK F+G No — 00077
Gross tonnage — 199
Net tonnage — 133

I will be in Seattle the week of 11/16 however I will be in route most of Monday 11/16 - My cellular phone should be operational between 11:30 am to 2:30 pm — 503-270-2012 If you need more

UniSea

November 12, 1992

To: Steve Pennoyer
C/O Terra Marine

This letter confirms Unisea's role in the prohibited species by catch retention and charitable distribution experiment.

We are willing to process the prohibited species (Salmon and Halibut) free of any charges in cooperation with Terra Marine with the product being distributed through Second Harvest.

We are anxious to be a part of this innovative program that will help eliminate some of the waste of our resources.

Sincerely,

Steve Stubbe
Director of Fleet Services

SS/kc

UniSea, Inc.
Pouch 500, Dutch Harbor, Alaska 99692 (907) 581-1258 FAX (907) 581-7228

RONDYS, INC.
F/V Alsea, F/V Argosy,
F/V Progress, F/V Rondys,
F/V Sourdough,
Tenders Terminals &
188 King Crab

349 229th Ave. S.E.
Issaquah, WA 98027
206-392-6324
Fax 206-391-8105

ALASKA OFFICE
P.O. Box 37
Kodiak, Alaska 99615
907-486-3341
Fax 907-486-2740

OFFICE
S.W. Abbey St.
Newport, Oregon 97365

...er 16, 1992

Terra Marine Research & Education
Northwest Chapter
7052 New Brooklyn Rd
Bainbridge Isle, Wa 98110

To Whom It May Concern:

Alsea Fisheries, a partnership of T.A.G., Inc. and Rondys, Inc., hereby encourages and authorizes Terra Marine Research & Education, Northwest Chapter to apply for an experimental permit with the purpose to divert prohibited species bycatch into the non-profit food distribution network of the United States.

We look forward to the opportunity to assist as a catcher vessel, the F.V. Alsea, in this worthy project.

Sincerely yours,

Margaret Hall

Margaret E. Hall
General Manager

cc. Wilburn Hall, President, Rondys, Inc.
Tim. A. Gerding, President, T.A.G., Inc.

RONDYS, INC.
F/V Alsea, F/V Argosy,
F/V Progress, F/V Rondys
F/V Sourdough,
Lake Line,
Research Mining,
Rondys Terminals &
Dungeness King Crab

Office
22nd Ave. S.E.
WA 98027
392-4324
206-391-8105

ALASKA OFFICE
Box 37
Alaska 99615
486-3041
907-486-2740

N.W. Abbey St.
Oregon 97365
265-2185

November 16, 1992

Terra Marine Research & Education
Northwest Chapter
7052 New Brooklyn Rd
Bainbridge Isle, Wa 98110

To Whom It May Concern:

Rondys Inc. hereby encourages and authorizes Terra Marine Research & Education, Northwest Chapter to apply for an experimental permit with the purpose to divert prohibited species bycatch into the non-profit food distribution network of the United States.

We look forward to the opportunity to assist as a catcher vessel, the F.V. Argosy, in this worthy project.

Sincerely yours,

Margaret Hall

Margaret E. Hall
General Manager

cc. Wilburn Hall, President

RECEIVED NOV 13 1992

FRANK BOHANNON
F/V NEAHKAHNIE
404 NW VIEW RIDGE STREET
CAMAS, WA 98607

November 13, 1992

Mr. Steve Pennoyer
Regional Director, North Pacific Region
C/O Terra Marine
7052 New Brooklyn Road
Bainbridge Is., WA 98110

Dear Steve,

My catcher boat, the Neahkahnie, intends to participate in the experimental bycatch utilization project with Terra Marine. We will work with Supreme Alaska Seafoods, Terra Marine, and the observer program to assure proper documentation and handling of the prohibited bycatch in order to meet the needs of the project.

Both the Neahkahnie and myself have been participants in the pollock and whiting fishery since 1979. As so called pioneers in the fishery, we have always felt that any waste of the resource including the prohibited species regulation is morally wrong. I and my crew are very excited about participating in this project and hope it leads to full utilization of the resource and better bycatch management. We will do every thing in our power to make this a success.

Sincerely,

F. D. Bohannon

Frank Bohannon

F/V Arctic Eagle

1212 N.W. Culbertson Drive
Seattle, Washington 98177

(206) 363-1994
FAX (206) 367-4945

10/18/92

National Marine Fisheries Service

Dear Sirs

On behalf of the F/V American Eagle, Official No. = 558605, ADF&G # 00039, we are authorizing the company Tesa Marine Research and Education to apply for an experimental permit to allow them to retain some of the prohibited species bycatch with the intention of donating it to the food banks.

This proposed program is to commence during the 'A' season 1993. Please grant them any favors as such.

Regards

Joseph Sabey Gardner

FOOD LIFELINE

...mber of
...nd Harvest
National Food
Bank Network
and a United Way
member agency

15230 - 15th Avenue N.E.
Seattle, WA 98155
(206) 545-6600
Fax (206) 545-6616

November 17, 1992

Mr. Tuck Donnelly
Terra Marine Research & Education
7052 New Brooklyn Road
Bainbridge Island, WA 98110

Dear Mr. Donnelly:

As you know, food banks face an increase in community need due to the current recession. We are unable to meet the food needs of low income people with present resources, and so we must pursue new approaches to expand available supply.

We are excited about the potential use of by-catch to help feed the hungry. Such a usage would be important for several reasons:

* It would create a new source of high protein food for distribution by food banks.
* It would creatively involve the fishing industry in addressing hunger.
* It would reduce the amount of waste in current industry practices.

This seems such a win-win approach that it deserves every support. Other segments of the food industry have already developed systematic ways of recycling their food waste into resources for America's hungry. It would be wonderful to see the fishing industry exercise leadership and vision on this issue as well.

FOOD LIFELINE feels so strongly about the value of this pilot project that it is willing to commit to fund-raising efforts, if necessary, to cover the costs of transporting the initial by-catch to Seattle.

Please let us know if we may be of assistance in other ways. What you are proposing is important and deserves every consideration.

Best Wishes,

Winifred Nazarko

Winifred Nazarko
Executive Director

Second Harvest®
NATIONAL FOOD BANK NETWORK
"Feeding America's Hungry Since 1979"

ovember 12, 1992

Mr. Steven Pennoyer
National Marine Fishery Services
Alaska Region, Regional Director
c/o Terra Marine Research & Education
7052 New Brooklyn Rd.
Bainbridge Island WA 98110

Dear Mr. Pennoyer,

This letter confirms our role in the prohibited species bycatch retention and charitable distribution experiment.

Second Harvest is the nation's largest non-governmental feeding program and the third largest charity in America. We offer a safe and efficient way to channel surplus product to 185 food banks who, in turn, serve over 46,000 charitable agencies nationwide.

Since 1979, Second Harvest has provided over 3 billion pounds of food to needy Americans, who include the ill, the elderly, the unemployed and families with children. We have served as the food industry's chosen alternative for production overruns, packaging changes, reformulations, off-specification and short-coded product. Your brand image will be protected through:

- quick and efficient product pickup
- proper storage and handling of product
- complete product tracking and recall capabilities
- accurate and timely receipting

We have the capability to track each donation from donor, to food bank, to charitable agency, to recipient. Attached are sections from our membership manual that pertain to requirements for donation receipting and tracking. Sample receipts are attached as well.

In 1990, Second Harvest, with the help of Pillsbury, began an innovative program called Value Added Processing, (VAP). This program helped increase the donations of highly nutritious and rarely available product to our food bank network. Pillsbury agreed to capture, donate, process and can bulk vegetables. Through the generous donation of the packaging industry, we received over 10 million pounds of canned vegetables. Attached is a VAP fact sheet that details the program.

We are anxious to be a part of this innovative program with Terra Marine Research and Education. We welcome your questions and comments. Thank you.

Sincerely,

Jorah Keegan
Director of Marketing

116 SOUTH MICHIGAN AVE. SUITE 4, CHICAGO, IL 60603 (312) 263-2303. FAX (312) 263-5626

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Alaska Fisheries Science Center
Resource Ecology and Fisheries
Management Division
7600 Sand Point Way NE.
BIN C15700, Building 4
Seattle, WA 98115

October 30, 1992

Mr. Tuck Donnelly
Terra Marine Research & Education
7052 New Brooklyn Rd.
Bainbridge Island, WA 98110

Dear Tuck:

I have reviewed your October 29th letter regarding your suggestions for recording of the information you are interested in as part of the TMRE Retention Project. With respect to the salmon scale collections, we currently collect scales from salmon and this information is recorded on the "Form 9US -Biological Sampling Form" with a unique number for each scale sample. This information is then tied to the haul data via the haul number, date, and vessel and all of the above data are contained in our master database. We have worked with FRI before on the exchange of these data and scales, so that process should be no problem.

With respect to the recording of the amount of time taken to collect the salmon data and the additional sorting and counting, I would prefer that observers record this information on an existing form rather than create another form we have to keep track of. For this project I suggest that we have the observers record the information under the "Other calculations; comments" on Form 3US. The date and haul number are also recorded on this form. We will then make a copy of that part of the Form 3US for you.

If the research permit is approved, we can get together before the start of the season to insure everything needed has been considered and that the individual observers involved are properly briefed on the project.

Sincerely,

Russ Nelson
Task Leader
Observer Program

FISHERIES RESEARCH INSTITUTE

University of Washington
School of Fisheries, WH-10
Seattle, Washington 98195
Telephone 206-543-4650
Telex 474-0096 UWUI
FAX 206-685-7471

12 November 1992

Mr. Steve Pennoyer
c/o Terra Marine and Education
7052 New Brooklyn Rd.
Bainbridge Island, Washington 98110

Dear Steve:

The Fisheries Research Institute has no funding at the present time to analyze the biological samples and data that would be collected during the proposed project by Terra Marine and Education. However, I want to acknowledge the importance of this sampling effort. The opportunity for U.S. researchers to obtain samples from salmon caught on the high seas has been greatly reduced in recent years. No funding is available to charter vessels for high-seas salmon research, and cooperative programs aboard Russian research vessels in 1992 were cancelled because of the severe economic problems in Russia. Most of the historical U.S. high-seas database for salmonids in the eastern Bering Sea and Gulf of Alaska was collected in the 1950s and 1960s, and cannot be used to address questions about recent changes in ocean distribution, growth, and survival of U.S. salmon stocks. I hope that you will take this opportunity to obtain samples and data that could expand our limited base of scientific information on salmon in the Bering Sea and Gulf of Alaska.

Sincerely,

Katherine W. Myers

Katherine W. Myers
Principal Fisheries Biologist,
High Seas Salmon Research

BROWN'S POINT JOINT VENTURE

18 West Mercer Street
Suite 400
Seattle, WA 98119
Tel: (206) 285-2815
Telex: 263657 GOLD UR
Fax: (206) 282-5958

October 20, 1992

Mr. Tuck Donnelly
Terra Marine Research & Education
7052 New Brooklyn Rd.
Bainbridge Island, WA 98110

Dear Tuck,

I hereby authorize TERRA MARINE RESEARCH & EDUCATION to apply for an experimental fishing permit on behalf of the F/T Browns Point (AK912726). This application is to address the retention and processing of prohibited species for use as food aid in 1993.

Sincerely,

Stan Simonson
President

November 13, 1992

Mr. Steve Pennoyer
Regional Director, North Pacific Region
C/O Terra Marine
7052 New Brooklyn Road
Bainbridge Is., WA 98110

Dear Steve,

I am writing to inform you of our intent to participate in the experimental bycatch utilization program with Terra Marine. In so doing, we will serve not only as the receiving and processing platform, but as the principle contact for the catcher boat fleet. The catcher boats, as well, have agreed to participate and will provide separately their letters of intent to do so.

Please be assured that both we and the catcher boat fleet will continue to make every effort to minimize the actual catch of prohibited species. At the least, this experiment will serve to make some use of that catch which is unavoidably caught, as well as provide the basis for developing a more rational approach to a fundamental problem of fisheries management, which is waste.

If SAS or any of it's catcher vessels can do more to help make this project a success, please don't hesitate to ask. We are all committed to make this small project a success and to find a way both industry and management can more effectively minimize bycatch and prevent waste of our valuable resource.

Sincerely,

James W. Salisbury
President

JWS/pkc

Supreme Alaska Seafoods, Inc.
2600 Denali ★ Suite 300 ★ Anchorage, Alaska 99503 ★ (907) 258-9432 ★ Fax (907) 279-5503

F/V CALIFORNIA HORIZON
HORIZON TRAWLERS
P.O. BOX 11721
BAINBRIDGE ISLAND, WA 98110

November 13, 1992

Mr. Steve Pennoyer
Regional Director, North Pacific Region
C/O Terra Marine
7052 New Brooklyn Road
Bainbridge Is., WA 98110

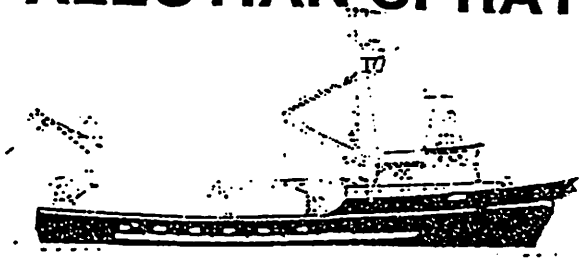
Dear Steve,

My catcher boat, the F/V California horizon, intends to participate in the experimental bycatch utilization project with Terra Marine. We will work with Supreme Alaska Seafoods, Terra Marine, and the observer program to assure proper documentation and handling of the prohibited bycatch in order to meet the needs of the project.

Sincerely,

Hugh Reilly

ALEUTIAN SPRAY FISHERIES, INC.



SUITE 401
4039 21st AVENUE WEST
SEATTLE, WASHINGTON 98199
PHONE (206) 285-5549

October 19, 1992

Mr. Steve Stubbe, Director of Fleet Relations
C/O Julie Cisco
UniSea, Inc.
P.O. Box 97019
Redmond, WA 98073-9719

Dear Steve,

Enclosed is the information you needed from our vessels to participate with the Terra Marine Research & Education program during the Pollock "A" season 1993.

Our observer contract is held through Pacific Observers, Inc. 4039 - 21st Avenue West, Suite 404, Seattle, WA 98199 (206) 282-3209.

You may also use this letter as an authorization for Terra Marine Research and Education to apply for the experimental permit needed.

If I can be of any further help please do not hesitate to give me a call.

Sincerely,
Aleutian Spray Fisheries, Inc.
F/V Starward
F/V Starlite
F/V Starfish
F/V Nordic Star

Cary K. Swasand

Cary K. Swasand
President

CKS\lw

Dutch Harbor Seafoods, Ltd.

15110 Northeast 90th Street
P.O. Box 97049
Redmond, Washington 98073-9749
(206) 881-8181 FAX (206) 882-1660

October 20, 1992

Mr. Steve Stubbe
UniSea, Inc.
P.O. Box 97019
Redmond, Washington 98073-9719

Re: F/V ALYESKA

Dear Steve,

This letter will serve as authorization for Terra Marine Research to apply to National Marine Fisheries Service for an experimental fishing permit for the ALYESKA, per your letter. I would like to have copies of their application(s) for my files.

Per your request, enclosed is a copy of the Federal Fisheries Permit, and ALYESKA uses Pacific Observers, Inc. for observer coverage.

Please let me know if you require any further information.

Regards,
DUTCH HARBOR SEAFOODS, LTD.

Richard C. White
President

encl.

/jcb

Oct. 21, 1992

F/V Defender
2442 N. W. Market St. #414
Seattle, Washington 98107

To: TERRA MARINE RESEARCH AND EDUCATION

It is understood that you wish to process and distribute to food banks any prohibitive species bycatch that we might deliver to Unisea Inc..

We do authorize you to make use of this and support the program. Our ADF&G no. is 56676.

Sincerely,

Barry B. Ohai

Barry B. Ohai
Managing Partner

To whom it may concern,

I Gunnar Ildhuso owner Ildhuso Fisheries am authorizing "Terra Marine Research" to apply for the necessary experimental fishing permits needed for my vessel.

Gunnar Ildhuso

LIST OF PARTICIPATING VESSELS

1.

VESSEL NAME: BROWNS POINT
FEDERAL PERMIT NUMBER: AK912726
REGISTRATION OR USCG OFFICIAL NUMBER: O/N 587440
OWNER NAME: BROWNS POINT JOINT VENTURE
ADDRESS: 18 WEST MERCER STREET, STE #400
SEATTLE, WA 98119
PHONE: 206 285-2815 FAX 282-5938
MANAGING COMPANY: GOLDEN AGE FISHERIES
RESPONSIBLE PERSON: JOHN HENDERSCHEDT
NMFS OBSERVER CONTRACTOR: ALASKAN OBSERVERS
LENGTH OF VESSEL: 190
TONNAGE: 611
COMMENTS: CATCHER PROCESSOR PARTICIPANT

2.
VESSEL NAME: F/V AMERICAN EAGLE EAGLE
FEDERAL PERMIT NUMBER: AK920434A
REGISTRATION OR USCG OFFICIAL NUMBER: O/N 558605
OWNER NAME: TYNES ENTERPRISES ET AL
ADDRESS: 1212 N.W. CULBERTSON DRIVE
SEATTLE, WA 98177

PHONE: 206 363-1994 FAX 367-4945
MANAGING COMPANY:
RESPONSIBLE PERSON: JOSEPH WABEY
NMFS OBSERVER CONTRACTOR: PACIFIC OBSERVERS
LENGTH OF VESSEL: 120
TONNAGE: 129
COMMENTS: CATCHER VESSEL FOR UNISEA

3.
VESSEL NAME: F/V STARWARD
FEDERAL PERMIT NUMBER: AK920417A
REGISTRATION OR USCG OFFICIAL NUMBER: O/N 617807
OWNER NAME: ALEUTIAN SPRAY FISHERIES, INC.
ADDRESS: 4039 21ST AVE WEST, STE 401
SEATTLE, WA 98199

PHONE: 206 285-5549
MANAGING COMPANY:
RESPONSIBLE PERSON: CARY K. SWASAND
NMFS OBSERVER CONTRACTOR: PACIFIC OBSERVERS
LENGTH OF VESSEL: 123
TONNAGE: 199
COMMENTS: CATCHER VESSEL FOR UNISEA

4.
VESSEL NAME: F/V STARLITE
FEDERAL PERMIT NUMBER: AK921998A
REGISTRATION OR USCG OFFICIAL NUMBER: O/N 597065
OWNER NAME: ALEUTIAN SPRAY FISHERIES
ADDRESS: 4039 21ST AVE WEST, STE 401
SEATTLE, WA 98199

PHONE: 206 285-5549
MANAGING COMPANY:
RESPONSIBLE PERSON: CARY K. SWASAND
NMFS OBSERVER CONTRACTOR: PACIFIC OBSERVERS
LENGTH OF VESSEL: 122
TONNAGE: 199
COMMENTS: CATCHER VESSEL FOR UNISEA

5.
VESSEL NAME: F/V STARFISH
FEDERAL PERMIT NUMBER: AK921167A
REGISTRATION OR USCG OFFICIAL NUMBER: O/N 561651
OWNER NAME: ALEUTIAN SPRAY FISHERIES
ADDRESS: 4039 21ST AVE WEST, STE 401
SEATTLE, WA 98199

PHONE: 206 285-5549
MANAGING COMPANY:
RESPONSIBLE PERSON: CARY K. SWASAND
NMFS OBSERVER CONTRACTOR: PACIFIC OBSERVERS
LENGTH OF VESSEL: 122
TONNAGE: 199
COMMENTS: CATCHER VESSEL FOR UNISEA

6.
VESSEL NAME: F/V NORDIC STAR
FEDERAL PERMIT NUMBER: AK924428A
REGISTRATION OR USCG OFFICIAL NUMBER: O/N 584684
OWNER NAME: BLUE BOATS CORP.
ADDRESS: 4039 21ST AVE. WEST, STE 401
SEATTLE, WA 98199

PHONE: 206 285-5549
MANAGING COMPANY:
RESPONSIBLE PERSON: CARY K. SWASAND
NMFS OBSERVER CONTRACTOR: PACIFIC OBSERVERS
LENGTH OF VESSEL: 122
TONNAGE: 134

7.
VESSEL NAME: F/V ALYESKA
FEDERAL PERMIT NUMBER: AK910395
REGISTRATION OR USCG OFFICIAL NUMBER: O/N 560237
OWNER NAME: DUTCH HARBOR SEAFOODS, LTD.
ADDRESS: 15110 NORTHEAST 90TH STREET
P.O. BOX 97049
REDMOND, WA 98073-1660

PHONE: 206 881-8181 FAX 882-1660
MANAGING COMPANY:
RESPONSIBLE PERSON: RICHARD C. WHITE
NMFS OBSERVER CONTRACTOR: PACIFIC OBSERVERS
LENGTH OF VESSEL: 121.5
TONNAGE: 131
COMMENTS: CATCHER VESSEL FOR UNISEA

8.
VESSEL NAME: F/V DEFENDER
FEDERAL PERMIT NUMBER: AK923257A
REGISTRATION OR USCG OFFICIAL NUMBER: O/N 554030
OWNER NAME: DUTCH HARBOR SEAFOODS, LTD.
ADDRESS: 15110 NORTHEAST 90TH STREET
P.O. BOX 97049
REDMOND, WA 98073-9749

PHONE: 206 881-8181
MANAGING COMPANY: BARRY B. OHAI, MANAGING PARTNER
RESPONSIBLE PERSON: BARRY B. OHAI
NMFS OBSERVER CONTRACTOR: PACIFIC OBSERVERS
LENGTH OF VESSEL: 200
NET TONNAGE: 200
COMMENTS: CATCHER VESSEL FOR UNISEA

9.
VESSEL NAME: PACIFIC MONARCH
FEDERAL PERMIT NUMBER: AK922785A
REGISTRATION OR USCG OFFICIAL NUMBER: O/N 557467
OWNER NAME: VENTURE PACIFIC MARINE, INC.
ADDRESS: 14313 143d S.E.
RENTON, WA 98059

PHONE: 206 226-7830 FAX 226-6222
MANAGING COMPANY:
RESPONSIBLE PERSON: DAN STABBERT
NMFS OBSERVER CONTRACTOR: PACIFIC OBSERVERS
LENGTH OF VESSEL: 166
TONNAGE: 326
COMMENTS: CATCHER VESSEL FOR UNISEA

10.
VESSEL NAME: GUN-MAR
FEDERAL PERMIT NUMBER: AK920425A
REGISTRATION OR USCG OFFICIAL NUMBER: O/N 640130
OWNER NAME: ILDHUSO FISHERIES
ADDRESS: 1927 NW 98TH
SEATTLE, WA 98117
PHONE:
MANAGING COMPANY:
RESPONSIBLE PERSON: GUNNAR ILDHUSO
NMFS OBSERVER CONTRACTOR: NORTHWEST OBSERVERS
LENGTH OF VESSEL: 135
NET TONNAGE: 132
COMMENTS: CATCHER VESSEL FOR UNISEA

11.
VESSEL NAME: AURIGA
FEDERAL PERMIT NUMBER: AK912889
REGISTRATION OR USCG OFFICIAL NUMBER: O/N 639547
OWNER NAME: ALYESKA OCEAN, INC.
ADDRESS: ANACORTES MARINE BUILDING
2415 T AVENUE
P.O. BOX 190
ANACORTES, WA 98221
PHONE: 206 293-4677 FAX 293-4241
MANAGING COMPANY:
RESPONSIBLE PERSON: MICHAEL ATTERBERRY
NMFS OBSERVER CONTRACTOR: FRANK ORTH AND ASSOCIATES
LENGTH OF VESSEL: 193
NET TONNAGE: 873
COMMENTS: CATCHER VESSEL FOR UNISEA

12.
VESSEL NAME: AURORA
FEDERAL PERMIT NUMBER: AK912888
REGISTRATION OR USCG OFFICIAL NUMBER: O.N 636919
OWNER NAME: ALYESKA OCEAN, INC.
ADDRESS: ANACORTES MARINE BUILDING
2415 T AVENUE
P.O. BOX 190
ANACORTES, WA 98221

PHONE: 206 293 4677
MANAGING COMPANY:
RESPONSIBLE PERSON: MICHAEL ATTERBERRY
NMFS OBSERVER CONTRACTOR: FRANK ORTH AND ASSOCIATES
LENGTH OF VESSEL:
NET TONNAGE:
COMMENTS: CATCHER VESSEL FOR UNISEA

13.
VESSEL NAME: SEA DAWN
FEDERAL PERMIT NUMBER: AK 922059
REGISTRATION OR USCG OFFICIAL NUMBER: O/N 548685
OWNER NAME: F/V SEADAWN FISHERIES INC.
ADDRESS: P.O. BOX 352
NEWPORT, OREGON 97365

PHONE: 503 867-3911 FAX 867-3913
MANAGING COMPANY:
RESPONSIBLE PERSON: FRED YECK
NMFS OBSERVER CONTRACTOR:
LENGTH OF VESSEL: 110
TONNAGE: 133 NET 199 GROSS
COMMENTS: CATCHER VESSEL FOR UNISEA

14.
VESSEL NAME: ALSEA
FEDERAL PERMIT NUMBER: AK922811
REGISTRATION OR USCG OFFICIAL NUMBER: O/N 626517
OWNER NAME: ALSEA FISHERIES PARTNERSHIP
ADDRESS: 5349 229TH AVENUE SE
ISSAQUAH, WA 98027
PHONE: 206 392-6324 FAX 391-8105
MANAGING COMPANY: RONDYS INC.
RESPONSIBLE PERSON: MARGARET E. HALL
NMFS OBSERVER CONTRACTOR: PACIFIC OBSERVERS
LENGTH OF VESSEL: 124
TONNAGE: 126
COMMENTS: CATCHER VESSEL FOR UNISEA

15.
VESSEL NAME: ARGOSY
FEDERAL PERMIT NUMBER:
REGISTRATION OR USCG OFFICIAL NUMBER:
OWNER NAME: RONDYS, INC.
ADDRESS: 5349 229TH AVENUE SE
ISSAQUAH, WA 98027
PHONE: 206 392-6324
MANAGING COMPANY:
RESPONSIBLE PERSON: MARGARET E. HALL
NMFS OBSERVER CONTRACTOR: PACIFIC OBSERVERS
LENGTH OF VESSEL: 124
TONNAGE: 135
COMMENTS: CATCHER VESSEL FOR UNISEA

16.
VESSEL NAME: EXCELLENCE
FEDERAL PERMIT NUMBER: AK924111B
REGISTRATION OR USCG OFFICIAL NUMBER: O/N 967502
OWNER NAME: ALASKA JOINT VENTURE SEAFOODS
ADDRESS: C/O SUPREME ALASKA SEAFOODS, INC.
2600 DENALI, STE 300
ANCHORAGE, AK 99503
PHONE: 907 258-9432 FAX 279-5503
MANAGING COMPANY: SUPREME ALASKA SEAFOODS, INC.
RESPONSIBLE PERSON: JIM SALISBURY
NMFS OBSERVER CONTRACTOR: DATA CONTRACTORS
LENGTH OF VESSEL: 367
TONNAGE: 1502 NET 4327 GROSS
COMMENTS: MOTHERSHIP PROCESSOR

17.
VESSEL NAME: PACIFIC ALLIANCE
FEDERAL PERMIT NUMBER: AK922816A
REGISTRATION OR USCG OFFICIAL NUMBER: O/N 612084
OWNER NAME: SUPREME ALASKA SEAFOODS
ADDRESS: 2600 DENALI, SUITE 300
ANCHORAGE, AK 99503
PHONE: 907 258-9432 279-5503
MANAGING COMPANY:
RESPONSIBLE PERSON: JIM SALISBURY
NMFS OBSERVER CONTRACTOR:
LENGTH OF VESSEL: 105
TONNAGE: 131 NET 193 GROSS
COMMENTS: CATCHER VESSEL FOR EXCELLENCE

18.
VESSEL NAME: ALASKAN STAR
FEDERAL PERMIT NUMBER: AK922097A
REGISTRATION OR USCG OFFICIAL NUMBER: O/N 909394
OWNER NAME: SUPREME ALASKA SEAFOODS
ADDRESS: 2600 DENALI, SUITE 300
ANCHORAGE, AK 99503
PHONE: 907 258-9432 FAX 279-5503
MANAGING COMPANY:
RESPONSIBLE PERSON: JIM SALISBURY
NMFS OBSERVER CONTRACTOR:
LENGTH OF VESSEL: 86
TONNAGE: 123 NET 169 GROSS
COMMENTS: CATCHER VESSEL FOR EXCELLENCE

19.
VESSEL NAME: NEAHKAHNIE
FEDERAL PERMIT NUMBER: TO BE SUBMITTED
REGISTRATION OR USCG OFFICIAL NUMBER: O/N 599534
OWNER NAME: NEAKAHNIE FISHERIES
ADDRESS: 404 NW VIEW RIDGE STREET
CAMAS, WA 98607
PHONE: 503 593-1681
MANAGING COMPANY:
RESPONSIBLE PERSON: FRANK BOHANNON
NMFS OBSERVER CONTRACTOR:
LENGTH OF VESSEL: 98
TONNAGE: 195
COMMENTS: CATCHER VESSEL FOR EXCELLENCE

20.
VESSEL NAME: CALIFORNIA HORIZON
FEDERAL PERMIT NUMBER: AK590758
REGISTRATION OR USCG OFFICIAL NUMBER: O/N 590758
OWNER NAME: HORIZON TRAWLERS, INC.
ADDRESS: P.O. BOX 11721
BAINBRIDGE ISLAND, WA 98110
PHONE: 206 780-0325
MANAGING COMPANY: WESTWARD TRAWLERS, INC.
RESPONSIBLE PERSON: HUGH REILLY
NMFS OBSERVER CONTRACTOR:
LENGTH OF VESSEL: 90
TONNAGE: 150
COMMENTS: CATCHER VESSEL FOR EXCELLENCE

21.
VESSEL NAME: TO BE DETERMINED
FEDERAL PERMIT NUMBER:
REGISTRATION OR USCG OFFICIAL NUMBER:
OWNER NAME:
ADDRESS:

PHONE:
MANAGING COMPANY:
RESPONSIBLE PERSON:
NMFS OBSERVER CONTRACTOR:
LENGTH OF VESSEL:
TONNAGE:
COMMENTS: CATCHER VESSEL FOR EXCELLENCE

22.
VESSEL NAME: TO BE DETERMINED
FEDERAL PERMIT NUMBER:
REGISTRATION OR USCG OFFICIAL NUMBER:
OWNER NAME:
ADDRESS:

PHONE:
MANAGING COMPANY:
RESPONSIBLE PERSON:
NMFS OBSERVER CONTRACTOR:
LENGTH OF VESSEL:
NET TONNAGE:
COMMENTS: CATCHER VESSEL FOR EXCELLENCE

MEMORANDUM

TO: Council, AP, and SSC Members

FROM: Clarence G. Pautzke
Executive Director

DATE: January 14, 1993

SUBJECT: Groundfish Issues

ACTION REQUIRED

(c) Report on analysis of trawl mesh regulations.

(d) Bycatch management planning.

(e) Status report on possible analysis of cod allocations be gear and season.

(f) Discuss possible amendment to open all gear seasons simultaneously on January 1 or January 20.

