

STATUS OF 2001 PACIFIC HALIBUT FISHERIES

Situation: The 2001 Pacific halibut season in the Council management area is winding down. After August 17, 2001, only a few fisheries remain, including the first fishery for incidental halibut catch in the directed longline sablefish fishery north of Point Chehalis, Washington. Bad weather has extended some mop-up fisheries longer than in most years, including the directed halibut longline season.

Attachment 1 provides a preliminary report summarizing the harvest in the 2001 Pacific halibut fisheries in Area 2A to date.

Council Task:

1. Information and discussion.

Reference Materials:

1. Preliminary Report on the 2001 Pacific Halibut Fisheries in Area 2A (Exhibit B.1, Attachment 1).

PPMC
8/23/01

STATUS OF BYCATCH ESTIMATE

Situation: Ms. Cyreis Schmitt, National Marine Fisheries Service (NMFS), will brief the Council on the status of bycatch estimates for Pacific halibut in the Council-area groundfish trawl fishery.

The halibut bycatch estimates for the 2000 groundfish trawl fishery in International Pacific Halibut Commission (IPHC) Area 2A waters should be completed just prior to the September Council meeting. A report will be provided to the Scientific and Statistical Committee (SSC) for review with the intent of providing estimates to the IPHC to use in establishing the 2002 halibut fisheries.

Council Task:

- 1. Utilizing input from the SSC, provide any needed Council guidance to the completion of the bycatch assessment and its transmittal to the IPHC.**

Reference Materials: None.

PFMC
08/23/01

RECEIVED
SEP 10 2001
PFMC

**Stress and delayed mortality induced in Pacific halibut
by exposure to hooking, net towing, elevated sea water temperature
and air: implications for management of bycatch**

Michael W. Davis* and Bori L. Olla

*Alaska Fisheries Science Center, National Marine Fisheries Service,
Hatfield Marine Science Center, Newport, Oregon 97365, USA*



In Press: North American Journal of Fisheries Management, 2001

* Email: michael.davis@hmsc.orst.edu

Abstract. - The levels of stress and eventual mortality in Pacific halibut *Hippoglossus stenolepis* that resulted from simulated capture by hooking or towing in a net, followed by abrupt exposure to elevated sea water temperature and air were determined under laboratory conditions. Abrupt exposure to 16°C sea water and air after either method of capture increased capture-induced stress with mortality at 33% for hooked fish and 78 % for fish towed in a net, with these deaths occurring up to 30 d after experimental treatment, suggesting that delayed mortality should be considered in any study of Pacific halibut bycatch mortality. Stress induced by hooking or towing in a net followed by air exposure was reflected in cessation of negative phototaxis and feeding, both of which resumed after 5 d with no mortality occurring. The results of this study clearly show that seasonal increases in temperature associated with thermoclines and deck conditions have the potential for markedly increasing mortality of Pacific halibut that might otherwise survive capture and release in colder seasons. Strategies for effective management of Pacific halibut bycatch need to include consideration of seasonal temperature elevation and how this factor might increase mortality.

Pacific halibut *Hippoglossus stenolepis* form the basis for an economically important fishery along the west coast of the United States and Canada and throughout Alaskan waters. Fishing regulations require that all Pacific halibut bycatch be released back into the ocean with the estimation of the survival of released fish being a major concern for the management of this species. While a system of visual classification for Pacific halibut condition and potential mortality has been implemented, it is not clear how accurately this system may predict mortality of fish that are released after capture (Hoag 1975; Kaimmer and Trumble 1998). Modification of this condition index would require better estimates of Pacific halibut delayed mortality as it is related to fishing practices. Previous in situ studies of delayed mortality in Atlantic halibut *Hippoglossus hippoglossus* (Neilson et al. 1989) and Pacific halibut (Oddsson et al. 1994; Trumble et al. 1995; Kaimmer and Trumble 1998) have held fish in nets or tanks for 2 - 10 d after experimental treatment. However, studies on other marine fish species have shown that delayed mortality can occur up to 14 d after capture (Lockwood et al. 1983; Van Beek et al. 1990; Soldal et al. 1993; Olla et al. 1998). These results suggest that in situ measurement of delayed mortality should be made over an extended period of time, even though this may generally be difficult under ocean conditions. An early preliminary study of delayed mortality in Pacific halibut that had been captured by longline, tagged and held in cages in a shallow bay for up to 77 d showed delayed mortality up to 73 d (Peltonen 1969). However, fish often died for reasons apparently not related to capture and tagging, as holding conditions in the field included increasing temperature and decreasing salinity.

Studies on other commercially important marine fish species have shown that stress and

mortality in bycatch may result from a variety of causes including net entrainment, mesh passage, crushing and wounding, sustained swimming until exhaustion, changes in pressure, hooking and exposure to air (Chopin and Arimoto 1995; Murphy et al. 1995; Olla et al. 1997). Trawling has been considered to be a greater source of Pacific halibut bycatch mortality than hooking (Williams and Wilderbuer 1995). The mortality associated with trawling was linked with time on deck, length of fish, total weight of catch, tow depth and tow duration, with typical tow durations during fishing operations that impact Pacific halibut ranging up to 4 h and time on deck ranging up to 1 h, although complete mortality could be noted after 20 min on deck (Hoag 1975; Richards et al. 1995; Trumble et al. 1995). The principle causes for hooking mortality have been suggested to be injuries from hooking and from release methods (Williams and Wilderbuer 1995; Kaimmer and Trumble 1998). Longlines are typically soaked for up to 24 h before hauling fish on deck.

Temperature is one of the key environmental factors that could interact with capture-induced stress to affect survival (Barton and Iwama 1991; Ross and Hokenson 1997; Olla et al. 1998). The magnifying effect of temperature on stress induced by capture has been described in detail for sablefish *Anoplopoma fimbria* (Olla et al. 1998; Davis et al. 2001). This effect is most likely to occur during warmer seasons when captured fish that are hauled on deck may be exposed to thermoclines ranging from 5 - 16°C and with even warmer deck temperatures (Olla et al. 1998). Previous in situ studies on bycatch in Atlantic halibut (Neilson et al. 1989) and Pacific halibut (Oddsson et al. 1994; Richards et al. 1995; Trumble et al. 1995; Williams and Wilderbuer 1995) have not reported temperatures through the water column or on deck and temperature may have been, at least in part, a causative factor in the observed mortality

effects. This temperature information is needed for management decisions where more accurate estimates of halibut bycatch mortality could be made on a seasonal basis. A preliminary attempt to assess seasonal mortality for Pacific halibut bycatch produced by the deepwater flatfish fishery in the Gulf of Alaska during 1993 and 1994 indicated that there was a 7 - 8 % increase in mortality rates during the warmer April - September months when compared to the cooler October - March months (G. H. Williams, International Pacific Halibut Commission, personal communication).

The aim of this study was to determine under laboratory conditions the relative degree to which stress and eventual mortality was induced in non-reproductive Pacific halibut by capture with hooking or net towing followed by exposure to air, and to document the role that exposure to elevated temperature plays in increasing mortality resulting from capture stressors. Pacific halibut were observed for up to 60 d after experimental treatment to assess the potential for delayed mortality that resulted from experimental treatments.

Methods

Pacific halibut (70 - 85 cm fork length [FL]) that were non-reproductive were captured in the spring on commercial longline gear offshore from Newport, Oregon and a total of 72 fish used in the studies were held in six tanks at a density of 12 fish per tank in the laboratory for up to 6 months prior to experimentation. Holding tanks were circular (4.5-m diameter, 1.0-m depth, 15,904 L volume), with a 3-cm layer of smooth, dark river rock (<15 mm diameter) spread over the bottom. Tanks were supplied with flow-through sea water (20 L min^{-1} , 4.0 - 5.5°C,

30 - 32 ppt salinity, $O_2 > 90\%$ saturation). Fish were fed to satiation on whole dead common squid *Loligo opalescens* twice per week. Half of the tank was covered with a black opaque cover and since fish were negatively phototactic, they generally remained under the cover and only came into the light side of the tank to feed. The light side of the tank had light conditions (daylight fluorescent, 5000°K) of $1.0 \mu\text{mol photons m}^{-2} \text{s}^{-1}$, while the dark side decreased to $0.002 \mu\text{mol photons m}^{-2} \text{s}^{-1}$ at the farthest side of the tank.

The combined effect on mortality of being hooked for a 24-h period, followed by abrupt exposure to either the same temperature at which the fish were hooked or to elevated sea water temperature, and then exposure to air was determined in Pacific halibut (Figure 1). Fish were transferred by dip net from a holding tank to a rectangular tank (1.5-m wide, 6.7-m long, 1.0-m depth, 10,050 L volume) supplied with flow-through sea water (20 L min^{-1} , $5.0 \pm 0.2^\circ\text{C}$, 30 - 32 ppt salinity, $O_2 > 90\%$ saturation). Fish were restrained in a foam-lined holding box in the water and hooked in less than 30 s through the upper jaw onto commercial longline gear consisting of 10-mm rope, 3-mm nylon ganglions, swivel snaps and Mustad circle hooks (13/0). Fish were held on the lines near the bottom of the tank for 24 h in darkness and then they were placed in the holding box, unhooked and placed into a dip net in the water within 10 s. Fish were then transferred to a circular tank (3.0-m diameter, 1.0-m depth, 7,068 L volume) which contained sea water at either 5.0 or 16.0°C and held for 30 min, followed by 15 min in air ($16.2 \pm 0.3^\circ\text{C}$). After treatment, fish were transferred to circular tanks that were similar to the holding tanks and that had been divided in half with clear acrylic partitions. Two fish were held in each partitioned section for 30 d. Half of the tank was covered with an black opaque cover and negative phototaxis was measured in the fish every 24 h by moving the cover over the opposite

half of the tank that fish rested in and observing whether the fish moved to the dark side. Fish were offered food daily and uneaten food was taken out of the tank after 4 h. Mortality was noted when it occurred and dead fish were removed from the tank. All fish were transferred back into original holding tanks after 30 d and further mortality and feeding were monitored in groups of fish.

The combined effect on mortality of being towed in a net for a 4-h period, followed by abrupt exposure to either the same temperature at which the fish were towed or to elevated sea water temperature, and then exposure to air was determined in Pacific halibut (Figure 1). Fish were transferred by dip net from a holding tank into towing nets, located in a tank, previously described (Olla et al. 1997; 1998). In brief, the apparatus had two nets suspended at the ends of two rotating arms in a tank (4.5-m diameter, 1-m depth) to simulate cod-ends of fishing trawls. The nets were cylindrical (1.2-m length, 0.7-m diameter) and constructed with 2.5-cm nylon diamond mesh. Nets were towed for 4 h at $5.0 \pm 0.2^{\circ}\text{C}$ in lighted conditions ($1.0 \mu\text{mol photons m}^{-2} \text{ s}^{-1}$) at 1.1 m s^{-1} , a speed at which halibut could not swim. During towing, fish rested in the net with a head forward orientation. If fish slid towards the back of the net during towing, they became oriented perpendicular to the main axis of the net and invariably died, probably from an inability to breathe as the water current and the net pressed their opercula closed. These fish were not included in the reported experiments. Following towing, fish were exposed to 5.0 or 16.0°C for 30 min, followed by 15 min in air ($16.3 \pm 0.4^{\circ}\text{C}$). Recovery was assessed as described for fish that had been hooked, followed by exposure to elevated sea water temperature and air.

The time course for elevation of body core temperature was determined by transferring Pacific halibut (78 - 85 cm FL) from a rearing temperature of 5.0°C to a circular tank

(3.0-m diameter, 1.0-m depth, 7,068 L volume) containing heated sea water (16.0°C). An ultrasonic temperature transmitter (30 mm x 16 mm; Sonotronics) was manually inserted into the stomach of a fish 5 min prior to transfer to the heated sea water to insure that the transmitter reached initial body core temperature. Change in body core temperature of a free swimming fish was monitored every 5 min for 30 min using an ultrasonic receiver (Sonotronics). At the end of a trial, the transmitter was removed from the fish and inserted into another fish.

Results

When Pacific halibut were hooked for 24 h at 5.0°C, abruptly transferred to 5.0°C for 30 min and then to air for 15 min (16.2°C), no mortality occurred with fish surviving for at least 60 d ($N = 12$, Figure 2). The overt signs of stress in surviving fish were a cessation of feeding and negative phototaxis which both resumed by 5 d after experimental treatment. In contrast, hooking and abrupt transfer of fish to 16.0°C, followed by transfer to air for 15 min (16.2°C) caused significant mortality, with 6 out of 18 fish dying (33 % mortality; one-tailed Sign test, $P = 0.016$; Figure 2), between 2 and 30 d after hooking (mean \pm 1 SE = 10.0 ± 4.5 d). All surviving fish resumed feeding and negative phototaxis within 30 d after hooking and elevated temperature treatment and no further mortality was noted after 30 d (Figure 3).

When Pacific halibut were towed in a net for 4 h at 5.0°C, abruptly transferred to 5.0°C for 30 min and then to air for 15 min (16.3°C), no mortality occurred for at least 60 d ($N = 12$, Figure 2). Feeding and negative phototaxis in the surviving fish ceased but resumed by 5 d after net towing. In contrast, net towing and abrupt transfer of fish to 16.0°C, followed by

transfer to air for 15 min (16.3°C) caused significant mortality, with 14 out of 18 fish dying (78 % mortality, one-tailed Sign test, $P < 0.001$, Figure 2), between 1 and 27 d after towing (16.1 ± 3.0 d). All surviving fish resumed feeding and negative phototaxis within 30 d after towing and elevated temperature treatment and no further mortality was noted after 27 d (Figure 3). The mean time it took for delayed mortality to occur apparently did not differ between fish that were hooked (16.1 ± 3.0 d) or towed (10.0 ± 4.5 d) and exposed to elevated temperature and air ($t_{11} = 1.17$, $P = 0.267$; Figure 3).

The time course of increase in body core temperature was determined to estimate the internal temperatures of Pacific halibut during exposure to elevated sea water temperature. For fish ($N = 5$) that had been acclimated to 5.5°C , abrupt transfer to 16.0°C resulted in body core temperature rising to $7.7 \pm 0.3^{\circ}\text{C}$ after 15 min; by 30 min body core temperature had reached $10.5 \pm 0.1^{\circ}\text{C}$ (Figure 40). This rise in temperature was statistically significant (Friedman's test, $F_3 = 25.0$, $P = 0.0001$). No mortality was observed for these fish up to 60 d after exposure to elevated temperature.

Discussion

For Pacific halibut, hooking or towing in a net, followed by air exposure did not result in mortality, while exposure of fish to elevated temperature and air after either hooking or net towing resulted in mortality, which was higher for the net towed fish than for the hooked fish. Similar results were obtained with sablefish towed in a net and exposed to elevated temperature and air (Olla et al. 1998; Davis et al. 2001). We presume that significant mortality would not

result from exposure only to 16°C, since no mortality was observed for any of the five Pacific halibut that were abruptly exposed to 16°C for 30 min during body core temperature measurements. Significant mortality would be expected to result as Pacific halibut approached an upper threshold of temperature tolerance, but determination of such a temperature threshold was not within the scope of this study.

Delayed mortality in Pacific halibut occurred up to 30 d after experimental treatment, with the average time to death apparently not differing between fish that had been hooked or towed and then abruptly exposed to elevated temperature and air. In an earlier study, delayed mortality was observed for walleye pollock *Theragra chalcogramma* for up to 14 d after capture by towing (Olla et al. 1997). Other studies have also reported delayed mortality after capture ranging from 3 - 14 d for a variety of species (Lockwood et al. 1983; Van Beek et al. 1990; Soldal et al. 1993; Olla et al. 1998). Since delayed mortality that resulted from post-capture stress was variable, this should be investigated for each species of interest (Chopin and Arimoto 1995; Olla et al. 1997). For both Atlantic halibut *Hippoglossus hippoglossus* (Neilson et al. 1989) and Pacific halibut (Oddsson et al. 1994; Trumble et al. 1995; Kaimmer and Trumble 1998) exposed to capture stresses, in situ studies on delayed mortality in fish held in cages or tanks were conducted for 2 - 10 d after experimental treatment. Our results clearly show that observations of post-capture mortality in Pacific halibut should be made over a longer period of time (up to 30 d) to insure that realistic results are obtained from laboratory or field studies of bycatch mortality. An early preliminary study of delayed mortality in Pacific halibut that had been captured by longline, tagged and held in cages in a shallow bay for up to 77 d showed delayed mortality up to 73 d, with fish not feeding for 60 d (Peltonen 1969). However, it was difficult to link the results of this study to

the effects of particular factors since fish were exposed to increasing temperature and decreasing salinity during holding, did not resume feeding until after 60 d and often died for reasons that appeared to be unrelated to capture or tagging.

Mortality appeared to be lower for fish that had been hooked and then exposed to elevated temperature and air than for fish that were towed in a net and then exposed to elevated temperature and air. In an earlier field study, capture of Pacific halibut by trawling was considered to be a greater source of bycatch mortality than by hooking, although temperature was not measured during the trials (Williams and Wilderbuer 1995). While the difference in mortality observed in the field trials may have been caused in part by the effects of crushing in the trawl, our laboratory results suggest that elevated temperature could explain at least part of the differences among capture methods observed in the field.

Comparisons of experiments conducted in the laboratory with possible results obtained in the field must be made with caution. The experiments in this study were designed to simulate some of the stressors that could be associated with bycatch processes and were generally conservative in their effects relative to field conditions of capture. Also, relatively minor stressors were equally present in all the laboratory experiments which would not be present in the field, including handling in nets and transport to tanks between capture, temperature and air treatments and these were considered part of the overall stressor treatments. We recognize that during capture, fish in the laboratory were not subjected to stressors that could be present in the field, e.g., depth and pressure changes, crushing in a trawl, dragging of longline gear by currents and heavy seas, changes in temperature during hauling that generally are less rapid than those simulated in the laboratory, unhooking processes, handling on deck during discard of bycatch, the

presence of predators and exposure to thermocline conditions after release from capture in a fishing operation. Conclusions resulting from this study emphasize principles of stressor action rather than attempts to precisely predict the stress that may result from capture in the field under a wide range of conditions. We have chosen to assess bycatch stress under controlled conditions where there is the possibility of understanding the additive nature of stressors and resulting mortality. Once this information is available, then experiments can be designed to investigate bycatch processes under field conditions where control of individual stressors is difficult and complex mixtures of stressors are present. Future research in our laboratory with Pacific halibut will consider possible correlations between measures of mortality and chemical measures of physiological stress which could be used as surrogate measures to predict mortality under actual fishing conditions, where holding fish for extended periods of time to determine mortality is not generally possible (Morgan and Iwama 1997; Olla et al. 1998; Davis et al. 2001).

Stress induced in fish as a result of bycatch processes may often result from a combination of several stressors, including capture, environmental factors and handling (Chopin and Arimoto 1995; Murphy et al 1995; Olla et al. 1997). The magnification of stress in fish caused by interactions of stressors is probably a common occurrence (Wedemeyer et al. 1990; Barton and Iwama 1991). With regards to the prediction of Pacific halibut bycatch mortality after release back into the ocean, the results of the present study suggest that as part of accounting for the interaction of stressors, it would be necessary to measure water and deck temperatures when conducting in situ studies of stress in halibut bycatch. Similar conclusions were reached in previous studies with sablefish in which temperature magnified the stress induced by capture (Olla et al. 1998; Davis et al. 2001).

Previous studies of mortality in bycatch Pacific halibut caught in the field have attempted to relate a three-level visual inspection index of fish condition and potential mortality to capture and handling stressors, but with limited quantitative success (Hoag, 1975; Kaimmer and Trumble 1998). In situ studies of bycatch mortality in Atlantic halibut (Neilson et al. 1989) or Pacific halibut (Oddsson et al. 1994; Richards et al. 1995; Trumble et al. 1995; Williams and Wilderbuer 1995) caught with trawl or longline have not included direct observation of temperature and its effects, but instead have measured the effects of indicator variables such as time on deck, tow depth, tow duration and release methods which may have been associated with elevated temperature. Since the visual index of halibut condition is an essential component in the estimation of bycatch mortality used in stock management models, a high priority for research would be to improve the accuracy of this index. Future refinement of the visual condition index for bycatch halibut should include consideration of the effects of exposure to elevated temperature during capture and handling, as well the use of longer holding times for fish to assess potential delayed mortality.

The thermal history of Pacific halibut during capture, as measured by body core temperature, would be an important factor in the prediction of bycatch mortality. As would be predicted, data on the warming of Pacific halibut showed a slow increase in body core temperature. It is expected that the slope of this warming curve would be dependant on body size and the history of exposure to temperature differentials between the depth of capture and conditions on deck during handling (Spigarelli et al. 1977). Seasonal increases in temperature associated with thermoclines and deck conditions (see Olla et al. 1998) would probably increase mortality of Pacific halibut that might otherwise survive capture and release in cooler seasons.

Obviously under fishing conditions, there are many possible combinations of thermocline and deck temperatures and the effects of this matrix of conditions on Pacific halibut body core temperature should be investigated in further detail. Also it would be relevant to investigate the possible effects of below freezing temperatures on Pacific halibut bycatch, such as would be found on deck during colder seasons in Alaska.

In this study, Pacific halibut were exposed to 16°C because this was a reasonable surface water temperature in the coastal waters off Oregon and Washington during the summer months (Olla et al. 1998). While bottom and surface water temperatures during the summer months in Alaska would be lower than those of Washington and Oregon, temperatures on deck during daylight hours would probably be similar in Alaska, Washington and Oregon, ranging between 15 - 30°C. These elevated temperatures represent a chronic stress, as acclimation of fish to elevated temperature probably does not occur during time periods of exposure less than 2 h that are relevant to bycatch processes. Acclimation of fish to temperature is a physiological process that requires altered gene expression in the broadest sense, occurring in a minimum of 6 - 8 h (Hazel 1993). Abrupt exposure to 16°C after capture was probably not the most realistic way to expose fish when compared to fishing operations, where fish may be retrieved over variable time periods up to 1 h through various gradients of temperature change and subsequent exposure to deck conditions ranging up to 1 h for trawl-caught fish and less than 5 min for hook-caught fish, followed by fish descending down through the thermocline. However, simulation of a range of temperature gradients was not possible in this study because of the limited availability of sea water facilities to hold large numbers of fish. Clearly, information about changes in body core temperature in field-caught Pacific halibut is needed. Ultimately, the most useful predictor of

bycatch mortality during warmer seasons may be a combination of measures of the intensity of capture stressors and the interaction of body core temperature. The results of this study emphasize the significance of these interactions in prediction of stress induction and eventual mortality.

Strategies for fisheries management of Pacific halibut bycatch should consider seasonal environmental factors and how they might increase mortality associated with capture. In Observer Programs required for some fisheries that produce Pacific halibut bycatch, in addition to recording characteristics of the capture and handling processes and fish condition and length, it would be useful to record surface water and deck temperatures and Pacific halibut body core temperatures in an effort to quantify factors controlling bycatch mortality. Significant reduction in Pacific halibut bycatch mortality could possibly be obtained by altering fishing practices to reduce elevated temperature exposure during warmer seasons or restricting fisheries that produce bycatch to seasons of cooler temperatures, although caution must be observed in exposing fish to freezing temperatures until more information is available on the possible effects of such cold temperatures. Data for Pacific halibut bycatch mortality rates in the deepwater flatfish fishery in the Gulf of Alaska during 1993 and 1994 indicated that there was a 7 - 8 % increase in mortality rates during the warmer April - September months when compared to the cooler October - March months (G. H. Williams, International Pacific Halibut Commission, personal communication). For all fisheries during 1999 in the Bering Sea and the Gulf of Alaska, 2,658 metric tons of Pacific halibut bycatch mortality occurred during the warmer April - September period while 3,886 metric tons occurred during the cooler October - March period ¹. If there are future shifts in fishing activity into warmer months because of considerations for political, economic or

endangered species factors, then total Pacific halibut bycatch mortality would be predicted to increase.

Acknowledgments

We thank M. Ottmar, M. Spencer, E. Sturm and R. Titgen for technical assistance.

Protocols used in this research conform to guidelines for ethical treatment of experimental animals prescribed by Oregon State University.

References

- Barton, B. A., and G. K. Iwama. 1991. Physiological changes in fish from stress in aquaculture with emphasis on the response and effects of corticosteroids. *Annual Review of Fish Diseases* 1:3-26.
- Chopin, F. S., and T. Arimoto. 1995. The condition of fish escaping from fishing gears - a review. *Fisheries Research* 21:315-327.
- Davis, M. W., B. L. Olla, and C. B. Schreck. 2001. Stress induced by hooking, net towing, elevated sea water temperature and air in sablefish *Anoplopoma fimbria*: lack of concordance between mortality and physiological measures of stress. *Journal of Fish Biology* 58:1-15.
- Hazel, J. R. 1993. Thermal biology. Pages 427-467 in Evans, D. H., editor. *The physiology of fishes*. CRC Press, Ann Arbor.
- Hoag, S. H. 1975. Survival of halibut released after capture by trawls. *International Pacific Halibut Commission Scientific Report* 57:1-18.
- Kaimmer, S. M., and R. J. Trumble. 1998. Injury, condition, and mortality of Pacific halibut bycatch following careful release by Pacific cod and sablefish longline fisheries. *Fisheries Research* 38:131-144.
- Lockwood, S. J., M. G. Pawson, and D. R. Eaton. 1983. The effects of crowding on mackerel (*Scomber scombrus* L.)—physical condition and mortality. *Fisheries Research* 2:129-147.

- Murphy, M. D., R. F. Heagey, V. H. Neugebauer, M. D. Gordon, and J. L. Hintz. 1995. Mortality of spotted seatrout released from gill-net or hook-and-line gear in Florida. *North American Journal of Fisheries Management* 15:748-753.
- Morgan, J. D., and G. K. Iwama. 1997. Measurements of stressed states in the field. Pages 247-268 in Iwama, G. K., A. D. Pickering, J. P. Sumpter and C. B. Schreck, editors. *Fish stress and health in aquaculture*. Cambridge University Press, Cambridge.
- Neilson, J. D., K. G. Waiwood, and S. J. Smith. 1989. Survival of Atlantic halibut (*Hippoglossus hippoglossus*) caught by longline and otter trawl gear. *Canadian Journal of Fisheries and Aquatic Science* 46:887-897.
- Oddsson, G., E. K. Pikitch, W. Dickhoff, and D. L. Erickson. 1994. Effects of towing, sorting and caging on physiological stress indicators and survival in trawl caught and discarded Pacific halibut (*Hippoglossus stenolepis* Schmidt 1904). Pages 437-442 in D. D. MacKinlay, editor. *High performance fish: proceedings of an international fish physiology symposium*. Fish Physiology Association, University of British Columbia, Vancouver.
- Olla, B. L., M. W. Davis, and C. B. Schreck. 1997. Effects of simulated trawling on sablefish and walleye pollock: the role of light intensity, net velocity and towing duration. *Journal of Fish Biology* 50:1181-1194.
- Olla, B. L., M. W. Davis, and C. B. Schreck. 1998. Temperature magnified postcapture mortality in adult sablefish after simulated trawling. *Journal of Fish Biology* 53:743-751.
- Peltonen, G. J. 1969. Viability of tagged Pacific halibut. *International Pacific Halibut Commission Report* 52:1-25.

- Richards, L. J., J. Fargo, and J. T. Schnute. 1995. Factors influencing bycatch mortality of trawl-caught Pacific halibut. *North American Journal of Fisheries Management* 15:266-276.
- Ross, M. R., and S. R. Hokenson. 1997. Short-term mortality of discarded finfish bycatch in the Gulf of Maine fishery for northern shrimp *Pandalus borealis*. *North American Journal of Fisheries Management* 17:902-909.
- Soldal, A. V., A. Engås, and B. Isaksen. 1993. Survival of gadoids that escape from a demersal trawl. *ICES Journal Marine Science Symposium* 196:122-127.
- Spigarelli, S. A., M. M. Thommes, and T. L. Beiting. 1977. The influence of body weight on heating and cooling of selected Lake Michigan fishes. *Comparative Biochemistry and Physiology* 56A:51-57.
- Trumble, R. J., G. H. Williams, and S. E. Hughes. 1995. Methods to improve survival of Pacific halibut bycatch discarded from a factory trawler. Pages 591-610 *in* Proceedings of the international symposium on North Pacific flatfish, Alaska Sea Grant College Program, Report Number 95-04, University of Alaska, Fairbanks.
- Van Beek, F. A., P. I. Van Leeuwen, and A. D. Rijnsdorp. 1990. On the survival of plaice and sole discards in the otter-trawl and beam-trawl fisheries in the North Sea. *Netherlands Journal of Sea Research* 26:151-160.
- Williams, G. H., and T. K. Wilderbuer. 1995. Discard mortality rates of Pacific halibut bycatch: fishery differences and trends during 1990-1993. Pages 611-622 *in* Proceedings of the international symposium on North Pacific flatfish, Alaska Sea Grant College Program, Report Number 95-04, University of Alaska, Fairbanks.

Wedemeyer, G. A., B. A. Barton, and D. J. McLeay. 1990. Stress and acclimation. Pages 451-489 *in* C. B. Schreck and P. B. Moyle, editors. Methods for fish biology. American Fisheries Society, Bethesda, Maryland.

Footnotes

1. National Oceanographic and Atmospheric Administration, National Marine Fisheries Service, Alaska Region. 2000. 1999 catch statistics for Bering Sea, Aleutian Islands and Gulf of Alaska. Website: <http://www.fakr.noaa.gov/1999/1999.html>. Accessed 2/2/01.