BACKGROUND

Trawl Mesh Regulations

At the December 1992 meeting, the Council reviewed a memorandum from the Highliners Association proposing trawl mesh regulations be implemented in the Alaska pollock fisheries. Their preference is for a single layer, 90 mm, square mesh in the top upper portion of the cod end. According to the memorandum, benefits of a mesh regulation include the reduction of bycatch of undersized, non-utilized pollock, which results in an economic loss to the fishing industry.

Trawl mesh regulations are utilized in many of the trawl fisheries around the world, including the East and West coast fisheries of the U.S. The bases for determining the optimal size and configuration of a codend are codend net selectivity studies. Very few U.S. codend net selectivity studies have been conducted on North Pacific pollock fisheries. The Highliners Association memo cites a selectivity study conducted by a cooperative Japan/Russian research group on Alaska pollock. Recently, the Alaska Fisheries Development Foundation, in cooperation with Dr. Ellen Pikitch of the University of Washington and Chris Bublitz of Fishery Industrial Technology Center in Kodiak, received federal funding to conduct selectivity studies on pollock fisheries in both the BSAI and GOA. Similar work was done for the Pacific Council over the past two years. However, this information will not be available until sometime in 1994.

Other issues that an analysis on trawl mesh regulations would need to consider are listed in Item D-4(c). This information can assist the Council in its discussion on this issue. The Council can take staff reports, assess staff availability, hear from the public on this issue, and decide whether it would like to go forth with an analysis on a proposal for trawl mesh regulations.

Bycatch Management Planning

This item was on the December 1992 meeting agenda, but due to lack of time, the Council recommended that it be carried over until the January meeting. The main item under bycatch management is the outcome of the Council's Bycatch Cap Committee. Results of the Bycatch Cap Committee meeting, held on November 5 and 6, 1992 in Anchorage are attached as Item D-4(d).

The Committee recommended immediate, intermediate and long term actions with regards to halibut bycatch management. The following table summarizes the proposed actions the Committee reviewed, its recommendation, and what is currently being done to address this issue.

PROPOSED ACTION	RECOMMENDATION	STATUS
Immediate Actions		
Time/Area Closures	No action until cod allocation analysis reviewed	
Careful Release of Halibut	Support IPHC	Being implemented
Slower Tow Speeds	Did not support	
Ban Night Trawling	Did not support, unenforceable	
Deck Sorting of Catch	Support	1993 IPHC Pilot Project
Quicker Observer Data	Support	On going
Intermediate Action		
VIP rates based on retained catch	Support	No action
In-season penalty for the VIP	Support amending the Magnuson Act	No action
1993 PSC Apportionments	Supports Council's recommendation	Completed
Long Term Measures		
Harvest rights, IFQ type under auspices of the CRP	General support	CRP schedule

The Council may wish to discuss the bycatch Committee's recommendations, and identify further tasking for this committee.

Cod Allocation analysis

At the September 1992 meeting, the Council reviewed a preliminary analysis of a proposal for allocating Pacific cod to gear types which exhibit low bycatch rates. The Council agreed at that meeting to postpone consideration of the analysis until the April 1993 meeting to allow for revision and additional information, and requested a status report from the author at the January 1993 meeting. This report will be presented to you at the Council meeting.

Simultaneous Opening Date for Trawl and Non-trawl Fisheries in the GOA

Last September, the Council requested that possible regulatory changes for groundfish seasons in the Gulf of Alaska be considered at the January meeting. It was suggested that a simultaneous season opening for trawl and non-trawl fisheries would be more equitable. The current opening date for non-trawl fisheries, including hook and line, pot and jigging, is January 1, whereas Amendment 19/24 delayed the opening for trawl fisheries until January 20. The rationale to delay trawling was to reduce bycatch of chinook salmon during the first few weeks of the trawl fishery. If proposals for a regulatory change were identified at this meeting, the analysis could be ready for review in April, final action would occur in June, and then could be in effect for the 1994 season opening.

The Council can review staff availability; discuss potential alternatives to be considered, and request staff to initiate an EA/RIR for a regulatory amendment analysis.

Ideas for Consideration when Discussing a Trawl Mesh Size Regulation

The following points highlight a few issues that require investigation when considering a mesh size proposal for Alaska pollock fisheries.

1. Research. A critical aspect of predicting long-term effects of mesh size regulations is determining the selectivity of different codends. Variables affecting selectivity include adjustments in mesh size, shape, construction, as well as operational factors. Presently, very little research on selectivity for Alaska pollock has been conducted. The Highliners Association's memorandum cites a cooperative study carried out by Japanese and Soviet investigators that describes selection curves of various mesh sizes and types. Their recommendation of a 90 mm (3.5 inch stretched) single layer square mesh for the upper portion of the codend apparently is based on this study. Recently, the Alaska Fisheries Development Foundation (AFDF), in cooperation with Dr. Ellen Pikitch from the University of Washington and Chris Bublitz from Fishery Industrial Technology Center, received S-K funding for its proposal to investigate alternative trawl codend mesh sizes and shapes to reduce catch and discard of undersized Alaska pollock. The study proposes to analyze biological and economic variables of different codends, including catch and gross revenues per tow, length-frequency distributions of pollock caught and discard rates. Information on changes in the population structure of pollock over time in response to changes in size-specific mortality rates resulting from the use of more selective gear is also proposed in the AFDF study. These results generated from this study would be beneficial for the development of an EA/RIR pertaining to mesh size regulations. However, timing of this study is such that information generated will not be available until early 1994.

2. Assessment of Escapement mortality (fish passing through the mesh of the codend). To accurately determine long term effects of a mesh size regulation on the pollock fishery, such as determining potential long term yields, information about the survivability of pollock filtering through the codend is critical. This is difficult to assess, and little information can be found in the literature on this issue.

3. Impacts on the Vessel Incentive Program. Currently the basis for the VIP bycatch rate is total catch of a vessel. By using a mesh size that allows small pollock to not be retained, while maintaining the same catch of halibut or crab, a vessel's bycatch rate will go up. Developing VIP rate standards that consider a mesh size restriction, or a VIP rate based on retained catch are two suggestions worth consideration.

4. Potential Enforcement Problems. Mesh size regulations in place in other areas of the country have been difficult to enforce. At sea boarding or dock side inspection is required, and some form of limitation on the number of codends a vessel can carry on deck is necessary. Apparently, obtaining an accurate and precise measurement of the size of a mesh in a codend can be a difficult procedure. A review of how other regions enforce their mesh size regulations, and the problems incurred would be helpful.

5. Consideration of a quota system (IFQ) for groundfish. Under a quota-based allocation system, the presumption is that an individual operator will develop methods of fishing that will maximize income and minimize operational costs. Small pollock that are discarded due to market constraints or processing capabilities are a cost that could be minimized by using a codend that is selective for larger, more valuable pollock. Thus, an IFQ program would provide the incentive for the fishermen to change their behavior voluntarily, rather than by enforcement of a regulation, because the change serves their own best interest. Proposals such as a mesh size restriction need to be viewed in light of the Council's intent on developing a comprehensive rationalization program.

MEMORADUM

TO: Richard Lauber, Chairman
NPFMC

FROM: John Roos, Chairman
Bycatch Cap Committee

DATE: December 3, 1992

SUBJECT: Summary of the second meeting of the Bycatch Cap Committee

The Council's Halibut Bycatch Cap Committee held its second meeting on November 5 and 6, 1992, in Anchorage. All committee members were present, including:

John Roos (Chair)	Pacific Seafood Processors Assn.
Jim Beaton	Yukon Queen Fisheries
Chris Blackburn	Alaska Groundfish Databank
John Henderschedt (for Joe Blum)	American Factory Trawlers Assn.
Kate Graham	American High Seas Fisheries Assn.
Linda Kozak	Kodiak Longline Vessel Owners' Assn.
Denby Lloyd	Aleutians East Borough
Mark Lundsten	Queen Anne Fisheries, Fisherman
Jerry Nelson	Pot Fisherman
Janet Smoker	Fisheries Information Services
Arni Thomson	Alaska Crab Coalition

The second meeting of this Committee began with staff presenting information the Committee requested at its first meeting. Attachment 1 contains this information.

A lengthy discussion on the Committee's goals and objectives, and discussion on what the group hoped to accomplish during the meeting, followed the information presentation. This discussion indicated a broad spectrum of interests. The objectives of the Committee are to:

1. provide recommendations to the Council at the December 1992 meeting for 1993 halibut bycatch management, and

2. develop a management program that will consider target fishery management as the driving force for bycatch management rather than bycatch species management, assuming that bycatch limits will continue to exist. In other words, bycatch management should be a function of target species management rather than vise versa.

Interest centered around exploring how bycatch limits are apportioned among fisheries, although questions were raised on how this group's recommendations for apportionment would be interfaced with those of the AP during the December Council meeting.

Initial discussions centered around benefit/cost ratios of our current bycatch management program. There was general recognition that our current bycatch management program is very expensive. Bob

Trumble from the IPHC made informative presentations of 1) new analyses being developed to "fine-tune" IPHC's accounting of bycatch (yield loss) when setting annual halibut quotas and 2) estimation of halibut mortality rates for specified fisheries for 1993. The IPHC recommends the following discard mortality rates be applied for the specified fisheries in the absence of in-season monitoring of halibut discard condition in 1993:

Area	Gear	Fishery	Mortality Estimate
BSAI	Trawl	Mid-water pollock	80%
		Atka mackerel, rock sole, and other flatfish	60%
		P. cod, bottom trawl pollock, and rockfish	60%
		Arrowtooth flounder, turbot and "other species"	40%
BSAI	Hook & Line	All targets	20%
GOA	Trawl	Mid-water pollock	75%
		Rockfish, shallow water flatfish & "other species"	60%
		P. cod, bottom trawl pollock, & deep water flatfish	55%
GOA	Hook & Line	Pacific cod and rockfish	16%
		Sablefish	25%
Both	Pots	All targets	5%

The Committee accepts the IPHC's discard mortality estimates, subject to Plan Team review and approval. The group questioned the two year lag time in basing mortality estimates (1991 observer data). The IPHC recommends using in-season data from the Observer Program to reflect more timely estimates of halibut discard mortality. If the Observer Program can produce in-season data upon which to base mortality estimates, the Committee recommends priority for adjusting halibut mortality in-season to the following fisheries: flatfish and rockfish for the GOA; longline Pacific cod, rocksole and other flatfish in the BSAI.

Next, the Committee agreed to explore immediate, intermediate, and long term management measures to address the bycatch problem.

IMMEDIATE ACTIONS

Time/area closures

A confrontational discussion ensued between trawl and non-trawl gear interests on the appropriateness of seasonal closures without adequate consideration of allocative effects (i.e., the Pacific cod issue). The Committee recognized that an analysis was being developed for the seasonal apportionment of Pacific cod TAC and the allocation of TAC among gear types, and delayed making a recommendation on this issue until the analysis could be reviewed.

Careful release of halibut

Bob Trumble presented a summary of the EA/RIR prepared for the proposed action to require mandatory careful release of halibut in the hook-and-line fisheries. He strongly argued for in-season adjustments to assumed mortality rates based on in-season observer data on condition factors. Russ Nelson has concerns on whether adequate resources exist within the Observer program to support Trumble's suggestion. The Committee supported implementation of a careful release amendment for 1993, as defined by the IPHC for the BSAI Pacific cod fishery, and recommended that similar regulations for careful release of halibut be considered in the GOA fisheries if observer coverage is adequate. Sue Salveson had a question on what procedures NMFS would need to follow to implement an in-season change of assumed mortality rates. These rates could become controversial if in-season adjustments raise assumed rates or are perceived to have an allocation effect among fisheries. She suggested that she would review this issue with NOAA General Counsel prior to the December Council meeting.

Slower tow speed in trawl fisheries

The Committee viewed this as unenforceable and decided not to recommend such a proposal.

Ban night trawling in the Pacific cod fishery

The Committee viewed this as unenforceable because other trawl activities could be ongoing during the night, but did recommend the Council investigate the possibility of a ban on trawling for Pacific cod and pollock as night.

Implement measures to facilitate on deck sorting of catch

There was general support for any research on methods to reduce handling mortality. Minimizing time on deck is generally recognized as a major factor in increasing survival rates of halibut. The Committee urged that a pilot project go forth in the 1993 Pacific cod trawl fishery to help determine ways to reduce time on deck for halibut.

Quicker turn around of observer data

As mentioned previously, there was strong support for in-season adjustment of assumed mortality rates. The Committee feels priority should be given to the following fisheries for adjusting halibut mortality in-season: flatfish and rockfish for the GOA; and longline P. cod, rocksole and other flatfish in the BSAI.

Develop and monitor fishery specific assumed mortality rates

The Committee supported this concept (see notes above).

INTERMEDIATE ACTION

Base the VIP bycatch rates on retained catch

This concept was supported and the Committee recommended that it be analyzed, particularly in view of ongoing gear research that enhances gear selectivity. The purpose of a retention based vessel incentive program (VIP) bycatch rate is to remove a presently existing disincentive to make trawl gear more selective for usable groundfish. The committee felt the VIP based on total catch, in an effort to decease a vessel's VIP bycatch rate below the VIP rate standard, leads to increased catch and discard of groundfish. Implementation concerns were presented to the Committee and although NMFS can explore this approach, they felt observer estimates of retained portions of sampled hauls would be difficult to determine. Interest was expressed on the progress of NMFS to implement measures to collect accurate measurements of total catch weight (volumetric measuring or total weighing of the catch).

In-season penalty action under the VIP

In general, the Committee supported efforts to enhance the enforceability of the VIP, such as increasing the accuracy of catch estimates and consideration of changes to legal standards of proof as presented in the Magnuson Act. The Committee intends to request NOAA General Counsel to draft language for a Magnuson Act amendment that would support and facilitate in-season enforcement actions under the VIP program, similar to the JV flatfish penalty box program.

APPORTIONMENT OF THE 1993 PSC LIMITS

The Committee, as a whole, generally supported existing apportionments (seasonally and by fishery) of halibut mortality PSCs, as amended by new IPHC mortality estimates. The Committee's limited discussion is presented below.

GOA Trawl

Fisheries with high bycatch needs are the trawl cod, deepwater flatfish and rockfish fisheries (this latter fishery should be less of a problem with the July 1 season delay. High bycatch in the deepwater flatfish fishery primarily results from a seasonal influx of inexperienced fishermen. The Committee generally is happy with the Council's proposed seasonal apportionments. Regarding the 2,000 mt halibut limit, the Committee cautioned that once the industry has gone as far as it can to reduce mortality and bycatch rates, industry petitions to increase the PSC limit will likely occur to allow for greater harvest of available groundfish (e.g., arrowtooth). When this occurs, the economic tradeoffs of the halibut cap may need to be analyzed.

GOA Hook-and-line

Discussion centered on enforceability and practicality of depth restrictions for the sablefish fishery. In general, depth restrictions to reduce halibut bycatch rates were viewed as impractical given enforcement questions, tides, currents and drifting of gear. The underlying problem is too many fishermen crowd the fishing grounds and force fishing effort into undesirable shallow water. The

Committee intends to consider possible actions in the future to reduce halibut bycatch in these GOA fisheries. The Committee sees no problems with halibut bycatch in the groundfish pot fishery.

BSAI Trawl and Hook & Line

Much discussion ensued on seasonal apportionment of halibut apportioned to the trawl and hook-and-line Pacific cod fisheries to reduce bycatch rates in summer months. At a minimum, longliners wanted the trawl fishery to have the same schedule for seasonal apportionments as the hook-and-line fishery (i.e. change the proposed date for the second seasonal trawl apportionment from June 29 to June 1). The Committee believes there may be merit to consider a summer restriction on the Pacific cod fisheries. Members of the Committee representing industry groups felt the necessity to consult with their members before endorsing a particular recommendation on a change in the trawl seasons.

Hook-and-line industry representatives on the Committee would like NMFS to increase the directed fishing standard for the Turbot fishery. A bycatch allowance of 15 - 20 percent reflects true bycatch rates in the sablefish fishery.

LONG TERM MEASURES

In general, most Committee members agreed that the establishment of harvest rights would address the bycatch problem and reduce waste and foregone harvest opportunities. Some support was voiced for development of an IFQ-type program for groundfish, probably under the auspices of the Comprehensive Rationalization Program.

In the interim, the Committee believes it serves a valuable function for the gathering and discussion of bycatch information between various industry interests and government agencies. Future work by the Committee will center upon dissemination of information and calm discussion of issues among industry representatives.

SUMMARY STATEMENTS:

- Keep pressure on Council to advocate reduction of waste (just short of endorsing IFQ program for all groundfish).

- Allocation issues have prevented conservation issues from being addressed. The Committee strongly, and unanimously, believes that allocation issues and disputes among the various fleets inhibit, and sometimes prohibit, meaningful discussion and agreement on conservation measures. A committee forum cannot successfully deal with allocation issues -- conservation issues, such as reduction of waste and bycatch, could be dealt with by committees if the Council would adequately deal with overriding allocation issues.

- Major result of the Committee meeting has been to diffuse divisiveness among different gear groups over bycatch allocations and mortality estimates and generate a more cooperative spirit to address bycatch issues.

- Chinook salmon bycatch problem is potentially explosive. Need innovative solution beyond Time/Area closures.

- The industry has more to gain by focussing on how to reduce mortality rather than fighting for a reduction in bycatch rates.

AGENDA D-4
JANUARY 1993
Supplemental

ALASKA CRAB COALITION

NPFMC AGENDA ITEM D-4(b), January 1993

3901 Leary Way (Bldg.) N.W., Suite #6 • Seattle, WA 98107 • (206) 547-7560 • FAX (206) 547-0130

DATE: January 11, 1993

TO: Louie S. Echols, Director
Washington Sea Grant Program
3716 Brooklyn Ave. N.E.
Seattle, WA 98105

FROM: Arni Thomson, Executive Director Arni Thomson

RE: COMMENTS ON UNIVERSITY OF WASHINGTON FISHERIES RESEARCH INSTITUTE SEA GRANT PROPOSAL, "NORTH PACIFIC BYCATCH SURVIVAL STUDY"

The ACC is aware that Dr. Ellen Pikitch, Director of the Fisheries Research Institute, has submitted a multi-year cooperative research proposal to Sea Grant for initiation in 1993. The grant proposal is supported heavily by industry funding from North Pacific trade associations involved in the billion dollar Bering Sea trawl gear fisheries, the focus of the problems being addressed in the proposed study.

The ACC wishes to go on record opposing federal funding of this project for the following reasons:

FOREGONE REVENUES TO THE TRAWL INDUSTRY ARE SELF INFLICTED, THEREFORE WASTE MINIMIZATION RESEARCH SHOULD BE FUNDED ENTIRELY BY THAT SECTOR OF THE INDUSTRY:

A large part of the rationale for justifying this project is "foregone revenues to the groundfish industry." The proposal estimates foregone revenues at approximately $50 million dollars in 1990. This is outdated information and narrowly focused.

The project is a reflection of the strong bias Dr. Pikitch maintains for the groundfish trawl sector of the industry. Dr. Pikitch stated in a meeting with industry on October 27, 1992, in Seattle, when asked about the origin of this project within the University of Washington, "I was looking for something to do when I was approached by the trawl sector of the industry, the group with which I am the most familiar."

Dr. Pikitch's reference to "foregone values to the groundfish industry" is significant, in that for years it has been the cornerstone of the argument for minimal federal regulations on the groundfish industry in the Northeast Pacific. With regulations tightening to reduce the waste of valuable public resources, the trawl sector now seeks public money to support research that ought to be a cost of doing business in a properly regulated environment.

The other side of the equation is "the impact costs of the groundfish industry to prohibited species target fisheries." The halibut and crab fisheries presently suffer the largest impact costs of the prohibited species.

I am enclosing three data sheets on the Estimated Costs of the Halibut Bycatch in the Alaska Groundfish Fisheries for the period 1990 through 1992. Two of the analyses on halibut bycatch have been produced by the NMFS. The other is a summary for 1991's bycatch impact costs to all prohibited species (PSC) in Alaskan groundfish fisheries. The ACC produced that summary, based upon the Bering Sea/ Aleutian Islands Groundfish FMP, Amendment 21, EA/RIR cost data.

The NMFS gross economic bycatch cost benefit sheets are relatively new information, developed for the NPFMC Bycatch Cap Committee in November of 1992. These data sheets provide a more comprehensive picture of the extent of the bycatch problem than the very narrow approach that Dr. Pikitch proposes for her project. Serious questions therefore arise about the legitimacy of the project as a candidate for federal support dollars.

Analysis of the data shows some developing trends that should be of interest to resource managers and public agencies concerned about the evolving patterns of bycatch and in identifying research priorities.

1. Under the present regime of bycatch management, the total value of groundfish foregone has decreased from $83 million dollars in 1990, to $30 million dollars in the 1992 Alaskan groundfish fisheries. This is a 60% reduction in the lost value. Essentially the trawl industry has reconfigured its gear to fish cleaner and to optimize better its target fisheries under the existing bycatch quotas. By its own public statements, the groundfish industry recommends the development of an "individual bycatch quota" (IBQ) program at the NPFMC as the best long term solution to fleetwide accountability and reduction of bycatch waste, not gear and mortality research.

2. Comparative analysis of the total value of groundfish and halibut foregone from 1990 to 1992 shows a similar overall reduction in aggregate foregone values from $134 million dollars to $72 million dollars, a 50% reduction.

3. Another significant trend has developed since 1990. Up to this time, the value foregone to the groundfish fisheries exceeded the value foregone to all the combined prohibited species fisheries. This trend reversed in 1991 when the value of prohibited species foregone for the first time exceeded the value of groundfish foregone, $57 million dollars to $52.4 million dollars.

Add to this the value foregone of pollock discards just one of the groundfish species, at $35 million dollars, and the total foregone value of fish wasted by the trawl sector of the industry in 1991 is estimated at $144.4 million dollars.

At this point, it is important to bear in mind, the aggregate foregone values (which equates to waste in the form of thousands of tons of dead fish) are caused by one gear type, trawl gear. Thus, as a matter of public policy, the taxpayers should not be obligated to subsidize research for a waste problem generated by one sector of an industry. Tax dollars would more appropriately be spent on developing and demonstrating the effectiveness of lower impact gears that minimize waste of resources and impact to habitats.

It should also be noted that missing in the NMFS analysis is foregone value estimates of salmon, herring and crab lost to the directed fisheries. Gross economic comparisons for these species are shown in the ACC analysis for 1991.

MORTALITY RATES IN BYCATCH MANAGEMENT ARE THE REAL SUBJECT OF THE STUDY, AND THEY SHOULD NOT BE ADDRESSED BY BIASED PRIVATE RESEARCH SUBSIDIZED BY PUBLIC FUNDS:

There is little doubt within the ACC, that the proponents of this project are developing a "result oriented scientific project" aimed at reducing halibut and crab bycatch mortality rates within the bycatch management regime of the North Pacific Fishery Management Council. This is the most recent example of such trawl industry supported projects which have been very controversial in the past and they have been the subject of Congressional testimony as recent as the 1990 MFCMA Reauthorization Hearings.

Bycatch mortality rates are a significant bycatch limitation factor. They have also become a measure for distinguishing clean gear from dirty gear and they are leading to management incentives for clean gear types, such as longline and pot gear in the Northeast Pacific cod fishery. If mortality rates are to be adjusted, objective scientific research by public officials-not biased studies funded in part by the interested industry-should be the basis.

Thus it is important that the project reviewers not be misled any longer that this clever proposal represents an industry funded concern for minimizing impacts to

prohibited species, when in reality, it is aimed at circumventing effective bycatch limitation measures. In short, the project lacks credibility.

In conclusion, the ACC wishes to reemphasize two points. First, reduction of waste by industry of a public resource should not be researched at the expense of the public, but rather should be paid for by the private user groups as a cost of doing business. (This is particularly so, where the public receives no economic rent.) Second, the basic components of the regulatory constraints on waste should not be subject to biased private analysis subsidized by public funds. These points must be respected, if the public interest is to be protected.

cc: Dr. William Fox, NMFS/NOAA, Assistant Administrator
Clarence Pautzke, Executive Director, NPFMC

Enclosures (4)

ESTIMATED COSTS OF THE HALIBUT BYCATCH PROBLEM IN THE 1990-91 ALASKA GROUNDFISH FISHERIES[1]

pact Costs of 1990 Bycatch Mortality on Directed fishery

1[illegible] halibut bycatch mortality - 9,234 mt
Foregone value of '90 bycatch
to the halibut fishery[2] - $ 50,787,831

Estimated 1990 Foregone Groundfish Catch and Value[3] Resulting From Halibut Bycatch Management Measures.

Joint Venture flatfish	116,244 mt	$19,528,992[4]
BSAI Rocksole	11,250 mt	9,720,000
BSAI Pacific cod	24,000 mt	25,080,000
GOA sablefish (H & L)	1,500 mt	4,450,500
GOA mixed flatfish	6,000 mt	3,780,000
GOA Pacific cod (trawl)	20,000 mt	20,900,000
Total	178,994 mt	$83,459,492

TOTAL 1990 costs of halibut and groundfish foregone = $134,247,323

Impact Costs of 1991 Bycatch Mortality on Directed fishery

1991 halibut bycatch mortality - 8,352 mt
Foregone Value of '91 bycatch
to the halibut fishery[1] - $ 45,936,752

timated 1991 Foregone Groundfish Catch and Value[2] Resulting From Halibut ycatch Management Measures.

BS[illegible] Other flatfish	6,000 mt	$ 3,780,000
BSAI Yellowfin sole	10,000 mt	4,490,000
BSAI Rock sole	15,000 mt	12,960,000
BSAI Pacific cod	20,000 mt	20,900,000
GOA Flatfish	6,694 mt	4,217,220
GOA Arrowtooth Flounder	2,545 mt	1,114,710
GOA Rockfish	4,600 mt	3,394,800
GOA sablefish (trawl)	360 mt	325,080
GOA sablefish (H & L)	750 mt	2,225,250
Total	65,949 mt	$52,407,060

TOTAL 1991 costs of halibut and groundfish foregone = $99,343,811

---

[1] Estimated costs do not include management costs or costs to the groundfish industry other than foregone groundfish

[2] Estimated unit value of impact costs to the directed halibut fishery is $5,500.09 per metric ton of halibut bycatch (from EA/RIR/IRFA prepared for Amendment 21 to the BSAI FMP).

[3] Values of foregone groundfish harvest are based on average 1990-91 first wholesale values of BSAI groundfish (from EA/RIR/IRFA prepared for Amendment 21 to the BSAI FMP).

[4] JVP value of flatfish based on value paid to U.S. harvesting vessels ($168/mt).

November 1, 1992

SUMMARY OF ESTIMATED BYCATCH MORTALITY IMPACT COSTS OF THE 1991 ALASKA GROUNDFISH FISHERIES TO THE DIRECTED HALIBUT, CRAB, HERRING AND SALMON FISHERIES, IN COMPARISON TO THE FOREGONE CATCH AND VALUE OF GROUNDFISH

BERING SEA/ALEUTIAN ISLANDS FOREGONE GROUNDFISH CATCH AND FOREGONE PROHIBITED SPECIES (PSC) VALUES FOR 1991:

GROUNDFISH VALUE FOREGONE	51,000	mt	$42,070,000
HALIBUT	5,000	mt	$27,500,000
BAIRDI CRAB	3,080,000	crabs	5,420,000
KING CRAB	117,208	crabs	2,530,000
HERRING	1,288	mt	1,870,000
CHINOOK SALMON	32,046	fish	656,000
BSAI IMPACT COSTS TO PSC DIRECTED FISHERIES			$37,976,000

GULF OF ALASKA FOREGONE GROUNDFISH CATCH AND FOREGONE PROHIBITED SPECIES (PSC) VALUES FOR 1991:

GROUNDFISH VALUE FOREGONE	15,000	mt	$11,277,000
HALIBUT	3,320	mt	18,260,000
CHINOOK SALMON	37,647	fish	771,763
GOA IMPACT COSTS TO PSC DIRECTED FISHERIES			$19,031,763

TOTAL VALUE BSAI AND GOA FOREGONE GROUNDFISH	$52,407,000
TOTAL VALUE BSAI AND GOA GROUNDFISH IMPACT COSTS TO PROHIBITED SPECIES DIRECTED FISHERIES	$57,007,763

Reference, NMFS Estimated Bycatch Costs 1990-91, summary report prepared for NPFMC Bycatch Cap Committee, September 11, 1992, Seattle, WA, attachment.

Estimated unit values of impact costs to the directed halibut, crab, salmon and herring fisheries are from the the EA/RIR/IRFA, Amendment 21 to the BSAI FMP, May 24, 1992.

Values of foregone groundfish are based on average 1990-91 first wholesale values of BSAI groundfish from the EA/RIR/IRFA, Amendment 21 to the BSAI FMP, May 24, 1992.

Arni Thomson, Alaska Crab Coalition

INDEPENDENT SCIENTIFIC COMMENTS ON NORTH PACIFIC BYCATCH SURVIVAL STUDY

North Pacific Bycatch Survival Study: Some Potential Pitfalls

1. Cage methodology remains an unproven technology at present.

2. It is doubtful that sample size will be sufficiently large to study all proposed treatment effects (fish size, condition, extent of injury, temperature, depth, time in captivity, etc.). The most important treatment effects for crabs have not been identified in the proposal (see point 7 and 9, below); the proposal ignores an extensive literature on handling effects on crustaceans.

3. Sample size for smart tag component of study is too small to provide precise (meaningful) estimates of survival rates.

4. Cage-induced abrasions during raising and lowering may result in overestimation of mortality on fishes.

5. Delayed mortality due to bacterial infections in fishes and crabs are not studied.

6. Cage methods ignore potential high mortality due to predation. Handled crabs often display reduced "righting response" and do not assume defensive postures when approached by predators. Such "defenseless" crabs are vulnerable to elevated predation rates.

7. Handling mortality of crabs is highly dependent on time of year; mortality of softshell crabs is much higher than mortality of hardshell crabs. No study of softshell crabs is proposed.

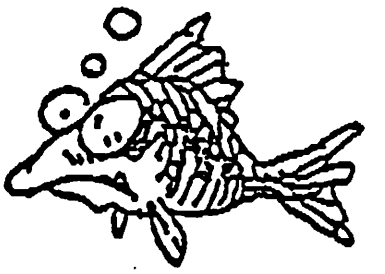
8. Short-term mortality of crabs depend upon the nature of the injury. Crabs with limbs severed at the plane of autotomy will suffer lower mortality rates than crabs with limbs severed inbetween "joints" or those with cracked carapaces. Deck time, air temperature, and wind conditions are also key factors. A better study design may be to fix these treatment effects and to conduct controlled experiments. In other words, it is debatable that the proposed study (with no controls) will provide more meaningful estimates of mortality.

9. Studies of short-term mortality may underestimate total handling mortality of crabs. Several studies have shown that handling may cause delayed mortality that occurs due to an aberrant molting process.

10. Intermediate and long-term effects are not studied. Aside from short-term handling mortality, handling is known to have the following adverse effects in some crustaceans: (1) limb loss; (2) increased cannibalism; (3) loss of visual acuity; (4) increased predation; (5) reduced mating success; (6) reduced growth; (7) lowered fecundity; and (8) lowered size at maturity.

11. Due to physiological stress, repeated capture of crabs and fishes in trawls may have multiplicative (rather than additive) effects on mortality; repeated handling is not studied.