Figure Captions

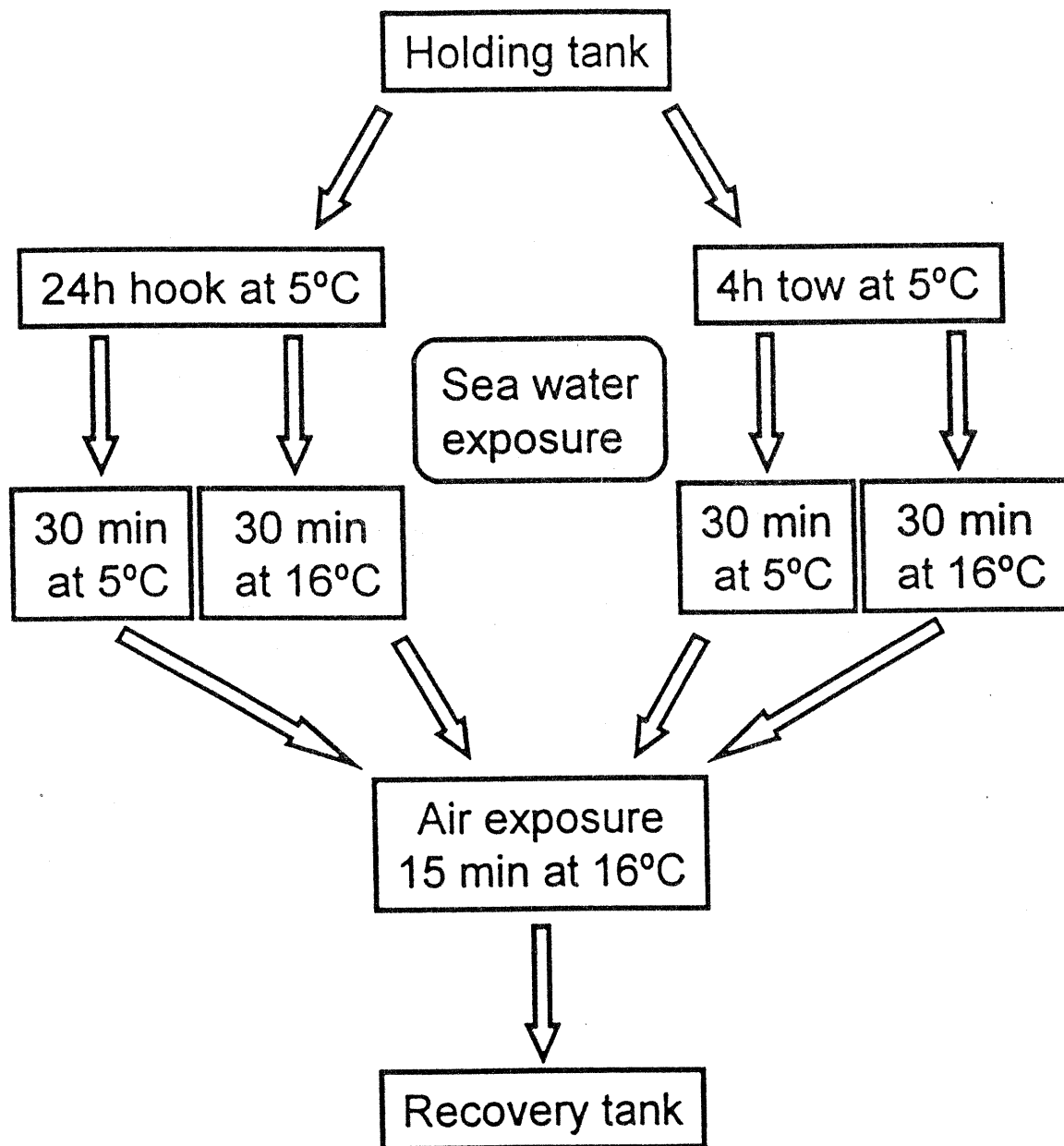
Figure 1. Flow chart of experimental stressor treatments for Pacific halibut *Hippoglossus stenolepis*. Fish were exposed to hooking for 24 h at 5°C followed by 5 or 16°C sea water for 30 min, air exposure for 15 min and transfer into recovery tanks; and exposed to towing for 4 h at 5°C followed by 5 or 16°C sea water for 30 min, air exposure for 15 min and transfer into recovery tanks.

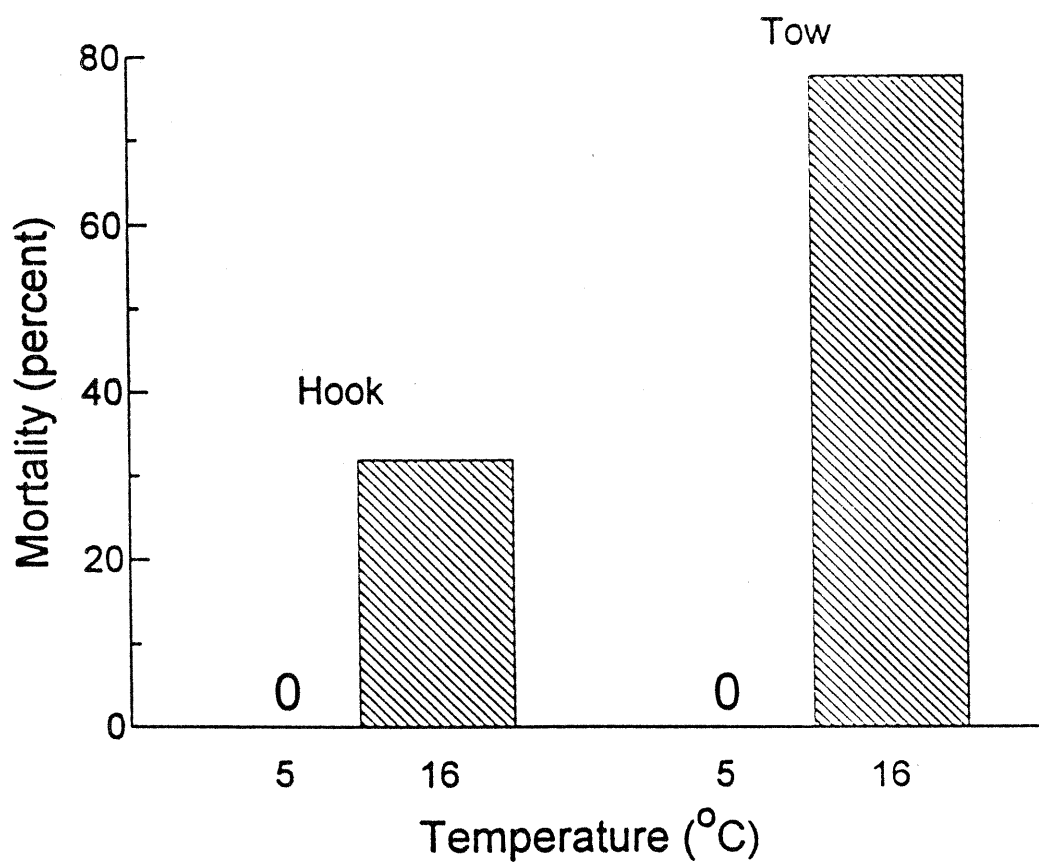
Figure 2. Pacific halibut *Hippoglossus stenolepis*. Effect of sea water temperature (5 and 16°C) on mortality (percent) in fish exposed to hooking for 24 h at 5°C followed by sea water temperature and air exposure (Hook); and exposed to towing for 4 h at 5°C followed by seawater temperature and air exposure (Tow). Mortality at 5°C for Hook and Tow treatments was 0 %.

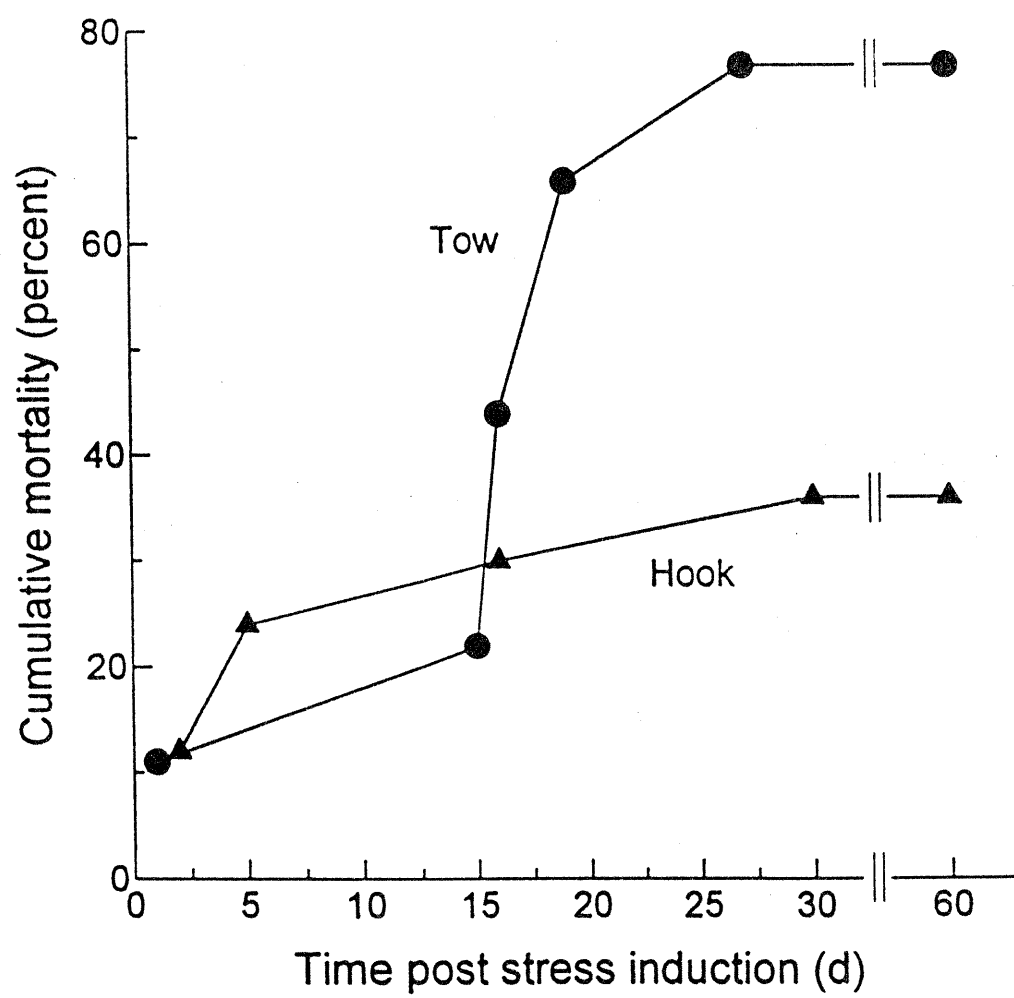
Figure 3. Pacific halibut *Hippoglossus stenolepis*. Time course (d) post stress induction for cumulative mortality (percent) in fish exposed to hooking for 24 h at 5°C followed by 16°C sea water and air exposure (Hook); and exposed to towing for 4 h at 5°C followed by 16°C seawater and air exposure (Tow). Note that fish were observed for up to 60 d, with no mortality occurring after 27 d for towed fish and 30 d for hooked fish.

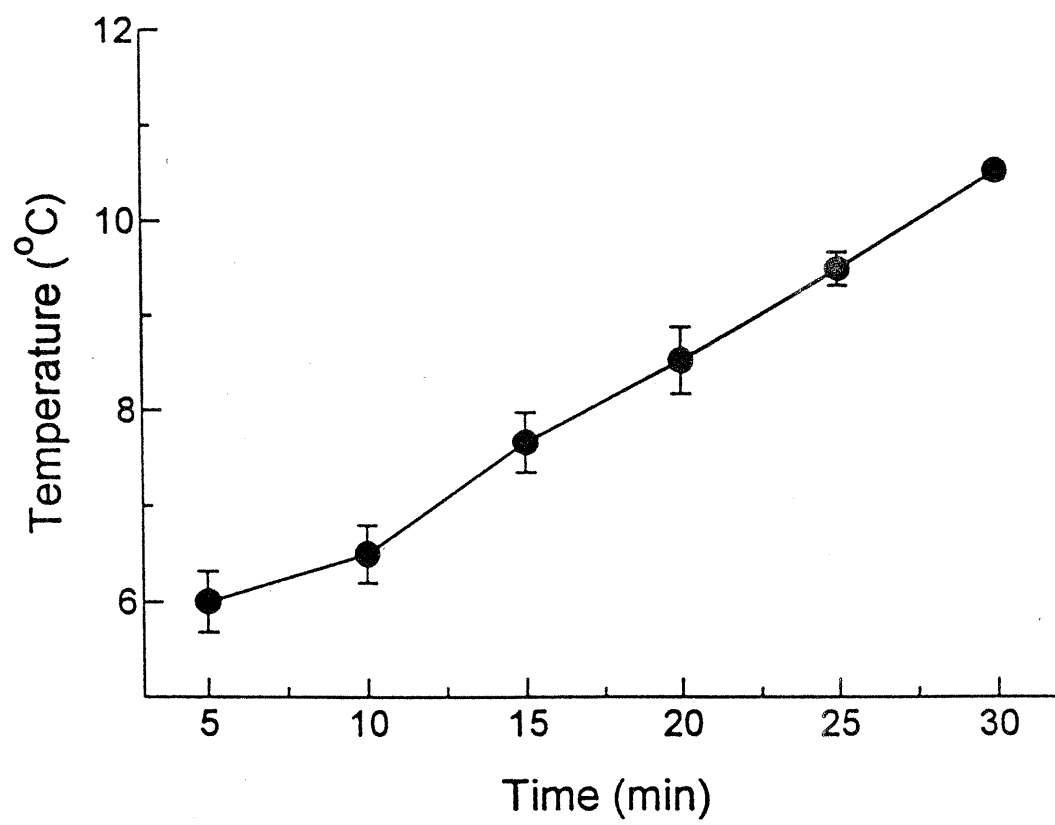
Figure 4. Pacific halibut *Hippoglossus stenolepis*. Time course (min) for increase of body core temperature (°C) in fish (78 - 85 cm FL) that were abruptly exposed to 16°C sea water for 30 min. Values are means \pm 1 S.E.; data point at 30 min includes error bar.