North
Pacific
Longline
Association



D-4 (g)

January 13, 1993

Mr. Richard B. Lauber, Chairman
North Pacific Fishery Management Council
605 West 4th AVenue
Anchorage, AK 99501

RE: Analysis of Cod Management Proposals

Dear Rick:

We have met with the economists from the AFSC who are working on the BSAI cod management proposals. We are satisfied that one analytical document treating the proposals as separate concepts will be adequate - it will not be necessary to have three separate analyses.

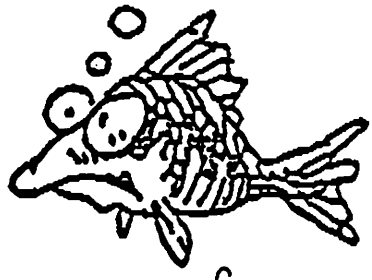
Thank you.

Sincerely,

Thorn Smith

4209 21st Avenue West, Suite 300, Seattle, Washington 98199
TEL: 206-282-4430; FAX: 206-282-4494

North
Pacific
Longline
Association



f
D-4 (X)

January 13, 1993

Mr. Richard B. Lauber, Chairman
North Pacific Fishery Management Council
605 West 4th Avenue
Anchorage, AK

RE: Season Opening Date

Dear Rick:

As you are aware, the trawl fisheries for groundfish begin on January 20 of each year. In the BSAI, the opening date was postponed to avoid chinook salmon bycatch; in the Gulf (if memory serves) it was delayed so that trawlers which usually fish in the BSAI would not move to the Gulf.

There is no reason to postpone the opening of fixed gear fisheries - fixed gear does not have chinook bycatch problems. There is no rational basis for changing the fixed gear opening from January 1 to January 20.

Thank you for your attention.

Sincerely,

Thorn

Thorn Smith

4209 21st Avenue West, Suite 300, Seattle, Washington 98199

T. Smith

January 17, 1993

Mr. Robert Alverson, Chairman
Comprehensive Rationalization Committee
North Pacific Fishery Management Council
605 West 4th Avenue
Anchorage, AK 99501

RE: Comprehensive Rationalization of the Cod Fisheries

Dear Bob:

Comments submitted at the November meeting of the Comprehensive Rationalization Committee observed that some groundfish fisheries are still developing and are accessible by different gear types. These fisheries should be treated differently from those which are fully developed and are prosecuted by only a single gear type.

The cod fishery is a case in point. There are now three gear types taking cod - trawl, longline and pot. TAC was taken this year by DAP fishermen for the first time. Further evolution of this fishery is to be expected. Analysis is now being done on proposals to improve the BSAI fishery through seasonal adjustments (like those in effect in the pollock fisheries) and gear limitations. We should first complete that analysis and decide on the proposals. An ITQ program is not a substitute for these measures - and is years away, in any event.

We suggest that cod be separated from the other groundfish fisheries, and that two industry committees be formed to address rationalization of the cod fisheries - one for fixed gear, one for mobile gear. These committees can develop and evaluate rationalization schemes from their perspectives, and present them to the Council. It is possible that industry may be able to negotiate compromises acceptable to all.

Thank you for your attention to this matter.

Sincerely,

4209 21st Avenue West, Suite 300, Seattle, Washington 98199

Linda Kozak
Kodiak Longline Vessel Owners' Association

Eric Olsen
Fishing Vessel Owners' Association

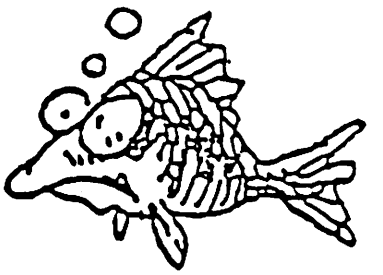
James Bruce
Deep Sea Fishermens' Union

Kris Norosz
Petersberg Vessel Owners' Association

Donald C. Iverson
North Pacific Longline Association

Mike Szymanski
Fishing Company of Alaska

North Pacific Longline Association



DATE: December 23, 1992

TO: All Freezer-Longliners

FROM: NPLA - Thorn Smith Thorn

SUBJECT: Careful Release Video

PAGES: 1

The NPLA has copied and will distribute the "careful halibut release" video made during the NMFS summer longline cruise. It demonstrates the hook straightening technique which is favored by the IPHC. You will see that the halibut suffers only a small exit wound when the hook is straightened.

The "hook straightening" portion of the video is silent. During the first part of the demonstration the hauling operation is slowed down or stopped, to show how the gaff engages and straightens the hook. Later the operation is performed at normal hauling speed - it is reportedly easier to straighten the hooks at normal speed.

The IPHC is very optimistic about this careful release procedure - they think we might be able to get our assumed mortality below 7% if everyone uses this technique. Whatever technique you decide to use - gangion cutting, shaking or hook straightening, please be sure that all halibut are carefully released before they come on board (unless the observer asks that they come on board - in which case we should co-operate while they collect condition and size data).

Above all, co-operate with your observer! He or she will record your handling techniques, which will translate into a mortality rate.

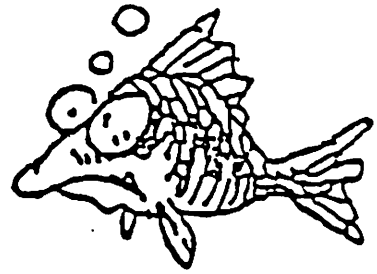
We have delivered "careful release" videos to the NMFS Observer Program. The observers will take a video to each freezer-longliner along with the attached announcement dated December 22. They will deliver the videos to the vessel's captain, and explain the program.

We have dubbed videos on Norwegian longline research and the Mustad Autoline system onto the tape, for your information.

PLEASE HELP MAKE THIS PROGRAM A SUCCESS!

4209 21st Avenue West, Suite 300, Seattle, Washington 98199
TEL: 206-282-4639; FAX: 206-282-4684

North
Pacific
Longline
Association



DATE: December 22, 1992

TO: ALL FREEZER-LONGLINERS

FROM: NPLA - Thorn Smith Thorn

SUBJECT: CAREFUL RELEASE OF HALIBUT - READ THIS!!!

PAGES: 1

STARTING JANUARY 1, 1993, ALL HOOK-AND-LINE HALIBUT BYCATCH MUST BE CAREFULLY RELEASED BEFORE COMING ABOARD THE VESSEL (UNLESS AN OBSERVER ASKS YOU TO BRING THEM ABOARD). THIS MEANS EACH AND EVERY HALIBUT, EVEN IF YOU HAVE TO STOP THE HAULER.

CAREFUL RELEASE MEANS:

1. CUT THE GANGION BEFORE THE HALIBUT HITS THE BOAT;

2. "SHAKE" THE HALIBUT BY GENTLY TWISTING THE HOOK OUT OF THE LIP WITH THE CURVE OF THE GAFF; OR

3. CAREFULLY RELEASE THE HALIBUT BY OTHER MEANS SUCH AS STRAIGHTENING THE HOOK (WE HAVE PROVIDED A VIDEO WHICH DEMONSTRATES THIS TECHNIQUE).

NEVER TREAT THE HALIBUT ROUGHLY, OR STICK THEM WITH THE GAFF OR ANY OTHER INSTRUMENT.

THE COUNCIL VOTED TO IMPLEMENT THIS REGULATION BY EMERGENCY RULE. THE LAST VESSEL CITED FOR "HORNING" HALIBUT WAS ASSESSED $25,000.

WE ARE LIMITED BY A STRICT HALIBUT BYCATCH MORTALITY CAP - WHEN WE REACH 825 MT, OUR COD FISHERY IN THE BSAI IS SHUT DOWN. WE WOULD HAVE BEEN SHUT DOWN SIX WEEKS EARLIER IN 1992 IF NMFS HAD THE BYCATCH CAPS IN PLACE. CAREFUL RELEASE OF HALIBUT WILL REDUCE OUR ASSUMED HALIBUT MORTALITY RATE, AND MAKE OUR CAP LAST LONGER.

PLEASE BE CERTAIN YOU RELEASE EACH AND EVERY HALIBUT CAREFULLY. CO-OPERATE WITH YOUR OBSERVER SO HE OR SHE WILL REPORT YOUR CAREFUL HANDLING. ASSIST THE OBSERVERS AS REQUESTED SO THEY CAN COLLECT DATA ON THE CONDITION AND SIZE OF FISH RELEASED.

OUR FISHERY AND OUR LIVELIHOODS DEPEND ON YOU!

4209 21st Avenue West, Suite 300, Seattle, Washington 98199
TEL: 206-282-4639; FAX: 206-282-4684

1 Thru 6 - POLLOCK

7 Thru 37 - BY-CATCH & WASTE

38 Thru 45 - FISHING IS IMPORTANT

By Jimmy Jordan

Pollock issue eclipses bycatch

By DANIEL R. SADDLER
TIMES WRITER

A weeklong debate over pollock allocation kept federal fish managers from making progress on reducing the number of Alaska salmon caught by high seas trawlers.

The North Pacific Fishery Management Council was scheduled to review several plans to decrease salmon bycatch and decide which should be fully analyzed and put into effect by Jan. 1, 1992.

Without the new amendments, there would be little to prevent a repeat of this year, which saw factory trawlers fishing for pollock take 73,000 salmon in the Bering Sea and Gulf of Alaska, said Deming Cowles, an attorney for a coalition of fishermen protesting the bycatch.

But after the council spent five days of its six-day meeting on a plan to allocate pollock between offshore and onshore processors, most of the people who wanted to testify about bycatch were gone.

"There's no reason the fishermen of Alaska should have to suffer for one more year because of bycatch, solely because the council didn't spend time on conservation," Cowles said.

The council will continue to take public testimony on the issue by telephone Wednesday, and could still make changes by the start of the 1992 trawl season, council staff said.

The delay also pushed back the schedule for dealing with another major item on the council agenda — whether to allocate sablefish by individual transferable quotas.

The council will take up the question at a special meeting scheduled for Aug. 13-15 in Juneau.

GOOD

Pollock closure cuts workforce

KODIAK — Western Alaska Seafoods has announced that it will lay off 70 workers due to the pollock fishery closure last week. General Manager Ken Allread said it's possible the entire plant may close down for November and December because of a lack of fish to process. Allread said an operations shutdown would be the first in the plant's 23-year history. Western Alaska Seafood uses the pollock to make surimi, which is in turn made into imitation crab, as well as other products for Japanese consumers. The company built a new facility in 1988 especially for surimi processing.

WHERE THE POLLOCK

Daily News staff and wire reports

THINK OF OTHER FISH WILL AND THE LONG TERM POLLOCK PRESSURE

Trawlers' huge take of pollock worries U.S. fishery scientists

By HAL BERNTON
Daily News business reporter

An armada of more than 100 foreign trawl boats appears to have dramatically overfished pollock stocks in an international zone of the Bering Sea.

Catch rates have plummeted, and some U.S. fishery scientists fear that the foreign fleets' unregulated take of millions of tons of pollock may trigger a bust in a major U.S. harvest that depends on many of the same fish.

"It's a preview of what we might start experiencing," said Steve Davis, a biologist who is deputy director for the North Pacific Fishery Management Council, which helps regulate the U.S. fishery.

Scientists also are concerned about how the intensive foreign fishery has affected salmon, herring and other species accidentally caught up in their trawl nets.

"Our observers have reported bycatches of salmon, and king salmon is included," said Loh Lee Low, a National Marine Fisheries Service biologist who specializes in the Bering Sea. "The catch rates don't appear to be high. But they could be significant."

The U.S. fishery most at risk is called the Bogoslof. It is an area just north of the Aleutian Islands where pollock — a mainstay of the bottom-fishing industry —

Please see Back Page, TRAWLERS

June 2-91 Lyn not a scientist and seen this year ago

2

Obituaries B2 □ Your Page B10 □ Calendar B11

B METRO
The Anchorage Times
SUNDAY
June 30, 1991

Industry growth guided pollock allocation

By DANIEL R. SADDLER
TIMES WRITER

Alaska's seafood industry knew the day of reckoning was coming.

Ever since American ships began taking over the harvest of Bering Sea pollock from foreigners in the early 1980s, it was clear there would someday be too many U.S. fishermen and not enough fish.

The day of reckoning came Friday in Anchorage, when the North Pacific Fishery Management Council decided the rapid growth of the floating processor industry required reserving almost half the catch to ships supplying land-based processors.

■ Salmon bycatch issue neglected B2

"Everybody knew the council had to make an allocation decision. They just didn't know when it would happen," said John Iani, president of Pacific Seafood Processors Association.

"Factory trawlers had to know there wasn't going to be enough fish for everybody," he said. "Yet they still continued to build more and more and more factory trawlers."

The U.S. factory trawl fleet caught and processed 1 percent of the 1986 pollock harvest. By this year, the fleet has grown to 64 ships, catching about 60 percent of the share.

If a plan passed by the council Friday is ratified by the U.S. secretary of commerce, that share would drop to 65 percent in 1992, 60 percent in 1993 and 55 percent in 1994. The catch totaled 1.4 million metric tons in 1990.

All the pollock in the Gulf of Alaska, and 90 percent of the Pacific cod, would go to onshore processors as well. Boats and trawlers would work in the onshore or offshore sector, but not both in any one year. The plan passed on a 9-2 vote.

"Allocation issues are traditionally the most difficult, because it is one U.S. fisherman versus another," said council member Bob Mace.

"This is an attempt to bring some stability to the industry."

Meanwhile, the North Pacific council would seek a way to limit entry to the fishery, and to divide the resource fairly among existing ships, possibly by issuing shares of the harvest to boats based on their past catch level.

"If we hadn't done this, there would have been thousands of jobs lost," said council chairman Rick Lauber of Juneau. "Kodiak, Dutch Harbor and Akutan could have become ghost towns."

Factory trawlers acknowledged their buildup has changed the balance of the fishery. But they

See Fish, page B2

Pollock

Continued from page A1

that a portion of the spawning population of pollock has been overfished because of unregulated fishing."

Of the nations that fish the Doughnut Hole, the Japanese take most of the pollock catch, he said.

Dr. Richard Morasko, director of the Resource Ecology Fishery Management Division with the Alaska Fishery Science Center in Seattle, said reported catches by the Japanese show 1987 amounted to 346,000 metric tons of pollock, 1988 at 126,000 metric tons, 1989 at 110,000 metric tons with no numbers available for 1990.

Despite the reported declines, however, Morasko said the numbers are no cause for alarm because pollock stocks follow an up-and-down pattern and the stocks probably will rebound.

Of the nations that fish the Doughnut Hole, the Japanese take most of the pollock catch.

The problem is no one has the authority to shut down the Doughnut Hole to fishing, Morasko said.

Dr. Lohlee Low, Bering Sea Groundfish Management Plan team leader and biologist with the National Marine Fisheries Service, said the decline can be blamed on more than just overfishing.

The other side of the story reveals that pollock harvests have fallen off every year since 1986.

In 1978, an abnormally large number of pollock spawned off U.S. and Soviet waters. Seven years later the offspring of 1978 spawning group matured and the Doughnut Hole was bloated with pollock, Lee said. That allowed foreign vessels to take record catches, Lee said.

But overfishing is too simple a term to describe what is happening in the Doughnut Hole, he said. Inaccurate reporting of catches also may be to blame, Lee said.

In the past, foreign nations have had a tendency to over-report their catches in the Doughnut Hole because they were taking pollock illegally from U.S. and Soviet waters, Lee said.

But the 1978 spawning group of pollock was fished so hard that it is clear the resource has declined drastically, he said.

The U.S. Department of State's Office of Oceans and Fisheries Affairs is working on the problem by organizing meetings to gain international agreement on the management of the Doughnut Hole, he said.

Japan, Korea, Poland, China, the Soviet Union and the United States have agreed to limit the number of boats fishing the Doughnut Hole to 170 processing vessels, or the same number of boats that fished the area last year, he said.

Lee said the limit does little to prevent overfishing but at least is a start toward management.

George Herrfurth, Office of Oceans and Fisheries Affairs in the Department of State, agreed that any management of the area is better than none at all. Herrfurth and his boss David Colson are heading up the drive to get nations fishing the Doughnut Hole to manage the area.

"Nobody knows what is going on in the Hole. Our scientists can't find a fish out there," Herrfurth said. "Our concern is that not only do you have big problems if you overfish the pollock stock, you also cause problems to other parts of the food chain from microscopic animals to marine mammals to birds."

The next meeting of the Doughnut Hole fishing nations is scheduled for July 31-Aug. 2 in Tokyo. Herrfurth said his aim will be to negotiate limits on the pollock catch and ensure observers are placed on boats to take an accurate count of the catch.

Steve Davis, deputy director of the North Pacific Fishery Management Council in Anchorage, said his group fears that while the U.S. is protecting the resource along its shore, pollock are venturing into the doughnut where they have no protection.

"They are being exploited to a level that is safe in the U.S. zone. If they are being hit again in the Hole, then that is beyond what they can produce," Davis said. "The pollock population has crashed."

I SAW TONS OF SMALL POLLOCK DUMPED = THE FUTURES CATCH NOW THEIR GONE

Pollock decline has 1987 experts guessing

By DAVID FUTCH
TIMES WRITER

The Doughnut Hole fishing area in the heart of the Bering Sea is nearly devoid of pollock, said experts Wednesday who monitor the hole's annual harvest.

Another expert, however, said the decline in pollock numbers is no cause of great concern since that species naturally exhibits peaks and valleys in population.

This week Japanese fishermen reported taking 13,000 metric tons of pollock in the first three months of the year.

That is a 750 percent decline from the 110,000 metric tons the Japanese landed in 1989, the Alaska Fishery Science Center in Seattle reported.

Declines in pollock harvests over the past five years worry some scientists who say the Doughnut Hole is in danger because the 4,500-square-mile area outside Soviet and U.S. jurisdiction is fair game for all nations and no nation is managing the resource.

Earl Krygier, who coordinates the Alaska Department of Fish and Game's extended jurisdiction program that runs from three miles to 200 miles offshore, said the decline is of great concern to the state.

"After the drop was reported many of us were nervous that this was the start of a serious pollock stock crash in the Doughnut Hole," Krygier said. "There is strong scientific evidence

See Pollock, back page

TIMES MAP

Continued from Page A-1

gather in immense schools to spawn. This past year, U.S. fishermen harvested about 200,000 metric tons — about one-sixth of their Bering Sea pollock catch — from this spawning ground. And the Bogoslof is thought to produce enough young fish to sustain more than one-fourth of a harvest worth more than $1 billion annually.

The Bogoslof harvest is restricted by U.S. fishery managers who attempt to ensure that pollock are not overfished. And so far, Bogoslof fishing remains good, although recent surveys indicate that stocks have begun to decline.

But Bering Sea feeding grounds aren't like the fenced-off pastures of cattle country. And there's no way to keep Bogoslof pollock within the U.S. management area.

Loh and other scientists say that during life cyles that may span more than a decade, the Bogoslof fish migrate into an over 200-mile-long international area of the Bering Sea before they migrate back to spawn.

This area is known as the doughnut hole, a swath of no-man's land that lies outside the 200-mile coastal management zones claimed by both the United States and Soviet Union. It is there that U.S. and Soviet scientists say tens of millions of pollock are intercepted before they have a chance to return to spawn in U.S. waters.

"You talk to biologists and they say at some point those harvests are going to have an effect (on Bogoslof in the U.S. zone)," said Davis of the fishery management council. "I share those concerns."

But other scientists and fishing industry officials believe that enough pollock still are making it back to Bogoslof to sustain future harvests, since each female lays a multitude of eggs. They say environmental conditions, which determine how many young fish survive, are the biggest influence on future harvests in the U.S. zone.

"It's the environment that plays the major role," said Wally Pereyra, a fishing industry official who serves as a voting member of the fishery management council.

For most of this century, few boats bothered to venture into the remote doughnut hole. Instead, they caught the pollock they needed in rich harvest grounds off Alaska and the Soviet Union.

But that all changed in the mid-1980s, when the U.S. fishing industry got interested in the pollock. Under federal law it had first claim to the catch, and its fleet rapidly expanded to catch the entire U.S. pollock quota. Now fishermen race against one another in seasons that grow shorter each year.

Foreign fleets that were forced out of the U.S. zone moved into the international zone of the Bering Sea to prospect for new hot spots.

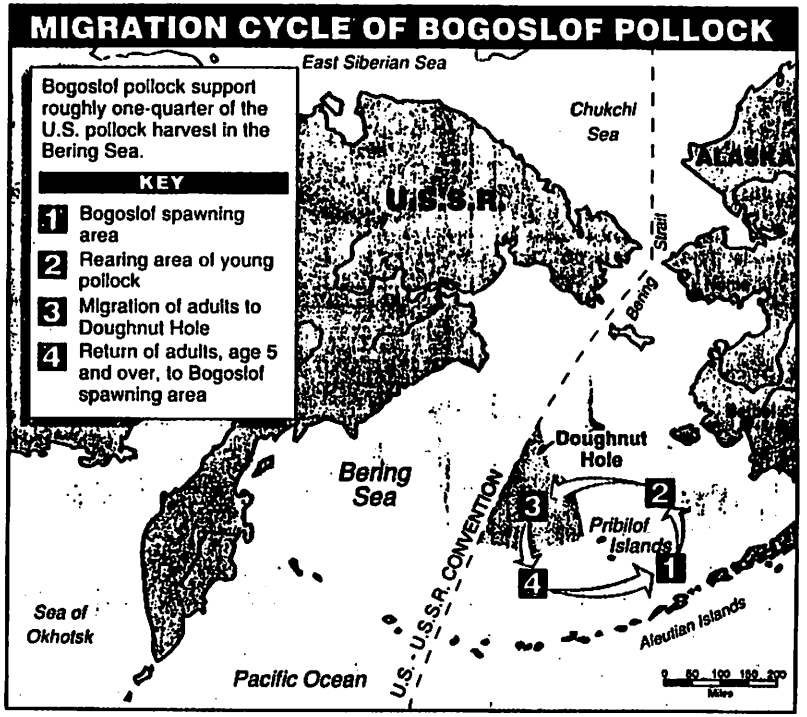
For a few heady years, Japanese, South Korean, Polish and Soviet fleets reported spectacular hauls of fish from the doughnut hole that flooded world markets with a new source of pollock.

Doughnut hole catches soared from less than 182,000 metric tons in 1984 to a peak of 1.46 million metric tons in 1988, according to statistics provided by foreign fleets. That unregulated catch exceeded the entire 1988 harvest of U.S. pollock within the Bering Sea zone off Alaska.

The doughnut hole pollock were taken by a fleet of 158 boats that rivaled — or possibly even surpassed — the catching power of the new U.S. fleet.

"It was a massive extraction," said Bruce Buls, spokesman for the American Factory Trawler Association. "There's been a lot of handwringing and a lot of talk and outrage expressed."

The downturn, when it finally came, was abrupt. Between 1988 and 1990, the harvest fell by nearly 50 percent, according to preliminary statistics.



And late last year, when a dozen U.S. boats ventured out into the doughnut hole, they found almost no fish, according to Buls. The boats — during several weeks of fishing — averaged a catch of about 30 metric tons a day. The same amount might be caught in an hour or two in normal fishing in the U.S. zone.

"It was as if there was nothing there," Buls said.

U.S. fishermen have long suspected that a substantial portion of the foreign fleet's catch in the doughnut hole actually has been taken in illegal forays into the U.S. fishery zone.

This year, as doughnut hole fishing continues to deteriorate, the Coast Guard is trying to closely monitor the movements of the foreign fleet. To date, they have caught several Chinese and Polish boats poaching pollock in the U.S. 200-mile zone, boarded those vessels and impounded them in U.S. ports.

The Chinese operators' boats have had to pay large fines to have their vessels released. A Polish vessel — the FV Marel — has been unable to come up with cash, and the U.S. attorney's office in Anchorage is seeking its forfeiture.

The U.S. government is also seeking to crack down on a Polish company's fleet by revoking rights to use U.S. waters to load and unload cargo. The sanctions would affect 16 vessels, according to Robert Babson, a general counsel for the National Oceanic and Atmospheric Administration.

Sport anglers angry at setnetters' status

By ED COOPER
Times Outdoors Writer

Sport fishermen are angry that the state has reimposed catch-and-release restrictions for the final four days of king salmon fishing on the Kenai River while commercial fishing continues near the river's mouth.

"The river should have been closed because the escapement is not there and the king salmon run is in danger," said Bob Penney, president of the Kenai River Sport Fishing Association. "Yet, incredibly, the state has been giving extra fishing periods to some 400 beach set-netters who fish near the river, and the state is going to allow them to keep on fishing until Aug. 15."

The Alaska Department of Fish and Game imposed the restriction at 12:01 a.m. today because not enough kings have entered the river to spawn. The order applies through the July 31 close of the season.

"We just ran out of fish," said Kevin Delaney, regional management coordinator for Fish and Game. THE NETS NO BUT THEM

The sonar count of king salmon entering the river dropped to 659 fish Thursday, compared with around 800 Wednesday and 1,000 fish Tuesday.

The river had been restricted to artificial lures, single-hook-only on Thursday, due to concerns about the number of kings returning.

Bob Saxton, a professional guide on the river since 1973, said he understood the need to protect the fish run, but was upset about the lack of warning.

Fish Creek to be opened to dip netting

The dip-net fishery for red salmon in Fish Creek off Knik Arm will open at 12:01 a.m. Monday to Alaska residents.

Dip netting on Fish Creek is allowed by emergency order of the Alaska Department of Fish and Game after it verifies 50,000 reds will escape through the creek to Big Lake to spawn.

Personal limits are six salmon a day and six in possession.

Any king or coho salmon taken in the dip nets must be immediately returned to the water, according to the emergency order. The emergency season will close at midnight Aug. 10 so it does not interfere with an expected run of silver salmon into the stream, area sport fish biologist Larry Engel said.

Fish Creek can be reached off Knik-Goose Bay Road from Wasilla. The area to open for dip netting will extend from Fish and Game markers approximately 500 yards from the mouth of the creek to markers about one-quarter mile upstream of the Knik-Goose Bay Road.

Dipnetters must be residents with valid fishing licenses or residents who are exempt from licensing. Fish caught cannot be sold.

ry's feeding fi
ils richest fisl

ERIK HILL / Daily News file phot

ery, fill a dockside bin outside the

By JOHN BALZAR
Los Angeles Times

KODIAK — How about this for a controversial perspective: The greatest environmental disaster in Alaska history was not the wreck of the Exxon Valdez but the mismanagement and waste of the state's bountiful fishing resources?

That's the view of maverick Gov. Wally Hickel, himself no stranger to argument.

The surprising thing is that when he made the observation in his 1992 state-of-the-state message to Alaskans, few people scoffed. By the dozens, they

High spies keep eye on fish pirates

By TOM BROWN
Seattle Times

A high-tech NASA satellite will sweep above the Bering Sea in August and beam down a detailed radar snapshot locating every fishing vessel combing the depths.

Back on Earth, ground stations at the University of Alaska Fairbanks and the University of British Columbia in Vancouver will sniff out diesel-engine exhausts to create a unique computer "fingerprint" for each vessel.

The result, program organizers hope, will be the beginnings of a foolproof system to police the world's fishing grounds against pirate driftnetters and trawlers.

The illegal fishing operations capture hundreds of millions of dollars worth of fish yearly, often killing marine mammals and sea birds in the process.

"Piracy is prominent in every major ocean basin," said Lee Alverson, president of Natural Resource Consultants Inc. of Seattle, which has formed a joint venture

Please see Page C-4. SPYING

PART II OF III

Next week: ALASK FISH

Catching

NASA satellites advanced radar it possible to ide trawlers and drift from space and enforcement offi catch them in the Satellite data fro the system will b at Fairbanks and Vancouver, B.C. to project coordi Seattle.

The exhaust plume

Vessels will be id by the pattern of molecules on wa vapor in diesel en exhausts. Each v produces a uniqu pattern.

cal, said board member Rod Berg. ...

Wounds on steelhead may indicate driftnets

The Associated Press

KETCHIKAN — Fishermen say healed wounds on steelhead salmon returning to Southeast rivers may be signs that foreign high-seas driftnet fleets have illegally snagged the American fish.

The Department of Fish and Game says as many as 40 percent of steelhead returning to a weir on Prince of Wales Island display net marks.

Some fishermen also say there's a chance the marks are from legitimate nets, caused when fish shifted their migratory pattern to compensate for effects of the warm, inshore current known as El Nino.

However state experts planned to document damage and report it to regulators at the National Marine Fisheries Service, said Steve Hoffman, sport-fish area management biologist for the state in Ketchikan.

Fishermen have been catching net-marked steelhead from a variety of streams in southern Southeast.

HERE'S PROOF

Daily News staff report

Fishing halted on 3 rivers

The Associated Press

FAIRBANKS — Sport fishing on the Salcha, Chena and Chatanika rivers has been closed by emergency order. The closure took effect Friday evening.

In addition, a commercial season on the Tanana River has been delayed until early next week, according to biologists with the Alaska Department of Fish and Game's Sport Fish Division.

Aerial surveys Wednesday showed only about 200 king salmon in Chena River spawning areas and 600 on the Salcha River, according to biologist Jerry Hallberg. Escapement goals for the rivers are 1,700 for the Chena and 2,500 for the Salcha.

state.

Catch and release ordered

Catch-and-release fishing for steelhead trout has been ordered on the Situk River near Yakutat,and bait has been banned to try to protect a weak run, according to the Alaska Department of Fish and Game. The Situk is one of the best — if not the best — steelhead streams in Alaska. The river hosted an average of more than 2,500 fish each year from 1984 through 1989, but returns have been dropping steadily. Only 883 fish have been counted in the river this year. Both the spring and fall runs are now considered to be in danger. For more information, contact area management biologist Mike Bethers in Juneau at 465-4270.

through Saturday night.

Kodiak pink run weak

KODIAK — Fishermen on Kodiak Island are singing the blues because they aren't catching pinks. As of Thursday, about 3.1 million pink salmon had been harvested on the island, far below the preseason harvest guideline of about 10 million fish. The Kodiak management area has been closed to fishing to ensure the pink salmon escapement goals are achieved, according to the Alaska Department of Fish and Game. Cape Alitak and Moser/Olga Bay reopened this weekend for late-run reds, while escapement of reds in Karluk was still short of optimal. An estimated 200,000 were in the vicinity of Karluk Lagoon late last week, but fishing there may not restart before Tuesday.

Daily News staff and wire reports

BUSINESS

FISHING INDUSTRY SINKING: Between overfishing and the increasing competition for the fish that are out there, the North Pacific bottom-dwelling fish industry may not last very much longer. 60 percent of the fish consumed in the United States is from Alaska, while 80 percent of the fish caught here goes to Asia as surimi paste. With boats that can catch from 25 to 240 tons of fish in a single cast of their huge nets, and the regulations requiring fishermen to throw back the often-dead too-small or out-of-season fish, the waste from the industry is enormous. Page C-1

Greenpeace seeks instant drift-net halt

REUTERS

VANCOUVER, British Columbia — The environmental group Greenpeace urged an immediate halt to drift-net fishing for squid in the North Pacific after a study showed the giant nets also kill millions of fish, dolphins, sharks and other marine animals.

"It's like going hunting with a machine gun, spraying the whole area. Here they are throwing out food that could feed the whole of Bangladesh for a year," Marina Lent, Greenpeace spokeswoman, said Wednesday.