Pacific halibut stressor treatments









()

()

()

SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON
PACIFIC HALIBUT MANAGEMENT

Dr. Rick Methot gave a brief summary to the Scientific and Statistical Committee (SSC) on the National Marine Fisheries Service (NMFS) document entitled "Estimates of Pacific Halibut Bycatch and Mortality of International Pacific Halibut Commission (IPHC) Area 2A in 2000." Even though the document was not distributed to the majority of the SSC members until the meeting, the SSC provides the following comments. These latest estimates are based on a new method using the data from Enhanced Data Collection Program (EDCP). This method was reviewed in detail by the SSC in 2000. For this latest estimate, the authors used the same stratification for bycatch rates and proportion of legal-size halibut as last year, but updated the bottom trawl effort for years 1999 and 2000. These updates were summarized from the PacFIN logbook data base rather than from state logbook data sets as in the past. A comparison of the two methods for deriving effort gave nearly identical results (two estimates were within 1% of each other). This confirms that the PacFIN logbook data base summary can be used in future years, which will expedite the process of updating mortality estimates. The 2000 estimate was not adjusted by any change in halibut abundance in Area 2A nor by the change in proportion of the stock that is longer than 81 cm, the current minimum size limit. Given the high percentage of sub-legal halibut in the size composition observed in the 1995-1999 EDCP sampling, one would expect a high proportion of the halibut in Area 2A to have grown to legal size by 2000. Assuming the same proportion of legal-size halibut, the 2000 legal bycatch mortality estimate is 222,000 pounds net weight out of a 663,000 pound estimate for all sizes. If growth of the abundant sub-legal fish has increased the number of the legal fish, then biomass mortality estimate would increase dramatically, and could far out weigh the reduction attributed to the decline in 2000 trawl fishing effort, which accounts for a reduction of 47,000 pounds. Results from the new observer program will be very valuable in updating the bycatch rates and the proportion of legal adults. With these comments in mind, we recommend the authors proceed to finalize the report and transmit the report to IPHC.

PFMC
09/11/01

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE
RECOMMENDED CHANGES TO
THE PACIFIC HALIBUT CATCH SHARING PLAN FOR AREA 2A FOR 2002

The Washington Department of Fish and Wildlife recommends that the following changes to the Pacific Halibut Catch Sharing Plan for Area 2A to be distributed for public review:

(f) SPORT FISHERIES

(1) Subarea management

(i) Washington inside waters (Puget Sound) subarea.

"...The structuring objective for this subarea is to provide a stable sport fishing opportunity and maximize the season length. **To that end, the Puget Sound subarea may be divided into two regions with separate seasons to achieve a fair harvest opportunity within the subarea.** Due to inability to monitor the catch in this area inseason, ~~a fixed~~ **seasons, which may vary and apply to different regions within the subarea,** will be established preseason based on projected catch per day and number of days to achievement of the quota. ~~No~~ inseason adjustments ~~will~~ **may** be made, and estimates of actual catch will be made postseason. The fishery will open in **April or** May and continue ~~at least through July 4, or until a~~ **dates** established preseason (and published in the sport fishery regulations) when the quota is predicted to be taken, or until September 30, whichever is earlier...."

Subject: Halibut Quota

Date: Fri, 17 Aug 2001 10:10:48 -0700

From: "William CHANEY" <WGCHANEY@centurytel.net>

To: <pfmc.comments@noaa.gov>

I am writing this in protest of the halibut quota..I think that Quota should be broken down in two parts, one for the charter boats and one for us sport fisherman. the charter boats can go out in high winds and high seas to catch halibut in so they are

By far the biggest catchers. while us small boats have to stay on shore. So I and all of us small boat owners think the Quota should be broken down in TWO parts...

- | | | | |
|-----------|--|---------------|-------------------|
| Reason 1: | We pay the road tax on our gas | Charter Boat: | NO fuel tax |
| 2: | We buy fishing licenses | | Another deduction |
| 3: | We buy trailer and boat license | | Another deduction |
| 4: | We can't go out in heavy seas | | They don't care |
| 5: | So I believe there should be two seasons One for them in May
And one for the SPORTS Fisherman in June | | |
| 6: | I know they have a powerful lobbying power but you got to remember
We [the sports man] pay your wages and keep the Fishery alive. | | |

Yours truly
WILLIAM A.CHANEY
721 7th Ave.
Forks Wa. 98331

w

08/24/2001 2:34 PM

Subject: Commercial Halibut 10 hour fishery

Date: Wed, 27 Jun 2001 12:05:36 -0700

From: "Dale Beasley" <crabby@aone.com>

To: <john.devore@noaa.gov>

CC: <john.coon@noaa.gov>, <jim.glock@noaa.gov>, <chris@iphc.washington.edu>

Mr. John DeVore,


Welcome to your new position with the PPMC.

It is Wednesday, June 27th, mid-day of the 10 hour commercial halibut fishery. The weather has been fair all week except for this day, which has gale warnings and 35-mile an hour winds. The weather is supposed to progressively come down by tomorrow. but the halibut opener is only today.

I know my husband and his crew along with many others is taking an unreasonable, unsafe (?) thrashing today because of the imposed timing regulations. Would it not be possible to at least lengthen the fishery to a maximum of 3 or 4 days to allow fishermen to catch their quotas in a safer environment, allowing a more opportune weather window. The catch limits have been set, and I see no harm in cooperating with the fishermen and their families in making this a safer fishery.

I would appreciate your cooperation in finding a way to lengthen the halibut opener. Please let me know what needs to be done to make this happen. I find worry and stress comes often enough with the uncertainties that face fishermen families. Please help change those things that can be changed to make a difference.

Thank you,
Edie Beasley
crabby@aone.com

 winmail.dat	Name: winmail.dat Type: application/ms-tnef Encoding: base64
---	---

RECOMMENDATIONS FOR HALIBUT

ALL-DEPTH FISHERY

Don Lettins

1. a. Sixty-five percent of all-depth allocation be set aside for the May fishery for those vessels that hold International Pacific Halibut Commission licenses.
 - b. Thirty-five percent be set aside for private boat owners who do not have IPHC licenses. This fishery to be in August when the weather is much more favorable for smaller vessels. IPHC license holders will not be allowed to fish in the August all-depth fishery.
 - c. Keep the 30 fathom curve fishery open all summer long, as it now exists.
2. Make halibut allocation a port allocation and not a geographic division of ocean waters. IPHC does not require geographic divisions for area 2-A. If your port is open for landing halibut, then you should be able to fish anywhere in 2-A and land your fish in your home port, if it is open, the same as commercial fishing regulations.
 3. Inconsistencies in regulations between halibut and salmon landing regulations at present: You can fish in an area that's open for coho and land these fish in an area that's closed, i.e., Garibaldi and Tillamook fishes in the Columbia area and land coho in their closed area for coho. At present, this is legal. But, if Tillamook is open for halibut and the Columbia River area port is closed, you cannot fish in the Tillamook area and land your halibut in the Columbia. Make it one way or the other!
 4. Columbia River Halibut Allocation: In 2001, Oregon contributed 43% of the poundage and Washington 57%. Total allocation: 10,487 pounds. Washington anglers harvested 89% of the catch and closed the area June 14. Contributions by Oregon need to be landed in Oregon. Anglers, this year,

were only able to harvest a mere 11% by June 14. This allocation was originally for incidental catch intended to last most of the summer. Ilwaco Charter Association championed this scenario and Oregon concurred. Now, Ilwaco anglers target the halibut and have taken 89% of the allocation.

I strongly recommend Oregon's contribution has to be landed in Oregon.

PRELIMINARY REPORT ON THE 2001 PACIFIC HALIBUT FISHERIES IN AREA 2A

The 2000 Area 2A total allowable catch (TAC) of 1,140,000 lb set by the International Pacific Halibut Commission (IPHC) was allocated as sub-TACs as follows:

Treaty Indian	424,000 lbs	(35.0% + 25,000 lb)
Non-Treaty Total		716,000 lbs (65.0% - 25,000 lb)
Non-Treaty Commercial	274,918 lbs	
Washington Sport	214,110 lbs	
Oregon/California Sport		226,972 lbs

The structure of each fishery and the resulting harvests are described below.

NON-TREATY COMMERCIAL FISHERY

A sub-TAC of 226,972 lbs (31.7% of the non-treaty share) was allocated to this fishery. The commercial fishery was divided into two components: 1) a directed longline fishery targeting on halibut south of Point Chehalis, WA; and 2) an incidental catch fishery during the salmon troll fisheries off Washington, Oregon, and California.

For the first time in 2001, the overall Area 2A TAC was high enough to allow incidental halibut retention in the primary, limited entry, fixed gear sablefish fishery. Although this is a non-treaty commercial fishery, the allocation for this fishery comes from the Washington sport fishery allocation. If the Area 2A TAC is greater than 900,000 lbs, the primary sablefish fishery north of Pt. Chehalis is allocated the Washington sport allocation that is in excess of 214,110 lbs, provided that at least 10,000 lbs is available to the fishery. If the amount above 214,110 lbs is less than 10,000 lb, then the excess is allocated to the Washington sport fisheries.

Incidental halibut catch in the salmon troll fishery A quota of 34,046 lbs (15% of the non-Indian commercial fishery allocation) was allocated to the salmon troll fishery in Area 2A as an incidental catch during chinook fisheries. According to the Catch Sharing Plan, the primary management objective for this fishery is to harvest the troll quota as an incidental catch during the May/June salmon troll fishery. If any of the allocation for this fishery remains after June 30, the fishery may continue to retain incidentally caught halibut in the July through September salmon troll fisheries until the quota is taken, or until the overall non-treaty commercial catch limit is taken. The final catch ratio established preseason by the Council at the April meeting was one halibut (minimum 32") per 3 chinook landed by a salmon troller, except that one halibut could be landed without meeting the ratio requirement, and no more than 35 halibut could be landed per trip.

- The salmon troll season opened May 1 and the halibut quota for this fishery lasted through July 11. A total of 34,192 lbs (146 lbs over quota) of halibut was landed from the salmon troll fishery. Of the total, 21,406 lbs were landed in Oregon and 12,786 lbs were landed in Washington.

Directed fishery targeting on halibut A quota of 192,926 lbs (85% of the non-treaty commercial fishery allocation) was allocated to the directed longline fishery targeting on halibut in southern Washington, Oregon, and California. The fishery was confined to the area south of Subarea 2A-1 (south of Point Chehalis, WA; 46° 53'18" N. lat.). One-day fishing periods of 10 hours in duration were scheduled by the IPHC for June 27, July 11, July 25, August 8, August 22, and September 5. A 32" minimum size limit was in effect for all openings. Vessel landing limits per fishing period based on vessel length were imposed by IPHC during all openings as shown in the following table. Vessels choosing to operate in this fishery could not land halibut in the incidental catch salmon troll fishery, nor operate in the recreational fishery.

Fishing period limits (dressed weight, head-off in pounds) by vessel size.

Vessel Class/Size	6/27/01 Opening	7/11/01 Opening	7/25/01 Opening	8/8/01 Opening	8/22/01 Opening
A 0 - 25 ft.	335 lb	295 lb	225 lb	200 lb	200 lb
B 26 - 30 ft.	420 lb	370 lb	285 lb	200 lb	200 lb
C 31 - 35 ft.	670 lb	590 lb	455 lb	200 lb	200 lb
D 36 - 40 ft.	1,850 lb	1,620 lb	1,250 lb	280 lb	415 lb
E 41 - 45 ft.	1,990 lb	1,745 lb	1,345 lb	300 lb	450 lb
F 46 - 50 ft.	2,385 lb	2,085 lb	1,610 lb	360 lb	535 lb
G 51 - 55 ft.	2,660 lb	2,330 lb	1,795 lb	400 lb	600 lb
H 56+ ft.	4,000 lb	3,500 lb	2,700 lb	600 lb	900 lb

- The June 27 directed commercial fishery resulted in a catch of about 42,000 lbs, leaving 150,926 lbs for later openings.
- The July 11 directed commercial fishery resulted in a catch of about 80,000 lbs, leaving 70,926 lbs for later openings.
- The July 25 directed commercial fishery resulted in a catch of about 53,000 lbs, leaving 17,926 lbs for later openings.
- Bad weather for the August 8 directed commercial fishery resulted in a catch of under 1,000 lbs, leaving 16,926 lbs for later openings.

SPORT FISHERIES (Non-treaty).

A sub-TAC of 441,082 lbs (68.3% of non-treaty share) was allocated between sport fisheries in the Washington area (48.5%) and Oregon/California (51.5%). The allocations were further subdivided as quotas among seven geographic subareas as described below.

Washington Inside Waters Subarea (Puget Sound and Straits of Juan de Fuca). This area was allocated 57,393 lbs (26.1% of the Washington sport allocation). Due to inability to monitor the catch in this area inseason, a fixed season was established preseason based on projected catch per day and number of days to achieve the sub-quota. The season was open 5 days per week (closed Tuesday and Wednesday) from May 17 through July 22. The daily bag limit was one halibut of any size per person.

- There is no catch estimate for this fishery at this time.

Northern Washington Coastal Waters Subarea (landings in Neah Bay and La Push). The coastal area off Cape Flattery to Queets River was allocated 108,030 lbs (53.0% of the Washington sport allocation). The fishery was divided into two seasons with 20,000 lbs set aside for the second season. The fishery was to open May 1 and continue 5 days per week (closed Sunday and Monday) until 88,030 lbs were estimated to have been taken. The second season was to open July 1- 4, and to reopen after July 4 if quota were available. A portion of this subarea, located about 19 miles southwest of Cape Flattery, was closed to halibut fishing. The daily bag limit was one halibut of any size per person.

- The fishery opened May 1 and continued 5 days a week, until June 1, when 71,131 lbs were estimated to have been taken. The fishery re-opened on Saturday, June 16, when an additional 3,924 lbs were taken, leaving 32,975 lbs for the July 1-4 fishery.
- The season re-opened for July 1-4, during which a total of 34,716 lbs were taken, approximately 1,741 lbs over the quota.

Washington South Coast Subarea (landings in Westport). The area from the Queets River to Leadbetter Point was allocated 42,739 lbs (18.3% of the Washington sport allocation). The fishery was to open on May 1 and continue 5 days per week (closed Friday and Saturday) offshore, until the quota was taken. An inshore fishery was also to open May 1 and continue 7 days per week in waters between the Queets River and 47° 00'00" N. lat. and east of 124° 40'00" W. long. through the closure of the offshore fishery until either the subarea quota were estimated to have been taken, or until September 30, whichever occurred first. The daily bag limit was one halibut of any size per person.

- The 5 day per week fishery opened on May 1 and continued until June 6, when 42,236 lbs were estimated to have been taken. The 7 day per week inshore fishery remains open.

Columbia River Subarea (Leadbetter Point to Cape Falcon). This sport fishery subarea was allocated 10,487 lbs, consisting of 2.7% of the Washington sport allocation plus 2.0% of the Oregon/California sport allocation. The fishery was to open May 1 and continue 7 days per week until September 30 or until the quota had been taken. The daily bag limit is the first halibut taken of 32 inches or greater in length.

- The 7 day per week fishery began on May 1 and continued through to June 14, with a total of 8,808 lbs landed, 1,679 lbs under quota.