Lent said that during last summer's squid fishing season, 74 scientific observers from Canada, Japan and the United States witnessed massive destruction by the 30-mile-long nets of the Japanese squid fleet of 463 vessels.

"Observers recorded almost 10,000 salmon, 80,000 sharks, over 1 million tuna, 3 million other fish, 30,000 sea birds, over 2,000 dolphins, whales and seals and 37 endangered sea turtles in nets set to catch squid," she said.

Lent said the kill figures, released Friday by the U.S. government, are based on monitoring of less than 5 percent of the total North Pacific drift-net fishing effort by fleets from Japan, Taiwan and South Korea.

For example, she said, the figures do not include observations of fish killed by the 459-ship Japanese tuna fleet.

The joint observer program was carried out as a part of a scientific review which will be forwarded to the United Nations, now examining the impact of world drift-net fishing.

A U.N. moratorium on drift-net fishing in the South Pacific is scheduled to take effect at the end of this month. Japan withdrew its South Pacific fleet last year.

A U.N. moratorium on drift-net fishing in the South Pacific is to take effect at the end of this month.

But a U.N. drift-net ban in the rest of the world's oceans is not set to take effect until June 30 next year.

Greenpeace is worried global drift-net fleets may get the ban lifted by arguing they have taken effective conservation and management measures, as outlined in the U.N. resolution.

Lent said Greenpeace wants an immediate halt to drift-net fishing and has called on all the world's fleets to cease operations. "On the basis of the damage it does, we think there should be an immediate halt," she said.

Lent said the fleets now have the technology to disrupt the whole global food chain.

"The high-seas fisheries are now capable of destroying fish stocks around the world," Lent said.

The European Council of Fisheries Ministers will meet July 8 to consider a ban on drift-net fishing in European Community waters and by EC vessels in international waters.

Senators vow to ban drift nets on the high seas

Stevens attacks 'curtains of death'

TIMES WASHINGTON BUREAU

WASHINGTON — Democrats and Republicans on the Senate Commerce Committee pledged Friday to push a bill through Congress to ban high seas driftnets that indiscriminately kill thousands of North Pacific salmon, marine mammals and other animals.

"These curtains of death have to be destroyed, once and for all, that is all there is to it,' Alaska Sen. Ted Stevens said.

Japan, Taiwan, and South Korea have a total of about 1,000 large scale driftnet vessels operating in the North Pacific.

The fleets are fishing for squid, but they virtually strip-mine the sea, snaring salmon, whales, dolphins, and birds, Stevens said.

He endorsed a bill by Sen. Bob Packwood, R-Ore., that is intended to start early enforcement of a United Nations ban on high seas driftnets due to go into effect June 30, 1992.

Packwood's bill requires that nations with driftnet fleets commit to the ban by Jan. 1, 1992. If they do not comply, President Bush may immediately order sanctions against that nation's fish and fish products.

According to the terms of the bill, the president would be required to order the sanctions against imports of fish and fish products from any nation that has not banned driftnet fishing by June 30 of next year. And if the practice continues, Bush may invoke other economic sanctions against that country.

"This committee has tried to do everything that was ... reasonable and honorable to try and end this practice on a bipartisan basis," Stevens said.

That included a 1986 law that banned high seas driftnets from inside the 200 mile U.S. territorial waters. A ban against driftnet fishing goes into effect in the South Pacific on July 1.

Michael Tillman of the National Oceanic and Atmospheric Administration said U.S. and Canadian observers aboard Japanese vessels during last year's season saw the grim toll of the driftnets that are as long as 30 miles and about 60 feet in depth.

Japan, Taiwan, and South Korea have a total of about 1,000 large scale drift-net vessels operating in the North Pacific.

ing about 10 percent of its industry. Tillman said these vessels caught nearly 8 million squid — but also 1,758 dolphins, 9,747 salmon, nearly 252,000 tuna, about 82,000 blue sharks and some 30,000 sea birds.

A State Department official declined to say if the administration will support the mandatory sanctions bill. David Colson of the Bureau of Oceans and Fisheries said the administration wants the flexibility to support the U.N. ban, but critics said it has no real force.

"Your policy is to tell nations we are displeased with them," Sen. Albert Gore, D-Tenn., told Colson. "I bet you dollars to doughnuts the administration will be opposed" to the Packwood bill, he said.

"The sanctions may never be used if the bill passes because of the club we will give you," Packwood said. Faced with sanctions, he said foreign governments will agree to the ban and blame its enforcement on "foreign devils."

"But this is absolutely necessary to set the stage before June 30 of next year," he said.

The National Marine Fisheries Service reported in May that China is engaging in driftnet fishing for the first time with six vessels in the North Pacific, apparently seeking salmon.

Colson said the Peking government first gave "strong assurances" that the vessels, actually owned by businessmen in Hong Kong but flying the Chinese flag, would immediately stop using driftnets. The fishing is continuing but the Chinese now say they will comply with the June 1, 1992 ban, Colson said.

Supporters of the bill include

12

FORUM

There're better ways to regulate salmon returns

By JAMES JOHNSON

COMPASS
POINTS OF VIEW FROM OUR COMMUNITY

SOLDOTNA — As most of you are aware the Kenai River king salmon sport fishery has sustained a second season of a "catch and release" fishery. These conservation measures were implemented because of poor returns of king salmon to the Kenai River in accordance to the management plan adopted at the 1988 Alaska Board of Fisheries.

My brothers and I have operated our sport-fishing guide service on the Kenai River since 1978. Personally, I have noticed more and more fisherman, guides and boats on the Kenai River as the years have come and gone. This catch-and-release fishery has been great for taking the boats off of the river. The Kenai River has been so peaceful and serene lately. In fact, the fish even bite well even with low returns because of the lack of angler pressure on the river.

However, I have a problem with the catch-and release fishery: People don't want to catch king salmon and let them swim away with a smile on their face to spawn up river. Fisherman have this thing about a big salmon and themselves in a picture and the subsequent fish dinner.

Believe it or not, thousands of fisherman have turned their irate, hostile, feelings upon hundreds of fishing guides and local businesses.

You try to placate them by telling them to eat halibut or kill a king salmon on the Kasilof River (which should now have its name changed to the Ka zoo lof due to angler pressure lately.) But the bottom line is these folks who, according to a state economic survey, may spend $1,000 to kill a king salmon on the Kenai River had enough intelligence to earn that kind of money, and they won't be foolish enough to play the Kenai River Lottery next year.

This catch-and-release fishery is costing our economy millions of dollars in lost revenue this year and in the years to come.

But you say conservation is worth this price tag so in future years the trophy-sized Kenai king salmon will abound in the Kenai River. Wrong. We must determine what the cause is for these low returns and attack that enemy.

Last season king salmon returns were much lower than expected for all of Cook Inlet. This would lead us to suspect an ocean cause for the poor returns. The two most logical possibilities are the high-seas interception fisheries and bottom fish trawler fleet. The trawlers admitted to dumping over 150,000 king salmon overboard last year. Alaskans need to insist that the factors causing poor king salmon returns be identified and removed as soon as possible.

I believe the present management plan for the early- and late-run Kenai king salmon needs some modifications to help bring stability to our fishery and economy.

The first mistake was committed by the Alaska Department of Fish and Game when it did not allow sufficient public scrutiny concerning these plans in advance of the 1988 Board of Fisheries meeting. Regulation proposal changes usually must be submitted months in advance to Juneau so to allow for publication and notification to the public. However, ADF&G is exempted from this rule and they gave only a few days warning to the exact management details of their early- and late-run Kenai king salmon management plan.

Basically sport and commercial fisherman were asked to form a committee to accept plan A or plan B in seeking to restrict sport-fishing productivity on the early run of king salmon. The committee did some haggling and adopted the most restrictive option, and then debated exact numbers for minimum and maximum escapement levels.

In short, this committee was asked to make some rash decisions without consulting with their constituents and without enough debate by intelligent and informed members of the various user groups.

The early-run plan stipulates that if biologists project a run of 5,300 to 9,000 king salmon for escapement then a hook-and-release fishery will be enacted. I recently consulted with our Kenai River sport-fishery biologists and was informed that the catch-and-release fishing saved about 2,000 king salmon lives both last year and this season.

Now for the question that must be asked, "Is 2,000 king salmon worth millions of dollars in lost revenue to our economy this year and in the years to come?" Both seasons have resulted in escapement of about 9,000 king salmon; would we be able to sustain escapements of 7,000 fish? By not instituting catch-and-release fishing and simply requiring only one king salmon can be harvested by anglers prior to July 1 the mortality level would have been reduced to 1,000 to 1,500 king salmon. Most anglers could tolerate a one-king-salmon limit far better than zero.

How much damage has been done to our Alaska economy only time will tell. People will be voting with their presence or lack of it, and with their money now and in the future.

How far can you push sport fishermen with excessive regulations? Will we find the reasons behind the low Kenai king salmon returns and do something about it? Will sport fishermen and businessmen ever really get involved in management decisions at the Board of Fisheries.

These questions and others need to be addressed by Alaskans who care about the health of our Kenai king salmon fishery and our economy.

James Johnson is owner of Johnson Bros. Guides & Outfitters in Soldotna.

THE ALASKA
JOURNAL OF COMMERCE

Vol. 16, No. 43 Alaska's Paper of R 976 One Dollar Week of Oct. 26, 1992

Waste in fisheries a growing issue

By Eric Fry
Alaska Journal of Commerce

"Across the vast reaches of the Bering Sea and the Gulf of Alaska, the beauty of the seas conceals a scandal beyond human comprehension," says narrator Chris Chavasse in a video called "The Last Great Buffalo Hunt."

"On a planet ravaged by hunger...the abundance of the ocean is being destroyed, squandered, literally turned into garbage—sanctioned by government and industry, which refuses to curb the overexploitation of this common resource.

"Totally legal is the killing and dumping of some 500 million pounds of vitamin-rich, high-protein fish every year," Chavasse said.

The 10-minute video, co-produced in August by Chavasse and Tricia King, was shown at the Alaska Federation of Natives convention in Anchorage Oct. 14, in a presentation by the Alaska Public Interest Research Group. The North Pacific Fishery Management Council viewed it in September.

"The video was put together in response to inaction from both the state and federal agencies governing the fisheries as to a substantive action to reduce the waste or to utilize the waste in a meaningful manner," Chavasse said in his opening remarks.

"Waste" refers to fish that are taken but never reach market. This includes:

- Salmon that are thrown out by hatcheries after the roe are taken, which is not prohibited by state laws on wanton salmon waste;
- Prohibited species that must be thrown back, either to protect the stock (as in the case of herring) or to protect the markets of other fishers (as in the case of trawlers discarding halibut intended for longliners);
- And economic discards, among which are fish too small for the processing machines on trawlers.

PHOTO BY MARGARET BAUMAN

Chris Chavasse, co-producer of 'The Last Great Buffalo Hunt.'

Something is happening

The question of waste overlaps other issues such as over-fishing, its effect tween large trawlers and all other fishers.

"It's pretty tough to be selective in a fishery that has the mouth of a net that covers two-and-a-half acres," said man and city councilman from Unalaska, in an interview.

"Trawling is too efficient. If we don't do anything in the next three years,

FORUM / LETTERS

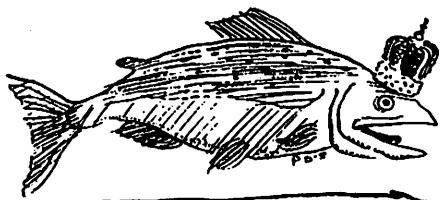
What's killing those early Kenai kings? Too much politics

By TIM KEENER

The reasons for what may turn out to be the smallest return of early-run kings to the Kenai may include interception on the high seas, bad climate and high mortality rates at sea. Some still complain that commercial setnetters are to blame.

Commercial fishermen have not fished during the early run since the 1960s. Our season has been limited for the past few decades from July 1 to Aug. 15. So commercial fishermen don't share the blame for the smaller runs.

Placing the blame on those other factors may be true only to a point. This summer record numbers of king are returning to the lower Kenai Peninsula. Those kings migrate to the same areas as the kings that leave the Kenai River. If high-seas interception is to blame for the low Kenai returns, why are the record runs coming back to other streams on the Peninsula?



The true answer to smaller king runs in the Kenai is that sportfish managers and the Board of Fisheries are managing the fishery based on economics and politics rather than sound biology.

Sportfish managers should take some guidance from what has been learned in the commercial fishery. Commercial fishermen begin the season cautiously by two fishing days per week. If the run comes in greater than expected, only then do we get more time. If the run is small, we may even lose those two days a week.

We accept that uncertainty as necessary to protect and preserve our fishery. We may suffer some years in the short term, but we know our fishery will be there decades from now.

Sportfish managers treat the Kenai River just the opposite. Without being sure of how many kings are returning, they open the fishery seven days a week with few restrictions. Last year the optimum king escapement level was not met. It appears escapement will fall about 1,500 short this year, and fishery managers knew this would be a weak run before the season opened.

The sport fishery is now going through growing pains, but guides and anglers will have to accept restriction if they are going to keep their fishery healthy for the future.

It's questionable whether the early run fishery should have opened at all either this year or last, but managers opened the fishery to preserve the income of guides and the economy of the local area. If we managed the commercial fishery for economics, as sportfish managers operate the Kenai, we wouldn't have a fish left today.

The Board of Fish and the Department of Fish and Game must stop worrying about complaints, economics and other distractions that prevent them from doing their proper job, which is biological management of fisheries resources. Guides and businesses must stop being blinded by the lure of dollar signs so that we ensure a sportfishery will exist for our children's children.

Today's management decisions must be based solely on what is best to preserve the fishery, not the fishermen, or else neither will be returning tomorrow.

Tim Keener is a life-long Kenai Peninsula resident and fisherman and past president of the Kenai Peninsula Fishermen's Association.

SLOW NETS DOWN

Fishing groups appeal to Rosier

Kenai said to need special attention

By BEN ELLIS
TIMES KENAI BUREAU

SOLDOTNA — Two sport fishing groups want the state's Fish and Game commissioner to personally manage the Kenai River because of the dismal number of returning king salmon.

The two groups also complain that Cook Inlet sockeye fishermen are killing too many kings before they enter the Kenai River.

In a letter to Commissioner Carl Rosier from the Alaska Sportfishing and Kenai River Sportfishing associations, anglers requested Rosier "personally become involved in the in-season management decisions for the Kenai River fisheries."

Tom Elias, president of the state sport fishing group, said Rosier's involvement is critical in protecting the Kenai king run.

"We need to front-load the river. Close down everybody and everything," Elias said. "Obviously, the com-fish (commercial fishing) department does not want to do anything to protect the resource. It's getting a little old, and it's getting worse."

A record low return of late-run Kenai kings could force the state to close Alaska's most popular recreational fishery next week, a state sport fish biologist said Tuesday.

As of Tuesday, 2,701 late-run kings had been counted at the state's sonar site on the lower Kenai River, with 392 chinooks being counted in the last 24 hours. On the same day last year, 4,472 kings had been counted, state records show.

The department will close the east side setnetters, marine sport fishery in the Deep Creek-Whiskey Gulch area, as well as the fishery within the Kenai River if projected escapement is below 15,500 fish. Catch-and-release restrictions will be imposed on the river if the projected spawning number is more than the minimum 15,500 but less than the optimum of 22,300.

State officials have said it is too early to project what restrictions, if any, will be placed on the fishery. But they expect to moni-

REMEMBER WHAT YOU SAID HERE TOM ELIAS!

TOM ELIAS IS NOW ON THE BOARD OF FISHERIES

With king salmon fishing on the Kenai restricted to catch-and-release, fishermen are flocking to the Kasilof and other rivers, where, if lucky enough to land a king, they can keep it.

ADELE T. CHAVEZ / Anchorage Daily News

Ruling spawns king salmon ghost town

DON'T BLAME US

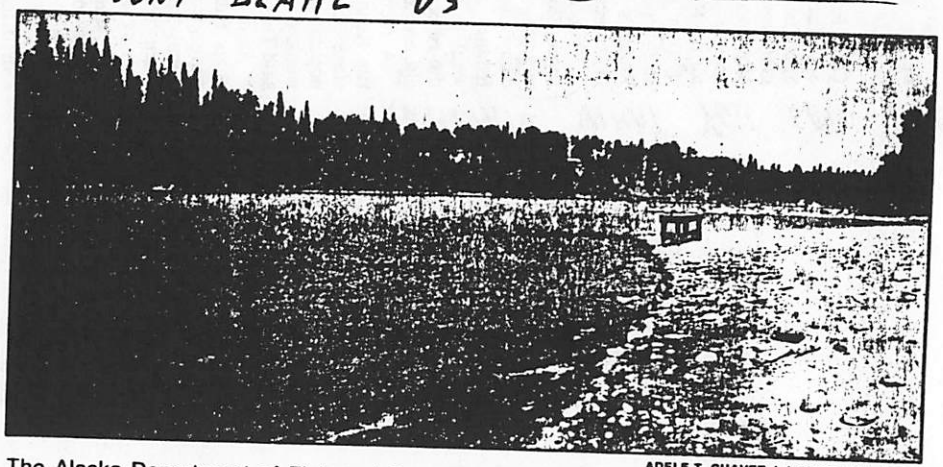
By LEW FREEDMAN
Daily News sports editor

KENAI — Early morning on the Kenai River. Birds chirped, dense foliage lined the banks, and the sun sent searchlight beams skimming across the light green surface of the water.

June is the height of king salmon season. Even though the wind carried the hint of winter — creating a windchill in the 30s — the sound of revving boat engines should have rumbled up and down the river, interrupting the serenity of this landscape painting.

It didn't happen. Six a.m. came and went. Nothing. No noise. No action. On shore, as he stepped into his flat-bottom boat, guide John Rudd said, "I'll be surprised if we see four boats."

The empty Kenai River. On a Tuesday. Ordinarily it is the week's most crowded day because the river is closed for king fishing Mondays. Empty is the word. No fish, no people, no boats.



ADELE T. CHAVEZ / Anchorage Daily News

The Alaska Department of Fish and Game's catch-and-release ruling for the Kenai has left the state's premier king salmon river virtually deserted of fishermen.

From 500 boats to 15 boats. From 2,000 fishermen to 50. June on the Kenai River is usually rush hour in the New York subway. Now it is the mezzanine at a Broadway flop.

May through August. This is supposed to be the busiest season of the year, when guides, hotel operators and restaurant owners make their money for the year. Yet a $40 million sport-fishing industry is drying up, gasping for air.

A ruling by the Alaska Department of Fish and Game permitting only catch-and-release fishing for kings on the Kenai as of June 6 has virtually padlocked the river, transformed the usually bustling fishing grounds into a ghost town.

The directive — announced because of the low number of fish returning to spawn — means anglers can continue to fish the Kenai for kings, but can't keep them to take home or to mount. They might be able to reel in a world record, but they can't keep it long enough to measure it.

The result has been abandonment of the river. For most of the thousands of fishermen who normally book five-hour trips on the Kenai, catch and release apparently doesn't cut it. They have cut out instead.

"On Sunday I was out fishing what is normally a real productive stretch of the Kenai," Bob Penney, chairman of the Kenai River Sport Fishing Association, said last week.

"There was not a rowboat, not a drift boat, not a power boat. When there is fish to be caught, fishermen show up immediately, and when there aren't, there are no fishermen there. It's instant. It's unbelievable. The Kenai is so peaceful, so serene, and so sad."

Please see Page E-8, **KINGS**

SURE THEY DO THEY WANT TO MAKE MONEY SELLING KINGS

KENAI PENINSULA / MAT-SU

Commercial fishermen say they want to preserve kings

for their own self

By BEN ELLIS
TIMES KENAI BUREAU

SOLDOTNA — A commercial fishing group is asking the state for assurance that any decision affecting the Kenai River king salmon sport fishery and the Cook Inlet commercial fishery be based on management plans and not on political preference.

"As commercial fishermen, we're concerned about the small return of late-run kings to the Kenai River," the Kenai Peninsula Fishermen's Association said in a letter to state Fish and Game Commissioner Carl Rosier. "But, we urge caution in decisions that you and your staff make in managing the Kenai River kings."

AFRAID

Earlier this week, two sport fishing groups urged the commissioner to take a personal hand in managing the Kenai River because of the dismal number of returning king salmon.

Some sport fishermen and Kenai River guides have long pointed the finger at the commercial setnetters as one of the main reasons king runs have been declining in the world-class salmon river fishery.

Commercial fishermen are interested in protecting the king run, said Brent Johnson, the commercial fishing group's president.

"We realize it is an important run. We support this management plan and are willing to play our part in preserving the king run," he said. "We're doing everything we know how to do to protect it and yet not give up our fishing."

Johnson said eastside setnetters have shown their support in preserving kings by the voluntary release of live chinooks caught in nets and the creation of the Kenai River King Salmon Fund.

In its first season, the money for the fund will come from sales of kings caught and sold by the commercial fishermen, as well as individual donations. Johnson projected the fund, which is managed by a nonprofit board, could net $100,000 to $250,000 this summer. The money will be used for habitat rehabilitation along the Kenai River and for public education on how to protect the river's fragile environmental system.

Johnson wrote Rosier that fishermen want assurance the department will follow plans that are in place and not make premature decisions based on limited information.

"We are opposed to closure of the commercial fishery if the minimum king escapement can be reasonably predicted. We expect fishery managers to make good faith estimates of run strength," he said.

Johnson said he was sure Rosier would spend time with the setnetters as well as sport fisherman when the commissioner visits the Peninsula within the next two weeks.

A record low return of late-run Kenai kings could force the state to restrict Alaska's most popular recreational fishery next week, a state sport fish biologist has said.

As of Thursday, 3,590 late-run kings had been counted at the state's sonar site on the lower Kenai River, with 406 chinooks being counted in the last 24 hours. On the same day last year, 5,506 kings had been counted.

The department will close the east side setnetters, marine sport fishery in the Deep Creek-Whiskey Gulch area, as well as the fishery within the Kenai River if projected escapement is below 15,500 fish.

Catch-and-release restrictions will be imposed on the river if the projected spawning number is more than the minimum 15,500 but less than the optimum of 22,300, according to the sport and commercial fisheries management plans.

State officials have said it is too early to project what restrictions, if any will be placed on the fishery, but they will monitor the situation daily beginning Monday.

Although the run has been at record low levels this summer, the biologist noted that the middle of July is historically the time when more kings flood into the river from the inlet.

KID'S AN'
SPORTS FISHERMAN KNOW, - IT'S THE NET'S, WE WON'T CLOSE OUR EYE'S

KINGS: Biologists may never know what reduced run of wild fish

Continued from Page J-1

were plotted on a graph, the picture only got scarier. The king run had obviously peaked on June 8. It was a very weak peak, and the run was heading downhill fast.

Biologists began to get seriously concerned.

Meanwhile, fishing guides who spend their days on the Susitna's best king tributaries were also starting to get nervous.

By mid-June, the Deshka should have been plugged with kings. It wasn't. There were so few fish, in fact, that guides were having a tough time finding fish for their clients.

Where Mike Janecek, co-owner of Mike's Good Time Charters, would usually see hundreds of kings on his daily run up this stream, he was seeing little or nothing.

Where he could usually put his clients into dozens of fish a day, he was having a hard time finding any.

"We were doing OK," he said. "(But) this week it's falling apart."

Hatchery runs at the Kasilof River, the Homer Spit Lagoon, Ship Creek in Anchorage and Halibut Cove all look healthy.

Only the wild runs are suffering.

"Obviously, it doesn't appear to be anything ocean-related because the hatchery fish are coming back good," Engel said. "The hatchery fish would have got the same treatment (in the ocean)."

"It must not have been out in the ocean," said Delaney.

"That limits it down to that period in freshwater," Engel said. "Something happened after the eggs were laid in the gravel."

Almost everywhere in the region, from the Kenai Peninsula to the Susitna Basin, the king salmon spawned in wilderness streams have suffered.

Attention has begun to focus on massive floods that swept the region in 1986. The floods scoured some stream beds 3 to 4 feet deep.

Some streams run in

spent a year in freshwater and went to sea in 1988.

Most of this year's return is made up of 5-year-old fish that have spent three years at sea. On average, they account for 50 percent of the return, with another 20 percent comes from the 4-year-old fish, or two-ocean fish.

Usually when a king run comes back unexpectedly weak, it is because one of the age classes is missing. Some environmental calamity — a particularly cold winter freezing eggs in the gravel or a flood such as that in 1986 — wipes out most of a year's production.

Oddly, however, that does not seem to be the case this time, Delaney said. Early data from scale samples gathered in the commercial fisheries appear to indicate a normal return split among the three age groups.

"There does not appear to be an age-class missing," Delaney said. "Maybe the 5-year-old component is a little weak," but not weak enough to account for the faltering run.

Which has sparked some interesting discussions about possible long-term consequences of the flood.

Biologists are now considering the possibility that the flood so disrupted stream beds that it took them years to return to normal. Meanwhile shifting gravels and suffocating silt were killing millions of immature salmon.

Engel said he remembers walking Montana Creek in 1987 and noting an unstable stream bed. Gravel and sand seemed to be constantly shifting under his feet. The system of pools and riffles that make the river productive for kings seemed to still be resettling itself.

"You just had the sense the streambed had not come to a sense of stability," he said. Whether that is what caused this year's weak king return, however, will probably never be known for sure. Fish and Game did not have the money to fund the kind of long-term, post-flood research that might have provided the answers, and it is too late to go back and do the research now.

"We'll never know for sure," Engel said. "We'll never know the answer to that. The only thing we do know was that we had a big flood in '86. Something went wrong after that.

"There was a flood. What effect did it have? It's something you try to figure out when the snow's flying, when you're sitting around the office in the winter."

"From our standpoint now," Delaney added, "it's a lot more important to consider what's going to happen next. If the information continues to lead us to the conclusion we've got so far, we're going to have to impose some (fishing) restrictions. What did happen was, at least now, completely beyond my immediate control."

What is important today is ensuring enough spawners survive this year to provide the potential for good returns in 1996, 1997 and 1998.

"We've basically seen some real good years in each of the years in the recent decade," Delaney said. Managing those runs was easy. Now it gets trickier.

On the good side, Delaney said, Susitna anglers — unlike those on the Kenai River — usually give up when the fishing gets poor, and unusually low, warm water in major tributaries has made kings harder to catch.

Both factors served to minimize early-season catches, but Fish and Game on Friday decided more restrictions are necessary to ensure catches stay low and most fish survive to spawn.

TO IT LETS SOME PEOPLE DO

TROUBLESHOOTER: Cycle dis

Outlook gloomy for kings

Restrictions possible on late-run salmon

STOP THE NET'S

By TOM KIZZIA
Daily News reporter

SOLDOTNA — A disappointing return of late-run king salmon to the Kenai River may force the state to impose catch-and-release restrictions as soon as next Monday, according to the Department of Fish and Game.

Officials say it's still early in the month to call the king run a bust. But a ban on keeping fish would be a blow to Soldotna's tourist and fishing businesses, which are still reeling from the low turnout for catch-and-release fishing on June's early king run.

And worse restrictions may be ahead. The July numbers may be so low that all fishing in the river might be shut down, along with eastside commercial setnetting, said state biologist Dave Nelson.

As of Tuesday, the late-run king return was the lowest it's been since sonar counting began on the Kenai River in 1987, Nelson said.

The state had counted 2,701 fish in the river, compared with 4,472 by July 9, 1990, and 7,022 in 1989, he said. Fishing has been slow, Nelson said.

By Monday, the state should have enough sense of the run's size to begin managing the river on a day-by-day basis, he said.

The state wants a minimum of 15,500 kings to spawn in the river, with an optimum target of 22,300.

Please see Page B-3. KINGS

20

KING SALMON: Council to take up issue of how to limit trawlers' bycatch

Continued from Page A-1

"Everything has its time," Mitchell said. The trawlers vs. king salmon time has ome.

The council meets this week in Kodiak. n Thursday it is scheduled to consider a quest for emergency action to protect the lmon populations by halting trawling in e eastern Gulf of Alaska. And the council ill begin work that could produce regula- ions for king salmon bycatch as early as anuary 1992. And even though the Ameri- an Factory Trawlers Association concedes a roblem exists, the council must move slow- y because any action it takes could end up eing challenged in court, Pautzke said.

There is a problem, Bruce Buls, a spokes- lan for the association, said Thursday at a neeting of the Resource Development Coun- il for Alaska. But "it is probably just a few oats."

A solution may be to set bycatch quotas for individual boats, rather than establish- ing a bycatch total and then shutting down all trawlers when the quota is met, he said, which is the way bycatch halibut is regulat- ed.

The technology and know-how already exist for reducing the salmon bycatch, said Clem Tillion, Gov. Wally Hickel's special assistant for fisheries. "The incentive to use it is not there."

So many variables influence king salmon runs that it is risky business blaming one fishery, said Katherine Myers, a University of Washington fish biologist who has studied king salmon bycatch by the bottom fisheries.

"It is all speculative," she said. But "if this large bycatch doesn't turn out just to be indicative of a really large run of fish, there is going to be a really large problem."

By using observers, the study of fish scales and information gathered from tagging, state and federal fish biologists have produced a number of studies suggesting how many kings are being killed off Alaska shores and where they come from.

The studies have been sporadic, so no consistent data exists. But a common thread in all of them is that thousands of fish are killed annually by the trawlers. Most of the kings killed in the Bering Sea appear to be western and southcentral Alaska fish. On the other side of the Aleutian chain, in the Gulf of Alaska, the king kill includes many fish from the Pacific Northwest.

In the late 1970s and early 1980s, observers aboard Japanese trawlers fishing close to Alaskan shores kept track of the number of king salmon scooped up by the trawlers and tossed overboard. The trawlers must throw the salmon back because they might be targeted, rather than rock fish and pollock, if they could be kept.

When those numbers crept up over 100,000 in 1980, the council gave the foreign fleets five years to get the bycatch down to 14,000, Mitchell said. For fear of being chased out of the waters, they wasted no time. The first year, the foreign trawlers hit the target simply by fishing differently, including slowing their boats so their nets would not be as wide open.

About the same time, inland fishermen were focused on a huge, Japanese mother ship, fishing the high seas of the Bering beyond the 200-mile limit controlled by the council. The mother ship reported a record-high bycatch of at least 703,798 king salmon. Inshore fishermen were irate.

"If just 100,000 of those would have made it back," Mitchell said, "they would have translated into 2 million pounds of additional king salmon. At $2 a pound, that would have been $4 million for the commercial catch alone."

While that was going on, the domestic trawlers were beginning to take over the fisheries inside the 200-mile zone, as mandated by the 1976 Magnuson Fishery Conservation and Management Act. They didn't have observers aboard because "the American fleet kept saying, 'We need room to grow.' They said, 'Don't put regulations on us.'" Pautzke said. "So the council sort of kept hands off for quite a while."

Meanwhile, restraints were placed on the inland fishermen, with the latest being a plan to limit the number of guides working on the Kenai River.

For the past two years, fishermen competing for Kenai River salmon have faced dwindling numbers of returning fish. State figures show that 48,123 salmon returned to the Kenai River to spawn in 1987 and sport fishermen caught more than 12,000 of them. Last year, only 24,000 kings returned to spawn, and just over 6,000 were caught by sport fishermen.

Last year, a system was put into place that requires observers on the domestic trawling fleets. Some fish biologists say with only two years of data, it is too early to say how the trawlers are affecting salmon returns.

Others, like Tom Elias, president of the Alaska Sport Fishing Association, say, "How much more data do you need? That's just the trawlers giving the same old line so they can buy more time."

THIS IS ROOT OF THE TROUBLE

Tons of kings wasted, but who's counting?

Lack of data or organized protest lets trawlers' huge bycatch of salmon go almost unchecked

By NATALIE PHILLIPS
Daily News reporter

Alaska setnetters, driftnetters, trollers and sport fishermen spent the past decade battling among themselves over a few hundred king salmon here and there and fretting over foreign fleets fishing in the high seas off the Alaska coast.

Meanwhile, closer to shore, large trawlers went about scooping up and inadvertently killing tens of thousands of king salmon from as far away as Idaho's Snake River and California's Sacramento River and as close to home as Ship Creek, according to National Marine Fisheries Service records dating to the late 1970s.

The trawlers killed at least 800,000 king salmon ranging in size from 14 to 35 inches and weighing from a little over a pound to 39 pounds, a sample of the tagged fish showed. So far this year, the number of kings killed by trawlers is estimated at 64,000, more than double the number reported killed in all of 1990.

Yet in the mid-1980s, when fishing regulators moved to stop the bottom-fish trawlers from inadvertently killing large numbers of halibut and crab with their huge sweeping nets, nothing was done about the king, the rod-and-reel angler's prized catch.

Why has the trawlers' take of kings gone virtually unchecked?

Some say because there is no conclusive data to prove the trawlers have taken a toll on their total numbers. Others say it is because salmon fishermen were too busy bickering to organize as did the halibut fishermen who managed to get the North Pacific Fisheries Management Council to set quotas on how many fish could be killed as bycatch by the trawlers.

"I've been in there flailing away about this since the mid-1980s," said Henry Mitchell, executive director of the Bering Sea Fishermen's Association and a council member. "You can't blame the council; they respond to pressure and there were just bigger things on their agenda."

"The council has had so much on its plate," said Clarence Pautzke, executive director for the council, which helps regulate fishing in the 200-mile zone off of Alaska's coasts. "There just have been other things more pressing. The salmon people just haven't banged the drum loud enough."

Please see Back Page, KING SALMON

THE ROOT OF THE MATTER
THANK YOU NATALIE PHILLIPS

4-21-91

MAY·26·91

Fish and Game keeps watch over salmon

By BEN ELLIS
TIMES KENAI BUREAU

ON THE KENAI RIVER — Ice still clings to the side of some banks of the Kenai River, but the 36 miles of the best king salmon fishing in Alaska is running cold and fast as anglers look forward to a chance of landing a world-class trophy salmon.

Old-timers on the Kenai can recall 30 years ago when they could fish all day and not see another angler.

Word of mouth, national advertising and trophy kings pushing 100 pounds that hang on walls throughout the world have changed that.

On a single summer day, as many as 300 boats with four or five anglers motor or drift down the glacier-fed river, while hundreds cast lines from the bank or wade hip-deep in the cold water.

Yet, despite the growing popularity of the Kenai, state biologists contend the Kenai king fishery is safe from too many anglers seeking too few fish and from human development of the habitat.

The state began a creel survey in 1974, recalled Dave Nelson, area management biologist for the state Fish and Game's Division of Sport Fish.

The state attempts to monitor the total king return to the Kenai River with creel surveys, sonar and other measurements.

"It's a relatively new fishery, which has grown at this time to the largest salmon fishery in the state," Nelson said.

> 'If the forecast for the early run is correct, then we do foresee catch and release. The late run would depend on the magnitude of the commercial harvest and the sport harvest.'
>
> — Dave Nelson
> Area management biologist

He does not see the fishery in danger of being overfished.

"Not in the sense that you are overharvesting it. If you want to get into the esthetic and social aspects, then I guess it is in the eye of the beholder.

"But in terms of being overfished and the run being depleted or declining as a result of overfishing, no. That is why we have management plans that the Board of Fisheries has established with given escapement goals to make sure that does not happen."

Last year, the state twice placed catch-and-release restrictions on the fishery, and if a department forecast is accurate anglers will be hooking and releasing kings again this summer.

A catch-and-release policy is imposed when fishery managers fear too few fish will survive to spawn.

If the state imposes catch-and-release restrictions this summer, it will allow anglers to keep what the department regards as trophy kings, Nelson said.

In a departure from last year, kings 52 inches or longer, which usually translates to about 60 pounds or larger, will be legal to keep. The department is trying to minimize the impact of any fishing restrictions, he said.

Last year, Kenai and Soldotna business owners said they were hurt by the catch-and-release restrictions imposed on May 15 and July 28.

This is the first season the department has released a forecast of the May 15-June 30 early run of kings into the Kenai River and the July 1 through mid-August late run.

"This is the first time we have had sufficient information to make a preseason forecast," Nelson said. "The actual studies on these fish go back to the mid-1980s. Since the fish can be 7 years old, we are just getting though one cycle."

The department is calling for 12,000 to 13,000 kings in the early run and about 43,000 in the late run. An average early run is estimated at 19,700 and the average late run is about 58,800, said Nelson.

"If the forecast for the early run is correct, then we do foresee catch and release. The late run would depend on the magnitude of the commercial harvest and the sport harvest. There are an awful lot of 'ifs' in there," he said.

"The biggest danger, if you will, the river faces comes from a loss of habitat," Nelson said. "That's always a factor in these fisheries."

While the state has noticed an increase in domestic development along the banks of the Kenai River, Donald O. McKay, habitat biologist for the state Fish and Game Department, said his division has not noticed a long-term impact on the river.

"The short answer is yes, we've seen some of that, but the longer answer is that we are not aware at this point in time that there has been a significant alteration of habitat."

McKay noted the state does not know where the line of significant alteration begins, but studies planned should help determine that point.

McKay said the Kenai River was lucky that much of the drainage was in public land, thus avoiding industrial pollution.

"We're trying to go for the long-term protection of the river," he said. "Our concern is that habitat is there regardless of short-term fluctuation in (salmon) population. If we maintain the base habitat, we maintain the base potential production."

WHAT ABOUT THE NETS 95%

23

FISH: Showdown looms over pi

Continued from Page C-4

lines, and mostly they do not seem to care.

"Fishing looks at itself as a way of life, not an industry. If the consumer would only put pressure on fishermen, they would start to behave like a food industry that cares about consumers. But the American consumer is a world-class ignoramus when it comes to fish," complains William Aron, director of the federal government's Alaska Fisheries Science Center.

All the fault is not the consumer's, however. No other large U.S. enterprise exists so clannishly apart from the public while solely dependent on a publicly owned resource. Unlike oil leases or grazing permits or timber sales on public lands, U.S. fish resources are given away free of charge. Just for the taking.

Over recent years, more and more Americans wanted their chance at high-seas adventure and quick riches, so the fleet of fishing vessels grew. The fisherman-dominated council responded by shortening the season, not by limiting how many boats can fish. The year-round pollock season now lasts only 5½ months and is getting shorter.

APPALLING WASTE

The 15-year-old policy that shaped the expansion of the U.S. North Pacific fishery was to distribute the greatest number of fish to the greatest number of fishermen — an expediency that resulted in dangerous inefficiencies and conflicts that will surely test the capacity of industry regulators to untangle.

With hindsight, it's easy to see that effects of a shrinking fishing season and growing fishing fleet capacity are many and almost all bad.

HERE IS THE TRAP

Waste is enormous. The processing machines on factory trawlers cannot handle pollock that are too small. But with a quota of pollock assigned to the fleet as a whole, individual boats compete against each other and scramble as fast and hard as they can, no matter how many millions of pounds of unusable pollock gets wasted.

"The way it is, a captain says, 'I don't care if I can only keep half of the (trawl net) tow, at least I can keep half. So he keeps on fishing,'" explains Bruce Buls, spokesman for the American Factory Trawlers Association.

The math is unpleasant: A net load of 100 metric tons of fish, half of which are undersized, means 110,200 pounds of immature pollock thrown back, dead and wasted. And that is just a single tow of the trawl net. Tomorrow's catch is being killed and heaved over the side for the sake of today.

Even when they keep a fish, the trawlers end up throwing back 85 percent of the body weight as waste.

When the giant nets scoop up other fish, such as premium halibut, this is called bycatch. And the council's rules specify that these out-of-season fish must be tossed back. Up to 90 percent of them are dead or mutilated.

Because of this bycatch and other waste associated with the high pressure placed on fishermen to work in dramatically shortened seasons, an estimated 20 million pounds of halibut is killed and allowed to rot each year in Alaska waters as a matter of policy. That compares to just 70 million pounds brought to market. Waste of other species is also appallingly large.

The toll on fishermen is also high. They are finding it harder and harder to make their boat payments each season, notwithstanding federal loan guarantees. Safety is sacrificed. A big factory trawler sank in the Bering Sea in 1990 and nine perished. Some said the pressures of time and money doomed the boat. Alaska ranked 50th among the states in worker safety in a recent AFL-CIO study.

No wonder the governor and Greenpeace and many fishermen say the whole system is nuts.

Some have suggested it's merely a question of which will go bankrupt first — the fishing fleet or the North Pacific marine environment.

GRAVEST DANGER

This month, after two years of anguished deliberation, the council took a first step to try to contain the mess. It voted for a temporary moratorium against new boats entering the offshore fisheries for the next three years. Presumably, this will prevent things from becoming worse in the short run, although it will do little to make them better.

But tougher questions await the council.

Overfishing is the gravest danger.

To date, the council has stayed within the advisory limits recommended by government scientists and established strict annual catch quotas based on preserving the long-term health of the fish populations. Some council officials say that record should put the public at ease, even if fishing management is otherwise messy.

Regulators also note that a vocal element of the Alaska fishing industry has a long and indisputable record of conservation.

Doubters say, just wait.

The problem is that the

2 L

...uelle L. Hope

Do fishermen need every inch?

The Alaska Wildlife Alliance, which has monitored Glacier Bay National Park for over 10 years, would like to respond to a recent letter from Brad Chisholm on Glacier Bay. Commercial fishing has never been legal in any national park. Commercial fishermen, however, continue to violate the law. The National Park Service's response has been to ignore the illegal activities.

Recently the NPS proposed regulations to allow the commercial fishing to continue illegally as a "test." The Alliance tried for several years to convince the NPS to enforce federal law. Finally, when no change had occurred, the Alliance was forced to file a lawsuit.

Since then, Sen. Murkowski and Rep. Young introduced a bill to reward the commercial fishermen for their illegal fishing, by legalizing their fishing activities in the national park.

Chisholm attempts to paint the situation as an attack on commercial fishing, implying this is a conspiracy to close down the industry. Glacier Bay is one of the very few areas in Alaska closed to commercial fishing. Are commercial fishermen so extreme that they have to have every inch of ocean? Should we not have at least a few areas left unexploited by man instead of devoting all our public resources to private profit?

His letter rightfully points out the air pollution caused by cruise ships. In recent years, the NPS illegally raised the number to 107 in spite of guidelines designed to prevent the endangered humpback whale from going extinct. The pending legislation would increase the number of ships from 107 to 184.

— *Jim Bensman*
The Alaska Wildlife Alliance

Japanese driftnets 'indiscriminately lethal,' official says

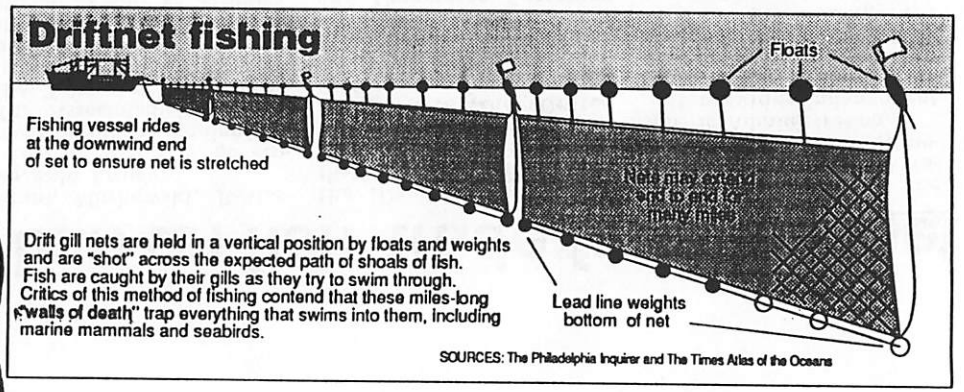
By SCOTT SONNER
The Associated Press

WASHINGTON — A top U.S. fishery official on Friday blamed Japanese driftnet fishermen for killing millions of fish and tens of thousands of sea birds and marine mammals in the North Pacific Ocean.

"The numbers of blue sharks, sea birds, tuna and porpoise being killed clearly indicate that driftnet fishery is indiscriminately lethal," said William W. Fox Jr., assistant administrator for the National Marine Fisheries Service.

Japanese fishermen catch squid in their monofilament nets, which stretch as long as 30 miles. But critics say the "curtains of death" also snare all other forms of marine wildlife in their path.

"The numbers of species other than squid being killed is unacceptable to the United States and we strongly support the United Nations resolution calling for a moratorium of this equipment on the high seas by 1992," said Fox, who acts as a scientific monitor for the Commerce Department.



Multinational observers monitoring 10 percent of Japan's driftnet fleet in the North Pacific recorded 3 million pomfret among the "innocent and incidental" victims of driftnet fishing in 1990, the Commerce Department said.

The nets also killed 81,956 blue sharks, 30,464 sea birds, 253,288 tuna and 1,758 whales and dolphins.

The Bush administration backs a United Nations resolution demanding an end to large-scale driftnets by June 1992, unless users can prove they can modify the technique to reduce the dangers.

Sen. Bob Packwood, R-Ore., and Rep. Jolene Unsoeld, D-Wash., have been pushing proposals that instruct the Bush administration to enter into direct agreements with driftnetting countries to discontinue the practice.

The lawmakers fear a U.N. ban will have only limited success because South Korea and Taiwan — two other driftnetting nations — are not members of the United Nations.

Murkowski demands ban on fish trade from driftnet violators

By SCOTT SONNER
The Associated Press

WASHINGTON — The government should ban imports of fish products from Taiwan and South Korea immediately in response to new evidence those countries are openly violating driftnet fishing prohibitions, Sen. Frank Murkowski, R-Alaska, said Friday.

An internal U.S. government document obtained by The Associated Press says the Taiwanese government is aware of the violations but has done nothing to halt the use of the nets that stretch as long as 30 miles, indiscriminately killing sea birds, marine mammals and non-target fish.

"Both Taiwan and South Korea have failed to curtail the illegal operations of their driftnet fishing vessels in the North Pacific, despite their international agreements with the United States to do so," Murkowski said.

Murkowski called on Secretary of State James Baker and Commerce Secretary Robert Mosbacher to initiate an immediate embargo on the fish products.

An aide to Sen. Bob Packwood, R-Ore., provided The Associated Press with the internal memo from the National Oceanic and Atmospheric Administration.

It provides independent confirmation of reports in Taiwanese newspapers last week that a fleet of driftnet vessels are using the so-called "curtains of death" to illegally snare salmon and other fish in the North Pacific.

Fifty Taiwanese and South Korean driftnet vessels are fishing north of the boundaries established in earlier driftnet agreements, the July 18 memo said.

Murkowski said the Bush administration has the authority to impose the embargo based on the earlier certification of sanctions when the two countries failed to negotiate driftnet controls as required by the Driftnet Act.

Ford said Friday it was not clear whether the certification still was in place.

DEALER: Sale closes

Continued from Page D-1

8 in size among Alaskan-owned, Alaska-based companies. The magazine said the [illegible] $107

tions involved, and it took over a year to put together."

The sale involved not only the new car dealership, but other enterprises under the Alaska Sales & Service um- [illegible] Alaska

2 owners to pay $700,000 for release of seized boats

In out-of-court settlements, two Seattle-based fishing boat owners agreed over the weekend to pay the federal government $700,000 in fines for the release of their seized vessels, according to the U.S. attorney's office.

The owner of the Endurance, Alaska Trawl Fisheries Inc., agreed to pay a $400,000 fine. And the owner of the Royal Sea, Royal Seafoods Inc., agreed to pay a $300,000 fine.

Both boats were seized by the Coast Guard on July 17 after they were spotted fishing in a no-fishing zone near Round Island in the Bering Sea. The buffer zone around Round Island was established by the National Marine Fisheries Service to protect walrus.

Four other Seattle-based fishing boats have been seized previously for crossing into the buffer zone. So far this year, six foreign vessels and seven U.S. vessels have been seized in Alaskan waters for violations of federal fishing regulations. The U.S. attorney's office has negotiated nine out-of-court settlements and collected $3.4 million in fines.

HERE IS THE TROUBLE

products.

RETHINKING

In the meantime, a few industry observers ask whether it also may be time to rethink the way the fish get caught. Several hundred seine boats are used in what has increasingly become a hatchery round-up confined to a few small areas of the bay. Having so many boats join in the harvest creates lots of jobs and spreads around the money earned from the fishery. But most of the fish could easily be caught with a fraction of the boats and manpower.

"In Alaska, we've managed to a large extent for inefficiencies. Not just to meet production goals, but also to meet social needs," said Ed Crane, president of the Alaska Commercial Fishing and Agricultural Bank, which has loaned more than $25 million to salmon fishermen.

"I'm not advocating we go back to fish traps. But we ought to recognize that we're hanging extra costs around the industry's neck."

TO MANY PERMITS

EVERYONE'S HURTING

American fishermen aren't the only ones hit by low prices. Japanese chum salmon caught this spring were selling for 30 percent less than last year, said Tom Asakawa, a fisheries analyst for the American Embassy in Tokyo.

Low prices helped push Marutsubo Otsubo Suisan Co. Ltd., a major processor of Alaska red salmon, into filing for bankruptcy, with one of its suppliers, Shin Nisshoku Co. Ltd.

The shock has paralyzed the many firms in the salmon trade as the credit that lubricates the salmon trade dries up until the bankruptcies are sorted out.

For Alaska processors, the timing of the Japanese market troubles — near the peak of the state's summer salmon season — could not have been worse. They are reporting that not a single pound of Bristol Bay sockeye salmon has been sold since the bankruptcy, said Rick Lauber, vice president of the Pacific Seafood Processors Association, which represent's Alaska's major operators. "The purchases have come to an exact halt. Frightening," he said.

The chill in Japanese buying is likely to sink several Alaska-based processors, Lauber said. U.S.- or Canadian-controlled companies that lack deep-pocket Japanese investors are likely to be the most vulnerable. These independents have been struggling for several years to cope with radical changes in the Japanese markets.

THEY WANT TO DO THIS

A DIFFER...

82

Key red salmon fishery called off in Inlet

By HAL BERNTON
Daily News business reporter

The upper Cook Inlet red salmon fishery, the key harvest for more than 1,000 Southcentral commercial fishermen, was shut down Monday due to weak returns of fish to the Kenai River.

The closure comes as too few red salmon have "escaped" into the Kenai River so they may spawn and produce fish for future years.

As of July 21, about 143,000 red salmon had escaped into the Kenai River, compared with the roughly 300,000 to 400,000 fish that state biologists had expected to see. And escapement rates have dropped off. That prompted fishery managers to cancel a 12-hour opening scheduled Monday, they are uncertain when fishing would resume.

"We would have to see a fairly dramatic improvement in escapement rates," said Ken Tarbox, a Soldotna-based state biologist who helps manage the harvest.

"It's looking grim. We're not happy to be idle at a time when we ought to be busy, but the top priority is to get fish into the

Please see Page C-6, SALMON

93

Survival rate in catch-and-release greater than previously estimated, biologist finds

The Associated Press

NANAIMO, British Columbia — Fish caught and released by recreational fishermen appear to stand a good chance of surviving, says a fisheries scientist who is researching the subject.

Terry Gjernes of the Department of Fisheries and Oceans has spent the past five years looking into the survival of hooked fish after their release.

At one point it was believed about 30 percent of fish that were released died. But Gjernes' research indicates the loss is between 10 percent and 20 percent, depending on the species.

That's good news for sports anglers, who practice catch-and-release fishing to preserve stocks.

The main cause of death for fish is being hooked in the blood-rich gills or the artery leading to the gills.

"It's surprising, even fish hooked in the eye usually manage to survive although they're more likely to be killed by a predator," Gjernes said.

ME WILL CATCH AND RELEASE, YOU SLOW NET'S DOWN

Decline in fish found

Overharvesting, pollution cited

The New York Times

Fish are disappearing at an alarming rate in U.S. coastal waters, and nearly one-third of all species have declined in population in the last 15 years, researchers say.

In separate reports, a Massachusetts agency and two national environmental groups have reached the same conclusion about the fish population off the coast: Unless the National Marine Fisheries Service imposes stricter conservation measures and fishing regulations, many fish species may decline or be wiped out in the next decade.

"The plundering of our coastal waters has imperiled most fish species," said Amos Eno, director of conservation programs for the National Fish and Wildlife Foundation, a non-profit conservation group in Washington, which recently issued a report on the management policies of the federal agency.

From haddock and flounder off Georges Bank in New England to Spanish

Please see Back Page, **FISH**

FISH: Overharvesting, pollution cited

Continued from Page A-1

mackerel off the Gulf of Mexico to striped bass off California, many fish species are threatened by overfishing and an advancing tide of pollutants and urban development on the coastline that have degraded habitats and wetlands, which fish use as spawning and migrating grounds.

But so far in Alaska, many major fish and shellfish species have held their populations up, and in some cases have staged dramatic comebacks.

Many major salmon runs, for instance, have been nursed back to health, and state salmon harvests stand at record levels. Pollock stocks have declined in the Gulf of Alaska, but fishery biologists have determined there was enough pollock in the Bering Sea to allow catches to remain at a constant level into the 1990s.

Alaska shellfish biologists have tracked the decline of king crab and shrimp stocks, but also have seen a tremendous surge in opilio crab populations that allowed a record 1991 harvest.

The National Marine Fisheries Service, which controls and regulates 2.2 million miles of coastal waters, says it is taking steps to control fish depletion, including tougher restrictions on net sizes and quotas.

"The bottom line is that there is a strong recognition that fish depletion has become a dire situation," said Roddy Moscoso, a spokesman for the agency. "The traditional belief that the fisheries are open to anyone with a boat does not work."

Scientists say that a change in the population of any one species of fish, particularly those at the top of the food chain, could have unforeseen effects on marine environments, disrupting ecosystems and affecting birds, marine mammals and smaller organisms that depend on fish and their habitats to survive.

Nearly one-fifth of the world's annual fish and shellfish harvests is caught within 200 miles of the United States coastline.

Yet only 15 percent of those fish species are yielding stocks near their potential level, according to the report by the National Fish and Wildlife Foundation.

At least 14 species found off coastal waters are in danger of being depleted, including Atlantic salmon, swordfish, Pacific Ocean perch, shad, California halibut, mackerel, cod, haddock and flounder, the three studies found.

In New England, overfishing has devastated so many species that most highly valued fish are being replaced by those of lower value, which are better able to survive, the study by the Massachusetts Offshore Groundfish Task Force found.

"The 1990s will definitely be a time of reckoning in the fishing industry," said Brian J. Rothschild, a biologist at the University of Maryland. "Technically, you can stop overfishing as quickly as you can snap your fingers. But nobody is doing it."

All three reports, by the Massachusetts task force, the Center for Marine Conservation, and the National Fish and Wildlife Foundation, recommend that the fisheries service restrict commercial catches to allow fish stocks to recover.

It would take 5 to 10 years to recover depleted stocks with little or no fishing, said John Wise, author of the report by the Center for Marine Conservation, a non-profit group.

Fish tend to be more resilient than wildlife, and few reach the point of extinction. But biologists say they are increasingly concerned about preserving habitats from pollution, development and energy projects.

DONT LET THIS HAPPEN TO US

JAPANESE OWNED

Fish industry pays share

The Alaska fishing industry has good compliance with state taxation laws, according to a two-year study released this week by the state Department of Revenue. The state taxes fish processing plants, processing ships that operate within three miles of shore, exporters of raw fish and limited-entry permits. Half of that money is funneled back to 61 coastal communities, and that amount totaled $18.2 million in fiscal year 1991. The report recommends the state pass a new tax that would collect money from ships that operate farther than three miles out but unload processed fish at Alaska ports. That tax would allow the state to collect money from factory trawlers that net most of the North Pacific huge bottom-fish harvest.

MONEY IS GOOD BUT FISH WON'T LAST

Onshore, offshore fisheries wrestle for surimi market

SLOW NETS DOWN

By IMRE NEMETH
TIMES BUSINESS WRITER

Alaska's onshore processors are locked in battle with factory trawlers.

But leaders of both camps say only one can survive; the state's fishing waters are not rich enough in bottom fish for both.

The processors and trawlers are squaring off over control of Alaska's surimi market. Regulators say both sides are overcapitalized and have too much processing equipment for too few fish.

The debate adds a new twist to a part of the state's commercial fishing industry that once was predominantly controlled by foreign fishing interests. Until the early 1980s, when U.S. companies began to see profit in pollock, black cod, rockfish, yellowfin sole and other species of bottom-dwelling fish, wholly owned foreign catcher-processor vessels dragged their colossal funnel-shaped nets through Alaska waters, taking nearly all the state's annual 1.7 million-ton catch. But by 1989, these mother ships from other countries had virtually been eliminated from the scene.

Yet despite the changes, fishing industry leaders say Alaska remains a wallflower at its own dance. Most processing companies here are based elsewhere and owned either by foreign multinational companies or U.S. corporations in the Lower 48. Local interests are limited to a few smaller processors, factory trawlers and catcher boats.

In the dispute between onshore and offshore interests, most state leaders have allied themselves with the shore-based processing contingent, citing its ability to pay taxes and contribute to local economies.

The North Pacific Fishery Management Council is expected in June to make a decision on a highly controversial issue: whether to allocate a specific portion of the state's huge bottom-fishing resource to shore-based processors.

Clarence Pautzke, executive director of the North Pacific Fishery Management Council, said the factory trawlers and the shore-based processors are taking more and more fish. He said Americanizing Alaska's fisheries has given the council its biggest challenge to date.

Although he knew of foreign companies bankrolling business ventures in many phases of the industry, the council executive director said their influence is difficult to determine.

If the council approves an onshore allocation, shore-based processors say they will survive. But factory trawlers say it could ruin their future.

Observers say sparks will fly regardless of how the 15-member council votes.

A vote in favor of onshore allocation will strengthen Japan's hold on Alaska's fisheries markets, said Henry Mitchell, executive director of the Bering Sea Fishermen's Association and a council member.

"They will be able to manipulate the world surimi market and force the factory trawlers out," he said. "It's the same thing they've done with salmon."

However, if shore-based processors do not receive a set portion of the resource, the faster-moving factory trawlers will take most of the fish, preventing fair competition for the resource, said Rick Lauber, executive director of the Alaska Processors Association.

Japanese companies own a powerful percentage of the new shore-based surimi processing plants in Alaska. Surimi is a paste made from bottom fish that is turned into such products as imitation crab legs.

Bruce Buls, spokesman for the Seattle-based American Factory Trawlers Association, said Japanese companies own 80 percent of the shore-based surimi processing plants in Alaska. Buls' members compete for product in the ocean and for sales of surimi in the marketplace.

"If they're given effective control of the resource, they'll have the market sewn up, especially in the surimi business," he said.

One executive of an ill-fated fish company said his catcher boat was not allowed to subcontract and deliver fish to Dutch Harbor processors until the corporation leased the ship to the Japanese-owned company.

Thorne Tasker, chairman of Anchorage-based Alaska J.V. Seafoods, said the high cost of a shore-based plant locks most domestic entrepreneurs out of the market. He said a factory trawler is less expensive and easier to buy.

"Who's going to loan me $50 million to build a shore-based plant?" he said.

Tasker said a myth of good and evil surrounds factory trawlers and shore-based plants, especially among Alaska lawmakers. Factory trawlers are perceived as evil, while shore-based plants are considered good neighbors that pay taxes, he said.

"It's a big game being played," he said. "All that's going to happen with an allocation is you're going to destroy the offshore guys. The shore-based guys are laughing. They own the ships."

However, Joe Plesha, an attorney with Trident Seafoods Inc., said many of the vessels supplying shore-based concerns are U.S.-owned said he has not heard of processo d ships squeezing out Alaska or domestically owned ships for deliveries.

"Right now we're desperate for boats," he said. "We would sign up a boat tomorrow. I think the other (shore-based) companies are in the same situation."

Trident has four processing facilities in Alaska and is wholly-owned by U.S. investors, including a 40 percent share by Omaha, Neb.-based Conagra Inc.

The North Pacific council also is expected to rule in June on individual fishing quotas for the black cod fishery.

If it favors quotas, industry leaders contend the quota system could spread to other fisheries and may nullify the need for a separate onshore-offshore allocation system.

Individual fishing quotas have been hailed as an alternative to onshore-offshore allocations. The practice is now being tested with Canada's halibut fishery.

Gregg Williams, International Pacific Halibut Commission biologist, said the system is relatively new and unproven. Fishermen will be able to fish from May 1 to mid-November to catch their quotas.

U.S. halibut fishermen now are allowed a series of 24-hour openings in which to catch the allotted overall quota.

An individual quota system enables longer seasons and a way out of the current fast and furious fishing style, said Clem Tillion, Alaska's special assistant to Gov. Walter J. Hickel.

Tillion, a longtime Homer area fisherman, said the short seasons cater to larger vessels and leave local fishermen with smaller boats fewer chances to make money. He said an individual quota system would even the score.

"Nobody else is able to catch your share," he said.

Because the system is untried, some Alaska fishermen are reluctant to criticize it while others are very vocal in their opposition.

Another problem the council must tackle is the bycatch issue.

Bycatch of species other than those targeted turn up in huge quantities in the huge funnel-shaped nets of factory trawlers and catcher vessels in their hunt for bottom fish.

Trawler nets are pulled bulging with life from Alaska waters with salmon, king crab, halibut and various other species of bottom fish. If a trawler targets pollock, the ship's crew must discard all black cod, rock fish and other incidental species captured.

The issue has angered other fishermen because the fish are caught, killed and thrown overboard. These bycatch fish are subtracted from the allowable quotas given other fishermen.

Tillion said factory trawlers would have to pay other fishermen for all the bycatch in their nets under the proposed individual quota system, spurring the industry to fish more carefully. He said the practice would also discourage waste.

"I recommend trawl IFQs," or individual fishing quotas, he said. He proposed the individual quota system be teamed with onshore allocation.

Buls said he would prefer individual quotas to onshore allocation.

Dave Woodruff, president of Alaska Fresh Inc. in Kodiak and one of the state's few resident onshore processors, has little hope for an equitable resolution to the bottom-fishing battle.

Said Woodruff: "I've watched every other fishery in Alaska be (devastated). This is the last great ican buffalo hunt."

Crab-harvest record drives prices down

The Associated Press

JUNEAU — Fishermen have set a new record with this year's harvest of opilio tanner crabs, but the abundance has driven prices down by more than a third from last year, the state Fish and Game Department said Monday.

More than 231 million pounds of opilio, also known as snow crab, have been taken in the Bering Sea this season, and the final figure could exceed 300 million pounds, said Herman Savikko, catch statistician for the department.

That figure more than doubles the previous record harvest of 101.2 million pounds in 1990, Savikko said.

The opilio season in the eastern Bering Sea closed May 5, but it continues in the western Bering. About six million pounds of a quota of about 69 million pounds have so far been harvested in the western area.