Oregon North Central Coast Subarea (Cape Falcon to the Siuslaw River). This sport fishery subarea was allocated 199,803 lbs (88.03% of the Oregon/California sport allocation). Three seasons were set: 1) a restricted depth (inside 30 fathoms) fishery to commence May 1 and continue every day until the combined North Central and South Central nearshore sub-quota of 17,150 lbs were estimated to have been taken; 2) a fixed May season in all depths that was to open on May 11, 12, 18, and 19, with a projected catch of 135,866 lbs and; 3) a fixed August season in all depths from Cape Falcon to Humbug Mountain on August 3 and 4, or until the combined all-depth subquotas for Oregon south of Cape Falcon totaling 198,473 lbs were estimated to have been taken. The daily bag limit was the first halibut taken of 32 inches or greater in length.

- The restricted 30-fathom fishery opened on May 1 and remains open. The initial sub-quota of 17,150 lbs was reduced to 5,150 lbs in August, when 12,000 lb were moved from the inside 30-fathom fishery to the all-depth fishery.
- The first fixed season in May with 4 fishing days ending May 19 had a total catch of 117,499 lbs, which was less than the 135,866 lb quota, but not by enough to hold another all-depth fishing day during the May-June period.
- The August all-depth season draws on the combined quotas of the Oregon north central and south central fisheries. The initial 49,951 lbs available to this fishery was supplemented by the 18,367 lb underage from the North Central coast May-June fishery and by 12,000 lbs from the nearshore fishery, but reduced by a 1,872 lb overage in the May-June south central coast all-depth fishery. As a result of these revisions, 78,446 lbs were available to the August 3 and 4 all-depth fishery. In any brief fishery, weather has a significant effect on harvest rates and the weather for August 3 and 4 was poor. The combined central coast fisheries took 36,434 lbs on August 3 and 4. Because the underage of 42,012 lbs was great enough to hold another day of all-depth fishing, a third all-depth fishing day was held on August 17. On August 17, the all-depth fishery took 17,051 lbs, which left 24,961 lbs for two more all-depth fishing days on September 21 and 22.

Oregon South Central Coast Subarea This sport fishery subarea was allocated 15,820 lbs (6.97% of the Oregon/California sport allocation). Three seasons were set: 1) a restricted depth (inside 30 fathoms) fishery to commence on May 1 and continue every day until the combined North Central and South Central nearshore sub-quota of 17,150 lbs were estimated to have been taken; 2) a fixed May season in all depths that was to open on May 11, 12, 18, and 19, with a projected catch of 12,656 lbs and; 3) a fixed August season in all depths from Cape Falcon to Humbug Mountain, described above. The daily bag limit was the first halibut taken of 32 inches or greater in length.

- The restricted 30-fathom fishery opened on May 1 and remains open. The initial sub-quota of 17,150 lbs was reduced to 5,150 lbs in August, when 12,000 lbs were moved from the inside 30-fathom fishery to the all-depth fishery.
- The first fixed season in May with 4 fishing days ending May 19 had a total catch of 8,942 lbs, which was 3,714 lbs under quota. With this underage, a third May-June all-depth fishing day was scheduled for the south central coast on June 8. On the June 8 fishery, 5,626 lbs were landed, for an overage of 1,812 lbs.
- The final combined fixed season (Oregon Central and South Coast subareas) opened on August 3, 4, and 17, as described above.

South of Humbug Mountain, Oregon and off the California Coast Subarea This sport fishery was allocated 6,809 lbs (3.0% of the Oregon/California quota). This area had a pre-set season of 7 days per week from May 1 to September 30 and a bag limit of the first halibut taken of 32 inches or greater in length.

- This season continues through September 30. No catch estimates are available for this fishery, but it is very unlikely that this subarea quota will be taken.

TRIBAL FISHERIES

A sub-TAC of 424,000 lbs (35% + 25,000 lb of the Area 2A TAC) was allocated to Tribal fisheries. The tribes estimated that 17,500 lbs would be used for ceremonial and subsistence (C&S) fisheries and the remaining 406,500 lbs was allocated to the commercial fishery. The tribal commercial fishery was scheduled to open on March 15, 2001 pursuant to regulations adopted by the IPHC and continue until the tribal commercial subquota was reached. The tribal C&S fishery was scheduled to run throughout the year.

The first restricted fishery (500 lbs/vessel/day) was held from March 15 to April 15, and resulted in 62,323 lbs being taken. The first 60-hr unrestricted (no per-vessel limits) fishery was held March 21-23, and resulted in 204,005 lbs being taken. The tribes held a 24-hr mop up fishery on April 19 and 20, which took an additional 116,280 lbs, leaving 23,892 lbs in the tribal commercial quota. The tribes targeted this remainder in another restricted fishery (500 lbs/vessel/day,) held April 25 through May 11. This final restricted fishery resulted in 29,042 lbs, for a total of 411,650 lbs taken in the 2001 commercial fishery (5,150 lbs over quota).

The C&S fishery will continue through December 31 and tribal estimates of catch will be reported by the tribes in January 2001.

2001 Area 2A TAC and Catch (in pounds)

	<u>TAC</u>	<u>Catch</u>	<u>Over/Under</u>
TREATY INDIAN	424,000	429,150	1.2%
Commercial	406,500	411,650	1.3%
Ceremonial & Subsistence	17,500	17,500 ‡	0.0%
NON-INDIAN	716,000	***	***
COMMERCIAL	274,918	***	***
Troll	34,046	34,192	0.4%
Directed	192,926	***	***
Sablefish Incidental	47,946	***	***
SPORT	441,802	***	***
WA Sport	214,110	***	***
OR/CA Sport	226,972	***	***
WA Inside Waters	57,393	***	***
WA North Coast	108,030	101,114	1.3%
WA South Coast	42,739	35,734	3.6%
Col River Area	10,487	8,808	-16.0%
OR Central Coast	199,803	141,408	-8.7%
Inside 30 fathoms (all areas)	17,150	***	***
May (North Central Coast)	135,866	117,499	-13.5%
May (South Central Coast)	12,656	14,568	15.0%
August (all areas)	49,951	53,485 ●	***
OR S. of Humbug/CA	6,809	6,809 ‡	0.0%
TOTAL	1,140,000	816,337	-1.1%

*** = Total catch not yet determined

‡ = Assumed for purposes of calculating overall catch amounts.

● = Although the initial allocation to the August all-depth fisheries was 49,951lbs, the quota was adjusted by the North Central Coast underage in May and by the South Central Coast overage in May, resulting in 16,455 lbs being added to the August all-depth. In accordance with the Catch Sharing plan, an additional 12,000 lbs were transferred from the inside-30-fathom fishery to the August all-depth fishery, making the total quota available in August 78,406 lbs. The 2001 all-depth fishery will be open again on September 21 and 22.

Estimates of Pacific Halibut Bycatch and Mortality in IPHC Area 2A in 2000

DRAFT for SSC Review

John Wallace
Richard Methot

NOAA Fisheries - NWFSC

September 10, 2001

This report updates the estimate of Pacific halibut bycatch and mortality in the bottom trawl fishery through the calendar year 2000. Changes in bottom trawl fishing regulations for 2000 may have affected halibut bycatch. For 2000 the trip limits for rockfish inhabiting the shelf area were reduced by approximately 80-90% from 1999 limits. Further, trawlers were allowed to use only small footrope gear (rollers of 8" or less) to land rockfish from nearshore or shelf areas. The intent of this gear requirement was to reduce rockfish catches to incidental levels. Some of the trawl effort could have moved nearshore to harvest flatfish. This may have affected the distribution of trawl effort among the strata used in the halibut bycatch estimate, thus could have affected the overall estimate of halibut bycatch.

The estimate of halibut bycatch and mortality in the bottom trawl fishery is based upon the method developed last year which uses halibut bycatch rates observed during 1995-1999 in the Enhanced Data Collection Program (EDCP). These rates are stratified by season, depth, latitude, and level of arrowtooth flounder catch, then multiplied by the amount of trawl effort in each stratum determined from Oregon and Washington trawl logbooks in 2000. Estimated halibut bycatch and mortality in other gear types has not been updated for 2000, so is assumed to be at the same level as the most recent estimate.

HISTORICAL BYCATCH ESTIMATES

Bottom Trawl Fishery for Groundfish

Estimated bycatch and mortality of halibut in 1987, 1992, and 1995 are summarized in Table 1. As described by Williams, et al. (1998)¹, these halibut bycatch and mortality estimates were based upon catch rates observed during a voluntary fisheries observer

¹Pacific halibut bycatch in IPHC Area 2A: Bycatch rates and current estimate of bycatch mortality. By Gregg Williams, Gary Stauffer, Hal Weeks, Mark saelens, Joe Scordino, Don Bodenmiller, and Tom Northrup. Jan. 23, 1998. 14 p.

program conducted during the late 1980s. Approximately 1,062 tows by bottom trawl fisheries off Oregon and Washington were observed during 1985-1987. An additional 65 tows were observed off California during 1988-1990. Catch rates were stratified by fishing strategy, depth, season, and area as described by Pikitch, et al. (1998)².

Shrimp Trawl

Estimated halibut bycatch by shrimp trawlers was not updated in 2000. Halibut bycatch in shrimp trawls in 1987, 1992, and 1995 reported by Williams, et al (1998), are shown in Table 2 and the methods are briefly described below.

Bob Hannah (ODFW, personal communication) produced three estimates of the 1998 halibut bycatch for PSFMC Areas 2B-3C and these are given in Table 3. Given the range of estimates and the data limitations, Hannah suggests that the 1998 bycatch mortality of legal-sized halibut (>81 cm) from Oregon is about 16,000 lbs, net weight. The three bycatch estimates were based on three different data sources: 1) bycatch rates observed during 128 tows by Pikitch, et al., during 1985-87; 2) control net catch rates from 166 tows observed by Hannah, et al. (1996); and 3) data compiled from shrimp fishing trips observed during 1996-99 by the EDCP, combined with control net catches from ODFW research charters during the same time period (for a total of 203 observed tows).

The approximate number of tows in the 1998 Oregon shrimp fishery was over 10,000. The halibut bycatch estimates for this fishery are based on expanding the encounter rates (pounds of halibut per single-rig equivalent hour (sreh)) by the effort expended by vessels landing shrimp in Oregon ports only. The estimates are not stratified by depth because the depth range of the shrimp fishery is very restricted and the amount of data is very limited. Bycatch from vessels landing shrimp into Washington ports is not included.

² Pikitch, E.K., Wallace, J.R., Babcock, E.A., Erickson, D.L., Saelens, M., and Oddsson, Geir. 1998. Pacific halibut bycatch in the Washington, Oregon, and California groundfish and shrimp trawl fisheries. *North American Journal of Fisheries Management*. Volume 18, pp. 569-586.

BOTTOM TRAWL UPDATE FOR 2000

Analysis of Enhanced Data Collection Program

During November 1995 through December 1998, halibut catches by bottom trawl fisheries on the west coast were observed during the Enhanced Data Collection Program (EDCP). In 1728 observed tows, 9739 halibut were measured. John Wallace³ used similar methods to those in Pikitch (1998) to analyze the EDCP data and identify appropriate strata for bycatch estimation. These strata are season (Jan-Aug and Sept-Dec), depth (0-100, 100-300, 300-700 fathoms), area (five latitude ranges) and catch of arrowtooth flounder (0-20 lbs per hour and >20 lbs). Numbers of tows, halibut catches, halibut catch rates, and proportion of legal-sized halibut (>81 cm) are given for each of these strata in Table 4. These methods and preliminary results were reviewed and approved by the Pacific Fishery Management Council's Scientific and Statistical Committee during the June and September 2000 meetings.

Bottom Trawl Effort from Logbooks

³ Wallace, J.R. Unpublished report June 2000. Pacific halibut discard in the EDCP Observer Program. 18 pg.

Logbook data for Oregon and Washington in 1999 and 2000 were obtained from PacFIN. Trawl effort from logbooks was accumulated into each of the strata identified in the EDCP analyses. Port and Month were added as factors for Oregon logbooks to avoid any potential bias created by unequal collection of logbooks in the three major ports (Astoria, Newport, and Coos Bay). ODFW collects logbook data for 70-80% of the trawl deliveries during a typical year, thus the need to avoid collection bias.

Total trawl effort (hours) for the entire Oregon fleet was based on expanding the groundfish catch rates in logbook data by the total groundfish catch reported on fish tickets, as follows. The average groundfish CPUE (catch per hour) was estimated from logbooks for each stratum in the EDCP analysis. The remaining "unknown" groundfish catch from deliveries for which representative logbooks were not available was divided by this average CPUE to estimate non-logbook effort. This year, the calculation of the non-logbook effort from 1999 Oregon logbook data is a few % less than the expansion calculated last year, possibly because of a better match of logbook to fish ticket records.

Total fleet effort is the combined logbook effort plus the estimated non-logbook effort in each stratum. Such an effort expansion was not conducted for the Washington fleet because WDFW provides essentially 100% logbook coverage, so total fleet effort is equal to reported logbook effort. The total fleet effort for each stratum in 1999 and 2000 is reported in Table 5.

Halibut bycatch for each stratum is estimated by multiplying total effort and the appropriate halibut bycatch rate for that stratum. Bycatch by the bottom trawl fleet is estimated by summing across strata. As in earlier years, about half of released halibut are assumed to survive capture, and therefore, bycatch mortality of halibut is assumed to be 50% of total bycatch. The bycatch mortality of legal-sized halibut (> 81cm) is estimated from the length frequencies of halibut measured in the EDCP study. Measurements of fish lengths were converted to fish weight based on a length-weight relationship for Pacific halibut (IPHC, personal communication), and the proportion of legal-sized fish (by weight) was computed for each stratum in the EDCP analysis. Updated results for 1999 and new results for 2000 are presented in Table 6 and added to the long-term time series in Tables 7 and 8.

Table 1. Halibut bycatch and mortality in the bottom trawl fisheries for groundfish off the west coast, estimated from Pikitch, et al., 1998 and reported by Williams, et al., Jan. 23, 1998 document.

Year	Trawl Effort (hours)	Estimated Halibut Bycatch (numbers)	Estimated Halibut Bycatch (kg., round)	Estimated Halibut Bycatch (lbs, net)	Estimated Total Halibut Mortality (lbs, net)	Estimated Legal-Sized Halibut Mortality (lbs, net)
1987	135,07	78,765	372,911	616,702	308,351	191,178
1992	182,15	89,756	465,595	769,979	384,989	238,693
1995	72,295	113,702	663,262	1,096,870	548,435	340,030

Note: For 1995, bycatch estimates for Areas 1B-2A off California are not included. Mortality estimated at 50% of bycatch. Legal-sized mortality (>81 cm) estimated at 62%, by weight, of total mortality. 1 kg, round = 1.65375 lbs, net weight.

Table 2. Halibut bycatch and mortality in the bottom trawl fishery for pink shrimp off the west coast, reported by Williams, et al., Jan. 23, 1998.