Savikko said the eastern Bering

Please see Page D-5, **SHELLFISH**

HOPE THEY LAST

Sporting Fishing Dec/Jan 1990

Page 62 Cradle of Death

by Ken Hinman

The Toll of Trawling

	KILLED
Croakers	1,550,000,000
Longspine porgy	225,000,000
Spot	156,000,000
Sand Sea Trout	88,800,000
Butterfish	75,000,000
Cutlassfish	63,000,000
Silver sea Trout	58,000,000
Bumper	46,000,000
Catfish	43,000,000
Red Snapper	11,600,000
Spanish mackerel	1,290,000
King "	198,000
Red Drum	126,000
	2,318,014,000 =

AND THE KILLING IS HAPPENING TO OUR SALMON IN THE HIGH SEAS THANK ABOUT IT?

Not included ... sharks, ... shrimp, crabs, ... squid, octopus, jellyfish, and many other ...

... Red Snapper ... Five ...

... Red Snapper ... shrimp trawls before they reach age one.

Edited by Don Hunter

SOUTHCENTRAL

COLORADO FISHERMAN NETS TROUT, LANDS HEART

KENAI — A Colorado boy with leukemia got his wish to fish in Alaska — for a second time. This time, 12-year-old Joel Davies caught a Purple Heart.

Last year the Make a Wish Foundation — the non-profit group that helps children with terminal illnesses — arranged for Davies to come to Alaska to catch some big ones.

Joel, of Berthoud, Colo., has Ewing's Sarcoma Leukemia, a form of cancer. It was discovered two years ago and already has claimed one leg, which was recently amputated.

Davies made headlines last year when Gov. Wally Hickel granted the boy a special one-day king salmon sport-fishing permit, despite the fact that the fishery had been officially closed to anglers.

Kenai River fishing guide Bill Gavin met the boy on his first trip here. During the winter, Gavin regularly called Joel to talk of fishing and other things, and talk eventually turned to the idea of a second trip.

The Denver chapter of Make A Wish, the Alaska Sportfishing Association and Kenai-area businesses helped make the dream a reality.

Joel's mother, Jan, father

M. SCOTT MOON / Peninsula Clarion

Joel Davies, 12, shows off the 10-pound rainbow trout he caught last week in the Kenai River.

38

WORLD

BARRY THUMMA / The Associated Press

'Pure relaxation'

President Bush and Premier John Swan of Bermuda go fishing in wind-driven rain in Southampton Friday morning. "You guys are wasting your time," the president told inquiring reporters. "This is going to be pure relaxation here." Bush, who played golf after the fishing trip, is to meet with British Prime Minister John Major today.

ERIK HILL / Anchorage Daily News

Catching more than fish

Lucy Lee of Anchorage took advantage of sunshine and warm weather over the weekend. She was ice fishing on Delong Lake and had a little luck. "Sometimes you get one right away, and sometimes you've got to wait an hour." But Lee, originally from Napakiak, caught some rays as well. "It sure is nice to see spring trying to get here. It's nice to stay outside and get the fresh air."

Sportfishing: keeping kids enthused

By Peter Wright

Anyone who has ever captained a boat knows that if you can show the kids a good time you don't have to worry about the adults. Happiness is an extremely contagious emotion, and many a slow day's fishing has been salvaged by focusing on the youngsters on board.

Dad may be looking for a trophy or a record catch, but the kids want action. Getting them involved in the various stages of preparation and activity that precede the "big fight" will make everyone's day more pleasant.

Catching bait is one obvious solution. If it is possible to continue catching bait while waiting for the big bite, by all means encourage the kids to keep hooking newer and fresher bait. The live bonito, mackerel, or grunt swimming on the big rod may be in fine shape, but replacing it with one junior or sis just caught gives him or her a vested interest and partial claim to the trophy when it finally comes along: "Mom, Dad got the big one on my bait that I caught."

Many experienced anglers prefer to watch the baits from a vantage point like the top of the flying bridge ladder and are content to let the mates wind in or let out the lines. But even being allowed to reel in a washed-out trolling bait with the big rig sitting in the fighting chair or a rod holder is quite a thrill for a youngster. The practice in keeping the line level on the spool will also help prepare for the day that this skill is required in a real fish-fighting situation.

Letting the line out takes some instruction. Even many of the older guys don't really handle this too well. Teaching a child how to freespool a bait or lure without getting a backlash or tangling the other lines can accomplish several things. By patiently explaining the process in detail, a nearby parent gets what may be a much-needed refresher course. Even if the old man remains a ham-handed klutz, if the son or daughter is a quick study a mate gets the benefit of an extra pair of hands when the action picks up.

Sewing trolling baits is another chore that doesn't require as much precision an many would-be Hemingways like to pretend. It takes no strength and only a modicum of talent. On one of those slow days when time hangs heavy on your hands there is no excuse for not having a lesson on bait rigging.

The instructor on the deck can twist the wire, crimp the sleeve, tie the knot or do whatever else requires strength or experience, but the kids can do the actual stitching. After one or two attempts even grammar school students can get the hang of it. If it takes twice as long for the child to sew a bait it doesn't matter, because time is what we're trying to kill.

Twisting wire takes a lot of pratice and is a skill that signifies a degree of competence. For slightly older youngsters, get some light wire that isn't too stiff for young hands and demonstrate the haywire twist. This is a chance for the instructor to get a break. After one or two attempts leave junior to make a few twists on his own. An occasional word of encouragement and instruction and you can not only keep the apprentice entertained but also be well on the way to having a happy helper.

Peter Wright, a professional billfish captain from Austrailia who fishes around the world, has caught more 1000-pound marlin than any man alive.

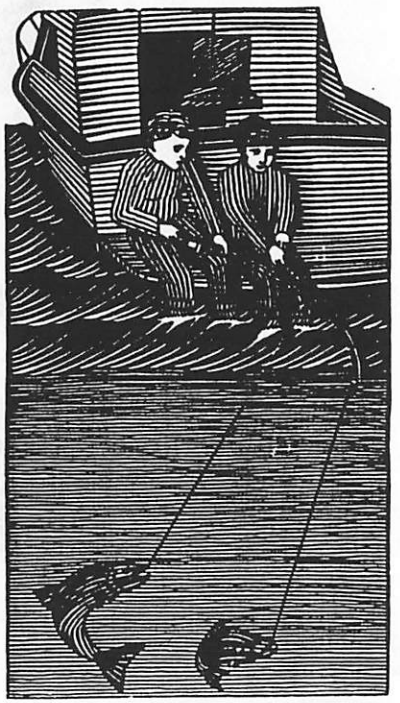


Illustration by Brian Callanan

Anchors Aweigh Boat Show seminar descriptions

Mountains ... admits the thought of ... can find."

There's magic when the love of fishing is passed along

y TOM STIENSTRA
in Francisco Examiner

Grandpa and the kid were ing fishing, and when two eople separated by 50 years re joined by a common al, the possibilities are owned with magic.

"C'mon, Grandpa Bob," id the kid, Alan. "I'll ow you how to catch 'em."

"Oh yeah?" answered randpa. "I'll bet you an ice eam cone I get the biggest sh."

"Well, I guess it's OK," lan said. "If you win, Mom ill have to pay you. But if win I want it dipped in ocolate!"

Grandpa rented a small at, and in a few minutes ey were motoring out to a ve where the trout are id to be big and hungry.

Alan watched his grandfa- er tie on a lure and noticed w wise Grandpa Bob oked. Then when Alan tied own lure on, he tried his st to look just as wise, t like Grandpa.

As they cruised out to the ret cove, Grandpa Bob membered a story he had d about kids in America: t 90 percent live in urban as and don't have many od fishing spots they can ch easily on their bikes,

COMMENT

It was a warm, clear day, with just a few friendly cumulus in the distance, and the water was blue and calm, with occasional circles from hatching caddis.

like kids used to do 20 years ago. That if a kid hasn't fished by age 14, he likely never will, and kids who don't fish rarely develop a love for the outdoors later or do much to protect it.

The story also said that single parents spend so much time working that the weekends are a time of recovery, not a time to take their kids fishing or on other adventures. That kids spend so much time watching multiple TV programs simultaneously with remote control that they come to expect excitement, fun and success by pushing buttons, rather than through persistence, spirit and logic, which fishing teaches.

But then Grandpa looked at Alan, a young product of the video generation, and saw how hard the kid wanted to please him.

"These kids can be reached," Grandpa thought to himself. "They just want to have some fun."

Grandpa slowed the boat to trolling speed, then let his line out. He did this slowly, so Alan could see how it was done. The kid, trying his best to imitate Grandpa, then put his own lure in the water.

"I know you're the expert," Grandpa said to the kid, "so I hope you don't mind if I ask you for some tips."

"That's OK," Alan answered, "even though I'm betting you an ice cream cone."

"Do you think we're trolling too fast?" asked Grandpa.

The kid tilted his head and squinted his eyes in an attempt to appear as crafty as possible.

"Maybe we're going a little fast," responded the kid.

Grandpa immediately slowed the boat a bit. "Thanks for your help," he said.

"No problem," said the kid.

It was a warm, clear day, with just a few friendly cumulus in the distance, and the water was blue and calm, with occasional circles from hatching caddis, and more rarely, rising trout. About a dozen other boats were on the water, their occupants mostly older men.

That made Grandpa realize how happy he was he and his wife had shared the outdoors with their two boys and three daughters, especially fishing, and that they were passing along the joys of the outdoors to their children. "Too many adults care only about themselves," Grandpa thought.

Suddenly, his thoughts were pierced by a scream: "Grandpa, I've got one!" shouted the kid.

Sure enough, the rod was bending, the tip dancing. "Now what do I do?"

"Rod tip up, rod tip, and keep a bend in the pole," coached Grandpa. "Reel slowly and make sure there's no loose line."

"What if he pulls me into the water?" shouted the kid.

"I'm right here to help you," Grandpa said. "I won't let him."

Well, it took awhile, maybe five or six minutes, with the fish diving once, but Alan finally reeled it alongside the boat, and Grandpa netted it. It was a rainbow trout, almost 13 inches long. Alan just stared at its beauty, the bright black spots and red stripe.

"It's huge, Grandpa," he said. "I'll tell you a secret. This is the biggest fish I've ever caught in my whole life."

Late that afternoon, Grandpa and the kid were at the soda shop, getting a couple of ice cream cones, chocolate dip for Alan. After all, a bet's a bet.

"I couldn't have done it without you," the kid told Grandpa.

Right then, Grandpa Bob felt as good as he had all year.

Then he turned to the waitress.

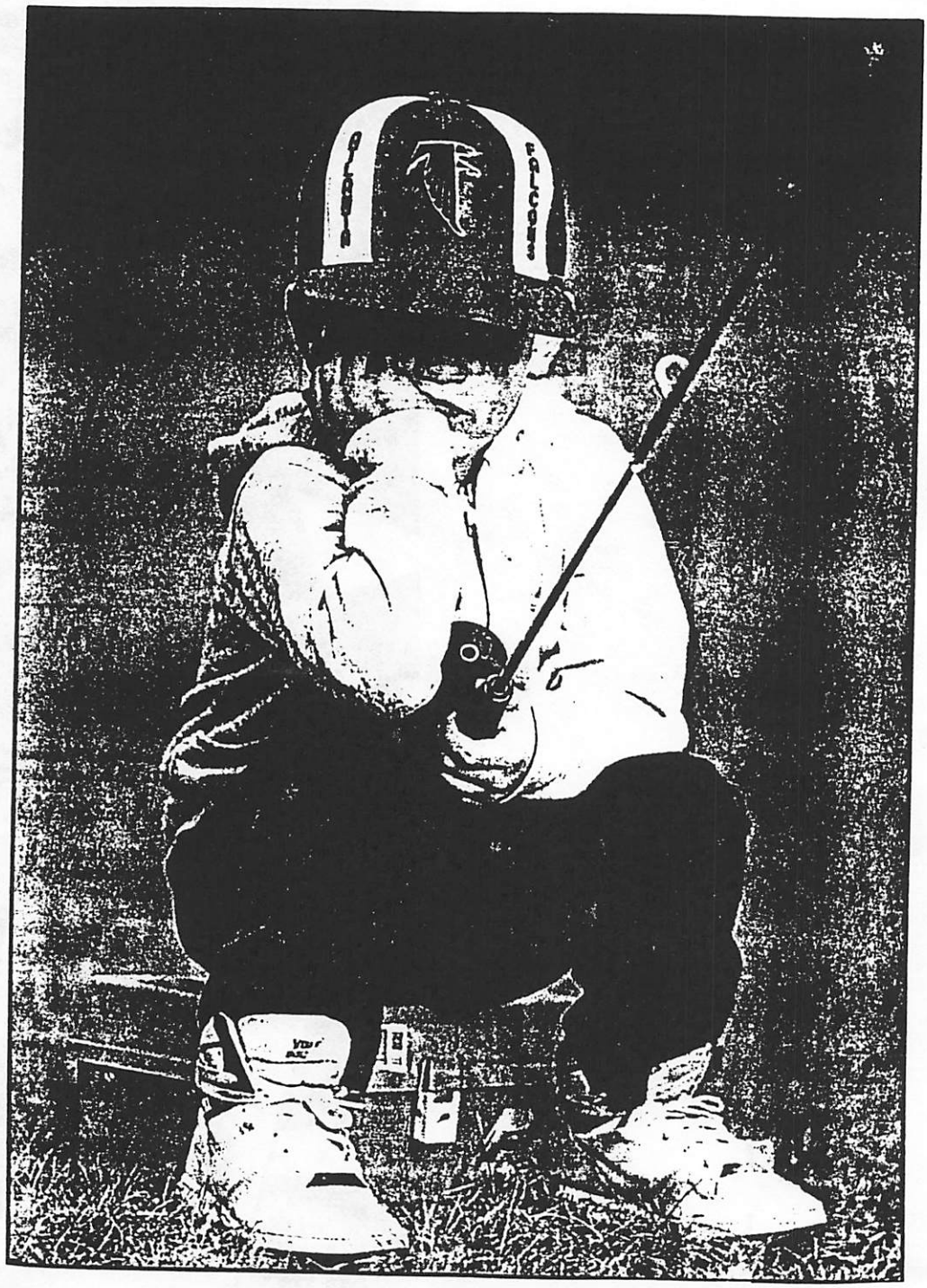
"Tell you what," he said, "I think I'll try a chocolate dip, too. Never had one before."

4/2

LOOK AT THE JOY IN THEIR FACE'S

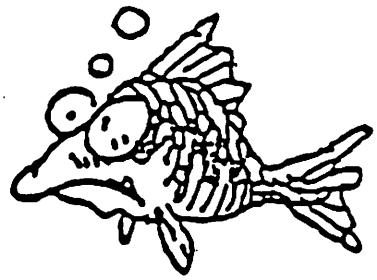
43

LOOK AT THE JOY



Fishing is important

North
Pacific
Longline
Association



January 15, 1993

Membership
North Pacific Fishery Management Council
Scientific and Statistical Committee
Advisory Panel

RE: Hook Straightening, Longline Research, Autoline Videos

Dear Member:

Enclosed please find a cassette containing three videos on longlining. With the assistance of the NMFS Observer Program, the NPLA has distributed copies to all freezer-longliners operating off Alaska, and to their home offices. We are hopeful that you will have time to view it at your leisure, and to consider the information it conveys. The subjects are as follows:

I. Hook Straightening

The first video was made during the 1992 NMFS longline survey. It demonstrates the "hook straightening" technique included in the careful release regulation recently adopted by the Council. Note that the straightened hook simply pulls out of the fish as it entered, leaving only a small puncture wound. Most halibut caught on the modified circle hooks used on the autolining systems are hooked in the corner of the mouth, making removal easy. The hauling is done slowly at the beginning of the video, to demonstrate the straightening technique - towards the end, halibut are released at normal hauling speed. It is reported that it is easier to employ the technique at normal hauling speed. The recent pilot study by the Fisheries Research Institute found that deck exposure time is significant in halibut bycatch survival - note that carefully released halibut never reach the deck, and are out of the water for only a few seconds. Because the survey is on designated stations a variety of fish is taken, from deep and shallow water - black cod, true cod, rock fish, skates, arrowtooth flounder (I am advised that the halibut-like fish which floats away from the boat is a flounder). This portion of the video is silent.

4209 21st Avenue West, Suite 300, Seattle, Washington 98199
TEL: 206-282-4639; FAX: 206-282-4684

Enclosed also are two NPLA bulletins on careful release which were delivered to the vessels and to their home offices.

II. Longline Fishing and Research

This video, prepared by the Institute of Fisheries Technology Research in Bergen, Norway, demonstrates the techniques and advantages of a mature longline fishery. It discusses developments over the last fifteen years which have greatly increased the effectiveness of longlining, and ongoing research. It demonstrates the longline catching cycle; the function of bait; hook, gangion and swivel development; species and size selectivity. It offers insight into the concept of conservation-oriented fishing - species and size selectivity, fish quality, environmental impacts, energy conservation. It also makes the point that in Norway, the cod fishery is a winter fishery. The enclosed paper, **"Recent Developments in Longline Fishing -- Catching Performance and Conservation Aspects"**, reviews these issues and is well worth reading.

III. Mustad Autoline System

This video, prepared by Mustad of Norway, demonstrates the function of a modern autoline system. Mustad autoline systems are employed on most of the freezer-longliners working off Alaska.

Enclosed also is a copy of Council Document No. 13, **"Reducing the Incidental Catch of Prohibited Species in the Bering Sea Groundfish Fishery Through Gear Restrictions"**, reprinted as IPHC Technical Report No. 19, 1982. This document is also worth reviewing.

These materials illustrate the potential effectiveness of hook-and-line operations. As time passes we expect to improve our harvesting techniques so that we can harvest fish of the correct species and size, while minimizing bycatch and associted mortality.

We hope that these materials prove interesting, and that they will help you to appreciate the value of conservation-oriented fishing in this period of increasing environmental consciousness.

Sincerely,

Thorn

Thorn Smith

PROCEEDINGS

WORLD SYMPOSIUM ON FISHING GEAR

AND FISHING VESSEL DESIGN

1988

MARINE INSTITUTE
P O Box 4920
St. John's, Newfoundland Canada A1C 5R3

RECENT DEVELOPMENTS IN LONGLINE FISHING -- CATCHING PERFORMANCE AND CONSERVATION ASPECTS

Åsmund Bjordal
Institute of Fishery Technology Research
Bergen, Norway

Abstract

During the last fifteen years the effectiveness of longline fishing has been significantly increased. This is achieved both by increased effort through mechanized baiting and gear handling, and by improved catching performance of the gear.

This paper describes recent developments of longline gear, with respect to the different gear components: Hooks, gangions, swivels, mainline and bait.

The conservation aspects of longline compared with those of trawl gear are discussed.

Introduction

Longlining is a traditional fishing method all over the world. Although the rigging and methods of operation vary considerably, the longline is basically a very simple gear. However, the success of capture for longline gear depends on a complicated interaction between a series of biotic and abiotic factors (Olsen and Laevastu, 1983). The different aspects of longline fishing are reviewed by Skud and Hamley (1978) and Bjordal (1981a).

This paper focuses on the recent developments of the main longline gear parameters, and on different conservation aspects of longline compared with those of trawl gear.

The longline catching cycle

The basic unit of longline gear consists of a baited hook connected by a gangion to the mainline. In a longline operation, the baited hook is the main daily investment, with a fish of high commercial value as the desired payback. The period from when the hook leaves the fishing vessel until it is retrieved might be defined as the longline catching cycle, during which time the hook goes through four major stages: Shooting, sinking, in fishing position and retrieval.

Recent developments of longline gear

The longline is in general an inefficient gear, if gear efficiency is measured as success of capture relative to the number of fish actually attracted by the bait stimuli and number of fish attacking the bait (Fig 1).

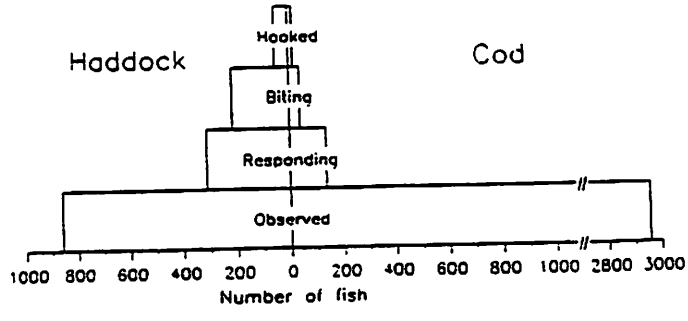


Figure 1
The behaviour of cod and haddock towards mackerel bait. Total number of observed fish and number of fish making a response, a bite or being hooked (from Løkkeborg et al, 1988).

Normal catch rates in the Norwegian longline fishery are from 5 to 30 fish (target species) per 100 hooks. Major reasons for this low hooking probability, escapement of target species and hooking of non target species. Recent research and development work has, however, shown that the gear efficiency of longlines might be significantly improved by apparently minor changes of the different gear parameters.

Bait

A good longline bait should stay on the hook throughout the fishing period, during which it should effectively attract fish, either by chemical or visual stimuli, and by taste stimuli effectively entice the fish to ingest the baited hook.

The process of attracting fish by baits is not fully understood, although several authors have given valuable contributions within this field (Atema, 1980; Fernø et al, 1981; Carr, 1982; Sutterlin et al, 1982; Olsen and Laevastu, 1983; Anonymous, 1984; Løkkeborg, 1985). However the rather vast field of chemical sensing in fish and fish attraction by baits is beyond the scope of this paper. So, given that the chemical properties of the bait are adequate, the following discussion will be focused on bait loss.

The catching efficiency of longline gear is inversely correlated to bait loss. The problem of bait loss is described by several authors (Shepard et al, 1975; Skud and Hamley, 1978; High, 1980), and according to type of bait, soak time and fishing depth, bait loss may vary from 20-100%.

Bait loss for different reasons occurs during all stages of the catching cycle. During shooting of longlines, bait predation by sea birds might significantly reduce the number of effectively baited hooks. Although crowds of sea birds in the wake of longliners during shooting of the gear is the familiar situation, this has never been looked upon as a severe cause of bait loss.

This problem varies with respect to fishing ground, time of day and seasonally, and according to Løkkeborg (1987), such bait loss might be as high as 70% in extreme situations. Although little is known about the average bait predation by birds, the above investigation suggests that methods to prevent this type of bait loss might give a significant increase in catching efficiency.

Bait loss continues in the fishing position. For bottom set gear in particular, severe bait loss might be caused by different bait predators like hagfish, sea lice (different isopods and amphipods), decapod crustaceans, snails, sea cucumbers and starfish (authors observations). In addition bait loss is caused by fish, either target or non target species, that succeed in removing the bait without getting hooked. Due to bait loss, longline efficiency is thus gradually reduced during the three first stages of the catching cycle.

In some longline fisheries, a combination of bait is found to be more effective than either of the bait types used alone. Bjordal (1983a) found that the traditional bait combination of mackerel and squid in the longline fishery for tusk and ling was significantly more effective than pure mackerel or pure squid. Franco et al, (1987) got the same effect using a combination of mackerel and sardine bait in the longline fishery for hake. The reason for this effect might be that one of the bait types is more attractive, but physically weaker than the other, and will therefore disappear quicker from the hooks, while the stronger bait will prolong the effective fishing time of the gear.

Gangion floats have been used as a method to prevent bait predation by bottom scavengers. Bjordal (1984) found that gangion floats of 5 and 8 grams buoyancy reduced bait loss and improved the catching efficiency.

These gangion floats were, however, never accepted by the fishermen, because they made the gear handling more complicated.

Substantial effort is made to develop artificial baits for longlining (Bjordal, 1981a; Anonymous, 1984). So far this work has not lead to a bait with sufficient efficiency for commercial longlining. A recent development based on a synthetic bait developed at the University of Florida, has, however, given very promising results, with catch rates of cod equal to those of natural bait (Anonymous, 1988a). Further, this bait type gives only 5% bait loss (Løkkeborg and Bjordal, 1987).

Hook

The effectiveness of a longline hook is determined by a series of hook parameters, like sharpness of the point, barb width or strength. However, the hook size and general dimensions of the hook are regarded as the most important parameters for the catching efficiency.

A small hook has a higher hooking probability than a larger one, and a slight reduction in hook size will normally give higher catch rates (Bjordal, 1981b).

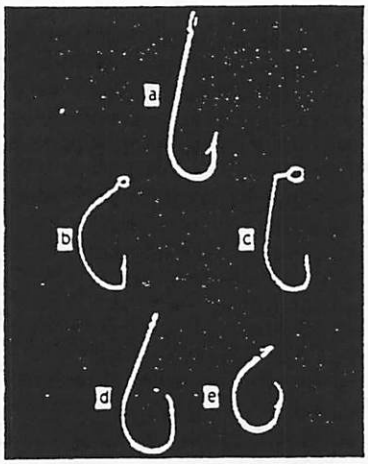


Figure 2
Traditional J-hook (a) and new hook designs: Wide Gap (b), Spurt/O'Shaugnessy (c), EZ-Baiter Circle (d) and Circle (e).

The most interesting developments are, however, on different new hook designs. At least in the western world, the J-hook (Fig 2) has been the traditional longline hook design for centuries. Development of more effective hook designs was initiated in the seventies through fundamental studies of fish hooking behaviour and longline field trials. Huse (1979) found that the catch rates of the Wide Gap and Spurt/O'Shaugnessy hooks (Fig 2) were superior to those of J-hooks in the order of 20-30% according to target species (cod, haddock, tusk and ling). Today these hook designs are dominant in the longline fisheries in northern Norway.

In the north American longline fisheries, the Circle hook (Fig 2) has proven to give significantly better catch rates, especially for halibut, but also for other species (Peeling and Rodgers, 1985). Compared with the traditional J-hook, the Circle hook is reported to give a 50-100% increase in catch rates of halibut, and this hook design is now used for halibut longlining in several countries. The circle hook is historically the traditional hook design in certain Pacific islands, and Johannes (1984) describes the catching principle of Circle or Rotating hooks (Fig 3).

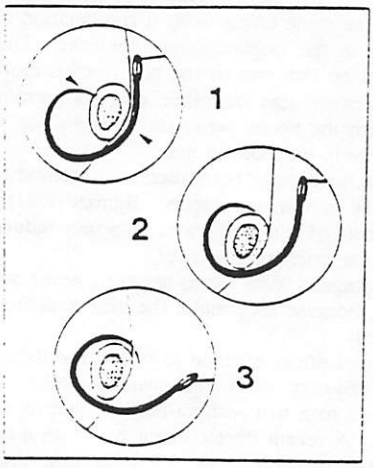


Figure 3
How a circle, or 'rotating' hook works. As the in-curved hook is pulled over the fish's jaw, the gape expands a little (and compresses the flesh on the jaw bone of the fish), and then snaps back into place once over the jaw, so the point acts like a one-way gate (from Johannes 1984).

The most recent major hook development is the EZ-Baiter Circle hook (Fig 2), which is a hybrid design between the traditional J- and Circle hooks. Compared with traditional J-hooks, this new hook design has given 20-40% catch increase in comparative fishing trials for tusk, ling, cod and haddock (Skeide et al, 1986; Bjordal, 1987a,b), and it is now being used by several autoline vessels.

The increased catching power of the new hook designs, which all have incurved points or shanks bent towards the point, is believed to be caused by a combination of better hooking efficiency and lower probability of escapement after hooking. Characteristic for all the new hook designs is that they all give a higher proportion of fish caught by the mouth or jaw compared with the J-hook design.

Gangions

Experimental fishing has shown that the material and length of gangions have an effect on longline catch rates. Compared with multifilament, monofilament gangions give higher catch rates in the order of 10-20% in longlining for cod, haddock, tusk and ling (Bjordal, 1985a, b).

Within the range determined by the practical operation of longline gear, it has been shown that a reduced gangion length gives decreased catch rates. Karlsen (1976) obtained a significant decrease in catch rate of 28% for tusk and 17% for ling by shortening the gangion length from 40 to 15cm. This is explained by lower escapement from a hook on a long gangion, since this can take a lot more twist before it looses the elasticity.

Swivels

On monofilament gear, gangions are normally connected to the mainline by swivels, and the generally high effectiveness of monofilament gear can partly be explained by this feature. The swivel will to a large extent prevent the twisting of gangions, an the catch rates are improved by lower escapement of fish during retrieval of the gear.

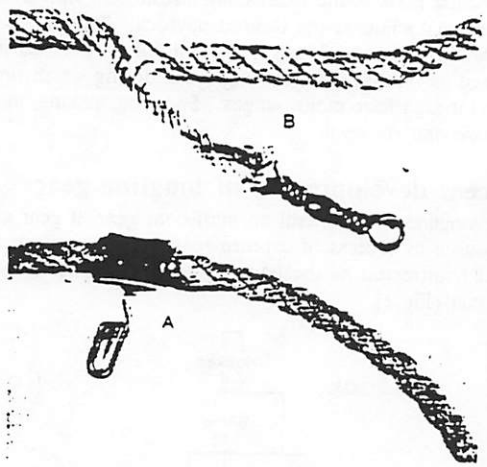


Figure 4
Examples of multifilament longlines with swivels. A) Two plane swivel (rotation around mainline and gangion axis). B) One plane swivel (rotation only around gangion axis). (From Bjordal 1988).

During the last years, different arrangements for swivel connection of gangions on multifilament gear have been develope (Fig 4). Testing in different fisheries (cod haddock, tusk and lin has shown that the swivel gives a catch increase of a minimum of 15% (Bjordal, 1985b, 1987c).

On traditional longline gear, two types of gangion twist occurs: Around the gangion axis, and around the mainline (Fig 5). Compared with traditional gear, both types of swivels give a significant reduction of 'gangion twist', while 'mainline twist' is only significantly reduced by the 'two plane swivel' (Bjordal 1988).

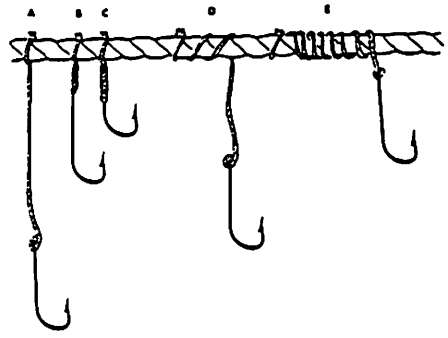


Figure 5
Gangion twist. A) Untwisted, B) and C) 'Gangion twist,' D) and E) 'Mainline twist.' (From Bjordal 1988).

Mainline

Several investigations have shown that the catching power of monofilament longlines is superior to those of multifilament gear (Karlsen, 1976; Huse and Karlsen, 1977; Hearn and Warren, 1980). This might partly be explained by the lower visibility of monofilament material, but also because the monofilament absorbs little bait odour, and the fish are therefore more efficiently guided to the baited hooks. There are also several other reasons for the high efficiency of monofilament gear. As mentioned above, swivels will partly increase the catching power of monofilament gear. Further, monofilament lines are thinner and are normally floated off the bottom. Movements by hooked fish will therefore more easily be transplanted to other parts of the gear, adding movement as an additional stimulant for fish attraction (Johannessen, 1983).