Year	Trawl Effort (hours)	Estimated Halibut Bycatch (numbers)	Estimated Halibut Bycatch (kg., round)	Estimated Halibut Bycatch (lbs, net)	Estimated Total Halibut Mortality (lbs, net)	Legal-sized Bycatch Mortality (lbs, net)
1987	193,694	20,536	98,983	163,693	81,847	50,745
1992	107,015	10,244	51,671	85,450	42,725	26,490
1995	----	----	----	100,000	50,000	31,000

Note: For 1995, bycatch estimates for Areas 1B-2A off California are not included. Mortality estimated at 50% of bycatch. Proportion of legal-sized mortality (>81 cm) is assumed to be 62% by weight. 1 kg, round = 1.65375 lbs, net weight.

Table 3. Estimated 1998 halibut bycatch and mortality in the bottom trawl fishery for pink shrimp (landings into Oregon ports only). (Bob Hannah, personal communication, October 8, 1999 memo).

Data Source	Single-rig Equivalent Hours (sreh) Observed	Bycatch Rate (lbs/sreh)	Fishing Effort (sreh) in Oregon Landings	Bycatch Estimate (kg., round)	Bycatch Mortality (lbs, net)	Legal-sized Bycatch Mortality (lbs, net)
Pikitch (1)	---	1.22	34,543	19,155	15,839	9,820
Hannah (2)	236.5	2.60	34,543	40,824	33,756	20,929
EDCP (3)	551.1	2.12	34,543	33,287	27,524	17,065

Note: Mortality estimated at 50% of bycatch. Proportion of legal-sized mortality (>81 cm) is assumed to be 62% by weight. 1 kg, round = 1.65375 pounds, net weight.

Table 4. Numbers of tows, halibut catches, and halibut catch rates, by strata, observed during the Enhanced Data Collection Program of the bottom trawl fishery for groundfish.

SEASON: JANUARY - AUGUST

Arrowtooth Catch (lbs)	Latitude	Depth (Fathoms)	Number of Observed Tows	Number of Tows with No Halibut	Number of Tows with ≥ 1 Halibut	Total Number of Halibut	Number of Halibut per Hour	Wgt. (kg., rnd) Halibut per Hour	Proportion Legal by Weight	Proportion Legal by Number
≤ 20	40.667 - 41.667	0 - 100	0							
		100 - 300	0							
		300 - 700	2	2	0	0	0.00	0.00		
	41.667 - 42.667	0 - 100	2	1	1	7	1.99	16.61	0.837	0.714
		100 - 300	9	9	0	0	0.00	0.00		
		300 - 700	14	13	1	1	0.01	0.14	1.000	1.000
	42.667 - 46.667	0 - 100	147	83	64	236	0.55	5.25	0.800	0.614
		100 - 300	164	83	81	590	0.80	8.12	0.542	0.458
		300 - 700	137	134	3	5	0.00	0.03	0.670	0.600
	46.667 - 47.667	0 - 100	68	28	40	238	3.81	32.65	0.627	0.475
		100 - 300	24	10	14	83	0.81	6.47	0.630	0.470
		300 - 700	37	35	2	2	0.02	0.11	0.618	0.500
	47.667 - 48.667	0 - 100	98	41	57	571	2.48	16.41	0.207	0.145
		100 - 300	76	24	52	1196	4.29	26.71	0.233	0.144
		300 - 700	57	43	14	312	0.64	4.05	0.282	0.170
> 20	40.667 - 41.667	0 - 100	0							
		100 - 300	0							
		300 - 700	0							
	41.667 - 42.667	0 - 100	0							
		100 - 300	1	0	1	1	1.33	8.83	1.000	1.000
		300 - 700	0							
	42.667 - 46.667	0 - 100	58	26	32	295	1.55	14.15	0.709	0.539
		100 - 300	89	35	54	658	1.45	13.07	0.463	0.356
		300 - 700	8	5	3	5	0.10	1.10	1.000	1.000
	46.667 - 47.667	0 - 100	10	1	9	161	2.98	21.24	0.333	0.211
		100 - 300	17	1	16	486	8.01	70.71	0.369	0.292
		300 - 700	2	1	1	12	1.09	7.00	0.266	0.167
	47.667 - 48.667	0 - 100	36	1	35	1179	10.63	68.60	0.195	0.123
		100 - 300	50	7	43	2157	16.37	114.68	0.094	0.056
		300 - 700	0							

Table 4. Continued.

SEASON: SEPTEMBER - DECEMBER

Arrow-tooth Catch (No.)	Latitude	Depth (Fathoms)	Number of Observed Tows	Number of Tows with No Halibut	Number of Tows with Halibut	Total Number of Halibut	Number of Halibut per Hour	Wgt. (kg, rnd) Halibut	Proportion Legal by Weight	Proportion Legal by Number
≤ 20	40.667 -	0 - 100	1	1	0		0.00	0.00		
		100 - 300	5	5	0		0.00	0.00		
		300 - 700	9	9	0		0.00	0.00		
	41.667 -	0 - 100	19	10	9	32	0.53	9.37	0.981	0.937
		100 - 300	6	3	3	5	0.20	2.03	0.745	0.600
		300 - 700	19	19	0		0.00	0.00		
	42.667 -	0 - 100	198	148	50	145	0.29	2.48	0.720	0.517
		100 - 300	124	72	52	518	1.14	12.48	0.412	0.363
		300 - 700	65	62	3	4	0.01	0.04	0.392	0.250
	46.667 -	0 - 100	37	15	22	83	0.64	7.02	0.800	0.578
		100 - 300	11	7	4	25	0.42	3.03	0.392	0.240
		300 - 700	12	11	1	5	0.04	0.46	0.795	0.600
	47.667 -	0 - 100	31	18	13	133	2.52	18.68	0.257	0.195
		100 - 300	26	6	20	444	5.87	36.85	0.093	0.068
		300 - 700	6	5	1	23	0.38	3.73	0.335	0.261
> 20	40.667 -	0 - 100	0							
		100 - 300	0							
		300 - 700	0							
	41.667 -	0 - 100	0							
		100 - 300	0							
		300 - 700	0							
	42.667 -	0 - 100	16	12	4	6	0.12	1.89	0.872	0.667
		100 - 300	19	10	9	57	0.85	8.00	0.781	0.632
		300 - 700	0							
	46.667 -	0 - 100	0							
		100 - 300	7	1	6	11	0.27	2.97	0.857	0.727
		300 - 700	0							
	47.667 -	0 - 100	0							
		100 - 300	11	3	8	53	1.41	14.75	0.568	0.472
		300 - 700	0							

Table 6. Halibut bycatch and mortality in the Oregon and Washington bottom trawl fisheries for groundfish off the west coast, estimated from the Enhanced Data Collection Program (EDCP).

Year	Trawl Effort (hours)	Estimated Halibut Bycatch (numbers)	Estimated Halibut Bycatch (kg., round)	Estimated Halibut Bycatch (lbs, net)	Estimated Total Halibut Mortality (lbs, net)	Estimated Legal-Sized Halibut Mortality (lbs, net)
1998	92,294	160,826	1,227,225	2,029,500	1,014,762	322,928
1999	76,397	124,926	980,754	1,621,904	810,960	268,551
2000	66,604	101,720	802,296	1,326,707	663,399	221,823

Note: Halibut bycatch by California bottom trawl fishery is not included. Mortality estimated at 50% of bycatch. Proportion of legal-sized mortality (>81 cm) estimated from length frequencies of fish measured in EDCP. 1 kg, round = 1.65375 pounds, net weight.

Table 7. Summary of total estimated bycatch mortality of Pacific halibut, in thousands of pounds, net weight, by fishery in 2A. Bycatch mortality estimates for 1977-1997 are reported from Table 6 in Williams, et al. 1998.

Year	Foreign, JV & Catcher-Proc.	Groundfish Trawls	Shrimp Trawls	Hook & Line	TOTAL
1977	3	308	82	16	409
1978	2	308	82	16	408
1979	1	308	82	16	407
1980	1	308	82	16	407
1981	Trace	308	82	16	406
1982	Trace	308	82	16	406
1983	1	308	82	16	407
1984	Trace	308	82	16	406
1985	Trace	308	82	16	406
1986	1	308	82	16	407
1987	1	308	82	16	407
1988	1	308	82	16	407
1989	2	308	82	16	408
1990	2	308	82	16	408
1991	2	308	82	16	408
1992	0	385	43	16	444
1993	0	385	43	16	444
1994	0	385	43	16	444
1995	0	548	50	16	614
1996	0	548	50	16	614
1997	0	548	50	16	614
1998	0	1,015	25	---	---
1999	---	811	---	---	---
2000	---	663	---	---	---

Note: Bycatch mortality by groundfish trawls in 1998-2000 does not include fisheries off California. Bycatch mortality by shrimp trawls in 1998 does not include fisheries off California and Washington. The value for groundfish trawls in 1999 is revised downwards from the previous estimate of 1,009 thousands due to updated estimate of effort

Table 8. Summary of total estimated bycatch mortality of legal-sized Pacific halibut, in thousands of pounds, net weight, by fishery in 2A. Legal-sized mortality for 1977-1997 is estimated as 62% of total mortality for these years (as given in Table 7). Bycatch mortality estimates for legal-sized halibut for 1998 and 1999 are from this report. (Sums across fisheries may not always equal Total due to rounding.)

Year	Foreign, JV & Catcher- Proc.	Groundfish Trawls	Shrimp Trawls	Hook & Line	TOTAL
1977	2	191	51	10	254
1978	1	191	51	10	253
1979	0.6	191	51	10	252
1980	0.6	191	51	10	252
1981	Trace	191	51	10	252
1982	Trace	191	51	10	252
1983	0.6	191	51	10	252
1984	Trace	191	51	10	252
1985	Trace	191	51	10	252
1986	0.6	191	51	10	252
1987	0.6	191	51	10	252
1988	0.6	191	51	10	252
1989	1	191	51	10	253
1990	1	191	51	10	253
1991	1	191	51	10	253
1992	0	239	27	10	275
1993	0	239	27	10	275
1994	0	239	27	10	275
1995	0	340	31	10	381
1996	0	340	31	10	381
1997	0	340	31	10	381
1998	0	323	16	---	---
1999	---	269	---	---	---
2000	---	222	---	---	---

Note: Bycatch mortality by groundfish trawls in 1998-2000 does not include fisheries off California. Bycatch mortality by shrimp trawls in 1998 does not include fisheries off California and Washington. The value for groundfish trawls in 1999 is revised downwards from the previous estimate of 315 thousands due to updated estimate of effort

**2001 PACIFIC HALIBUT CATCH SHARING PLAN FOR AREA 2A
(Proposed at November PFMC Meeting)**

(a) FRAMEWORK

This Plan constitutes a framework that shall be applied to the annual Area 2A total allowable catch (TAC) approved by the International Pacific Halibut Commission (IPHC) each January. The framework shall be implemented in both IPHC regulations and domestic regulations (implemented by NMFS) as published in the *Federal Register*.

(b) ALLOCATIONS

- (1) Except as provided below under (b)(2), this Plan allocates 35 percent of the Area 2A TAC to U.S. treaty Indian tribes in the State of Washington in subarea 2A-1, and 65 percent to non-Indian fisheries in Area 2A. The allocation to non-Indian fisheries is divided into three shares, with the Washington sport fishery (north of the Columbia River) receiving 36.6 percent, the Oregon/California sport fishery receiving 31.7 percent, and the commercial fishery receiving 31.7 percent. Allocations within the non-Indian commercial and sport fisheries are described in sections (e) and (f) of this Plan. These allocations may be changed if new information becomes available that indicates a change is necessary and/or the Pacific Fishery Management Council takes action to reconsider its allocation recommendations. Such changes will be made after appropriate rulemaking is completed and published in the *Federal Register*.
- (2) To meet the requirements of U.S. District Court Stipulation and Order (*U.S., et al. v. State of Washington, et al.* Case No. 9213 Phase I, Subproceeding No. 92-1, Stipulation and Order, July 7, 1999), 25,000 lb (11.3 mt) dressed weight of halibut will be transferred from the non-treaty Area 2A halibut allocation to the treaty allocation in Area 2A-1 each year for eight years commencing in the year 2000 and ending in the year 2007, for a total transfer of 200,000 lb (90.7 mt). To accelerate the total transfer, more than 25,000 lb (11.3 mt) may be transferred in any year upon prior written agreement of the parties to the stipulation.

(c) SUBQUOTAS

The allocations in this Plan are distributed as subquotas to ensure that any overage or underage by any one group will not affect achievement of an allocation set aside for another group. The specific allocative measures in the treaty Indian, non-Indian commercial, and non-Indian sport fisheries in Area 2A are described in paragraphs (d) through (f) of this Plan.

(d) TREATY INDIAN FISHERIES

Except as provided above in (b)(2), thirty-five percent of the Area 2A TAC is allocated to 12 treaty Indian tribes in subarea 2A-1, which includes that portion of Area 2A north of Point Chehalis, WA (46°53'18" N. lat.) and east of 125°44'00" W. long. The treaty Indian allocation is to provide for a tribal commercial fishery and a ceremonial and subsistence fishery. These two fisheries are managed separately; any overages in the commercial fishery do not affect the ceremonial and subsistence fishery. The commercial fishery is managed to achieve an established subquota, while the ceremonial and subsistence fishery is managed for a year-round season. The tribes will estimate the ceremonial and subsistence harvest expectations in January of each year, and the remainder of the allocation will be for the tribal commercial fishery.

- (1) The tribal ceremonial and subsistence fishery begins on January 1 and continues through December 31. No size or bag limits will apply to the ceremonial and subsistence fishery, except that when the tribal commercial fishery is closed, treaty Indians may take and retain not more than two halibut per day per person for subsistence purposes. Ceremonial fisheries shall be managed by tribal

regulations promulgated inseason to meet the needs of specific ceremonial events. Halibut taken for ceremonial and subsistence purposes may not be offered for sale or sold.

- (2) The tribal commercial fishery begins between March 1 and April 1 and continues through November 15 or until the tribal commercial subquota is taken, whichever is earlier. Any halibut sold by treaty Indians during the commercial fishing season must comply with IPHC regulations on size limits for the non-Indian fishery.

(e) NON-INDIAN COMMERCIAL FISHERIES

The non-Indian commercial fishery is allocated 31.7 percent of the non-Indian share of the Area 2A TAC for a directed halibut fishery and an incidental catch fishery during the salmon troll fishery. The non-Indian commercial allocation is approximately 20.6 percent of the Area 2A TAC. Incidental catch of halibut in the primary directed sablefish fishery north of Point Chehalis, WA will be authorized if the Washington sport allocation exceeds 224,110 lb (101.7 mt) as described in section (e)(3) of this Plan. The structuring and management of these three fisheries is as follows.

(1) Incidental halibut catch in the salmon troll fishery.

Fifteen percent of the non-Indian commercial fishery allocation is allocated to the salmon troll fishery in Area 2A as an incidental catch during salmon fisheries. The quota for this incidental catch fishery is approximately 3.1 percent of the Area 2A TAC. The primary management objective for this fishery is to harvest the troll quota as an incidental catch during the May/June salmon troll fishery. The secondary management objective is to harvest the remaining troll quota as an incidental catch during the July through September salmon troll fishery.

- (i) The Council will recommend landing restrictions at its spring public meeting each year to control the amount of halibut caught incidentally in the troll fishery. The landing restrictions will be based on the number of incidental harvest license applications submitted to the IPHC, halibut catch rates, the amount of allocation, and other pertinent factors, and may include catch or landing ratios, landing limits, or other means to control the rate of halibut harvest. NMFS will publish the landing restrictions annually in the *Federal Register*, along with the salmon management measures.

(ii) Inseason adjustments to the incidental halibut catch fishery.

(A) NMFS may make inseason adjustments to the landing restrictions, if requested by the Council Chairman, as necessary to assure that the incidental harvest rate is appropriate for salmon and halibut availability, does not encourage target fishing on halibut, and does not increase the likelihood of exceeding the quota for this fishery. In determining whether to make such inseason adjustments, NMFS will consult with the applicable state representative(s), a representative of the Council's Salmon Advisory Sub-Panel, and Council staff.

(B) Notice and effectiveness of inseason adjustments will be made by NMFS in accordance with paragraph (f)(5) of this Plan.

- (iii) If the overall quota for the non-Indian, incidental commercial troll fishery has not been harvested by salmon trollers during the May/June fishery, additional landings of halibut caught incidentally during salmon troll fisheries will be allowed in July and will continue until the amount of halibut that was initially available as quota for the troll fishery is taken or the overall non-Indian commercial quota is estimated to have been achieved by the IPHC. Landing restrictions implemented for the May/June salmon troll fishery will apply for as long as this fishery is open. Notice of the July opening of this fishery will be announced on the NMFS hotline (206) 526-6667 or (800) 662-9825. No halibut retention in the salmon troll fishery will be allowed in July unless the July opening has been announced on the NMFS hotline.

- (iv) A salmon troller may participate in this fishery or in the directed commercial fishery targeting halibut, but not in both.

(2) Directed fishery targeting halibut.

Eighty-five percent of the non-Indian commercial fishery allocation is allocated to the directed fishery targeting halibut (e.g., longline fishery) in southern Washington, Oregon, and California. The allocation for this directed catch fishery is approximately 17.5 percent of the Area 2A TAC. This fishery is confined to the area south of Subarea 2A-1 (south of Point Chehalis, WA; 46°53'18" N. lat.). The commercial fishery opening date(s), duration, and vessel trip limits, as necessary to ensure that the quota for the non-Indian commercial fisheries is not exceeded, will be determined by the IPHC and implemented in IPHC regulations. If the IPHC determines that poundage remaining in the quota for the non-Indian commercial fisheries is insufficient to allow an additional day of directed halibut fishing, the remaining halibut will be made available for incidental catch of halibut in the fall salmon troll fisheries (independent of the incidental harvest allocation).

(3) Incidental catch in the sablefish fishery north of Point Chehalis.

If the Area 2A TAC is greater than 900,000 lb (408.2 mt), the primary directed sablefish fishery north of Point Chehalis will be allocated the Washington sport allocation that is in excess of 214,110 lb (97.1 mt), provided a minimum of 10,000 lb (4.5 mt) is available (i.e., the Washington sport allocation is 224,110 lb (101.7 mt) or greater). If the amount above 214,110 lb (97.1 mt) is less than 10,000 lb (4.5 mt), then the excess will be allocated to the Washington sport subareas according to section (f) of this Plan.

The Council will recommend landing restrictions at its spring public meeting each year to control the amount of halibut caught incidentally in this fishery. The landing restrictions will be based on the amount of the allocation and other pertinent factors, and may include catch or landing ratios, landing limits, or other means to control the rate of halibut landings. NMFS will publish the landing restrictions annually in the Federal Register.

(4) Commercial license restrictions/declarations.

Commercial fishers must choose either (1) to operate in the directed commercial fishery in Area 2A and/or retain halibut caught incidentally in the primary directed sablefish fishery north of Point Chehalis, WA or (2) to retain halibut caught incidentally during the salmon troll fishery. Commercial fishers operating in the directed halibut fishery and/or retaining halibut incidentally caught in the primary directed sablefish fishery must send their license application to the IPHC postmarked no later than April 30, or the first weekday in May, if April 30 falls on a weekend, in order to obtain a license to fish for halibut in Area 2A. Commercial fishers operating in the salmon troll fishery who seek to retain incidentally caught halibut must send their application for a license to the IPHC for the incidental catch of halibut in Area 2A postmarked no later than March 31, or the first weekday in April, if March 31 falls on a weekend. Fishing vessels licensed by IPHC to fish commercially in Area 2A are prohibited from operating in the sport fisheries in Area 2A.

(f) **SPORT FISHERIES**

The non-Indian sport fisheries are allocated 68.3 percent of the non-Indian share, which is approximately 44.4 percent of the Area 2A TAC. The allocation is further divided as subquotas among seven geographic subareas.

(1) Subarea management. The sport fishery is divided into seven sport fishery subareas, each having separate allocations and management measures as follows.

(i) Washington inside waters (Puget Sound) subarea.

This sport fishery subarea is allocated 23.5 percent of the first 130,845 lb (59.4 mt) allocated to the Washington sport fishery, and 32 percent of the Washington sport allocation between 130,845 lb (59.4 mt) and 224,110 lb (101.7 mt) (except as provided in section (e)(3) of this Plan). This subarea

is defined as all U.S. waters east of the mouth of the Sekiu River, as defined by a line extending from 48°17'30" N. lat., 124°23'70" W. long. north to 48°24'10" N. lat., 124°23'70" W. long., including Puget Sound. The structuring objective for this subarea is to provide a stable sport fishing opportunity and maximize the season length. Due to inability to monitor the catch in this area inseason, a fixed season will be established preseason based on projected catch per day and number of days to achievement of the quota. No inseason adjustments will be made, and estimates of actual catch will be made postseason. The fishery will open in May and continue at least through July 4, or until a date established preseason (and published in the sport fishery regulations) when the quota is predicted to be taken, or until September 30, whichever is earlier. The Washington Department of Fish and Wildlife will sponsor a public workshop shortly after the IPHC annual meeting to develop recommendations to NMFS on the opening date and weekly structure of the fishery each year. The daily bag limit is one fish per person, with no size limit.

(ii) Washington North Coast subarea.

This sport fishery subarea is allocated 62.2 percent of the first 130,845 lb (59.4 mt) allocated to the Washington sport fishery, and 32 percent of the Washington sport allocation between 130,845 lb (59.4 mt) and 224,110 lb (101.7 mt) (except as provided in section (e)(3) of this Plan). This subarea is defined as all U.S. waters west of the mouth of the Sekiu River, as defined above in paragraph (f)(1)(i), and north of the Queets River (47°31'42" N. lat.). The structuring objective for this subarea is to maximize the season length for viable fishing opportunity and, if possible, stagger the seasons to spread out this opportunity to anglers who utilize these remote grounds. The fishery opens on May 1, and continues 5 days per week (Tuesday through Saturday). If May 1 falls on a Sunday or Monday, the fishery will open on the following Tuesday. The highest priority is for the season to last through the month of May. If sufficient quota remains, the second priority is to establish a fishery that will be open July 1, through at least July 4. If the preseason prediction indicates that these two goals can be met without using the quota for this subarea, then the next priority is to extend the fishery into June and continue for 5 days per week (Tuesday through Saturday) for as long a period as possible. No sport fishing for halibut is allowed after September 30. The daily bag limit in all fisheries is one halibut per person with no size limit. A closure to sport fishing for halibut will be established in an area that is approximately 19.5 nm (36.1 km) southwest of Cape Flattery. The size of this closed area may be modified preseason by NMFS to maximize the season length. The closed area is defined as the area within a rectangle defined by these four corners: 48°18'00" N. lat., 125°11'00" W. long.; 48°18'00" N. lat., 124°59'00" W. long.; 48°04'00" N. lat., 125°11'00" W. long.; 48°04'00" N. lat., 124°59'00" W. long.

(iii) Washington South Coast subarea.

This sport fishery is allocated 12.3 percent of the first 130,845 lb (59.4 mt) allocated to the Washington sport fishery, and 32 percent of the Washington sport allocation between 130,845 lb (59.4 mt) and 224,110 lb (101.7 mt) (except as provided in section (e)(3) of this Plan). This subarea is defined as waters south of the Queets River (47°31'42" N. lat.) and north of Leadbetter Point (46°38'10" N. lat.). The structuring objective for this subarea is to maximize the season length, while maintaining a quality fishing experience. The fishery will open on May 1. If May 1 falls on a Friday or Saturday, the fishery will open on the following Sunday. The fishery will be open Sunday through Thursday in all areas, except where prohibited, and the fishery will be open 7 days per week in the area from Queets River south to 47°00'00" N. lat. and east of 124°40'00". The fishery will continue until September 30, or until the quota is achieved, whichever occurs first. Subsequent to this closure, if any remaining quota is insufficient for an offshore fishery, but is sufficient for a nearshore fishery, the area from the Queets River south to 47°00'00" N. lat. and east of 124°40'00" W. long. will reopen for 7 days per week until either the remaining subarea quota is estimated to have been taken and the season is closed by the IPHC, or until September 30, whichever occurs first. The daily bag limit is one halibut per person, with no size limit.

(iv) Columbia River subarea.

This sport fishery subarea is allocated 2.0 percent of the first 130,845 lb (59.4 mt) allocated to the Washington sport fishery, and 4 percent of the Washington sport allocation between 130,845 lb (59.4 mt) and 224,110 lb (101.7 mt) (except as provided in section (e)(3) of this Plan). This subarea also is allocated 2.0 percent of the Oregon/California sport allocation. This subarea is defined as waters south of Leadbetter Point, WA (46°38'10" N. lat.) and north of Cape Falcon, OR (45°46'00" N. lat.). The fishery will open on May 1, and continue 7 days per week until the subquota is estimated to have been taken, or September 30, whichever is earlier. The daily bag limit is the first halibut taken, per person, of 32 inches (81.3 cm) or greater in length.

(v) Oregon North Central Coast subarea.

If the Area 2A TAC is 388,350 lb (176.2 mt) and greater, this subarea extends from Cape Falcon to the Siuslaw River at the Florence north jetty (44°01'08" N. lat.) and is allocated 88.03 percent of the Oregon/California sport allocation, which is approximately 18.13 percent of the Area 2A TAC. If the Area 2A TAC is less than 388,350 lb (176.2 mt), this subarea extends from Cape Falcon to the Humbug Mountain, Oregon (42°40'30" N. lat.) and is allocated 95.0 percent of the Oregon/California sport allocation. The structuring objectives for this subarea are to provide two periods of fishing opportunity in May and in August in productive deeper water areas along the coast, principally for charterboat and larger private boat anglers, and provide a period of fishing opportunity in the summer for nearshore waters for small boat anglers. Fixed season dates will be established preseason for the May and August openings and will not be modified inseason except that the August openings may be modified inseason if the combined Oregon all-depth quotas are estimated to be achieved. Recent year catch rates will be used as a guideline for estimating the catch rate for the May and August fishery each year. The number of fixed season days established will be based on the projected catch per day with the intent of not exceeding the subarea season subquotas. ODFW will monitor landings and provide a post-season estimate of catch within 2 weeks of the end of the fixed season. If sufficient catch remains for an additional day of fishing after the May season or the August season, openings will be provided if possible in May and August respectively. Potential additional open dates for both the May and August seasons will be announced preseason. If a decision is made inseason to allow fishing on one or more additional days, notice of the opening will be announced on the NMFS hotline (206) 526-6667 or (800) 662-9825. No all-depth halibut fishing will be allowed on the additional dates unless the opening date has been announced on the NMFS hotline. Any poundage remaining unharvested in the May all-depth subquota will be added to the August all-depth sub-quota. Any poundage that is not needed to extend the inside 30-fathom fishery through to September 30 will be added to the August all-depth season if it can be utilized, and any poundage remaining unharvested from the August all-depth fishery will be added to the inside 30-fathom fishery subquotas. The daily bag limit for all seasons is the first halibut taken, per person, of 32 inches (81.3 cm) or greater in length. ODFW will sponsor a public workshop shortly after the IPHC annual meeting to develop recommendations to NMFS on the open dates for each season each year. The three seasons for this subarea are as follows.

- A. The first season opens on May 1, only in waters inside the 30-fathom (55 m) curve, and continues daily until the combined subquotas for the north central and south central inside 30-fathom fisheries (7 percent of the north central subarea quota plus 20 percent of the south central subarea quota) are taken, or until September 30, whichever is earlier. Poundage that is estimated to be above the amount needed to keep this season open through September 30 will be transferred to the August all-depth fishery if it can be utilized. Any overage in the all-depth fisheries would not affect achievement of allocation set aside for the inside 30-fathom curve fishery.
- B. The second season is an all-depth fishery that begins on the second Thursday in May and is allocated 68 percent of the subarea quota. Fixed season dates will be established preseason based on projected catch per day and number of days to achievement of the subquota for this season. No inseason adjustments will be made, except that additional opening days (established preseason) may be allowed if any quota for this season remains unharvested. The fishery will be structured for 2 days per week (Friday and Saturday) if the season is for 4

or fewer fishing days. The fishery will be structured for 3 days per week (Thursday through Saturday) if the season is for 5 or more fishing days.

- C. The last season is a coastwide (Cape Falcon, Oregon to Humbug Mountain, Oregon) all-depth fishery that begins on the first Friday in August and is allocated 25 percent of the subarea quota. Fixed season dates will be established preseason based on projected catch per day and number of days to achievement of the combined Oregon all-depth quotas for the Central and South Oregon Coast subareas. The fishery will be structured for 2 days per week (Friday and Saturday). No inseason adjustments will be made (unless the combined Oregon all-depth quotas are estimated to be achieved), except that additional opening days may be allowed if quota remains unharvested. If quota remains unharvested, but is insufficient for one day of an all-depth fishery, that additional quota will be transferred to the fisheries inside the 30-fathom (55 m) curve.

(vi) Oregon south central coast subarea.