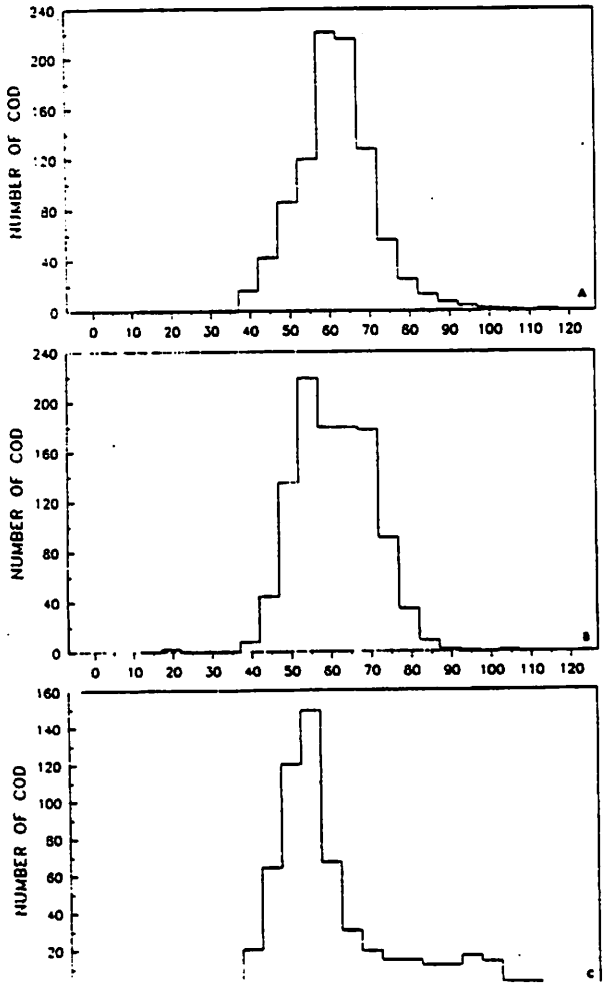


Figure 6
Length frequency distributions of cod caught by longline off northern Norway in three different periods: A) April 1987,

Selectivity of longlines

The longline is regarded as a size selective fishing gear. This is true to a certain extent. A longline will, however, catch fish over a fairly wide length range, but normally very few small fish. Figure 6 shows a typical length frequency distribution of cod caught by longline off northern Norway, where in these cases only 0.9-3.8% of the fish are under the legal size (42cm).

What is the most important factor for size selectivity of longline gear? McCracken (1963) and Sætersdal (1963) found that smaller hooks would select smaller fish. This is true to a certain extent, but in both these investigations the bait size was reduced with decreasing hook size. Through a comprehensive study Johannessen (1983) found that bait size had a much greater effect than hook size on the selective properties of longlines. A large fish will normally take both large and small baits, while a smaller fish will rather go for a small bait. A reduction in bait size will therefore give equal or increased catch rates, but a higher proportion of smaller fish (Bjordal, 1983b).

The information on species selectivity of different fishing gears is rather scarce. Table 1 is based on different Norwegian longline investigations, just to give an indication of the trash fish catch rates versus catch rates of the target species. The catch of non-commercial species will vary in different longline fisheries, but it is normally fairly low.

Table 1
Catch rates of target species and trash fish in bottom longlining.

	CATCH RATES (No of fish per 100 hooks)	
Main target species	Target species	Trash fish
Cod/haddock 1)	37.9	4.7
Cod/haddock 2)	16.6	1.2
Tusk/ling 3)	19.6	1.3

1) Løkkeborg (1985), 2) Bjordal (1988), 3) Bjordal (1987b)

Conservation aspects of trawl- and longline gear

Conservation oriented fishing

The following discussion on the conservation aspects of longline and trawl gear is based on different aspects:

a) The species and size selectivity of the gear.
b) Survival after escapement.
c) Fish quality.
d) Effects on environment (eg, bottom fauna).
e) Energy budget.

Ideally a conservation oriented fishing gear should effectively catch only target species of legal size and high quality at minimum energy costs, with no harmful effects on the environment. According to the aspects above, different methods of exploiting marine resources may be classified from little to highly conservative.

Selectivity

- Size selectivity

In trawling, selection takes place at different stages of the catching process, from the doors and sweeps to the codend. For small (undersized) fish, codend selection is most important. In principle, a certain mesh size should give a good size selection. Clogging of meshes (eg, by flatfish or rockfish) or large catches that stretch (close) the meshes, are factors that may give very poor selection properties.

As mentioned above, longline gear might also catch small fish, and the length frequency distributions of longline and trawl catches might be fairly similar when the proportion of small fish in the fishing area is low.

Compared with longline gear, the trawl is, however, a much more powerful tool for catching small or undersized fish. This is based on fundamental differences between the two gears regarding gear saturation, catching capacity and operational tactics.

Longline gear has a clearly defined level of gear saturation and catching capacity, defined as the daily catch in number of fish, which is limited upwards to the number of hooks operated per day. In Norwegian longlining this ranges from a few thousand to 30 to 40,000 hooks, according to vessel size. With normal catch rates, ranging from 10-30 fish per 100 hooks and thereof 5-10% undersized fish, the exploitation of fish under legal size by longline is bound to be moderate.

The fact that longline gear has a definite saturation level also affects the tactics of operation in a conservation oriented direction The profit in longlining depends on a maximum yield or payback per invested hook, and it is inversely correlated to the number of small fish in the catches. With an increasing proportion of small or undersized fish in the longline catch, the catch value will eventually reach a break even level. The skipper then has the choice, either to stop fishing or move to fishing grounds with less small fish. In addition to gear selectivity, the skipper's choice of fishing grounds regarding the possibilities of catching large fish, is therefore an inherent mechanism in longlining towards exploitation of larger size groups of fish.

In comparison, trawl fishing has no definite level of gear saturation or catching capacity. As is the case for longlining, the profit in trawl fishing will also be reduced with an increasing proportion of small fish in the catches. There is, however, an important difference: as long as each haul produces adequate quantities of larger size groups for profitable fishing, there is no need to stop fishing or change fishing ground -- even if there might be large quantities of small- and undersized fish in the catches. Unlike longlining, there is therefore no strong inherent mechanism in the operational tactics of trawling that prevents exploitation of young fish.

The information available on the proportion of undersized fish in different trawl- and longline fisheries is too scarce to make a good comparison between the two gears. However, one rough measurement of the non-conservative nature of trawl gear, is the closure of fishing grounds when the proportion of undersized fish in the trawl catches exceeds a certain level. This is frequently used as a method of regulation to protect young fish in the fishery for Arcto-Norwegian cod by trawl and seine net, but is never used for stationary gears like longline and gillnet.

To illustrate the relative catch of young fish taken by different gears, the fishery for Arcto-Norwegian cod makes a good example. Figure 7 shows the proportion of cod less than 45cm (de-headed) caught by trawl, seine net, longline and gillnet during the period 1978 to 1987. On average the trawl catches contained 19.4% small fish compared with 6.1% for longline (Table 2), which clearly indicate that longline is a more conservation oriented fishing method than trawling with respect to low exploitation of the younger fish groups. It should be noted that Figure 7 and Table 2 are only based on legally landed fish, and do not include undersized fish discarded at sea.

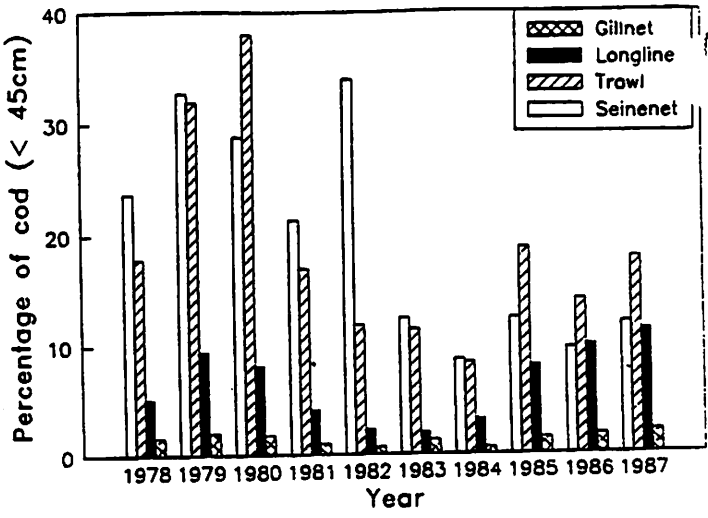


Figure 7

The proportion of cod less than 45cm (length, deheaded) for different fishing gears. (Based on landing statistics in northern Norway, from the Norwegian fishermen's sales organization.

Table 2

Catches of cod in northern Norway. Total catches of cod by different gears in northern Norway (1978-87) and the proportion of fish less than 45cm (length, deheaded). (Based on data from Norwegian Fishermen's Sales organization).

Type of gear	Total catch (tonnes)	< 45cm (tonnes)	< 45cm (%)
Trawl	399 419	77 304	19.4
Longline	178 667	10 853	6.1
Seine net	84 635	16 166	19.1
Gillnet	350 070	4 659	1.3

As shown in Figure 7, the difference between trawl and longline is reduced in the last part of the period. A possible explanation is a change in the migration pattern of the Arcto-Norwegian cod. Since 1982 the smaller size groups have migrated close to the shore, where they are less available to trawl gear, and mainly caught by longline and gillnet. Another reason might be the effect of closing of fishing grounds for trawling when the proportion of small fish exceeds 15%, which was first effectuated in 1984 (H E Olsen, Norw Fish Dir, pers comm).

- Species selectivity

As indicated in Table 1, longlines have good species selective properties, and non-commercial by-catch is normally modest. A trawl will in principle catch all fish in the swept volume, except those that are selected through the meshes. Large by-catches of different non-commercial species, particularly fish with high retention properties (eg, flatfish, rockfish) are therefore not uncommon in trawling.

Survival after escapement

Little information exists on the survival of fish after escapement from fishing gear, mainly due to lack of methodology for unbiased investigations within this field. However, this is a very important

aspect of conservation oriented fishing, and ongoing research will hopefully clarify mortality rates of fish after selection or escapement (Main and Sangster, 1988; Efanov and Istomin, 1988). At present, it is therefore difficult to evaluate the two gears with respect to this conservation aspect.

Fish quality

Both methods of capture may produce fish of high quality. However, big trawl hauls and hauls of long duration might lead to reduced quality, both because the fish are exposed to a high pressure in the codend, and because it might take too long before parts of the catch are processed.

This is no problem in longlining since most of the fish are alive until onboard-processing. However, some of the fish caught on longline are of reduced quality when landed on deck - mainly due to attack by scavengers as hagfish and sea lice. This is generally a small problem, but according to target species, fishing ground and fishing time, this form of quality reduction might be significant.

However, fish caught by longline are in general regarded to be of a better quality than trawl caught fish, although there is little relevant information on this subject to make a proper evaluation.

Ghost fishing

Ghost fishing, or fishing mortality caused by lost gear, is another important conservation aspect of fishing gears. This problem is most predominant for gillnets and traps or creels. For both trawl- and longline gear, ghost fishing is not regarded as a severe problem.

Negative effects on the environment

Ideally, a conservation oriented fishing method should not have destructive effects on the environment, like bottom topography and bottom fauna. Longline gear fulfils this requirement. Trawl gear might on the other hand have severe impact on the bottom environment. However, there is no available information regarding possible corresponding negative effects on the fish stocks (Anonymous, 1988b).

Energy conservation

Compared with trawling, longlining is regarded as a low energy fishing method. Endal (1979) found that longliners used from 0.075 (coastal) to 0.140 (deep water) litres of fuel per kg fish caught, while the corresponding value for trawling was 0.370. From a fuel saving point of view, longlining is therefore superior to trawling.

However, this comparison becomes somewhat different if the bait consumption of longlining is accounted for in the total energy budget of the two methods of capture. A normal bait/catch relation in Norwegian fisheries is at a 1:5 to a 1:10 ratio, eg, 0.1 to 0.2kg of bait are used to catch 1kg of fish. One way to look upon this is to subtract the bait consumption from the catch, which gives an average catch of 0.85kg per unit of fuel. If this is calibrated the longline fuel/catch ratio is raised to 0.088 to 0.165kg of fuel per kg of fish which is still far below the relative fuel consumption in trawling.

Conclusion

The longline is a relatively inefficient gear. Compared with other fishing gears it is also an ineffective catching method when fish are abundant, but a relatively effective gear at low fish densities and scattered fish distribution.

Mechanization of gear handling and baiting has increased the effort in longlining by 50-100% (number of hooks per vessel per day). Through different gear developments the catching efficiency is increased by the same order of magnitude. To further increase the catching power of longline gear, an important future challenge will be to develop new generations of automated longline systems, that can handle the most efficient gear.

In the comparison between longline and trawl gear with respect to conservation oriented effects, some aspects are fairly easy to evaluate based on existing data, while other aspects have to be judged more freely.

In Table 3, the different conservation oriented aspects are weighted as high, medium or low conservation oriented.

Table 3
Conservation oriented aspects of longline and trawl gear. H = high degree of conservation orientation, M = medium degree of conservation orientation, L = low degree of conservation orientation.

	Longline	Trawl
Species selectivity	H	L
Size selectivity	H	L
Survival after escapement	M	M
Fish quality	H	M
Ghost fishing	H	H
Environmental impacts	H	L
Energy conservation	H	L

As indicated in the table, the longline must be evaluated as a conservation oriented gear, while trawling has a rather low conservation oriented effect.

References

Anonymous. 1984 *Int Coun Explor Sea. Report of the Ad hoc WG on Artificial Bait and Bait Attraction, Hirtshals 1984, 8p (Mimeo).*

Anonymous. 1988a *Bait flavours for longlining. Fishing News International, September, 1988, 44p.*

Anonymous. 1988b *Report of the study group on the effects of bottom trawling. Int Coun Explor Sea, C M 1988/B:56, 30p (Mimeo).*

Atema, J. 1980 *Chemical senses, chemical signals and feeding behaviour in fishes. In: Bardach, J E, J J Magnuson, R C May and J M Reinhardt (eds) Fish behaviour and its use in the capture and culture of fishes, 57 - 101pp.*

Bjordal, Å. 1981a *Engineering and fish reaction aspects of longlining - A review. Int Coun Explor Sea, C M 1981/B:35, 22p (Mimeo).*

Bjordal, Å. 1981b *Effects of hook shape and -dimensions on longline catch rates. Int Coun Explor Sea/Fish Capt WG, Nantes 1981. 7p. (Mimeo)*

Bjordal, Å. 1983a *Effect of different longline baits (mackerel, squid) on catch rates and selectivity for rusk and ling. Int Coun Explor Sea, C M 1983/B:31.*

Bjordal, Å. 1983b *Full scale trials with new hook designs and reduced size of bait. Int Coun Explor Sea, C M 1983/B:32. 7p. (Mimeo)*

Bjordal, Å. 1984 *The effect of gangion floats on bait loss and catch rates in longlining. Int Coun Explor Sea, C M 1984/B:8, 10p. (Mimeo)*

Bjordal, Å. 1985a *Full scale tests of improved longline gear. Int Coun Explor Sea, C M 1985/B:45, 7p (Mimeo).*

Bjordal, Å. 1985b *Forsok med svivelmontering, monofilamentforsyn og krokstorrelse i banklinefisket - mai 1985. (Trials with swivels, monofilament gangions and hook size in the bank*

longlining. May 1985). Rep Inst Fish Techn Res, Bergen, 01.11.85.

Bjordal, Å. *Testing of a new hook design in the longline fishery* **1987a** *for tusk (Brosme brosme) and ling (Molva molva). Int Coun Explor Sea, C M 1987/B:20, 8pp (Mimeo).*

Bjordal, Å. *Testing av fire varianter av EZ-krok i linefisket etter* **1987b** *brosme og lange (Testing of four different EZ-hooks in the longline fishery for tusk and ling). Rep inst Fish Techn Res, Bergen, P15, 22p.*

Bjordal, Å. *Swivel connected gangions in mechanized longlining -* **1987c** *effect on catch rates and operation. Int Coun Explor Sea, C M 1987/B:18, 5p (Mimeo).*

Bjordal, Å. *Testing av to typer swivel-line (Testing of two types of* **1988** *swivel longline). Rep inst Fish Techn Res, Bergen, P18, 21p.*

Carr, W E S. *Chemical stimulation of feeding behaviour. In:* **1982** *Hara, T J (ed): Chemoreception in fishes, 259-273pp, Elsevier Sci Publ Co.*

Efanov, S F and Istomin, I G. *Survival of Alaska pollock and* **1988** *selective properties of trawl codends. Int Coun Explor Sea, C M 1988/B:20.*

Endal, A. *Energy consumption in various Norwegian fisheries.* **1979** *Int Coun Explor Sea, Fish Capt Comm Work Gr, Goteborg, 1979, 7p (Mimeo).*

Ferno, A, Solemdal, P and Tilseth, S. *Factors influencing the* **1981** *attraction and hooking of fish in longline fishing. Int Coun Explor Sea / Fish React W G, Nantes, 1981. (Mimeo)*

Franco, J M, Bjordal, A and Løkkeborg, S. *Synergistic effects of* **1987** *different baits on the same hook in the longline fishery for hake (Merluccius merluccius) and torsk (Brosme brosme). Int Coun Explor Sea, C M 1987/B:39, 22p (Mimeo).*

Hearn, D and Warren, J. *An assessment of monofilament lines* **1980** *in the Newfoundland longline fishery. Rep Fish Tech Dir Dev Branch, Dept of Fish, St. John's, Newfoundland, 12p, (Mimeo).*

High, W L. *Bait loss from halibut longline gear observed from a* **1980** *submersible. Mar Fish Rev, Vol 12, 26-29pp.*

Huse, I. *Nye krokforsøk i linefiskeriene etter torsk, hyse,* **1979** *lange og brosme (New hook designs in the longline fisheries for cod, haddock, ling and tusk). Rep inst Fish Techn Res, 14p.*

Huse, I and Karlsen, L. *Further results on Norwegian* **1977** *longline studies. Int Coun Explor Sea, C M 1977/B:43, 8p. (Mimeo)*

Johannes, R. *Island study shows why circle hooks work so* **1984** *well. Australian Fisheries, October, 1984, 34-36pp.*

Johannessen, T. *Betydning av krok- og agnstørrelse for* **1983** *fangsteffektivitet og lengdeseleksjon i linefisket etter torsk (Gadus morhua L) og hyse (Melanogrammus aeglefinus L) (The effect of hook and bait size on catch efficiency and length selection in the longline fishery for cod (Gadus morhua L) and haddock (Melanogrammus aeglefinus Thesis, U of Bergen, Norway, 109p, (Unpublished).*

Karlsen, L. *Basic studies of Norwegian longline gear. Int Coun* **1976** *Explor Sea, C M 1976/B:27, 7p (Mimeo).*

Løkkeborg, S. *Faktorer som påvirkere fangstegenskapene til* **1985** *naturlig og kunstig lineagn (Factors affecting the catch efficiency of natural and artificial longline bait). Thesis, U of Bergen, Norway, 117p.*

Løkkeborg, S. *Agntap i linefisket forårsaket av sjøfugl (Bait loss* **1987** *in longlining caused by sea birds). Inst Fish Techn Res, Bergen, Norway, Field Rep. 09.11.87, 5p (Mimeo).*

Løkkeborg, S and Å. Bjordal. *Testing of artificial bait for cod* **1987** *and haddock, April, 1987. Inst Fish Techn Res, Field Rep, 01.06.87, 12p (Mimeo).*

Løkkeborg, S, Bjordal. A and Ferno, A. *The behaviour of cod* **1988** *(Gadus morhua) and haddock (Melanogrammus aeglefinus) in relation to longlines, observed in natural environment. (In prep)*

Main, J and Sangster, G I. *A progress report on an* **1988** *investigation to assess the scale damage and survival of young Gadoid fish escaping from the codend of a demersal trawl. Dept Agric Fish Scotland/Mar Lab Aberdeen, Working Paper No 3/1988, 54p.*

McCracken, F.D. *Selection by codend meshes and hooks on* **1963** *haddock, flatfish and redfish. Spec Publs int Comm N. Atlant Fish, 1963(5): 133-155pp.*

Olsen, S, and Laevastu, T. *Factors affecting catch of longlines,* **1983** *evaluated with a simulation model of longline fishing. Northw and Alaska Fish c, Processed Rep 83-04, 50p.*

Peeling, D A and Rodgers, D M. *Circle hook comparison study.* **1985** *Fisheries and Oceans, Scotia-Fundy Region, Project Rep No 78, 16p.*

Shepard, M P, Roberts, R F A, Aro, K V and Turner, C E. **1975** *Effect of bait loss on catching power of floating longline gears. Int North Pac Fish Commn Bull No 5, 71-75pp.*

Skeide, R, Bjordal, Å and Løkkeborg, S. *Testing of a new hook* **1986** *design (EZ-Baiter) through comparative longline fishing trials. Int Coun Explor Sea, C M 1986/B:25, 12p. (Mimeo)*

Skud, B E and Hamley, J M. *Factors affecting longline catch* **1978** *and effort. Int Pac Halib Commn, Sci Rep 64: 1-50pp.*

Sutterlin, A M, Solemdal, P and Tilseth, S. *Baits in fisheries* **1982** *with emphasis on the North Atlantic cod fishing industry. In: Hara, T J (ed): Chemoreception in fishes. Elsevier Sci Publ Co, 293-305pp.*

Sætersdal, G. *Selectivity of longlines. Spes Publ int Comm NW* **1963** *Atlant Fish,1963. 1963(5): 189-192pp.*

ISSN: 0579-3920

INTERNATIONAL PACIFIC HALIBUT COMMISSION

Established by a Convention Between
Canada and the United States of America

Technical Report No. 19

I. Reducing the Incidental Catch of Prohibited Species in the Bering Sea Groundfish Fishery Through Gear Restrictions

by

Vidar G. Wespestad, Stephen H. Hoag, and Renold Narita

II. A Comparison of Pacific Halibut and Tanner Crab Catches in (1) Side-Entry and Top-Entry Crab Pots and (2) Side-Entry Crab Pots With and Without Tanner Boards

by

Gregg H. Williams, Donald A. McCaughran,
Stephen H. Hoag, and Timothy M. Koeneman

Seattle, Washington
1982

ABSTRACT

The retention of several fully-utilized species (salmon, halibut, and crab) is prohibited in the Bering Sea groundfish fisheries. These prohibited species, however, are caught incidentally to groundfish, and the incidental catch reduces the yield available to the directed fisheries. The incidental catch of prohibited species is generally less with longlines or off-bottom trawls than with on-bottom trawls. Thus, one possible solution is to restrict the type of gear used in the groundfish fishery. This report examines the effect of restricting on-bottom trawls with respect to the production of groundfish as well as the catch of prohibited species. The results suggest that most of the available groundfish could be harvested with longlines and off-bottom trawls with a substantial reduction (over 80%) in the incidental catch of prohibited species. Allowing limited on-bottom trawling for flounders could minimize the loss of groundfish production and still provide for a reduction (over 60%) in the catch of prohibited species. Economic considerations were not examined, although the report recognizes that gear restrictions would likely increase the harvesting cost of some groundfish species.

I. Reducing the Incidental Catch of Prohibited Species in the Bering Sea Groundfish Fishery Through Gear Restrictions

by

Vidar G. Wespestad[1], Stephen H. Hoag[2], and Renold Narita[1]

INTRODUCTION

In the Bering Sea groundfish fisheries, the retention of salmon *(Onchorhynchus* spp.), halibut *(Hippoglossus stenolepis),* king crab *(Paralithodes* spp.), and Tanner crab *(Chionoecetes* spp.) is prohibited. These species are essentially fully utilized in directed fisheries, and trawls (the primary gear used in the groundfish fisheries) tend to catch individuals of sub-optimal size. Also, most groundfish are harvested by foreign nationals whereas the directed fisheries are by United States nationals. Prohibiting retention is intended to eliminate any incentive to direct fishing effort on these species, all of which are of higher unit economic value than groundfish. Nevertheless, these species are caught incidentally and many die from injuries received during capture. This incidental catch not only reduces the yield available to the directed fisheries, but constitutes a conservation and management problem in that the catch is unspecified and difficult to estimate precisely. Hence, the incidental catch combined with the directed catch may result in excessive exploitation. This was apparently the case with halibut stocks in the 1960's and 1970's (Bell 1970, Skud 1973, Hoag 1976).

Hoag and Skud (1975) examined general management approaches to the problem of incidental catches in a multi-species fishery, and the North Pacific Fishery Management Council (unpublished)[3] has examined specific management options for the Bering Sea groundfish fishery. One of the options that could reduce incidental catches, while permitting harvesting of most groundfish species, is some form of gear restriction.

This report examines two possible management alternatives involving gear restrictions: (1) prohibit on-bottom trawls in all areas, i.e., groundfish will be harvested only with longlines and off-bottom trawls (trawls where the footrope of the net is not in contact with the bottom); (2) on-bottom gear will be allowed only in areas defined as yellowfin sole *(Limanda aspera)* or turbot *(Atheresthes stomias, Reinhardtius hippoglossoides)* grounds. These grounds would include the area of Bristol Bay shallower than 100 meters (yellowfin sole grounds) and the edge of the shelf deeper than 300 meters (turbot grounds). Off-bottom trawls or longline gear would be allowed in all areas.

Other management alternatives obviously could be examined. We chose Alternative (1) because it appeared to provide maximum protection for prohibited species and requires the greatest adjustment for the groundfish fisheries. Thus, Alternative (1) provides an upper limit to the potential benefits and costs of using off-bottom trawls and longlines to harvest groundfish. Alternative (2) is less restrictive and allows for harvesting fish which cannot be caught efficiently with off-bottom trawls.

[1]/ U.S. Department of Commerce, NOAA, National Marine Fisheries Service, Northwest and Alaska Fisheries Center, 2725 Montlake Blvd. East, Seattle, WA 98112.

[2]/ International Pacific Halibut Commission.

[3]/ Reducing the incidental catch of prohibited species by foreign groundfish fisheries in the Bering Sea, unpublished report. Working Group on Prohibited Species, North Pacific Fishery Management Council, January 1980.

In evaluating these alternatives, the effect of gear restrictions on the groundfish harvest was evaluated as well as the potential reductions in the catch of prohibited species. Data collected by U.S. observers aboard foreign fishing vessels during 1977-1979 were used in the evaluation. Catch rates for prohibited species (kg per mt of groundfish) were estimated for various gear types and target species, and these rates were projected to the estimated groundfish catch that would occur under the two alternatives. The economic implications of gear restrictions were not examined in this study.

TREATMENT OF DATA

To examine the question of the effectiveness of gear restrictions as a means of reducing the incidental catch of prohibited species, the 1977-1979 observer data files on catches of groundfish and prohibited species collected and maintained by the U.S. National Marine Fisheries Services were utilized. The organization and contents of these files have been presented by French et al. (1981).

Data in the observer files are recorded by individual hauls. Haul records were aggregated into five gear-target fishery categories:

(1) off-bottom trawl, pollock and other available species
(2) on-bottom trawl, yellowfin sole
(3) on-bottom trawl, turbot
(4) longline, Pacific cod *(Gadus macrocephalus)*
(5) longline, sablefish *(Anoplopoma fimbria)* and turbot

The average rate of incidence of halibut, salmon, Tanner crab and king crab in each category was estimated during 1977-1979 (Table 1). In reality, factors such as time, area, and depth also affect rates of incidence, and to some degree complicate the results. However, as discussed below, the five gear-target categories are generally distinct, and we consider the incidence rates in Table 1 to be indicative of the differences associated with each category. In any event, it is not possible to predict what changes might occur within each category if gear restrictions were instituted.

Table 1. Estimated catch rates (kg per m.t. of groundfish catch) for prohibited species by gear and target species in the Bering Sea.

	Prohibited Species Catch Rates			
Gear/Target Species	Halibut	Tanner Crab	King Crab	Salmon
Off-bottom trawl				
All available species	0.010	0.016	0.006	0.033
On-bottom trawl				
Yellowfin sole	0.499	6.861	0.517	0.020
Turbot	9.166	11.169	5.704	0.051
Longline				
Pacific cod	4.019*	0.000*	0.000*	0.010
Sablefish-turbot	1.503*	0.000*	0.000*	0.000

*Adjusted for an estimated survival of 75% for halibut and 100% for Tanner and king crab.

The pollock fishery is the largest in the Bering Sea, accounting for over 74% of the total groundfish catch (Bakkala et al. unpublished)[1]. The fishery is concentrated along the continental slope and most catches are made in depths between 100-200 m. Pollock are semi-demersal, occurring on- and off-bottom. Observers do not record whether individual hauls are on- or off-bottom hauls; however, observer reports note that Polish vessels exclusively utilize pelagic trawls and U.S.S.R. vessels generally fish off-bottom, while Japanese and Korean vessels trawl on-bottom. Observer reports also note that off-bottom hauls are almost entirely pollock. Therefore, to estimate the incidental catch rates of prohibited species in off-bottom trawls, data from Soviet and Polish hauls containing at least 98% pollock were utilized.

The yellowfin sole fishery occurs on the Bering Sea shelf in waters less than 100 m. Catch rates were based on hauls containing at least 50% yellowfin sole observed on Japanese motherships and U.S.S.R. large trawlers, the two vessel classes which account for most of the yellowfin sole catch.

A distinct deep water fishery occurs along the outer continental slope for turbot, which are fished primarily by Japanese small trawlers. Turbot are the major portion of the catch at depths over 300 m whereas pollock and Pacific cod are the primary species caught in shallower water.

Data from Japanese longlines were available separately for depths less than 500 m and depths greater than 500 m. Observer reports show that at depths less than 500 m the target species is Pacific cod, while at depths greater than 500 m sablefish is the target species.

All prohibited species captured in trawls were assumed to be dead, based on reports of observers aboard foreign vessels (U.S. National Marine Fisheries Service unpublished) and studies conducted by Hoag (1975). Observers on trawl vessels subjectively examine the condition of prohibited species in the catch. They report that nearly all of the salmon are dead when returned to the sea, that halibut viability ranges from 0-10%, and that many of those released alive are eaten by sea lions following the vessels. The survival rate of king and Tanner crab is uncertain, but a high percentage is noted to have crushed carapaces or severe appendage loss which indicates a very low probability of survival.

Catch rates for longline gear were adjusted for the following survival rates: 75% for halibut, 100% for Tanner and king crab, and 0% for salmon. These rates are approximations based on unpublished reports from U.S. observers on foreign vessels, joint U.S.-Japan longline surveys, and the International Pacific Halibut Commission.

ESTIMATED CATCH OF GROUNDFISH

In 1976, Canada, Japan, and the United States cooperated in a joint study to test a Japanese off-bottom trawl, designed to reduce the incidental catch of halibut (Pereyra et al. unpublished)[2]. The study involved four Japanese stern trawlers in the southeastern Bering Sea during January 1 through May 15. The vessels fished in pairs with one vessel

[1] Bakkala, R., V. Wespestad, L. Low, and J. Traynor. 1980. Condition of groundfish resources of the eastern Bering Sea and Aleutian Islands Region in 1980. (Document submitted to the annual meeting of the International North Pacific Fisheries Commission, Anchorage, Alaska, October 1980.) National Marine Fisheries Service, Northwest and Alaska Fisheries Center. 98 p.