If the Area 2A TAC is 388,350 lb (176.2 mt) and greater, this subarea extends from the Siuslaw River at the Florence north jetty (44°01'08" N. lat.) to Humbug Mountain, Oregon (42°40'30" N. lat.) and is allocated 6.97 percent of the Oregon/California sport allocation, which is approximately 1.43 percent of the Area 2A TAC. If the Area 2A TAC is less than 388,350 lb (176.2 mt), this subarea will be included in the Oregon Central Coast subarea. The structuring objective for this subarea is to create a south coast management zone that has the same objectives as the Oregon central coast subarea and is designed to accommodate the needs of both charterboat and private boat anglers in the south coast subarea where weather and bar crossing conditions very often do not allow scheduled fishing trips. Fixed season dates will be established preseason for the May and August openings and will not be modified inseason except that the August openings may be modified inseason if the combined Oregon all-depth quotas are estimated to be achieved. Recent year catch rates will be used as a guideline for estimating the catch rate for the May and August fishery each year. The number of fixed season days established will be based on the projected catch per day with the intent of not exceeding the subarea season subquotas. ODFW will monitor landings and provide a post-season estimate of catch within 2 weeks of the end of the fixed season. If sufficient quota remains for an additional day of fishing after the May season or the August season, openings will be provided if possible in May and August respectively. Potential additional open dates for both the May and August seasons will be announced preseason. If a decision is made inseason to allow fishing on one or more additional days, notice of the opening will be announced on the NMFS hotline (206) 526-6667 or (800) 662-9825. No all-depth halibut fishing will be allowed on the additional dates unless the opening date has been announced on the NMFS hotline. Any poundage remaining unharvested in the May all-depth subquota will be added to the August all-depth sub-quota. Any poundage that is not needed to extend the inside 30-fathom fishery through to September 30 will be added to the August all-depth season if it can be utilized, and any poundage remaining unharvested from the August all-depth fishery will be added to the inside 30-fathom fishery subquotas. The daily bag limit for all seasons is the first halibut taken, per person, of 32 inches (81.3 cm) or greater in length. ODFW will sponsor a public workshop shortly after the IPHC annual meeting to develop recommendations to NMFS on the open dates for each season each year. The three seasons for this subarea are as follows.

- A. The first season opens on May 1, only in waters inside the 30-fathom (55 m) curve, and continues daily until the combined subquotas for the north central and south central inside 30-fathom fisheries (7 percent of the north central subarea quota plus 20 percent of the south central subarea quota) are taken, or until September 30, whichever is earlier. Poundage that is estimated to be above the amount needed to keep this season open through September 30 will be transferred to the August all-depth fishery if it can be utilized. Any overage in the all-depth fisheries would not affect achievement of allocation set aside for the inside 30-fathom curve fishery.

- B. The second season is an all-depth fishery that begins on the second Thursday in May and is allocated 80 percent of the subarea quota. Fixed season dates will be established preseason based on projected catch per day and number of days to achievement of the subquota for this season. No inseason adjustments will be made, except that additional opening days (established preseason) may be allowed if any quota for this season remains unharvested. The fishery will be structured for 2 days per week (Friday and Saturday) if the season is for 4 or fewer fishing days. The fishery will be structured for 3 days per week (Thursday through Saturday) if the season is for 5 or more fishing days.
- C. The last season is a coastwide (Cape Falcon, OR to Humbug Mountain, OR) all-depth fishery that begins on the first Friday in August. Fixed season dates will be established preseason based on projected catch per day and number of days to achievement of the combined Oregon all-depth quotas for the Central and South Oregon Coast subareas. The fishery will be structured for 2 days per week (Friday and Saturday). No inseason adjustments will be made (unless the combined Oregon all-depth quotas are estimated to be achieved), except that additional opening days may be allowed if quota remains unharvested. If quota remains unharvested, but is insufficient for one day of an all-depth fishery, that additional quota will be transferred to the fisheries inside the 30 fathom (55 m) curve.

(vii) South of Humbug Mountain subarea.

This sport fishery subarea is allocated 3.0 percent of the Oregon/California subquota, which is approximately 0.62 percent of the Area 2A TAC. This area is defined as the area south of Humbug Mountain, OR (42°40'30" N. lat.), including California waters. The structuring objective for this subarea is to provide anglers the opportunity to fish in a continuous, fixed season that is open from May 1 through September 30. The daily bag limit is the first halibut taken, per person, of 32 inches (81.3 cm) or greater in length. Due to inability to monitor the catch in this area inseason, a fixed season will be established preseason by NMFS based on projected catch per day and number of days to achievement of the subquota; no inseason adjustments will be made, and estimates of actual catch will be made post season.

- (2) Port of landing management. All sport fishing in Area 2A will be managed on a "port of landing" basis, whereby any halibut landed into a port will count toward the quota for the subarea in which that port is located, and the regulations governing the subarea of landing apply, regardless of the specific area of catch.
- (3) Possession limits. The sport possession limit on land north of Leadbetter Point, WA is two daily bag limits, regardless of condition, but only one daily bag limit may be possessed on the vessel. The possession limit on land south of Leadbetter Point, WA is the same as the bag limit.
- (4) Ban on sport vessels in the commercial fishery. Vessels operating in the sport fishery for halibut in Area 2A are prohibited from operating in the commercial halibut fishery in Area 2A. Sport fishers and charterboat operators must determine, prior to May 1 of each year, whether they will operate in the commercial halibut fisheries in Area 2A which requires a commercial fishing license from the IPHC. Sport fishing for halibut in Area 2A is prohibited from a vessel licensed to fish commercially for halibut in Area 2A.
- (5) Flexible inseason management provisions.
 - (i) The Regional Administrator, NMFS Northwest Region, after consultation with the Chairman of the Pacific Fishery Management Council, the IPHC Executive Director, and the Fisheries Director(s) of the affected state(s), or their designees, is authorized to modify regulations during the season after making the following determinations.
 - (A) The action is necessary to allow allocation objectives to be met.
 - (B) The action will not result in exceeding the catch limit for the area.

- (C) If any of the sport fishery subareas north of Cape Falcon, OR are not projected to utilize their respective quotas by September 30, NMFS may take inseason action to transfer any projected unused quota to a Washington sport subarea projected to have the fewest number of sport fishing days in the calendar year.
- (ii) Flexible inseason management provisions include, but are not limited to, the following:
 - (A) Modification of sport fishing periods;
 - (B) Modification of sport fishing bag limits;
 - (C) Modification of sport fishing size limits;
 - (D) Modification of sport fishing days per calendar week; and
 - (E) Modification of subarea quotas north of Cape Falcon, OR consistent with the standards in section (f)(5)(i)(C) of this Plan
- (iii) Notice procedures.
 - (A) Inseason actions taken by NMFS will be published in the *Federal Register*.
 - (B) Actual notice of inseason management actions will be provided by a telephone hotline administered by the Northwest Region, NMFS, at 800-662-9825 (May through September) and by U.S. Coast Guard broadcasts. These broadcasts are announced on Channel 16 VHF-FM and 2182 kHz at frequent intervals. The announcements designate the channel or frequency over which the notice to mariners will be immediately broadcast. Since provisions of these regulations may be altered by inseason actions, sport fishermen should monitor either the telephone hotline or U.S. Coast Guard broadcasts for current information for the area in which they are fishing.
- (iv) Effective dates.
 - (A) Inseason actions will be effective on the date specified in the Federal Register notice or at the time that the action is filed for public inspection with the Office of the Federal Register, whichever is later.
 - (B) If time allows, NMFS will invite public comment prior to the effective date of any inseason action filed with the *Federal Register*. If the Regional Administrator determines, for good cause, that an inseason action must be filed without affording a prior opportunity for public comment, public comments will be received for a period of 15 days after of the action in the *Federal Register*.
 - (C) Inseason actions will remain in effect until the stated expiration date or until rescinded, modified, or superseded. However, no inseason action has any effect beyond the end of the calendar year in which it is issued.
- (v) Availability of data. The Regional Administrator will compile, in aggregate form, all data and other information relevant to the action being taken and will make them available for public review during normal office hours at the Northwest Regional Office, NMFS, Sustainable Fisheries Division, 7600 Sand Point Way NE, Seattle, WA.

(6) Sport fishery closure provisions.

The IPHC shall determine and announce closing dates to the public for any subarea in which a subquota is estimated to have been taken. When the IPHC has determined that a subquota has been taken, and has announced a date on which the season will close, no person shall sport fish for

halibut in that area after that date for the rest of the year, unless a reopening of that area for sport halibut fishing is scheduled by NMFS as an inseason action, or announced by the IPHC.

(g) PROCEDURES FOR IMPLEMENTATION

Each year, NMFS will publish a proposed rule with any regulatory modifications necessary to implement the Plan for the following year, with a request for public comments. The comment period will extend until after the IPHC annual meeting, so that the public will have the opportunity to consider the final Area 2A TAC before submitting comments. After the Area 2A TAC is known, and after NMFS reviews public comments, NMFS will implement final rules governing the sport fisheries. The final ratio of halibut to chinook to be allowed as incidental catch in the salmon troll fishery will be published with the annual salmon management measures.

Sources: 65 FR 14909 (March 20, 2000)
64 FR 13519 (March 19, 1999)
63 FR 13000 (March 17, 1998)
62 FR 12759 (March 18, 1997)
61 FR 11337 (March 20, 1996)
60 FR 14651 (March 20, 1995)
59 FR 22522 (May 2, 1994)
58 FR 17791 (April 6, 1993)

Sources: 63 FR 13000 (March 17, 1998)
62 FR 12759 (March 18, 1997)
61 FR 11337 (March 20, 1996)
60 FR 14651 (March 20, 1995)
59 FR 22522 (May 2, 1994)
58 FR 17791 (April 6, 1993)

PROPOSED CHANGES TO THE CATCH SHARING PLAN AND ANNUAL REGULATIONS

Situation: Each September meeting, the Council considers proposed changes to the halibut regulations. The purpose of this consideration is for relatively minor adjustments in the annual regulations (primarily in the recreational fishery) or catch sharing plan, not major changes in catch allocation among areas or gear groups.

Attachment 1 contains the current catch sharing plan. The plan includes the equitable adjustment agreement, first implemented in 2000, which transfers 25,000 pounds dressed weight of halibut from the standard non-treaty allocation to the treaty Indian allocation. This transfer is to occur each year for eight years (2000 through 2007).

Washington Department of Fish and Wildlife and Oregon Department of Fish and Wildlife will hold public meetings prior to the September Council meeting to consider changes in the halibut regulations. Any recommendations resulting from these meetings will be presented for review at the Council meeting. The Council will take final action on proposed changes for 2002 at the October-November meeting.

Council Action:

1. Adopt, for public review, any proposed changes to season structuring and minor changes to the catch sharing plan in 2002.

Reference Material:

1. 2001 Pacific Halibut Catch Sharing Plan for Area 2A (Exhibit B.3, Attachment 1).
2. Written public comment (Exhibit B.3.e, Public Comment).

PPMC
08/21/01

**PROPOSED OPTIONS FOR MODIFYING THE PACIFIC HALIBUT
CATCH SHARING PLAN FOR THE 2002 OREGON FISHERY**

The Oregon Department of Fish and Wildlife held a public meeting on August 16, 2001 to discuss proposed changes to the Pacific Halibut Catch Sharing Plan for Oregon fisheries. Over 30 participants attended the meeting. Based on the meeting comments, and other public input, the Oregon Department of Fish and Wildlife recommends the Pacific Fishery Management Council (PFMC) consider adopting the following options for additional public comment.

1. Increase the possession limit on land to two daily bags, but only one daily bag may be possessed on the vessel. This would allow the angler to transport up to two fish on land.
2. Open the Cape Falcon to Leadbetter Point fishery annually on June 15. In 2001, Oregon anglers landed approximately ten percent of the sub-area quota, while the Oregon contribution was over forty percent of the sub-area quota. A later opener, closer to the timing of the salmon fishery, should increase the proportion of the sub-area catch taken by Oregon anglers and likely redirect the halibut fishery to mainly an incidental nature consistent with the original intent.
3. Reallocate the Cape Falcon to Humbug Mountain all-depth quota as follows:
 - Allocate fifty to sixty-five percent of the all-depth quota to the May-June fishery for vessels that hold International Pacific Halibut Commission (IPHC) licenses.
 - Allocate the remaining thirty-five to fifty percent of the all-depth quota to private vessel owners who do not have IPHC licenses. This fishery would occur in August-September when the weather is generally more favorable for smaller vessels. IPHC license holders will not be allowed to fish in the August-September all-depth fishery.

Bycatch Mortality Concerns

The participants at the meeting also wanted the PFMC to know they are concerned about the magnitude of Pacific halibut bycatch in the trawl and shrimp fisheries. For example, the estimated 1999 bycatch mortality was estimated to exceed the landed poundage. The participants offered several recommendations:

4. Revise the bycatch estimate in light of recent gear changes (roller, footrope). Some felt using encounter rates from the Enhanced Data Collection Program (EDCP) was not appropriate. It was recommended that PFMC and the states fund gear research to investigate encounter rates with the recent gear restrictions.
5. Base 2002 bycatch estimates on projected 2001 effort, not observed 2000 effort.
6. The PFMC and states independently estimate area 2A abundance and not rely on the IPHC and their technique of associating 2A and 2B abundance.

The following proposals were discussed without majority support at the meeting:

7. Create separate all-depth quotas for charter and private vessels.
8. Allocate annual recreational halibut harvest based on "tag drawings".
9. Reallocate from the commercial fishery to the recreational fishery.
10. Split the Columbia River area quota into two quotas, one for Washington and one for Oregon.
11. Allow boats to catch halibut in closed areas as long as they are landed into open ports or manage as area of catch rather than port of landing.

**Comments of Jim Harp on Proposed Changes to the Halibut
Catch Sharing Plan**

Mr. Chairman, I would just like to offer a very brief comment on the proposed changes to the catch sharing plan for Pacific halibut.

The tribes propose no changes to the catch sharing plan as it relates to the Treaty Indian allocation of halibut for 2002. That allocation would remain at 35% of the Area 2A TAC, plus the 25,000 lb. adjustment, as specified in the Stipulation and Order of the U.S. District Court, Subproceeding No. 92-1.

GROUND FISH ADVISORY SUBPANEL COMMENTS ON
PROPOSED CHANGES TO THE PACIFIC HALIBUT CATCH SHARING PLAN
AND ANNUAL REGULATIONS

The Groundfish Advisory Subpanel (GAP) received a presentation from the Oregon Department of Fish and Wildlife (ODFW) on proposals for halibut catch sharing.

The GAP endorses ODFW proposals for changing the possession limit to 1 halibut on board, 1 on land, and for starting the fishery in June in order to provide some overlap with the salmon fishery. The GAP believes these proposals will ease enforcement burdens and provide a greater recreational opportunity for halibut harvest.

A majority of the GAP endorses the proposal of establishing a split season in the mid-Oregon region, with anglers being allowed to choose between fishing in May and June or August and September. Supporters see this as an opportunity to spread effort over a longer period of time and provide opportunities for smaller boats to harvest halibut during better weather. A minority of the GAP opposed this proposal.

The GAP also recommends the Council examine the following issues when discussing halibut:

- means of reducing bycatch in the commercial and recreational fisheries;
- allowing retention of incidental halibut in the trawl fishery to prevent waste and discards;
- the recreational harvest allocation split between Oregon and Washington relative to biomass abundance in the two areas; and
- examining full retention of incidental halibut take, perhaps in conjunction with other Council full retention programs.

PPMC
09/11/01