[2] Pereyra, W., I. Ellis, S. Hoag, and S. J. Westrheim. 1976. Results of comparative testing of the Japanese off-bottom trawl designed to reduce the incidental catch of halibut. (Document submitted to the annual meeting of the International North Pacific Fisheries Commission, Tokyo, Japan, October 1976.) National Marine Fisheries Service, Northwest and Alaska Fisheries Center. 24 p.

using the experimental off-bottom trawl and the other acting as a control, using a standard on-bottom trawl. The experimental off-bottom trawl differed from the on-bottom trawl in the following manner: (1) the footrope was attached to a groundrope by 90 cm lengths of chain; (2) the groundrope was adjusted to position it directly under the footrope; and (3) floats were placed in two rows along the upper body of the net for greater buoyancy. Testing results indicated that the footrope would be about 70 cm above the bottom at a trawling speed of 3 knots.

The results from the comparative tests (Table 2) showed that groundfish catches in off-bottom trawls are equal to or greater than those in on-bottom trawls. The detailed species composition of the groundfish catch was not available, but the catch consisted primarily of pollock. The incidence rates of halibut observed were substantially lower in the off-bottom trawls, although the rates were greater than those shown in Table 1 because the experiment was conducted in an area which contains high densities of halibut and is not open to foreign trawl fisheries. Based on these findings and on the fact that Soviet and Polish vessels traditionally fish pollock with off-bottom trawls, we concluded that pollock can be fully harvested with off-bottom trawls.

Table 2. Results from comparative testing of a Japanese off-bottom trawl (from Pereyra et al. unpublished).

Trawl Type	January	February	March	April	May	Average[1]
			Number of Hauls			
On-Bottom	74	59	45	55	2	
Off-Bottom	98	81	56	75	11	
			Mean Weight of Halibut (kg)			
On-Bottom	2.26	1.40	1.98	1.93	1.56	1.89
Off-Bottom	3.33	1.75	1.74	1.91	2.09	2.18
			Incidence of Halibut (kg mt Halibut)			
On-Bottom	1.40	3.43	7.35	1.77	0.97	3.64
Off-Bottom	0.74	0.78	2.29	1.52	1.19	1.48
			All-Species Catch Rate (mt per hour)[2]			
On-Bottom	10.2	8.6	7.6	8.6	1.7	8.8
Off-Bottom	12.8	9.0	7.7	8.3	7.0	9.5

[1] Unweighted average over months of January-April.
[2] Primarily pollock.

Comparative catch data are not available for other species, but squid *(Loligo* spp.*)*, Atka mackerel *(Pleurogrammus monopterygius)*, and rockfish *(Sebastes* spp.*)* probably can be at least partially harvested with off-bottom trawls because these species are often found off-bottom. Pacific cod tend to be close to the bottom, and probably cannot be fully harvested with off-bottom trawls. However, Pacific cod can be effectively taken with longline gear. Similarly, longlines could harvest sablefish and large flounders (primarily turbot).

Yellowfin sole and other flounders could not be harvested with either off-bottom trawls or longlines. To harvest these species would require allowing on-bottom trawls in at least limited areas or time periods such as suggested under Alternative (2).

The impact of gear restrictions on the groundfish harvest is difficult to predict because the catch rates and costs of fishing for some species with off-bottom trawls and longlines are unknown. Using 1977-1979 actual catches as a basis for comparison and assuming that off-bottom trawls and longlines are economically viable, we estimate that 12% of the total groundfish production, or 157,615 mt, would be lost under Alternative (1) (Table 3). Although some additional loss in production is likely because off-bottom trawls and

Table 3. Average catch (mt) of groundfish during 1977-1979 and the projected catch that might have occurred under the proposed management alternatives if off-bottom trawls and longlines are an economically viable method of harvesting.

Species	Average Catch 1977-1979	Gear	Projected Catch Alternative (1)	Projected Catch Alternative (2)
Pollock	966.692	Off-bottom trawl	966.692	966.692
Squid	8.262	Off-bottom trawl	8.262	8.262
Atka mackerel	23.745	Off-bottom trawl	23.745	23.745
Pacific ocean perch	8.350	Off-bottom trawl	8.350	8.350
Pacific cod - Trawl	37.733	Off-bottom trawl	20.682	20.682
- Longline	3.631	Longline	20.682	20.682
Sablefish	3.323	Longline	3.323	3.323
Yellowfin sole and other flounder	132.657	On-bottom trawl	0	132.657
Turbot - Trawl	47.901	On-bottom trawl	0	47.901
- Longline	2.014	Longline	24.958	2.014
Other	76.985	Off-bottom trawl	38.492	38.492
		Longline	38.492	38.492
Total	1,311.293		1,153.678	1,311.293

longlines probably are not efficient for some species, all available evidence suggests that pollock can be essentially fully harvested with off-bottom trawls. Therefore, an upper bound on the loss can be calculated by assuming that only pollock would be harvested under Alternative (1). Again using 1977-1979 catch data, the harvest would be 966.692 mt, and the loss would be 26%, 344.600 mt. The loss in groundfish production under Alternative (2) should be minimal because on-bottom trawling is allowed. A reduction in the catch of species such as Pacific ocean perch *(Sebastes alutus)* and Atka mackerel is possible but these species represent a relatively minor part of the total groundfish complex.

ESTIMATED SAVINGS OF PROHIBITED SPECIES

The catches of prohibited species that would occur under Alternatives (1) and (2) were estimated by extrapolating the catch rates from Table 1 to the projected groundfish catch in Table 3. The results by gear and target species are given in Table 4. The estimated catch was then compared to the observed catch (1977-1979 average), and the savings (difference) was calculated (Table 5).

Alternative (1) greatly reduced the catch of all prohibited species: halibut catches were reduced by about 92%, Tanner crab catches and king crab catches by 99%, and salmon catches by over 80%. Alternative (2) also reduced catches of prohibited species but the reductions were less than for Alternative (1). High incidental catches of halibut and crab were estimated for the on-bottom trawl fishery for turbot, and large catches of Tanner crab occurred in the yellowfin sole fishery.

A reduction in the allowable catch of yellowfin sole, other flounder, and turbot would, in turn, reduce the catch of prohibited species. For example, if the optimum yield of all flounder species were reduced by 50% under Alternative (2), the estimated catch (mt) of prohibited species would be:

Halibut	Tanner crab	King crab	Salmon
460	751	182	38

Table 4. The estimated catches of prohibited species by gear and target species under Alternatives (1) and (2).

Gear/Target Species	Prohibited Species Catch (m.t.)*			
	Halibut	Tanner Crab	King Crab	Salmon
		Alternative (1)		
Off-bottom trawl				
All available species	10.6	16.9	6.3	34.8
Longline				
Pacific cod	124.7	0.0	0.0	0.3
Sablefish-turbot-other species	100.4	0.0	0.0	0.0
Total	235.7	16.9	6.3	35.1
		Alternative (2)		
Off-bottom trawl				
All available species	10.6	16.9	6.3	34.8
On-bottom trawl				
Yellowfin sole and other flounders	66.2	910.2	68.6	2.7
Turbot	457.5	557.5	284.7	2.5
Longline				
Pacific cod	124.7	0.0	0.0	0.3
Sablefish and other species	62.9	0.0	0.0	0.0
Total	721.9	1,484.6	359.6	40.3

*Estimates are based on catch rates in Table 1 and projected groundfish catches in Table 3.

Table 5. Estimated savings of prohibited species under Alternatives (1) and (2), based on 1977-1979 data.

	Prohibited Species Catch (m.t.)			
	Halibut	Tanner Crab	King Crab	Salmon
Observed catch (m.t.) (1977-1979 average)	2,830	4,572	920	227
Alternative (1)				
Estimated catch	236	17	6	35
Estimated savings[1]	2,594	4,555	914	192
Alternative (2)				
Estimated catch	722	1,485	360	40
Estimated savings[1]	2,108	3,087	560	187

[1] Observed catch minus estimated catch.

CONCLUSIONS

An examination of catch data from 1977-1979 indicates that it is technically possible to substantially reduce the incidental catch of prohibited species in the Bering Sea while harvesting most of the available groundfish by restricting the type of gear used in the groundfish fishery. We recognize that precise rates of incidental catch will vary with the area and time of year fished and that the institution of restrictions could alter the manner in which the fishery is conducted and therefore the incidental catch that would occur. However, we doubt that these deviations would change the basic conclusions. A more serious concern is that gear restrictions would increase the cost of harvesting and could affect the economic viability of the fishery. Data are not currently available to fully address these aspects of gear restrictions, and further research is needed to assess the economics of the fishery and, in particular, the catchability of different groundfish species with longline and off-bottom trawls.

ACKNOWLEDGEMENTS

We thank James W. Balsiger, Robert C. Francis, Keith S. Ketchen and Loh-Lee Low for their review of the manuscript.

LITERATURE CITED

Bell, F. Heward. 1970. Management of Pacific halibut. [IN] A century of fisheries in North America. American Fisheries Society. Special Publication No. 7. pp. 209-221.

French, R., R. Nelson, J. Wall, B. Gibbs. 1981. Description of groundfish and prohibited species data base. [IN] Reducing the incidental catch of prohibited species by foreign groundfish fisheries in the Bering Sea. N. Pac. Fish. Mgt. Coun. Doc. 13:40-47. N. Pac. Fish. Mgt. Coun., Anchorage, AK.

Hoag, Stephen H. 1975. Survival of halibut released after capture by trawls. International Pacific Halibut Commission. Scientific Report No. 57. 18 p.

_____. 1976. The effect of trawling on the setline fishery for halibut. International Pacific Halibut Commission. Scientific Report No. 61. 20 p.

Hoag, Stephen H. and Bernard E. Skud. 1975. Effect of multi-species fisheries on the management of halibut stocks. Food and Agriculture Organization of the United Nations. Advisory Committee on Marine Resources Research (ACMRR). Eighth Session. FAO Fisheries Report No. 171. Supplement 1. pp. 27-35.

Skud, Bernard Einar. 1973. Management of the Pacific halibut fishery. Journal of the Fisheries Research Board of Canada. Volume 30. No. 12. Part 2. pp. 2393-2398.

FISHERIES MANAGEMENT APPROACHES TO LONGLINING AS VIEWED FROM THE NORWEGIAN AND ICELANDIC PERSPECTIVES

SUMMARY

As the result of extensive discussions with both managers and participants in the Norwegian and Icelandic cod fisheries, two dominant themes have emerged with regard to fisheries management strategies and the relationship of the longlining technique to these strategies. Each country has its own mix of social, political, economic, biological, and environmental considerations which influence the decisions of fisheries managers, but in each country there is one simple underlying theory about fish abundanc and one simple underlying objective about how to maximize fish stocks and the potential for harvest.

The theory is: Nature determines the initial strength of year classes--not management or fishing effort.

The management objective is: Preserve spawning stock by protecting small fish.

Note that the objective is not to protect spawning fish or spawning grounds, but to prevent the removal of younger sexually immature fish from the stocks. All other considerations are ultimately of minimal importance in the management strategy of these two countries.

Both countries have an extremely liberal approach to longliners. There are a number of reasons for this policy, such as the high quality of the landed product and the benign influence o the gear on the habitat, but the overiding consideration is that the technique is inherently size selective: longliners do not kill small fish--to avoid killing small fish is the fundamental management objective.

The findings for trawler-longliner catch characteristics for the New England region (based on Dr. Serchuck's data) as reported by Mr. Sheldon at the September 17, 1984 regional council meeting are directly in line with those of researchers in Norway and Iceland. The average cod caught by otter trawl, even with large mesh is less than four years old, weighs less than four pounds and has a fifty to seventy percent chance of having spawned. The average longline-caught cod is nearly seven years old, weighs over fifteen pounds, and has spawned at least twice. Comparisons of other fish characteristics and of other species, such as haddock, caught by the two methods are equally dramatic. The data from Norway, Iceland, and the New England area agree very closely and show the striking difference between the two fishing systems.

Furthermore, both Norway and Iceland have investigated the desirability of excluding longliners from spawning areas. In discussions with me representatives of both the scientific and management communities appeared surprised that there was any longer an

issue. In Norway there has been considerable research concerning the spawning process and the activites which might disturb it, including the development of theories about the influence of temperature, wave action, other organisms, and the presence of various forms of fishing gear. Their scientists have concluded that longliners using conventional #6 gear do not disturb spawning. There are no spawning areas closed to longliners in Norway.

In Iceland there is one area about twenty by thirty miles in size off the south coast which is closed to all fishing from March 20 to May 2. It is an area of heavy fish concentration. Strangely enough the area is closed as the result of a request by fishermen. The director of the Marine Research Institute told me flatly that there is no scientific or management reason for the closure and that closure was not initiated or actively supported by the Institute, which has responsibility and sweeping authority for such measures. With regard to spawning the director saw no objection to longliners catching spawning fish, and felt that any objection raised would be largely muted by the fact that fish ready to spawn are not inclined to feed and therefore will respond poorly to baited hooks. He further stated that from his point of view there is no reason to restrict longliners from any area at any time.

The positive attitude toward longliners results from an effort on the part of both countries to encourage the success of a fishing technique which is totally harmonious with their understanding of effective stock management and conservation.

BACKGROUND

The basis for the preceding summary of viewpoints can be better appreciated with the benefit of some understanding of the fishing industries of Norway and Iceland. Brief background information relevant to the cod and haddock fisheries follows.

NORWAY

Sources: Major sources include Mr. Tobin Foss, from the Ministry of Fisheries in Oslo, Mr. Arvid Hylen, head of the cod section at the Institute of Marine Research in Bergen, and several industry personnel, including Mr. R. Stave of the fishing vessels Bergholm and Per Senior, Mr. Per Homeseth of the fishing vessel Geir, and Mr. Jan Silden, representing the fishing vessel Keltic. Mr. Silden is also president of O. Mustad and Son(CAN) Ltd.

In broad generalization it can be said that Norway's fishery potentials and problems parallel those of the Canadian maritimes with which we are somewhat more familiar. Norway is relatively sparsely populated, with numerous small towns and villages scattered along the coastlines. Fishing is accordingly very important and many traditions and practices are deeply engrained. Income from fishing nonetheless is sometimes meager and government has been involved in numerous plans which have sometimes provided shor term benefits at the expense of long term solutions to complicated problems.

Up until about fifteen years ago, especially in the northern sections of Norway, handlining, gillnetting, and longlining from boats in the 40' to 70' range were the dominant fishing methods. These vessels operated on haddock and pelagic fish in summer monti and on cod from mid-October to the following June or July. About ten years ago large filleting plants were built along the coast and dragger fleets were constructed to fish the huge Barents Sea cod stocks. Several factory trawlers were constructed capable of freezing 3,000 metric tons of fillets per year. Unfortunately small fish were heavily targeted and the stocks were "scooped down" to the point where draggers in general, particularly with present quota and fish size regulations, are marginally economic at best. In the meantime the composition of the longline fleet h changed with the development of mechanization. The traditional 40-60' inshore fleet is about the same size as in previous years. The 60-90' size vessel is phasing out and the large, mechanized vessels in the 100' plus range, capable of fishing various stocks and species in widespread areas is increasing.

At present smaller handliners, gillnetters and longliners ar surviving. Government takes a dim view of gillnetting because of poor fish quality. Most of the fish must be split, salted and sold to third world countries with uncertain markets and low pric However, small boat fishermen prefer gillnetting because when fis school they can catch many more than with traditional tub trawls.

As yet efforts to develop rudimentary mechanical baiters for the smaller fleets have been relatively unsuccessful. The large processing factory vessels no longer operate in Norwegian waters. The processing plants along the coast in one way or another own or control the dragger fleets which were built to provide year-round supplies of product. Initially the system worked. After the unexpected depletion of stocks combination boats, capable of as many as four fishing techniques, were built in a continuing effort to supply a variety of products to the plants. These efforts soon were also unsuccessful, and most vessels reconverted to handle one or at most two techniques. The increasing mechanized longliner fleet does not solve the problems of the shoreside plants. These larger vessels operate on the Norwegian cod stocks in the colder six months, but then find it more profitable to fish ling and cusk (which the draggers cannot catch in commercial quantities) farther south on the coast, and in waters controlled by the British Islands, the Faroe Islands and Iceland.

In the midst of this situation the government is attempting to produce policies which will preserve and enhance both the fishing industry and the fish stocks.

Gillnetting, handlining, and tub trawling dominate the small vessel fleets. Increasing attempts to require and reward quality have discouraged gillnetting, but all three methods are given some measure of support. In general small otter trawlers are not allowed within four miles of the coast, medium vessels within six miles, and larger trawlers and factory vessels within twelve miles. Four or five areas outside twelve miles which have high concentrations of fish are also closed to trawlers. Some small areas, particularly aroud the Lofotan Islands, are divided such that gillnetters, longliners, and small Danish seiners each have exclusive access to certain portions. Handliners are allowed in when the other vessels are out of an area. In some cases the government even hires vessels to protect longlines and gillnets from draggers operating at night.

Otter trawlers are considered a very mixed blessing. On the one hand they were built to provide substantial year-round supplies of fish to coastal plants. A differentiated fleet is still encouraged for this reason. But the tendency of draggers to deplete schools of small fish has led to severe restrictions on them. Present quotas of about 800 tons on moderately large vessels makes many of them uneconomic. Similarly they are banned from numerous areas in order to protect both the fish stocks and other methods of fishing.

The fundamental management problem lies in the small size of fish caught by trawlers. A 135 millimeter(5.3") mesh regulation is in effect, with minimum fish sizes of 43 cm(16.9") for cod and 39 cm(15.35") for haddock. Government officials feel the size limits are too small, that the mesh size itself should be increased

to 155 millimeters(6.1"), and that the minimum size cod to match both the mesh size and the biologically appropriate limit should be 55 centimeters(21.65"). Politically, 155 mm mesh and 55 cm minimum fish limits cannot be enacted into law at present.

The substitute management measure is the closure to draggers of areas with small fish. When 15% by count of dragger cod catches in an area are smaller than 42 centimeters in length, the area is closed. For haddock the closure is triggered when 15% are less than 39 centimeters in length. Longliners and gillnetters can continue fishing in these closed areas.

Management of the "Norwegian" cod stocks is an international problem involving the USSR, Britain, West Germany, and Spain among others. The main responsibility rests with Norway and Russia. A normal year class is spawned in Norway, spends its first year or so in Russian waters and then migrates westward to Norway again. The development of catch restrictions has been gradual, with individual vessel quotas appearing only in the last several years. Longliners and gillnetters have been unrestricted until this year when, under severe pressure from Russia, these vessels have been given quotas as well. However, in practice the smaller longliners and gillnetters are still allowed to continue after their quotas are filled.

The management objective is to maintain a spawning stock of 500,000 tons. Unfortunately all year classes, due to natural causes, from 1976 through 1981 have been poor. The 1975 year class was very strong and total allowable catch limitations and severe closure measures on trawlers in 1979 have worked well to preserve the 1975 year class. Fortunately 1982, 1983 and 1984 classes have all been good, with at least one considered "rich". The general consensus is that cod abundance is on the increase and that, with continued protection of small fish, greatly increased catch rates will be possible in the near future.

Presently about 30% of the Norwegian fleet is composed of longliners, many of them small inshore boats. Lack of recent historical rights has prevented the new, large, mechanized longliners from receiving large cod quotas. However their flexibility allows them to operate efficiently while draggers with twice the codfish quotas cannot.

Recent trends in cod landings by various techniques is very informative. The following table is from The Fish and the Ocean, special issue number 1, 1984, published by the Norwegian Directorate of Fisheries. The article containing the table is entitled "Norwegian Arctic Cod and Coastal Cod North of 62°".

	Gillnets	Longliners	Handliners	Scottish and Danish Seines	Draggers
1977	125,000	44,000	59,000	39,000	165,000
1978	121,000	51,000	46,000	19,000	151,000
1979	101,000	41,000	30,000	19,000	132,000
1980	86,000	36,000	39,000	15,000	89,000
1981	120,000	64,000	36,000	20,000	74,000
1982	107,000	74,000	39,000	31,000	63,000

Note that all methods have declined except longlining, which has increased dramatically. The decline in dragger landings has been precipitous. In spite of obvious advantages and capabilities under certain conditions, dragging is becoming less and less desirable and economic given the requirements for effective fish production and stock management in Norwegian waters. On the other hand, the efficiency of mechanized longliners and the compatability of the technique with management objectives is resulting in their increase.

ICELAND

Sources: The principal sources of information about Iceland are Mr. Jakob Jakobsson, director of the Marine Research Institute in Reykjavik, and Mr. Gudni Thorsteinsson, a fishing gear expert and marine biologist at the Marine Research Institute.

In many respects the development of fishing fleets, related problems, and methods of solution in Iceland parallel the experience in Norway. Iceland is very heavily dependent on fishing for the health of her economy. As in Norway, the majority of the fishing is accomplished from numerous small ports ringing the coastline. There are approximately 800 decked boats in her fishing fleet, about 100 of which are stern trawlers, and another 100 of which fish most of the time with longlines. As many as 350-400 boats are engaged in longlining at some time of the year, but the majority of these are small vessels which also gillnet and are sometimes involved with other fishing techniques as well, for example, drift netting for herring or deep water shrimping. Longliners ring the island, but even the larger boats, ranging up to 100 feet in length are almost all tub trawlers relying on shoreside hand baiting. Only on the northwest coast will the longliners go offshore for trips up to a week in length. Even here most of them go only for two days(two sets) with the baiting done ashore. The initial introduction of autoliners to Iceland was not well received, partly due to equipment problems, partly due to fishermen's belief in the efficiency of hand baited hooks, and partly due to the proximity of good fishing grounds to the coastal ports, which

made hand baiting ashore reasonable. One of the main reasons, however, was a deadlock between owners, connected with the fish plants, and crews concerning equitable share arrangements on the more expensive and more efficient mechanized vessels. There are only three or four autoliners in all of Iceland. However, one of them is now doing extremely well and there are expectations that more vessels will be added.

As in Norway, the government attempts to encourage longliners because of the quality of fish landed and the conservation benefits of the technique. Also as in Norway, there is a preference among small boat owners to combine a considerable amount of gillnetting with their longlining. Gillnets(7" minimum mesh size) are expensive, but when the fish are densely schooled they are also very efficient. Furthermore when the spawning capelin come in late February and March the cod have much to eat and will not feed on baited hooks. Similarly in April when the cod themselves spawn they will not respond to hooks. Under these conditions gillnetters do well. On the other hand in autumn and early winter the fish are widely distributed and even trawlers will not do well. It is then that longlining is effective and popular. By covering long stretches of bottom with bait which draws fish from a considerable distance the longliners have excellent catches.

This present year is the first time Iceland has had quotas for individual boats. The boats can use any method they wish to catch their quotas and are also allowed to sell them. Part of the purpose of individual quotas is to avoid the frenzy of activity which normally accompanies a general quota. Reducing the intensity of the effort is intended to encourage better quality in the landed product. The result of this form of quota system appears thus far to be a 5-7% increase in the amount of fish landed in prime condition. The Marine Research Institute has also established quality grades and related price structures. All boats are now paid according to the grade of their fish. This measure clearly encourages better care of fish caught by any method and helps induce fishermen to favor hook fishing over gillnetting.

In general longliners and gillnetters are protected in ways similar to the Norwegian system, with special efforts to favor the longliners. In situations where gillnetters and longliners compete for the best grounds, some areas are open to longliners only, while others are divided between them and gillnetters. Similarly this year catches in January and February by longliners only, did not count against their annual quotas. Geographical limits on trawlers vary widely and are complicated due to the diverse makeup of Iceland's continental shelf, but in general draggers must operate offshore. These distance regulations are intended to protect both the inshore fish and other fishing methods.

The cod bio-mass in Icelandic waters stands at about 1,200,000 metric tons, well below the 2,000,000 metric tons of some years ago.

Biologists see recruitment, which has recently been poor, as determined by nature only. The initial size of year classes they understand as totally beyond the effects of fishing effort or management. 1976 was first thought to be a very strong year class, but for reasons unknown it did not mature in great numbers. Unfortunately 1979, 1981, 1982 and 1983 were poor year classes. Only 1980 in the recent series was reasonably good.

One major determinant of year class strengths is the effect of the cold East Greenland current and the warm Gulf Stream. When the East Greenland current swings toward Iceland year classes tend to be poor. When part of the Gulf Stream swings around the north and west coasts, as it did in 1984, the year classes are much stronger. 1984 is expected to be a very strong year class.

Such factors are beyond anyone's control. Thus Iceland's managers see their role as protecting the small fish which nature provides until they mature. Several measures are in effect to accomplish this end. First, there is a minimum mesh size of 155 millimeters(6.1") for trawlers. Second, there is a minimum fish size of 50 centimeters(19.69"). Of course smaller fish are caught. Therefore some fish between 45 and 50 centimeters are allowed to be landed and sold, on the assumption that they are killed anyway and that some value should be retained. Such fish are sold for reduced prices and generally go to a meal operation. Third, a major protection for small fish is provided by a system for closing areas to trawlers where heavy concentrations of immature fish are located. Large mesh is then considered inadequate protection.

There are about 100 stern trawlers in Iceland. At any given time about eight of the trawlers at sea will have an observor aboard whose responsibility is to monitor the size fish being caught. If 35%, by count, of the fish are 55 centimeters(21.65") or less in length the area is immediately closed to stern trawlers, but left open to longlining and some other fishing methods. Someone is on duty every hour of the year at the Marine Fisheries Institute. When the observors determine the excess abundance of small fish and locate the general boundaries where they are found, a radio call is placed to the Institute. Whoever is on duty consults with the Director of the Institute and the area is closed, by radio, within one to two hours of the observor's first call. The coast guard is notified right away and the Ministry of Fisheries is notified the next day. The closed areas are reinspected frequently, normally about once a week, and reopened when the small fish leave. If the fish persist for more than two to three months, the continuing closure must be authorized by the Ministry of Fisheries, a process which takes two or three days.

In both Norway and Iceland considerable effort is expended to encourage longliners. Only minimal restrictions are put on them. In general they are allowed to fish whenever and wherever they want. No emphasis is placed on protecting spawning grounds or

other areas from longlines. However, substantial effort is placed on allowing small fish to mature with the help of restrictive mesh sizes on trawlers, minimum fish size regulations, and fast-acting, flexible but stringent measures to exclude draggers from areas where large numbers of juveniles are being caught.

These approaches are consistent with the theory that nature alone determines the initial strength of year classes and that the objective of good management is to allow juvenile fish to mature.

MPLE

IMMATURE HARVEST COMPARISON:

OTTER TRAWL 1983

36,756 TONS TAKEN

BY WEIGHT, 12,331 TONS IMMATURE, OR 33.5%

BY [illegible]

AGE 1 .77 x 10% = .7

AGE 2 28.6% x .80 = 22.9

AGE 3 44.6% x .50 = 22.3

AGE 4 10.0% x .30 = 3.0

48.9%

LONGLINE 1981 S-K

BY WEIGHT, USING NMFS LENGTH/AGE/WEIGHT FIGURES: 4.5%

AGE 1 0

AGE 2 2.0% x .80 = 1.6

15.0% x .50 = 7.5

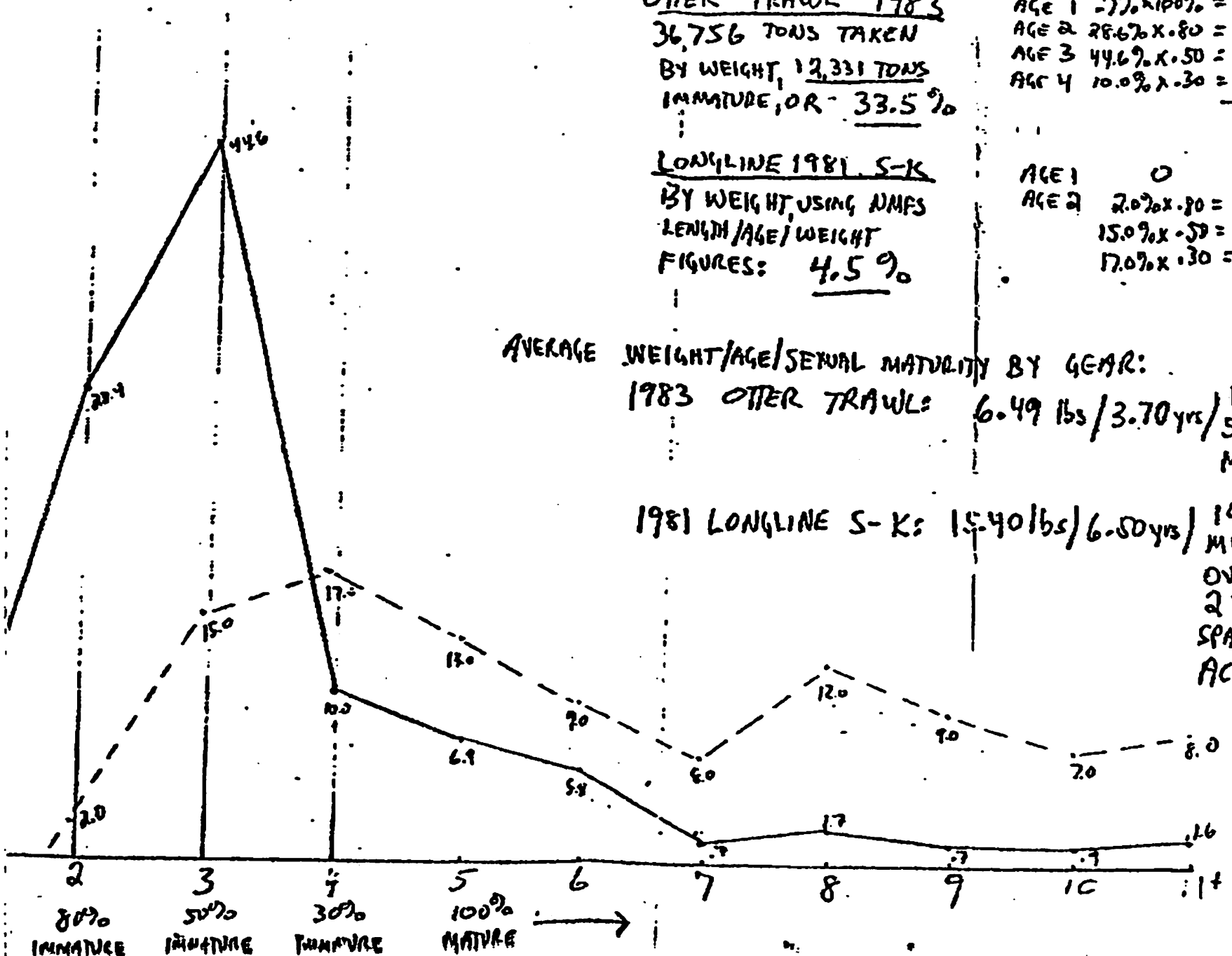
17.0% x .30 = 5.1

14.2%

AVERAGE WEIGHT/AGE/SEXUAL MATURITY BY GEAR:

1983 OTTER TRAWL: 6.49 lbs / 3.70 yrs / BETWEEN 50-70% MATURE

1981 LONGLINE S-K: 15.40 lbs / 6.50 yrs / 100% MATURE, OVER 2 YEARS SPAWNING ACTIVITY



36,756 TONS TAKE
BY WEIGHT, 12,331 TONS
IMMATURE, OR 33.5%

LONGLINE 1981 S-K
BY WEIGHT USING NMFS
LENGTH/AGE/WEIGHT
FIGURES: 4.5%

AVERAGE WEIGHT/AGE/SEXUAL MATUR
1983 OTTER TRAWL:

1981 LONGLINE S-K: