

MEMORANDUM

TO: Council, SSC and AP Members

FROM: Clarence G. Pautzke  
Executive Director



ESTIMATED TIME

2 HOURS

DATE: September 9, 1996

SUBJECT: Amendments - Initial Review

**ACTION REQUIRED**

- (a) Review of night trawling analysis.
- (b) Review regulatory amendment to: (1) create a standard deduction for "slime and ice" for halibut and sablefish and (2) revise the procedure for adjusting the annual allocation of IFQ (overages).

**BACKGROUND**

**(a) Night Trawling Analysis**

In January, the Council indicated that it wished to re-examine the issue of a ban on night trawling for cod as a means to reduce halibut bycatch in that fishery. A proposal to ban night trawling was discussed by the Council in 1993, and they decided not to proceed with such a ban. Although studies based on 1990 data indicated that halibut bycatch rates in the cod fisheries may be higher at night, and some savings could be expected, the Council did not proceed with the proposal, primarily because of enforcement concerns.

In June, the Council requested that NMFS re-examine observer data for information regarding day/night differences in bycatch rates of crab and halibut in the Pacific cod trawl fishery, and develop an EA/RIR analysis if possible prior to the September meeting. The NMFS report summarizing day/night bycatch rates is attached as Item D-3(a)(1). Their report indicates that nighttime halibut bycatch rates in bottom groundfish catches were generally higher than day rates during the directed fisheries for Pacific cod in 1990 and 1995, but not in 1994. NMFS has estimated that overall halibut bycatch mortality could be reduced by about 100- 250 tons under a night bottom trawling prohibition.

At this meeting, the Council will review the analysis, and provide additional direction as necessary. Based on the NMFS analysis, the following Alternatives could be considered in an EA/RIR:

Alternative 1: No Action. Trawl vessels could continue to fish day and night periods.

Alternative 2: Prohibit bottom trawling for Pacific cod at night in the Bering Sea. Vessels targeting Pacific cod would be prohibited from fishing at night (defined as 11 p.m. to 5:00 a.m.). Vessels that don't check-in, yet fall into a Pacific cod target fishery defined by directed fishing standards, may be subject to penalty.

Alternative 3: Prohibit bottom trawling in the area north of Unimak Island during the period 11 p.m. to 5:00 a.m. from January 1 through May 31. This alternative addresses concerns about switching back and forth among the Pacific cod and other target fisheries to allow for continued night trawling. The North Unimak area is the area enclosed by 163° W to 166°W, south of 56°N to the Aleutian Islands.

Alternative 4: Prohibit ALL trawling at night in the area north of Unimak Island during the period 11 p.m. to 5:00 a.m. from January 1 through May 31. This alternative would address enforcement concerns as it may be difficult to determine if a vessel is bottom trawling or pelagic trawling.

**(b) Review regulatory amendment to: (1) create a standard deduction for "slime and ice" for halibut and sablefish and (2) revise the procedure for adjusting the annual allocation of IFQ (overages).**

## BACKGROUND

The EA/RIR for a regulatory amendment under initial review is provided as Item D-3(b)(1). It addresses two management issues related to the halibut and sablefish IFQ program. The first issue, a standard deduction for ice and slime for halibut and sablefish, is being proposed to prevent inaccurate accounting of harvests caused by the lack of such standards. The IFQ regulations currently require that the initial accurate scale weight at the time of landing should be reported. Numerous reports from the fishing industry have pointed to widespread violations of this provision, primarily under the guise of deductions for ice and slime. Deductions varying between 0 - 9 % have been reported.

The second issue addressed by this analysis, revising the procedure for adjusting the annual allocation of IFQ, is proposed to clarify the current process and allow for total deductions for all overages or alternatively, eliminating any adjustment. The IFQ regulations currently provide that an administrative adjustment for an overage will occur if a person lands (or harvests) a greater amount of IFQ species (in pounds) than is available in that person's account and the amount of IFQ species landed that exceeded the IFQ account does not exceed 10 percent of the amount available in the IFQ account at the time of landing. The regulation was designed in this manner because the administrative adjustment was considered to be in lieu of a penalty for exceeding an IFQ account. Therefore, if there was an administrative adjustment, then there could be no penalty, and *vice versa*. The following alternatives are included in the analysis:

### Standard Deductions for Ice and Slime

Alternative 1: No Action--no provision for standard deductions for ice and slime.

Alternative 2: 2 percent allowance for ice and slime for halibut [and sablefish].

### Revision of the Adjustment Policy

Alternative 1: No Action--adjustment policy would remain as currently provided in § 679.40(d).

Alternative 2: Adjustment policy would be revised so that any amount of IFQ species harvested above the amount in an IFQ account would be deducted from the formula used to determine the next year's annual allocation of IFQ.

Alternative 3: Revising the regulations to eliminate the adjustment policy.

## **An Evaluation of Pacific Halibut Bycatch Rates in Trawl Fisheries of the Eastern Bering Sea and Aleutian Islands**

### **NMFS North Pacific Groundfish Observer Program - September 1996**

#### **Summary**

- Research conducted by staff of the International Pacific Halibut Commission (IPHC) and observations of participants in Bering Sea/Aleutian Islands (BSAI) bottom trawl fisheries provide evidence that bycatch rates for Pacific halibut taken in night bottom trawls targeting Pacific cod may be greater than rates obtained in catches from bottom trawls conducted during the day. Consequently, the North Pacific Fishery Management Council (Council) wishes to consider the possibility of placing a prohibition on night trawling for Pacific cod in the BSAI in order to reduce overall bycatch of Pacific halibut.

- This analysis utilizes data from 1990, 1994, and 1995 to examine differences in day and night bycatch rates. It focuses on all bottom trawling activity conducted in the BSAI during the period when directed fishing for Pacific cod is open (generally January - May). In addition to considering the consequences of prohibiting bottom trawling at night, the analysis examined possible impacts of a night ban on all trawling activity.

- Initial analysis considered catch and bycatch in Regulatory Area 509 to compare with previous work conducted by IPHC. Subsequent examination of catch and bycatch information for the BSAI revealed that most fishing effort occurs in a small area immediately to the north of Unimak Island. Additional effort does occur in the Aleutian Island area and to the northwest of the Pribilof Islands but numbers of sampled hauls and halibut bycatch quantities are small in these areas. Therefore, analysis of recent data focussed on the North Unimak Island Area.

- Night halibut bycatch rates in bottom groundfish (and Pacific cod) catches were generally higher than day rates during the 1990 and 1995 directed fisheries for Pacific cod. Day bycatch rates were generally higher than night rates for the same period in 1994. Differences were small and were not statistically different for most months. Using the 11:00 pm - 5:00 am definition of night favored by the Council, overall proportions (and quantities) of catch and bycatch taken during this 6 h period were generally quite small.

- Regardless of day/night rate differences, overall halibut bycatch could be reduced under a night bottom trawling prohibition during the BSAI directed Pacific cod fishery in the North Unimak Island Area. Such a ban during the period January - May, 1994 would have resulted in a loss of 15,932 t of groundfish including 2,660 t of Pacific cod and a savings of 181 t of halibut (equivalent to 118 t of halibut mortality based using the 65% assumed mortality rate applied in 1995). A similar ban in 1995 would have resulted in a loss of 19,799 t of groundfish including 3,682 t of Pacific cod and a savings of 388 t of halibut (252 t of mortality). A ban on all trawling in 1994 would have resulted in additional loss of 46,626 t of groundfish (pollock) and savings of 7 t of halibut (5 t of mortality). Similar figure for 1995 would have been 55,206 t of groundfish (pollock) and 4 t of halibut (3 t of mortality). These estimates do not take into account possible changes in fishing activities which might result from a night trawling ban.

## Introduction

Pacific cod might be expected to migrate from the bottom into the midwater region at night to feed on juvenile pollock (Brodeur and Livingston 1988) while halibut and other flatfish generally remain on the bottom. Such behavior would be consistent with observations regarding gadoids and other species in the Atlantic Ocean reported by many authors including Beamish (1966) and Turuk (1973). Therefore, bottom trawling at night may result in higher catches of halibut, relative to Pacific cod, than during the day.

Fishermen harvesting Pacific cod in the Bering Sea Aleutian Island (BSAI) region have observed bycatch rate differences and researchers at the International Pacific Halibut Commission (IPHC) began to analyze relevant data in the early 1990s. This led to publications by Adlerstein (1992) and Adlerstein and Trumble (1993) who reported that bottom trawl fisheries targeting on Pacific cod experienced higher halibut bycatch rates during the night. These results suggest that halibut bycatch might be reduced by avoiding trawling during the night.

The North Pacific Fishery Management Council (Council) wishes to consider the costs and benefits associated with prohibiting bottom trawling for Pacific cod in the BSAI at night. From a practical point of view (i.e. to provide the basis for an enforceable regulation), it was recommended that night be defined as the period between 11:00 pm to 5:00 am for all time periods and areas of interest. The time period of interest is the January-May season when fishing for Pacific cod occurs in the BSAI. Areas of interest (as expressed by the Council during its June, 1996 meeting) are the Eastern Bering Sea (with attention focussed on the Horseshoe area adjacent to Unimak Island), the Aleutian Islands, and the area northwest of the Pribilof Islands.

The National Marine Fisheries Service (NMFS) Alaska Region determines target fishery for each processor on a weekly basis. Individual factory trawler hauls can only be assigned a target once the weekly target has been identified for each catcher/processor; therefore it would not be possible to determine target for an individual haul by inspection of catch or observer data during a boarding. Furthermore, target cannot be determined by haul or by vessel for catcher boats because it is not reasonable to assume that the weekly aggregate of deliveries to a plant reflects the composition (or "targeting") of individual hauls on individual catcher vessels. Thus realtime, haul-by-haul determination of target is not possible and, therefore, it would not be realistic to prohibit trawling "for Pacific cod" while continuing to allow trawling for other species. Midwater trawling for pollock occurs when the BSAI bottom trawl fishery for Pacific cod is open and halibut bycatch rates in this fishery are very low. Thus, a decision to enact a time and area prohibition on all trawling would have a major impact on the midwater trawl fishery and provide little benefit in terms of reduced halibut bycatch. The Council's Enforcement Committee has indicated that enforcement of a ban on directed fishing for Pacific cod would be problematic, that a (time and area) prohibition on all trawling would be relatively straightforward to enforce, and that a (time and area) ban on all bottom trawling would likely be enforceable. Therefore, this analysis focused on all bottom trawling activity conducted in the BSAI during the period when directed fishing for Pacific cod is open (generally January - May). However, in addition to considering the consequences of prohibiting bottom trawling at night, the analysis examined possible impacts of a night ban on all trawling activity. Data from 1990, 1994, and 1995 were examined.

## Data and Methods

### Selection of Data

Data collected by observers during the January - May 1990, 1994, and 1995 BSAI bottom trawl fisheries were utilized for this study. Data from 1990 were analyzed to compare with results published by Adlerstein and Trumble (1993) who considered day/night differences in bottom trawl halibut bycatch rates in Regulatory Area 509 (Fig. 1) For this purpose, observer-sampled hauls estimated to contain at least 30% Pacific cod were selected. Since sunset and sunrise times were not readily available for 1990, United States Weather Service data for 1994 was substituted. Each haul was classified as day (net down after sunrise, net up before sunset), night (net down after sunset, net up before sunrise), or transition. Subsequent analyses used the 11:00 pm - 5:00 am period to define night fishing, as recommended by the Council at its June, 1996 meeting.

In order to identify areas where fishing effort was concentrated, the geographical locations of all observer-sampled bottom trawl hauls in the BSAI were plotted separately for 1994 and 1995. Each haul was assigned as day, night, or transitional. Additional smaller-scale plots were prepared for areas of concentrated fishing effort, but these contained data only from sampled trawls which contained more than 30% Pacific cod. Hauls with net down and net up times between 5 am and 11 pm were assigned as day tows and those with net down and net up times between 11 pm and 5 am were classified as night tows. All other tows were considered as transitional. Initially, three study areas were defined: Eastern Bering Sea (Region I, east of 170°W), Northwest of the Pribilof Islands (Region II, mainly Regulatory Area 521), and the Aleutian Islands (Region III, Regulatory Areas 541-543). After initial review of the data from these areas it was possible to identify regions where fishing activity was concentrated and which would merit detailed examination of the relationship between halibut bycatch and groundfish catch. To evaluate possible relationships between Pacific cod fishing success and halibut bycatch, monthly bycatch rates for hauls containing 0 - 10%, 10 - 30%, 30 - 50%, and 50 - 100% Pacific cod were compared.

Data analyses were conducted on a monthly basis because sample sizes were not large enough to evaluate smaller temporal strata. Months were defined so as to match with week-ending dates in the NMFS Alaska Region catch database (BLEND):

Month	1994	1995
January	Jan. 1 - Jan. 29	Jan. 1 - Jan. 28
February	Jan. 30 - Feb. 26	Jan. 29 - Feb. 25
March	Feb. 27 - Apr. 2	Feb. 26 - Apr. 1
April	Apr. 3 - Apr. 30	Apr. 2 - Apr. 29
May	May 1 - May 28	Apr. 30 - Jun. 3

## Bycatch Rate Estimation

Two bycatch rates estimators were employed: a ratio of means (or totals) estimator (kg halibut/mt total catch) and a mean of ratios estimator. Let:

$n$  = number of sampled hauls in a given stratum,  
 $C$  = estimated total catch weight of haul (mt), and  
 $y$  = estimated halibut bycatch weight in haul (kg).

The two bycatch rates are defined as:

1. This estimate weights the bycatch rate of each haul by the total catch in that haul

$$R_1 = \frac{\text{kg halibut/stratum}}{\text{mt total catch/stratum}} = \frac{\sum_i y_i}{\sum_i C_i}$$

2. This estimate weights the bycatch rate of each haul equally

$$R_2 = \frac{\text{kg halibut/haul}}{\text{mt total catch/haul}} = \frac{\sum_i y_i / C_i}{n}$$

## Total Catch and Bycatch Estimation

To evaluate costs (groundfish catch forgone) and benefits (halibut saved) which would have occurred under a night trawling ban in 1994 and 1995, it was necessary to develop total catch and bycatch estimates for day and night bottom trawling for these years. Data from the observer database (NORPAC) and the NMFS Alaska Region catch database (BLEND) were used for this purpose. BLEND total catches were aggregated into strata defined by week ending date, regulatory area, processor mode (catcher vessel, catcher/processor, and mothership), permit, and target fishery. The total catch was obtained from each stratum using the BLEND database.

To apportion catch and bycatch into appropriate temporal and spatial strata, overall BLEND total catch estimates were multiplied by the ratio of the aggregated observer total catch estimates for that stratum to the aggregated overall observer total catch estimate. Let  $C_{ijklm}$  be the BLEND total catch estimate for week  $i$ , area  $j$ , processor  $k$ , and target fishery  $m$  and let  $c_{ijklm}$  be the observed catch for the same stratum. Then  $C_{tijklm}$  and  $c_{tijklm}$  are the estimated total catch and the aggregate observed catch for this stratum during time period  $t$  (day, night, or transition):

$$C_{ijklm} = C_{ijklm} \frac{C_{ijklm}}{C_{ijklm}}$$

The associated halibut bycatch is calculated as:

$$H_{ijklm} = C_{ijklm} R_{1\ ijklm}$$

where  $R_1$  is the bycatch rate in kg/mt as described above.

Estimated monthly total catches and halibut bycatches were summed for each time period over all strata I, j, k, l, and m for each fishery type (catcher, catcher/processor, and mothership) and each region.

## Results

### 1. Analysis of 1990 data

When the data from hauls containing more than 30% Pacific cod in Regulatory Area 509 were used, estimated night bycatch rates were greater than day rates in January, March, April and May (Fig. 2); both rate estimators indicated increases in night bycatch rates between February and May, with differences between night and day rates being more marked in April and May. Patterns were generally similar when using data selected using the more than 50% Pacific cod criterion, although differences between day and night rates did not occur until April and were smaller than those indicated when the 30% criterion was used. It is apparent from the 95% confidence intervals indicated on the figures that differences were not significant for all months.

These results reveal the influence of techniques utilized for selecting data and estimating bycatch rate on the outcome of the analysis. Different data selection criteria were applied during the IPHC study and this resulted in the inclusion of many hauls containing less than 30% Pacific cod in their analysis. Therefore, differences between the results presented by Adlerstein and Trumble (1993) and the results of this study might be expected.

### 2. Analysis of 1994 and 1995 data

Analysis of 1994 data for hauls containing more than 30% Pacific cod indicated that day bycatch rates were higher than night rates for all months except April (Fig. 3). When the more than 50% Pacific cod criterion was used, day and night bycatch rates were similar for all months except May.

In 1995, night rates were higher than day rates in all months, regardless of selection criterion and were markedly different for the cpue-based rate in February and March (note that very

little fishing activity occurred in April or May of 1995 and, therefore, sample sizes were too small to support an analysis of this type).

Preliminary analysis indicated that catch of all groundfish and Pacific cod, and bycatch of halibut were substantially greater in region I than in regions II and III for both years (Table 1). In 1994, 74% of the groundfish and 93% of the halibut taken during the day were caught in Region I; for night catches, the percentages were 67 and 86, respectively. In 1995, 73% of the groundfish and 98% of the halibut taken during the day were caught in Region I; for night catches, the percentages were 65 and 94, respectively. Differences between day and night halibut bycatch rates in bottom trawl fisheries may not always be associated with the same groundfish target species. For example, the overall night halibut bycatch rates observed in Region 2 in 1994 were primarily associated with high bycatch in the directed rock sole fishery. Higher night rates observed in Regions I and II in 1995, however, were associated with the Pacific cod fishery (Table 2). Most bottom trawling effort occurred within Region I in both years (Figs. 4 - 8); furthermore, overall catch and bycatch quantities in Region II were small in both years. Consequently, appreciable bycatch savings would only accrue from a bottom trawling prohibition in Region I.

### 3. Distribution of fishing effort within Region I

The majority of day and night observer-sampled tows within Region I containing more than 30% Pacific cod took place to the north of Unimak Island, in an area which includes the Horseshoe (Figs. 9 - 12). This area is enclosed by 163° W. To the east, 166° W. to the west, 56° N. to the north, and the Aleutian Islands to the south (Fig. 13). It is defined as the North Unimak Area. In 1994, 69% of the day trawl groundfish catch and 84% of the halibut bycatch was taken in this area; night trawl catch percentages were 49 and 53, respectively (Table 3). In 1995, 63% of the day trawl groundfish catch and 76% of the halibut bycatch taken in Region I was removed from this smaller area. Night trawl catch percentages were 55 and 73, respectively. The percentage of night halibut bycatch taken from this area was high during most months of major Pacific cod fishing activity in 1994 and 1995.

### 4. Halibut bycatch rates in North Unimak Area

Large numbers of observer-sampled bottom trawl hauls contained appreciable proportions of cod in February, March, and April of each year and the proportion containing more than 50% cod was notably high in March and April (Fig. 14). Trawl fishing effort directed towards Pacific cod was small in May of 1994 and very small in May of 1995. Sample sizes are small in many time-strata. This is particularly apparent for observer-sampled night trawls. This is consistent with the definition of night (6 out of 24 hours) and the fact that night trawl hauls were often of longer duration.

In 1994, night halibut bycatch rates were generally less than day rates for all months except April, regardless of the criterion used to define the Pacific cod fishery (Fig. 15). In 1995, night rates were generally higher than day rates from January to April (Fig. 16). It is evident that bycatch rate estimates were lower for catches that contained less than 10% Pacific cod. These analyses should be interpreted with caution because of sample size limitations.



## 5. Costs and savings associated with a prohibition of bottom trawling at night

Using estimates developed during this analysis, it is possible to calculate possible costs (in groundfish catches forgone) and benefits (halibut savings) which might have occurred if night trawling in the North Unimak Area had been prohibited in 1994 and 1995. Such a ban on bottom trawling at night in the North Unimak Area during the period January - May, 1994 would have resulted in a loss of 15,932 t of groundfish including 2,660 t of Pacific cod and a savings of 181 t of halibut (equivalent to 118 t of halibut mortality using the 65% mortality rate applied in 1995) (Tables 1 and 3). A similar ban in 1995 would have resulted in a loss of 19,799 t of groundfish including 3,682 t of Pacific cod and a savings of 388 t of halibut (252 t of mortality). A ban on all trawling in 1994 would have resulted in additional loss of 46,626 t of groundfish (pollock) and savings of 7 t of halibut (5 t of mortality). Similar figure for 1995 would have been 55,206 t of groundfish (pollock) and 4 t of halibut (3 t of mortality). This estimate does not take into account possible changes in fishing activities which might result from a night trawling ban.

### Discussion

While there is evidence of day/night halibut bycatch rate differences in the BSAI bottom trawl fisheries, the patterns of these differences appear to vary by year. The work of Adlerstein and Trumble (1993) and our own analysis indicates that night halibut bycatch rates in the Pacific cod trawl fishery were higher than day rates in 1990. A similar pattern was apparent in the 1995 data. This was not the case in 1994 when day rates exceeded night rates in some months. Most observed differences were not statistically significant. Furthermore, day/night rate differences observed in 1990 were generally greater than those observed in 1995.

While there is a biological basis for expecting day/night differences, confounding factors may influence the extent to which observer data reflects true diel behavior changes in groundfish species or halibut. Fishing practices are constantly changing and interannual differences in halibut size composition and in the distribution of halibut and groundfish species will influence fishing success for target and bycatch species.

Implementation of the Vessel Incentive Program (VIP) since May of 1991 has encouraged vessel personnel to reduce halibut bycatch. The NMFS Observer Program reports that this program has also resulted in an increase in presorting (removal of (probably larger) halibut before observer sampling) and use of steeply inclined conveyor belts to carry unsorted catch to the observers' sampling stations (which causes larger halibut to tumble down the belt and be excluded from observer sampling). Furthermore, a requirement to use baskets when sampling for catch composition in some VIP fisheries may also result in a bias against sampling larger halibut. Alderstein and Trumble (1993) observed that large halibut were prevalent in night during periods of darkness. It is possible, therefore, that some of these practices have resulted in biased observer sampling and masked the true extent of day/night differences in bycatch rates.

Regardless of the real or perceived day/night differences in halibut bycatch rates, the amount of savings, if any, will be influenced by the manner in which the fleet responds to a prohibition. If,

for example, the directed Pacific cod fishing season was extended, bycatch saved by a cessation of fishing at night might be harvested during daytime trawling later in the year. It is important to note, however, that the proportion of halibut taken in bottom trawls at night when the directed BSAI Pacific cod trawling season was open in 1994 and 1995 was low.

#### Literature Cited

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Table 1. Day and night total catch and halibut bycatch in mt for the all bottom trawl and two major target fisheries in areas of the BSAI where directed trawl fishing for Pacific cod occurred 1994 and 1995. Most of halibut was taken from Region I. Note the low proportion of catch and bycatch attributed to night trawling.

Year	Region	Month	All Fisheries				Pacific cod				Rock Sole				
			Day Tows		Night Tows		Day Tows		Night Tows		Day Tows		Night Tows		
			Total	Halibut	Total	Halibut	Total	Halibut	Total	Halibut	Total	Halibut	Total	Halibut	
94	I	1	14,345.65	115.55	3,347.04	26.04	821.80	13.52	188.43	2.91	9,322.94	73.74	1,878.46	16.80	
		2	52,978.31	451.35	15,603.22	77.28	3,986.23	5.81	1,038.41	0.66	26,927.49	373.38	6,774.72	75.59	
		3	54,161.12	1,184.52	7,590.91	87.42	31,895.68	935.10	2,874.53	59.55	6,280.71	173.11	1,258.30	19.27	
		4	37,294.49	1,593.33	3,515.42	81.35	23,965.32	1,479.65	1,327.38	57.35	261.15	8.70	73.56	4.68	
		5	19,078.32	590.70	2,793.49	73.20	3,001.24	287.50	57.23	3.42	579.26	18.82	100.91	0.94	
		SUM	177,857.89	3,935.44	32,850.08	345.30	63,670.27	2,721.59	5,485.99	123.88	43,371.55	647.76	10,085.95	117.28	
		II	1	863.27	3.47	48.12	0.57	9.97	0.17	0.00	NA	853.29	3.29	48.12	0.57
	2		4,212.79	24.40	580.30	5.43	0.00	NA	4.83	0.00	2,459.24	14.42	544.94	5.43	
	3		10,415.30	60.74	1,370.18	12.70	4,449.83	28.48	530.34	3.92	2,972.05	10.64	350.70	3.89	
	4		3,004.59	15.82	634.88	2.83	66.43	1.09	4.17	0.06	274.76	2.31	25.80	0.10	
			SUM	18,495.95	104.42	2,633.48	21.53	4,526.24	29.74	539.35	3.97	6,559.34	30.66	989.56	9.99
		III	1	3,141.27	2.14	653.94	1.77	NA	NA	NA	NA	NA	NA	NA	NA
	2		9,177.72	7.31	3,985.38	1.31	39.98	0.02	0.00	NA	NA	NA	NA	NA	
	3		21,547.40	56.68	3,981.91	4.50	6,097.10	10.10	703.33	1.39	NA	NA	NA	NA	
	4		9,959.99	105.33	3,759.04	26.00	165.49	2.29	29.88	0.00	NA	NA	NA	NA	
			SUM	43,826.39	171.46	12,380.26	33.57	6,302.57	12.40	733.21	1.39	NA	NA	NA	NA
95	I	1	8,849.55	138.56	1,401.49	22.99	2,403.67	45.03	404.43	9.41	3,843.12	90.47	694.16	13.57	
		2	59,444.91	598.85	20,068.81	190.63	11,795.53	151.12	3,314.21	39.09	20,660.04	312.50	5,278.77	143.42	
		3	70,461.77	1,347.38	9,588.49	173.73	39,152.25	1,191.83	2,383.42	144.68	1,466.22	16.89	213.33	0.62	
		4	57,512.34	1,366.24	4,168.01	61.04	25,792.97	1,049.57	624.09	33.42	1,235.43	9.09	191.02	0.26	
		5	4,895.21	358.55	837.05	79.76	NA	NA	NA	NA	17.13	0.00	0.00	NA	
		SUM	201,163.78	3,809.58	36,063.86	528.14	79,144.41	2,437.55	6,706.15	226.60	27,221.94	428.95	6,377.28	157.86	
		II	1	69.21	0.51	20.84	0.61	50.78	0.16	20.84	0.61	NA	NA	NA	NA
	3		6,838.95	24.98	260.88	1.95	6,832.78	24.98	260.88	1.95	6.17	0.00	0.00	NA	
	4		2,322.45	13.89	137.10	2.51	1,758.41	5.27	36.79	0.28	NA	NA	NA	NA	
			SUM	9,230.61	39.37	418.82	5.07	8,641.97	30.42	318.51	2.83	6.17	0.00	0.00	NA
		III	1	5,756.63	7.96	1,431.17	7.00	NA	NA	NA	NA	NA	NA	NA	NA
	2		12,463.86	13.67	2,600.32	8.59	NA	NA	NA	NA	NA	NA	NA	NA	
	3		28,709.30	15.89	6,772.39	4.14	5,084.94	3.66	188.94	0.91	NA	NA	NA	NA	
	4		12,423.42	17.71	4,278.91	5.62	260.65	2.17	0.00	NA	NA	NA	NA	NA	
	5		6,954.77	2.91	4,114.35	0.09	10.71	0.00	0.00	NA	NA	NA	NA	NA	
			SUM	66,307.99	58.13	19,197.14	25.44	6,356.30	6.83	188.94	0.91	NA	NA	NA	NA

NA: Insufficient data.

Table 2. Day and night halibut bycatch rates (mt/mt) for the all bottom trawl and two major target fisheries in areas of the BSAI where directed trawl fishing for Pacific cod occurred in 1994 and 1995. Night bycatch rates are generally higher than day rates in the highlighted blocks. Note that the inverse of the bycatch rate equivalent to the amount of catch forgone to save 1 mt of halibut. (Region I - east of 170W, Region II - NW of the Pribilof Islands, Region III - Aleutian Islands)

Year	Region	Month	All Fisheries		Pacific cod		Rock Sole		
			Day	Night	Day	Night	Day	Night	
94	I	1	0.0081	0.0078	0.0165	0.0154	0.0079	0.0089	
		2	0.0085	0.0050	0.0015	0.0006	0.0139	0.0112	
		3	0.0219	0.0115	0.0293	0.0207	0.0276	0.0153	
		4	0.0427	0.0231	0.0617	0.0432	0.0333	0.0637	
		5	0.0310	0.0262	0.0958	0.0597	0.0325	0.0093	
		TOTAL	0.0221	0.0105	0.0427	0.0226	0.0149	0.0116	
		II	1	0.0040	0.0119	0.0175	NA	0.0039	0.0119
			2	0.0053	0.0094	NA	0.0000	0.0059	0.0100
			3	0.0058	0.0093	0.0064	0.0074	0.0036	0.0111
			4	0.0053	0.0045	0.0164	0.0136	0.0084	0.0037
		TOTAL	0.0056	0.0082	0.0066	0.0074	0.0047	0.0103	
		III	1	0.0007	0.0027	NA	NA	NA	NA
			2	0.0008	0.0003	0.0004	NA	NA	NA
			3	0.0026	0.0011	0.0017	0.0020	NA	NA
			4	0.0106	0.0069	0.0138	0.0000	NA	NA
	TOTAL	0.0039	0.0027	0.0020	0.0019	NA	NA		
95	I	1	0.0157	0.0164	0.0187	0.0233	0.0235	0.0195	
		2	0.0101	0.0095	0.0128	0.0118	0.0151	0.0272	
		3	0.0191	0.0181	0.0304	0.0612	0.0115	0.0029	
		4	0.0238	0.0146	0.0407	0.0536	0.0074	0.0013	
		5	0.0732	0.0953	NA	NA	0.0000	NA	
		TOTAL	0.0189	0.0146	0.0308	0.0338	0.0158	0.0248	
		II	1	0.0073	0.0295	0.0032	0.0295	NA	NA
			3	0.0037	0.0075	0.0037	0.0075	0.0000	NA
			4	0.0060	0.0183	0.0030	0.0071	NA	NA
		TOTAL	0.0043	0.0121	0.0035	0.0089	0.0000	NA	
		III	1	0.0014	0.0049	NA	NA	NA	NA
			2	0.0011	0.0033	NA	NA	NA	NA
			3	0.0006	0.0006	0.0007	0.0048	NA	NA
			4	0.0014	0.0013	0.0083	NA	NA	NA
			5	0.0004	0.0000	0.0000	NA	NA	NA
	TOTAL	0.0009	0.0013	0.0011	0.0048	NA	NA		

NA: Insufficient data

Table 3. Percent of the Region 1 total bottom trawl catch and halibut bycatch taken from the North Unimak Area in 1994 and 1995.

Year	Month	Day		Night	
		Total	Halibut	Total	Halibut
94	1	63.1	61.0	49.9	20.9
	2	80.6	70.3	61.8	36.9
	3	76.6	94.2	52.7	85.9
	4	66.4	93.4	31.9	73.1
	5	20.2	46.1	19.8	21.1
	TOTAL	69.2	83.8	48.5	52.6
95	1	76.8	88.6	72.0	86.2
	2	90.3	92.4	93.0	96.8
	3	53.6	82.1	29.7	76.4
	4	43.3	79.6	24.6	76.4
	5	28.7	16.1	44.7	12.4
	TOTAL	62.7	76.1	54.9	73.4

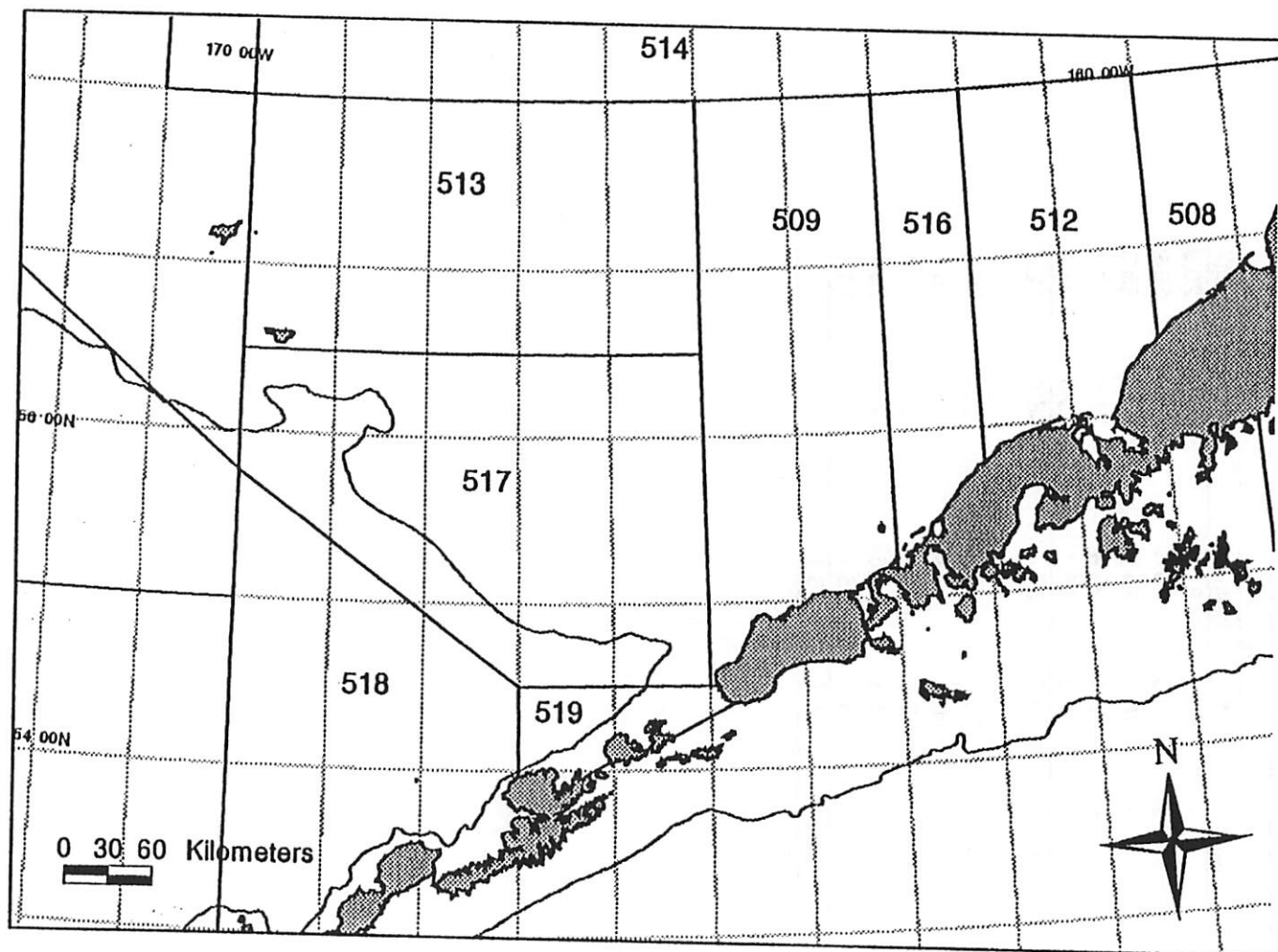
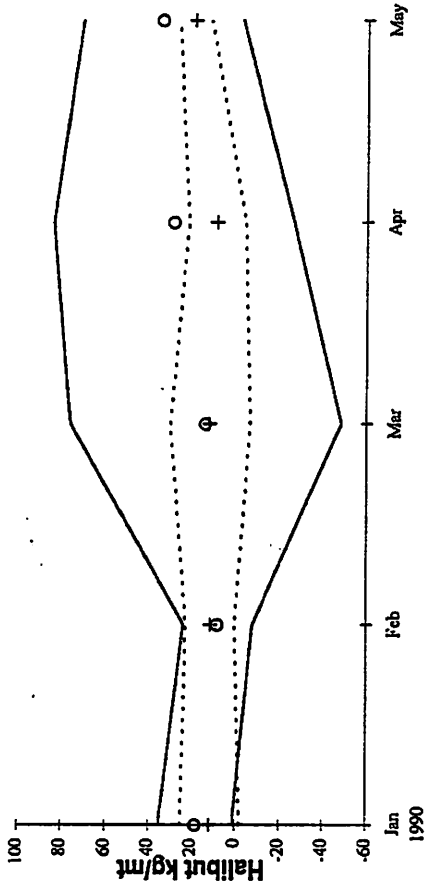
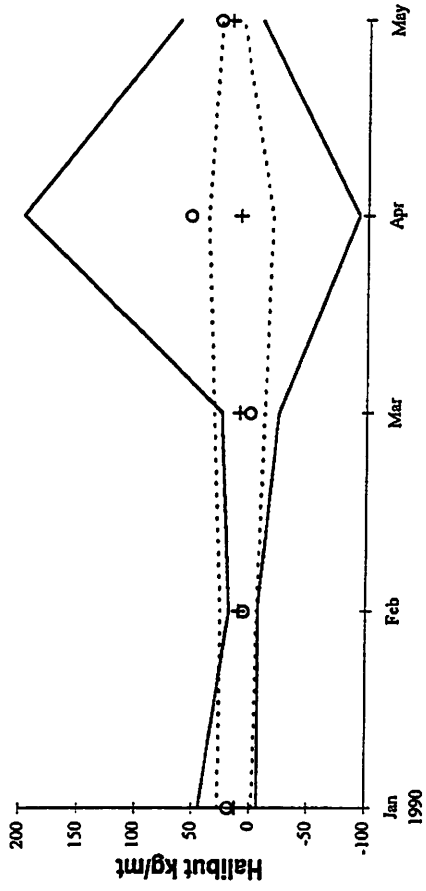


Figure 1. Bering Sea/Aleutain Islands indicating Regulatory Areas.

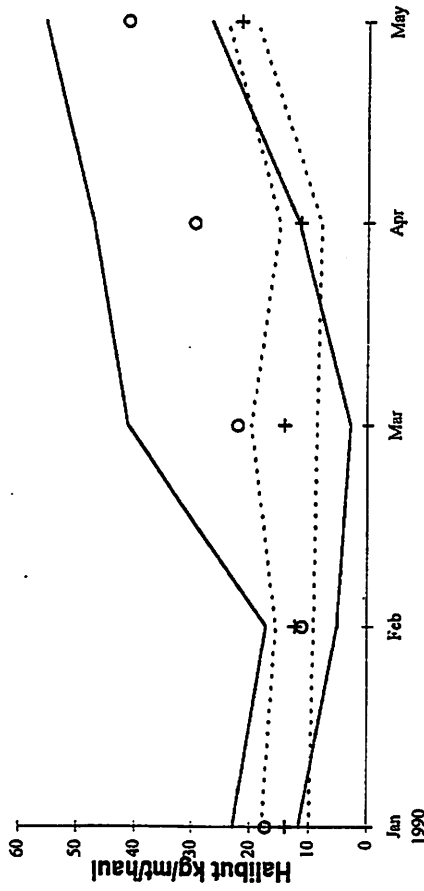
Hauls Containing > 30% Pacific Cod



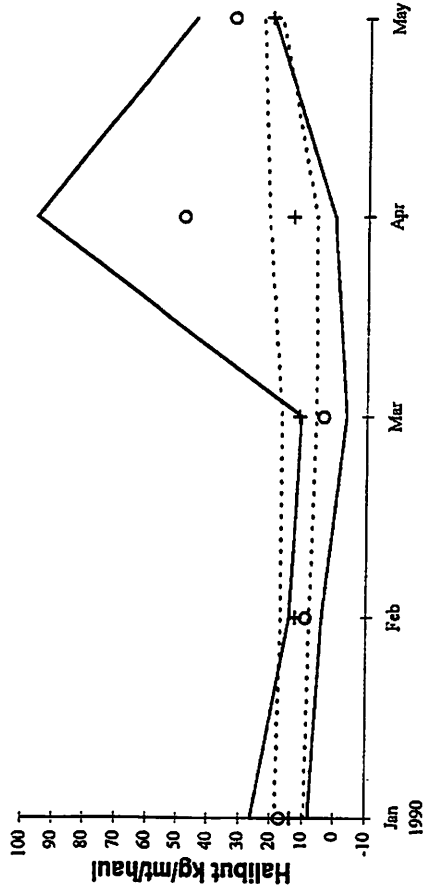
Hauls Containing > 50% Pacific Cod



Hauls Containing > 30% Pacific Cod



Hauls Containing > 50% Pacific Cod



+ : Day  
o : Night  
..... : Day 95% CI  
—— : Night 95% CI

Fig. 2. Monthly halibut bycatch rates for hauls with more than 30% and 50% Pacific cod catch in Regulatory Area 509, 1990.

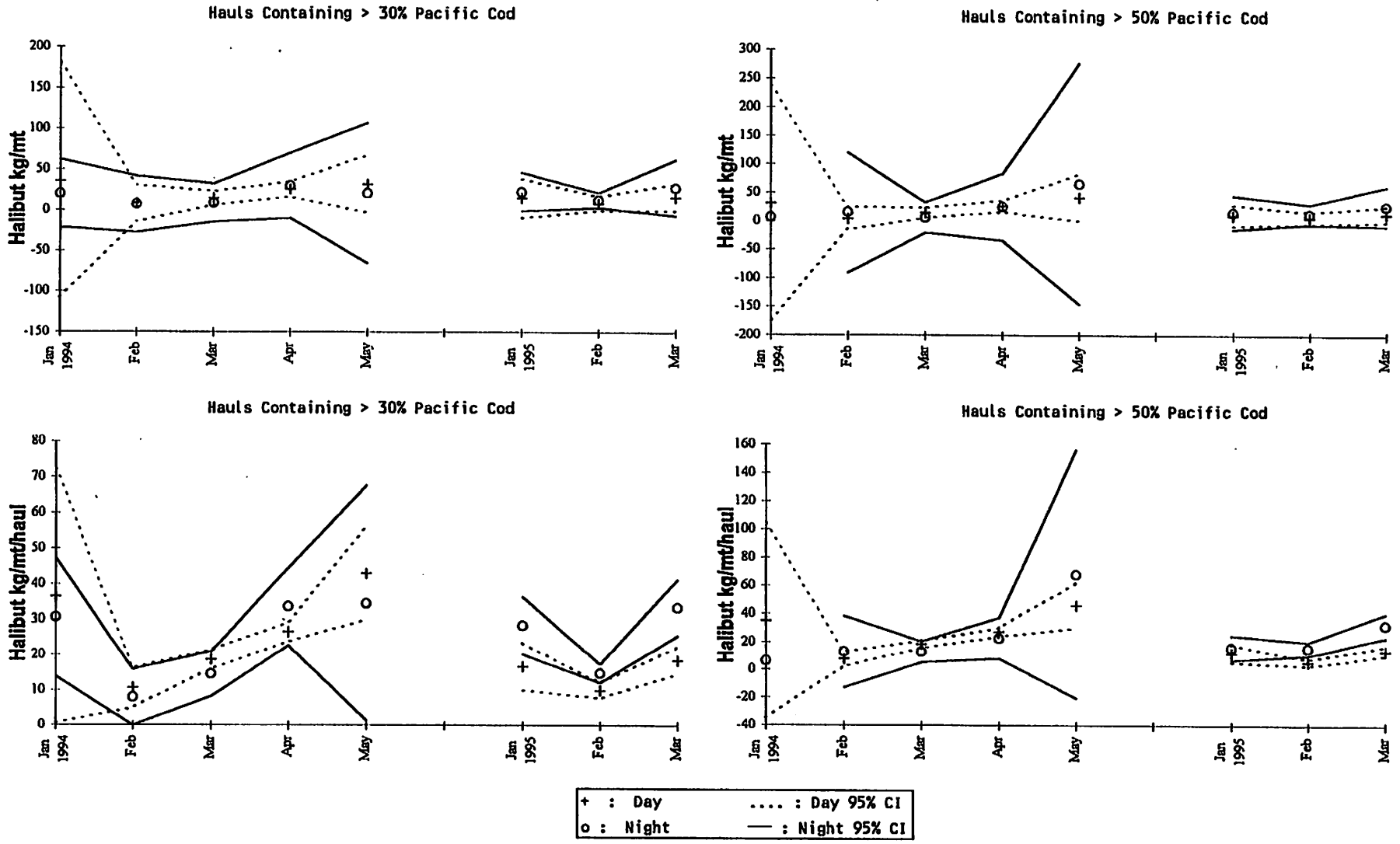
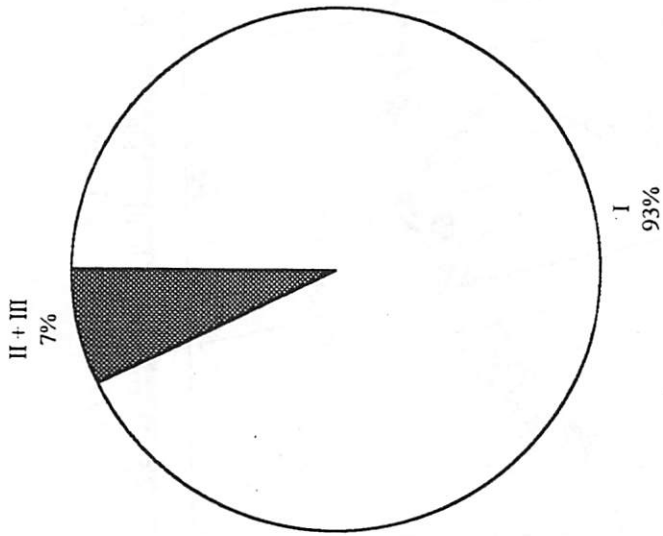


Fig. 3. Monthly halibut bycatch rates for hauls with more than 30% and 50% Pacific cod catch in Regulatory Area 509, 1994 and 1995.



1994 Halibut Bycatch



1995 Halibut Bycatch

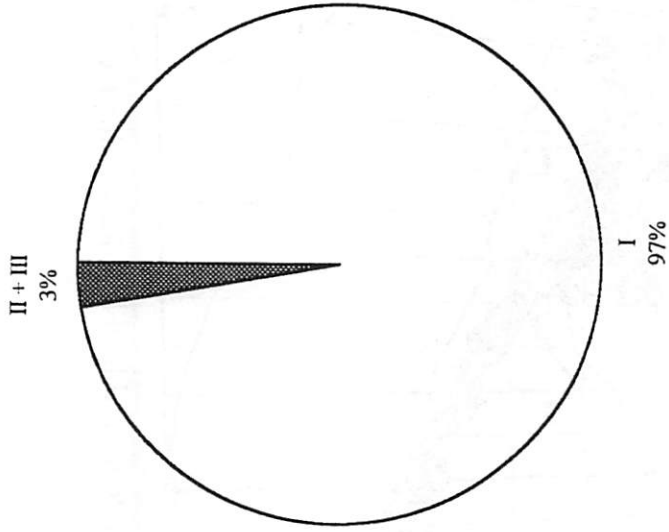


Fig. 4. Proportions of halibut bycatch in the three regions for all bottom trawl fisheries in 1994 and 1995.

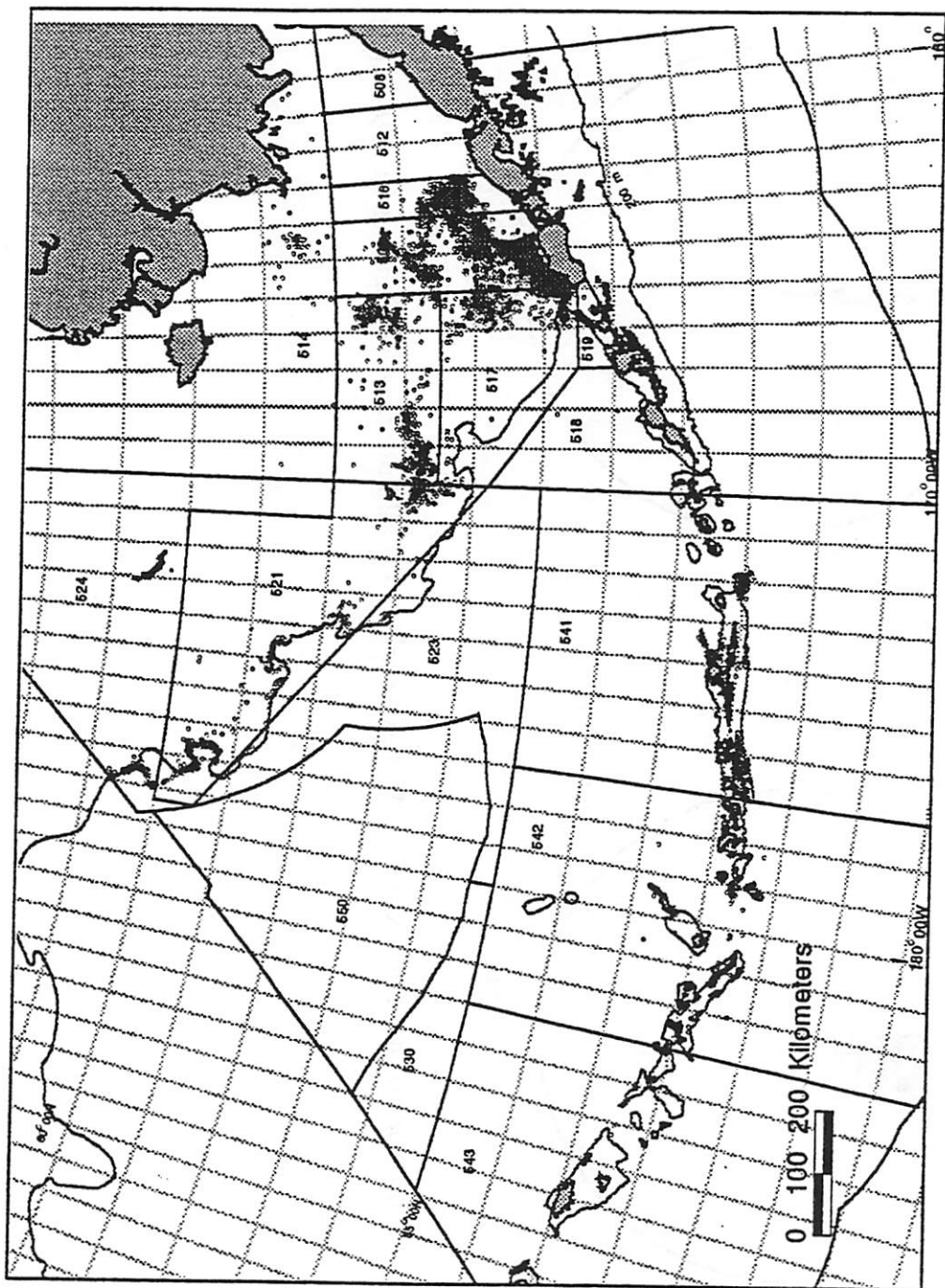


Figure 5. Bering Sea/Aleutian Islands indicating all observed bottom trawl haul locations during the 1994 Pacific cod fishery.

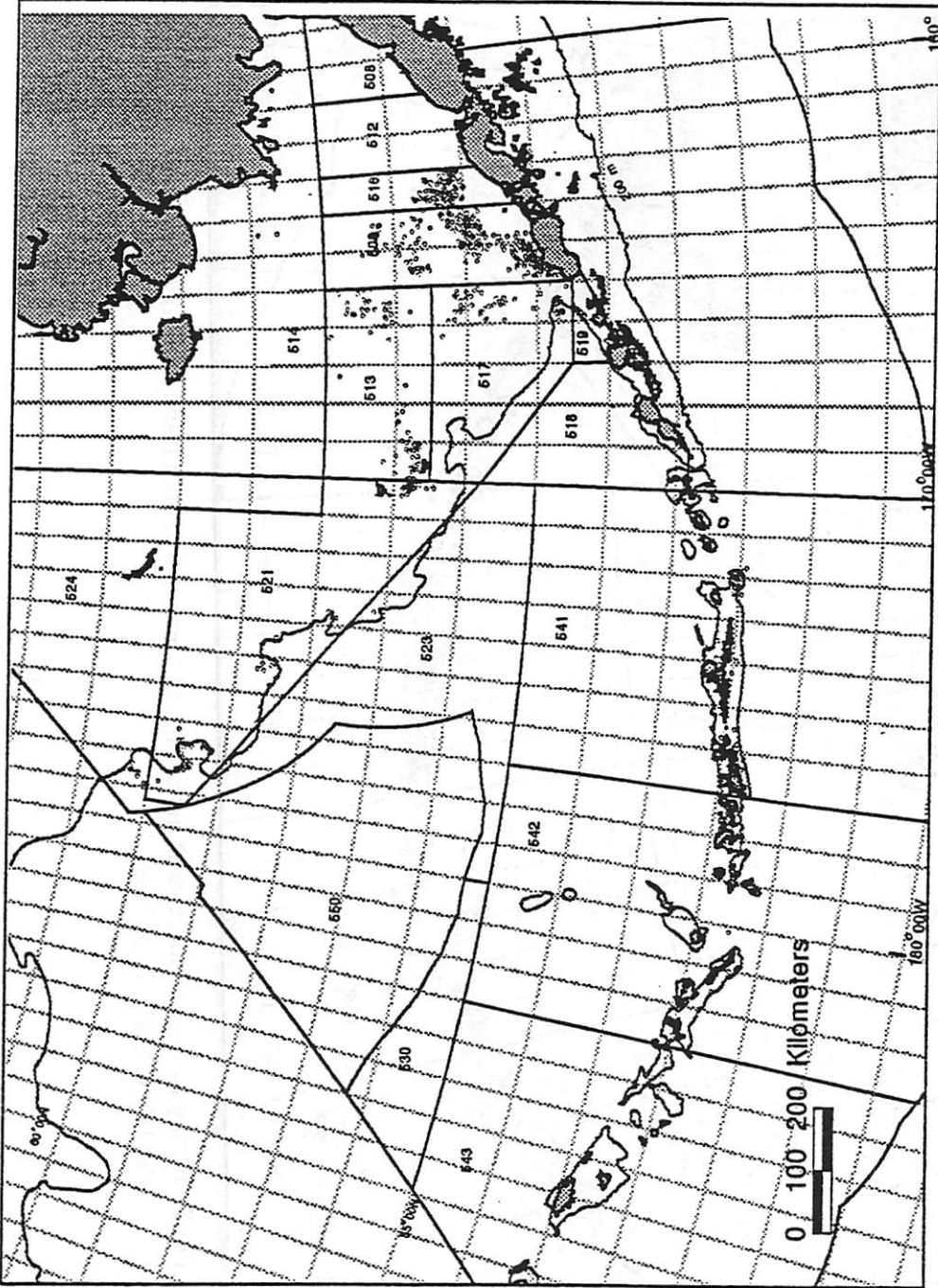


Figure 6. Bering Sea/Aleutian Islands indicating all observed night bottom trawl haul locations during the 1994 Pacific cod fishery.

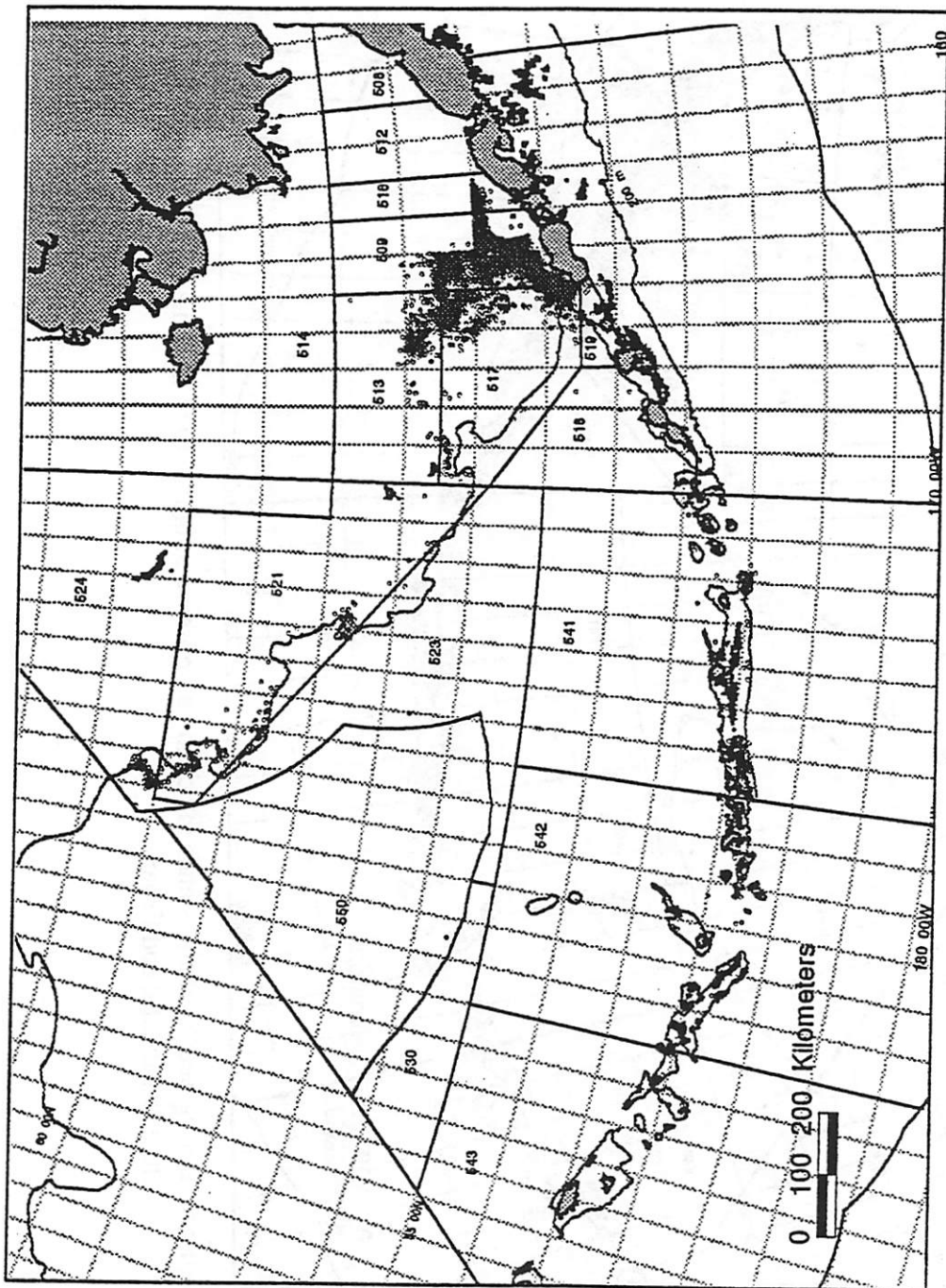


Figure 7. Bering Sea/Aleutian Islands indicating all observed bottom trawl haul locations during the 1995 Pacific cod fishery.

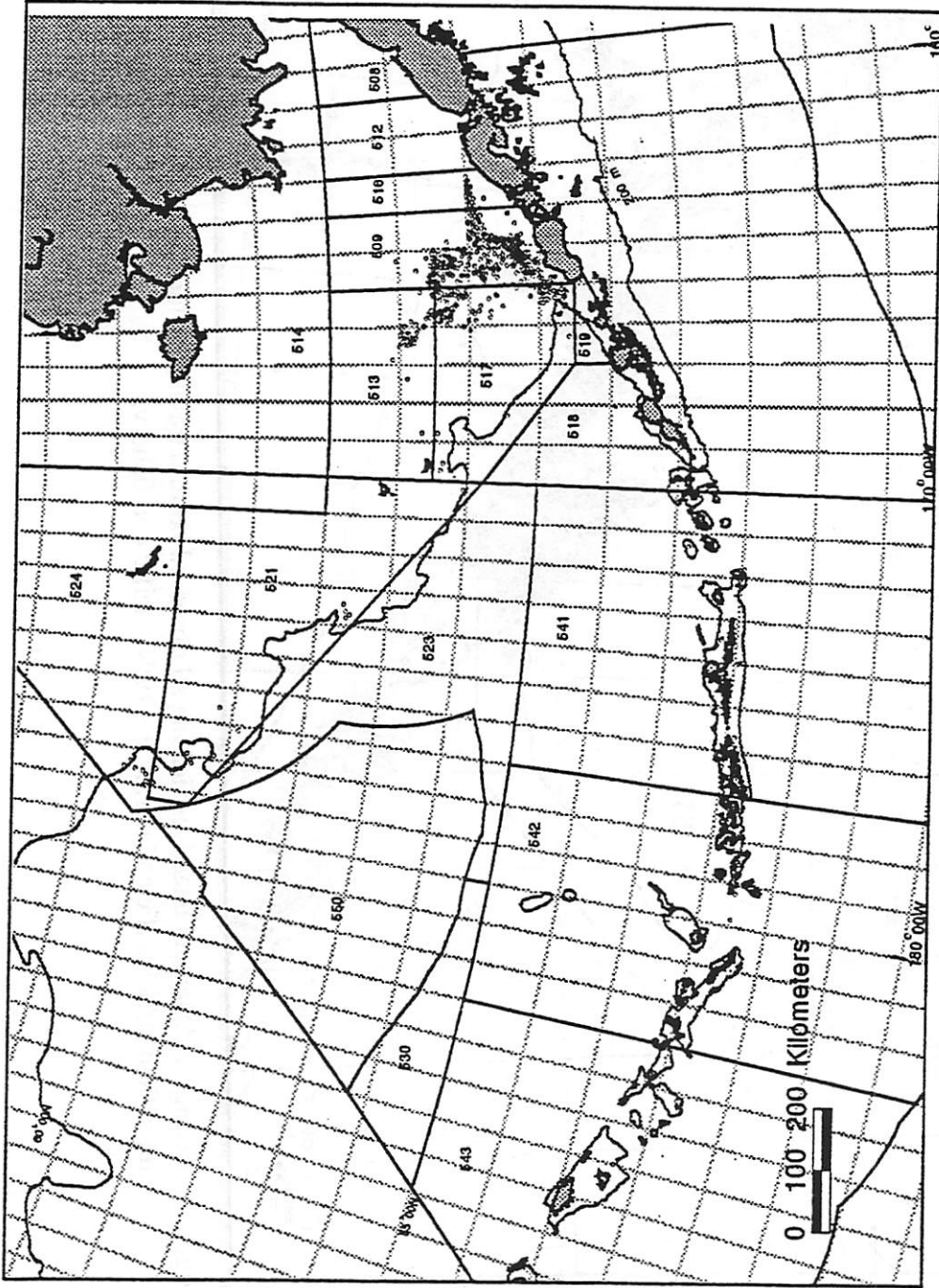


Figure 8. Bering Sea/Aleutian Islands indicating all observed night bottom trawl haul locations during the 1995 Pacific cod fishery.

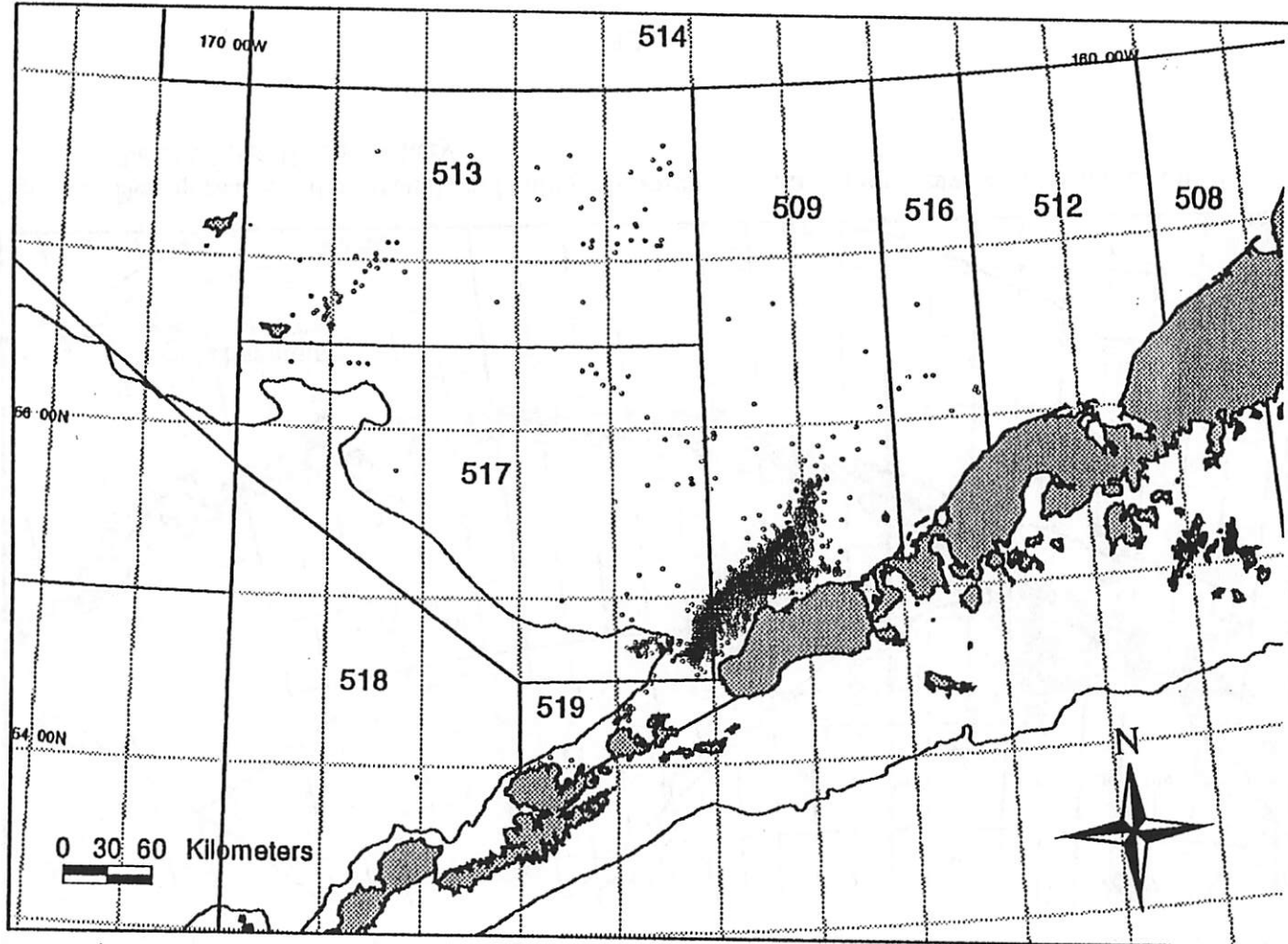


Figure 9. Bering Sea/Aleutian Islands indicating all observed bottom trawl haul locations containing more than 30% Pacific cod during the 1994 Pacific cod fishery.



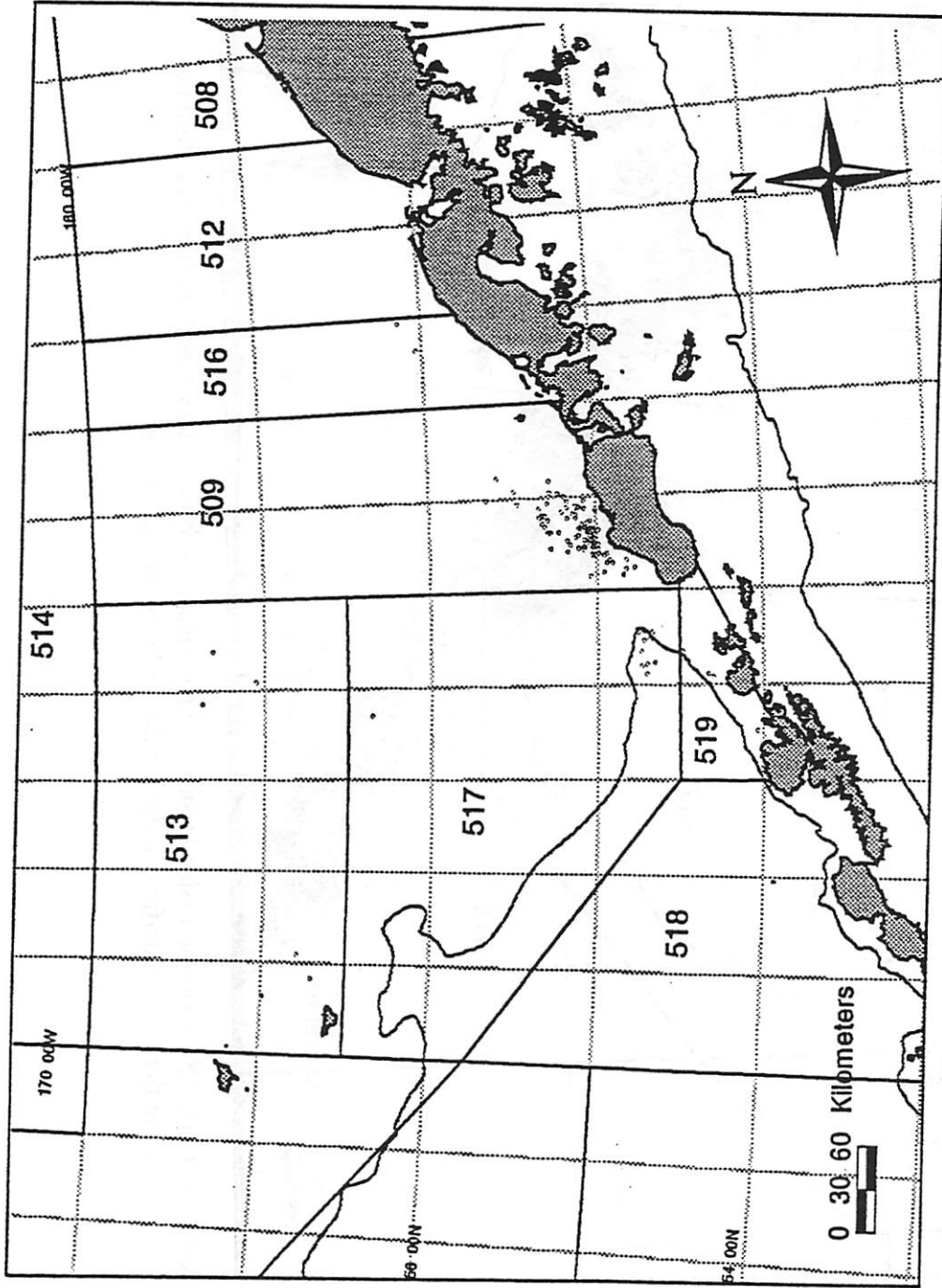


Figure 10. Bering Sea/Aleutian Islands indicating all observed night bottom trawl haul locations containing more than 30% Pacific cod during the 1994 Pacific cod fishery.

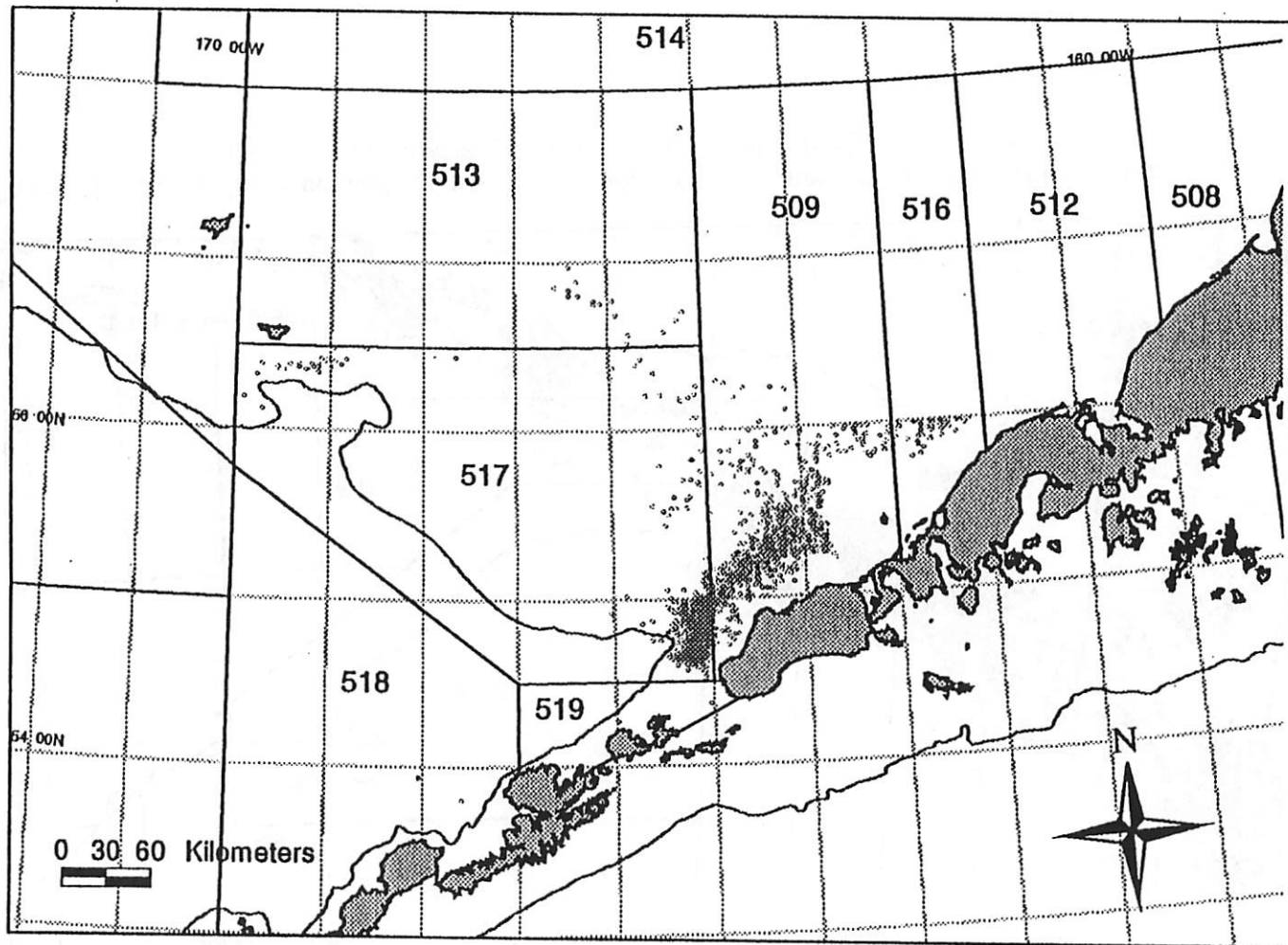


Figure 11. Bering Sea/Aleutian Islands indicating all observed bottom trawl haul locations containing more than 30% Pacific cod during the 1995 Pacific cod fishery.



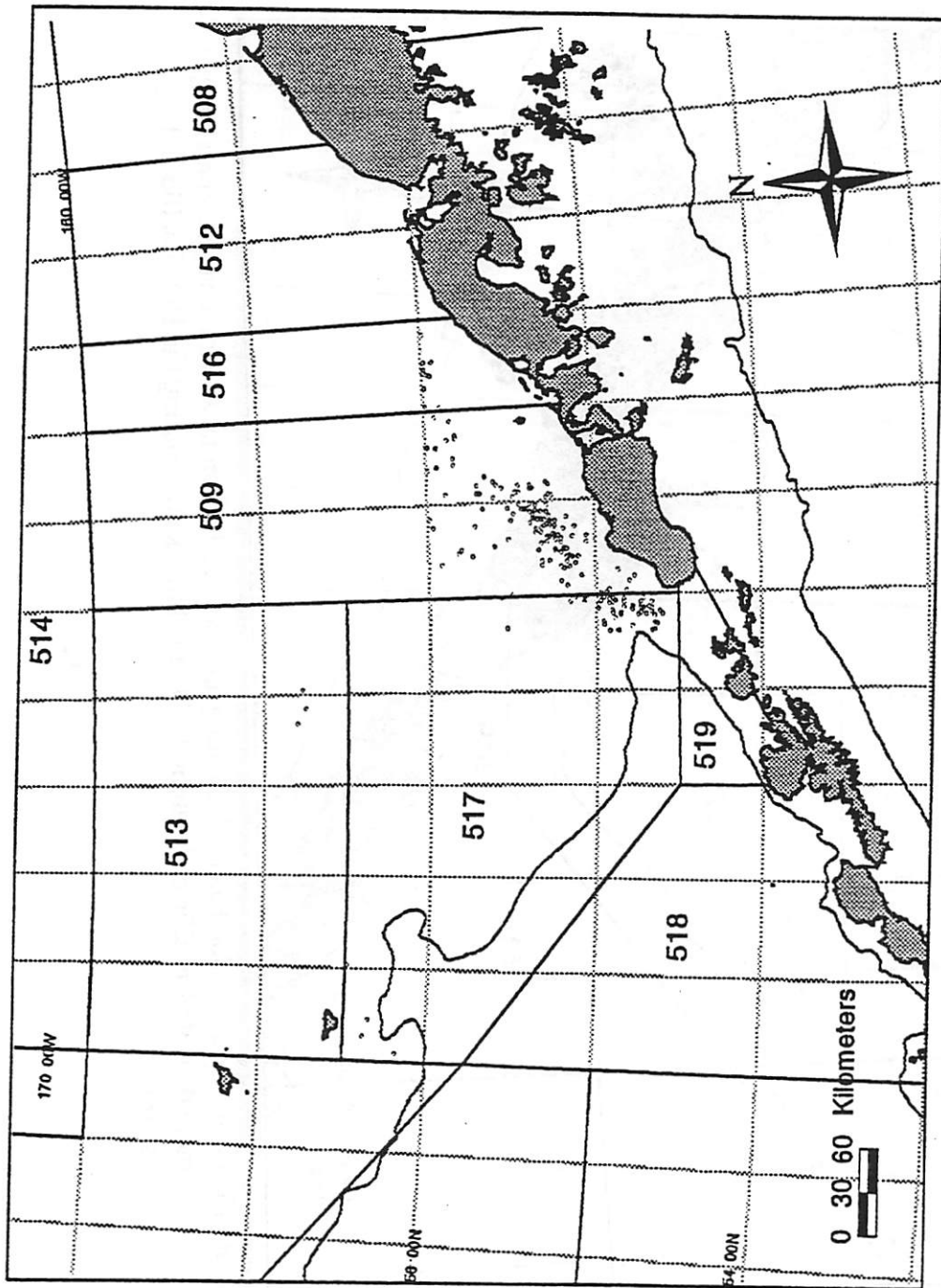


Figure 12. Bering Sea/Aleutian Islands indicating all observed night bottom trawl haul locations containing more than 30% Pacific cod during the 1995 Pacific cod fishery.

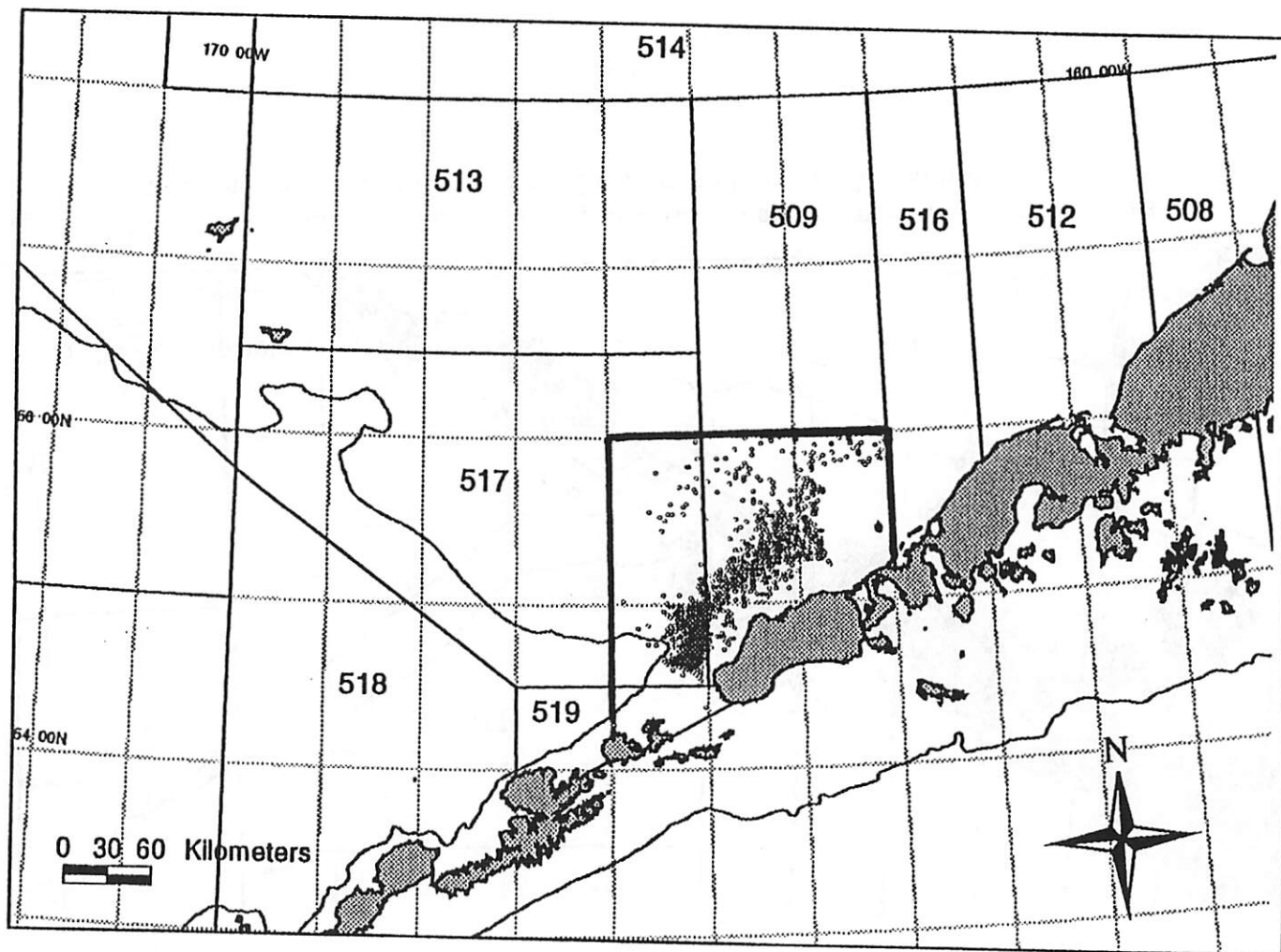


Figure 13. Bering Sea/Aleutian Islands indicating all observed bottom trawl haul locations containing more than 30% Pacific cod within the North Unimak Area during the 1995 Pacific cod fishery.

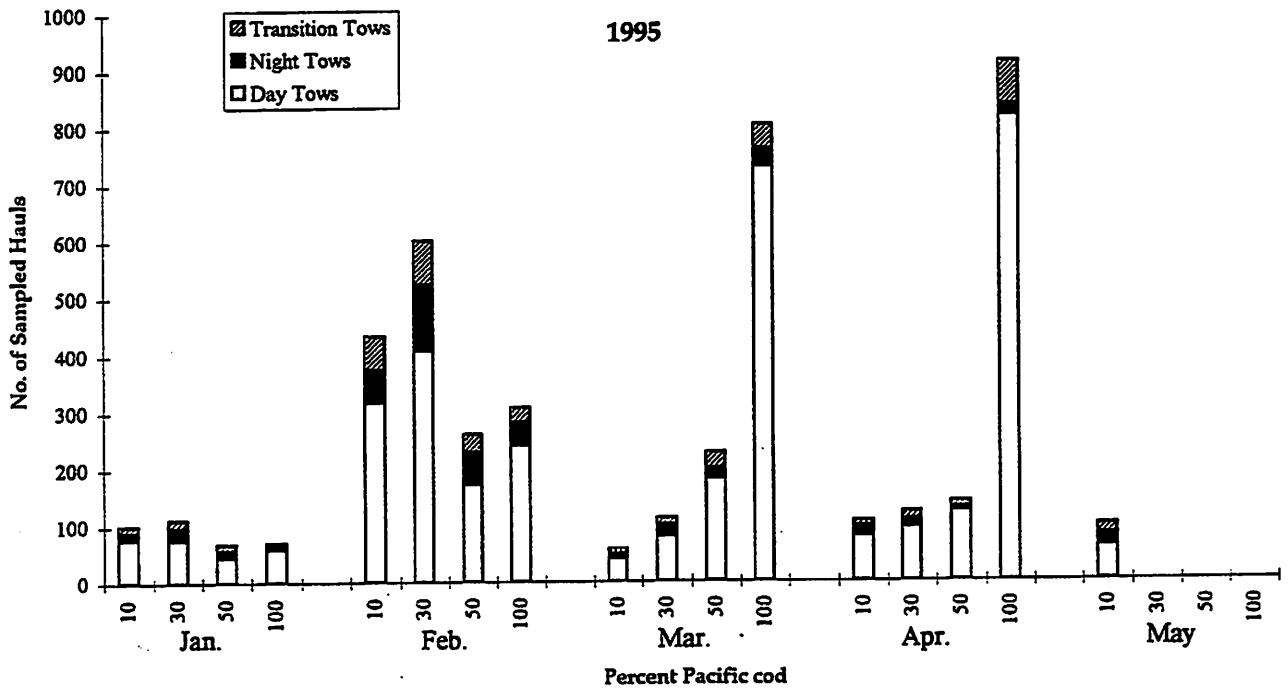
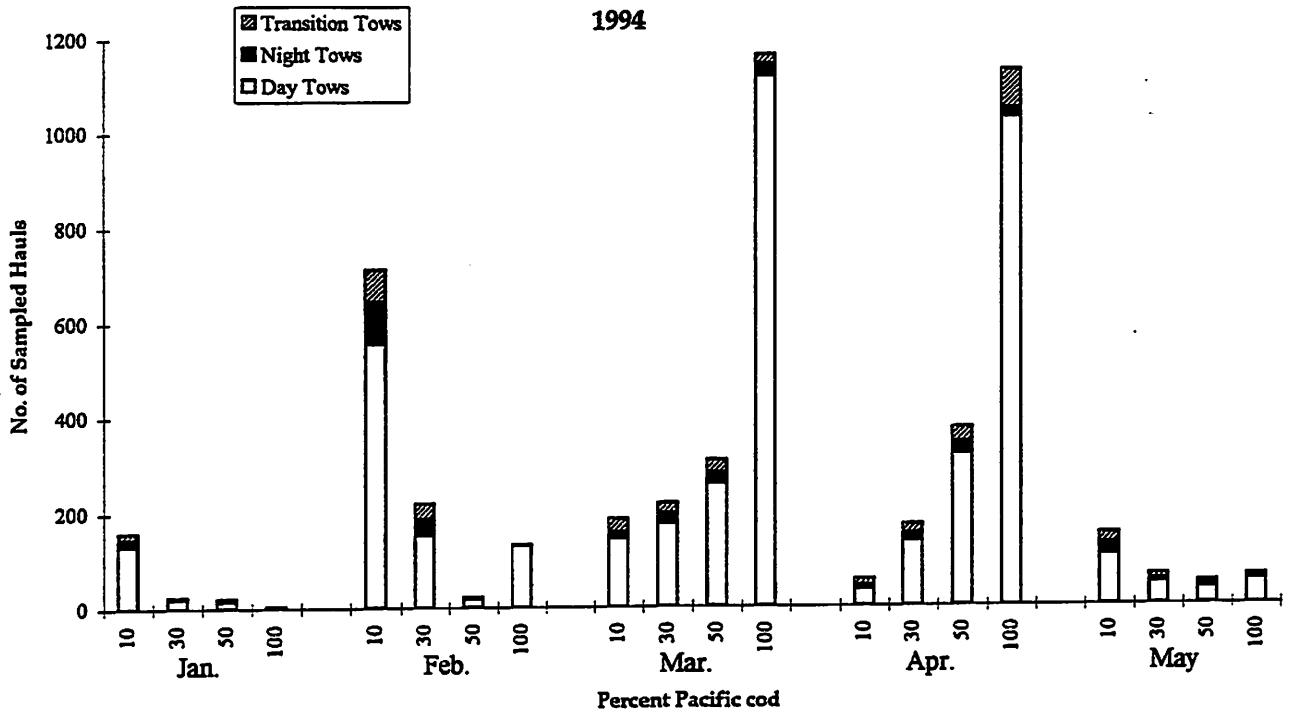


Fig. 14. Number of sampled hauls in the day, night and transition periods in 1994 and 1995.

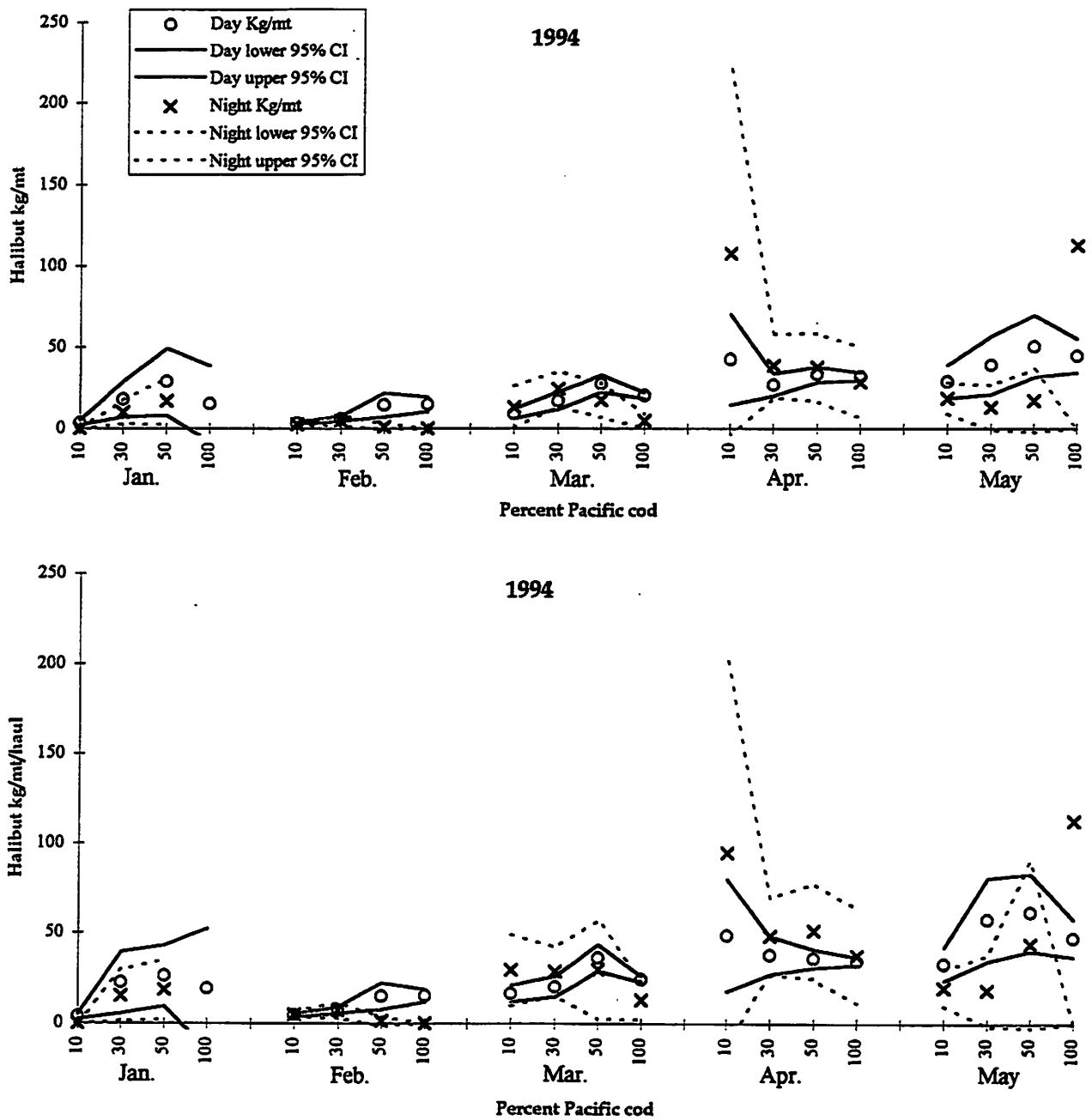


Fig. 15. Monthly halibut bycatch rates by percent category of Pacific cod catch in north Unimak area, 1994. (only upper bounds of percent category are labeled)

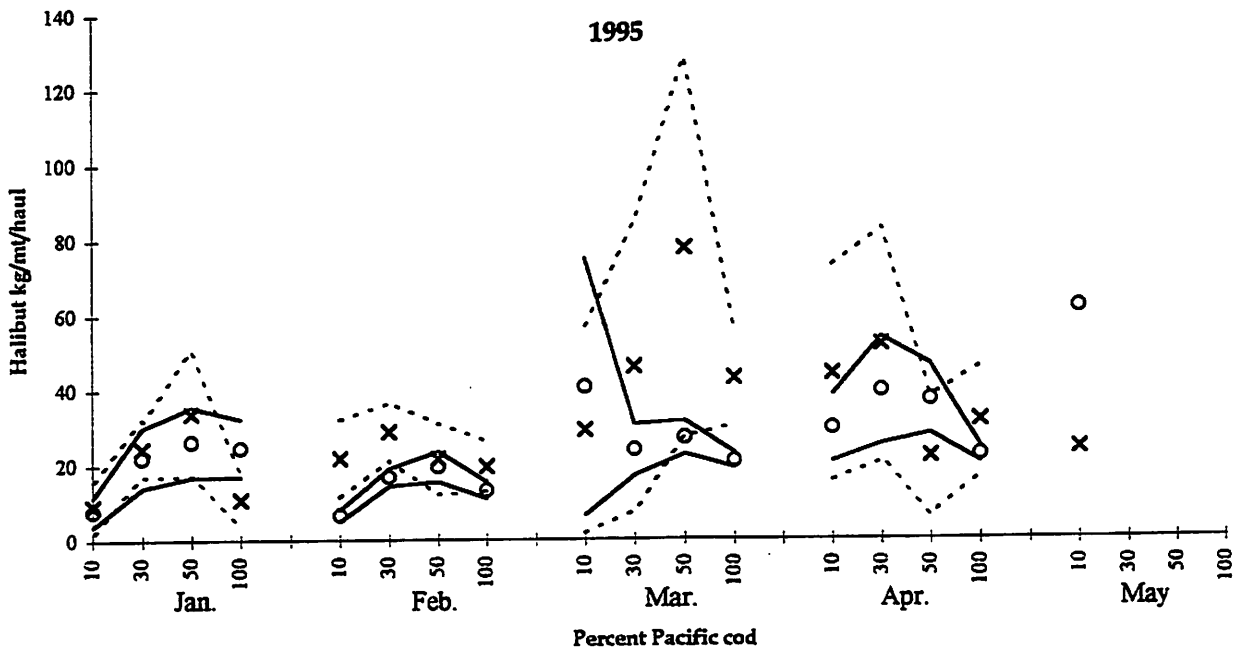
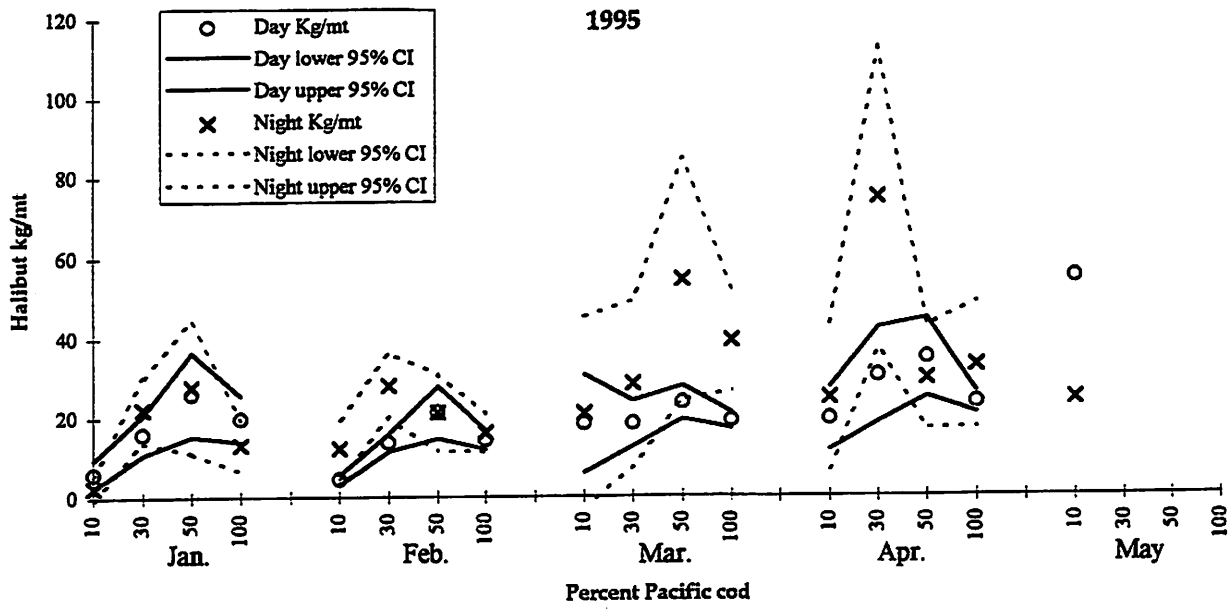


Fig. 16. Monthly halibut bycatch rates by percent category of Pacific cod catch in north Unimak area, 1995. (only upper bounds of percent category are labeled)

**DRAFT FOR COUNCIL REVIEW**

**ENVIRONMENTAL ASSESSMENT/REGULATORY IMPACT REVIEW  
FOR A REGULATORY AMENDMENT  
PROVIDING STANDARD DEDUCTIONS FOR ICE AND SLIME  
AND REVISING  
THE ADJUSTMENT PROCEDURE FOR THE IFQ PROGRAM**

Prepared by

National Marine Fisheries Service  
Alaska Regional Office

September 1996

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## Executive Summary

Proper accounting methods are important to individual transferable quota (ITQ) management programs because specific allocations of a limited resource are granted to participants. Improper accounting of a participant's quota not only affects that participant, but it also affects all other participants in the quota pool for that resource. More quota for one participant means less quota for all other participants and *vice versa*.

The individual fishing quota (IFQ) program for Pacific halibut and sablefish is an ITQ management program. The IFQ program currently has some deficiencies in its accounting methods. First, the IFQ program does not have a standard deduction for ice and slime found on IFQ species delivered fresh. Second, the adjustment policy for the annual allocation of IFQ does not fully account for all overages made to an IFQ account.

A standard deduction for ice and slime would prevent inaccurate accounting of harvests caused by a lack of any codified standard. Alternative 2 for this issue would provide a 2 percent deduction for ice and slime found on IFQ species delivered fresh, which is the industry standard currently used by Canada's Department of Fisheries and Oceans. This industry standard is also recognized by the International Pacific Halibut Commission.

Changes to the adjustment policy for annual allocations of IFQ would prevent inaccurate accounting caused by incomplete adjustments. Alternative 2 for this issue would revise the adjustment policy so that all IFQ species harvested that exceeded the IFQ in a person's account would be deducted in the formula used to determine the next year's allocation of IFQ. Alternative 3 would eliminate the adjustment policy entirely; therefore, no administrative adjustments would be made to an annual allocation of IFQ based on a previous year's behavior. This action, of course, would not preclude enforcement actions based on regulatory violations, e.g., a person harvesting more IFQ than is available in a person's IFQ account.

These suggested changes to the IFQ accounting procedure would assist resource managers in their task of allocating IFQ accurately and equitably. These suggested changes can be considered as one more step in the process of making the IFQ program for halibut and sablefish a more responsive and viable program for fisheries management.

## **1.0 INTRODUCTION**

The groundfish fisheries in the Exclusive Economic Zone (EEZ) (3 to 200 miles offshore) off Alaska are managed under the Fishery Management Plan for the Groundfish Fisheries of the Gulf of Alaska and the Fishery Management Plan for the Groundfish Fisheries of the Bering Sea and Aleutian Islands Area. Both fishery management plans (FMP) were developed by the North Pacific Fishery Management Council (Council) under the Magnuson Fishery Conservation and Management Act (Magnuson Act). The Gulf of Alaska (GOA) FMP was approved by the Secretary of Commerce and become effective in 1978 and the Bering Sea and Aleutian Islands Area (BSAI) FMP become effective in 1982.

The Northern Pacific Halibut Act of 1982 (Halibut Act), authorizes the Council to develop regulations governing the Pacific halibut catch in U.S. waters that are in addition to, but not in conflict with, regulations of the International Pacific Halibut Commission (IPHC). The individual fishing quota (IFQ) program for Pacific halibut and sablefish is implemented by Federal regulations at 50 CFR part 679 that were issued under the authority of the Magnuson Act and the Halibut Act.

Actions taken to amend FMPs or implement other regulations governing the groundfish fisheries must meet the requirements of Federal laws and regulations. In addition to the Magnuson Act, the most important of these are the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), Executive Order (E.O.) 12866, and the Regulatory Flexibility Act (RFA).

NEPA, E.O. 12866 and the RFA require a description of the purpose and need for the proposed action as well as a description of alternative actions which may address the problem. This information is included in Section 1 of this document. Section 2 contains information on the biological and environmental impacts of the alternatives as required by NEPA. Impacts on endangered species and marine mammals are also addressed in this section. Section 3 contains a Regulatory Impact Review (RIR) which addresses the requirements of both E.O. 12866 and the RFA that economic impacts of the alternatives be considered. Section 4 contains the Initial Regulatory Flexibility Analysis (IRFA) required by the RFA which specifically addresses the impacts of the proposed action on small businesses.

This Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA) addresses (1) including a standard deduction for ice and slime in the IFQ program and (2) revising the procedure for making adjustments to the annual allocation of IFQ.

### **1.1 Purpose of and Need for the Action**

To meet management and conservation goals of the Magnuson Act, the Council developed the IFQ program, a limited access management system for the fixed gear Pacific halibut and sablefish fisheries. NMFS approved the IFQ program in November 1993, and fully implemented the program beginning in March 1995. The Magnuson Act and the Halibut Act authorize the Council to recommend to NMFS changes to the IFQ program as necessary to conserve and manage the fixed gear Pacific halibut and sablefish fisheries.

One of the important features of any individual transferable quota (ITQ) program, of which the IFQ program is a type, is the accounting method for harvest of the managed species. For example, in the IFQ program, participants are issued an annual allocation of IFQ based on an algorithm using: (1) the amount of QS they hold in an IFQ regulatory area; (2) the total amount of QS for that IFQ regulatory area; (3) the fixed gear allocation of the total allowable catch (or in the case of Pacific halibut the catch limit apportionments) of the current year minus the CDQ allocation for that IFQ regulatory area, if any; and (4) any adjustments necessary because of

exceeding last year's annual allocation of IFQ (overage) or not using the entire amount of last year's annual allocation of IFQ (underage). NMFS must accurately track a participant's harvest to ensure a correct accounting for the current year. Any inaccuracies in this accounting not only affect the current year, but also affect the next year's annual allocation of IFQ through faulty adjustments.

The first issue addressed by this analysis, a standard deduction for ice and slime, is being proposed to prevent inaccurate accounting of harvests caused by the lack of any standards on the deductions for ice and slime for halibut [and sablefish]. NMFS, in an effort to obtain the most accurate information available for harvest accounting, did not include a standard deduction for ice and slime for the IFQ program. Instead, the regulations provided that the initial accurate scale weight at the time of landing should be reported. Although this seemed to be a workable solution at the time, numerous reports from the fishing industry pointed to widespread violations of this provision, primarily under the guise of deductions for ice and slime. Deductions that varied from 0 - 9 percent were reported.

The range of this variation was considered insupportable by NMFS. First, it was apparent from the range of variation that NMFS was not receiving an accurate account of the actual amount of halibut [and sablefish] harvested by participants. Second, reports indicated that some purchasers of IFQ product used deductions as a method to induce participants to deliver their harvest to them. For instance, if a purchaser of IFQ product uses a larger percentage deduction for ice and slime, a smaller amount of halibut [or sablefish] is reported for deduction from the participant's IFQ account. This method of "capturing" a participant's business is unfair to other purchasers of IFQ product, who use a smaller, more accurate percentage for the deduction, and to the resource, of which a portion is being harvested but not accounted for because it is considered "ice and slime" by the purchaser. Setting a standard deduction for ice and slime would "level the playing field" for IFQ purchasers and participants.

The second issue addressed by this analysis, revising the procedure for adjusting the annual allocation of IFQ, is being proposed to clarify the current process and to allow for total deductions for all overages or alternatively, eliminating any adjustment. The regulations for the IFQ program currently provide that an administrative adjustment for an overage will occur if a person lands (or harvests) a greater amount of IFQ species (in pounds) than is available in that person's account and the amount of IFQ species landed that exceeded the IFQ account does not exceed 10 percent of the amount available in the IFQ account at the time of landing. The regulation was designed in this manner because the administrative adjustment was considered to be in lieu of a penalty for exceeding an IFQ account. Therefore, if there was an administrative adjustment, then there could be no penalty, and *vice versa*.

This regulatory provision created an anomaly to the principles of the administrative adjustment. For instance, if a person harvested an amount of IFQ species that exceeded the balance of their IFQ account and the harvested amount that exceeded the IFQ account was 9.9 percent of the amount available in the IFQ account at the time of landing, then that harvested amount (in pounds) that exceeded the IFQ account would be deducted from the amount used to determine the next year's annual allocation of IFQ. However, if a person harvested an amount that exceeded the balance of their IFQ account and the harvested amount that exceeded the IFQ account was 10.1 percent of the amount available in the IFQ account at the time of landing, then that harvested amount (in pounds) that exceeded the IFQ account would not be deducted from the amount used to determine the next year's annual allocation of IFQ. The proposed revision would solve this anomaly and ensure that any amount harvested above an IFQ account would be deducted from the formula used to determine the next year's annual allocation of IFQ.

## **1.2 Alternatives Considered**

### **1.2.1 Standard Deductions for Ice and Slime**

#### **1.2.1.1 Alternative 1: No Action--no provision for standard deductions for ice and slime**

The IFQ program currently does not provide for a standard deduction for ice and slime. Instead, the landing report must contain the initial accurate scale weight at time of landing for halibut and sablefish (see § 679.42(c)(3)(i) and (ii)). NMFS contemplated that recording IFQ landings in this manner would provide a uniform method for all participants.

#### **1.2.1.2 Alternative 2: (Preferred Alternative) 2 percent allowance for ice and slime for halibut [and sablefish]**

This alternative would provide a 2 percent standard deduction for ice and slime for halibut [and sablefish]. This deduction would occur through the use of product codes, the IFQ landing report would still need to contain the initial accurate scale weight at time of landing. Recording any amount on the IFQ landing report that is different than the initial accurate scale weight at time of landing would be a violation subject to penalty. If ice and slime are present on the landed species, then the product code with the standard deduction would be used; if ice and slime are not present, then the product code without the standard deduction would be used.

The 2 percent standard deduction is based on long-standing industry convention. For example, the Canadian Department of Fisheries and Oceans (DFO), uses a 2 percent standard deduction for ice and slime on their Halibut Validation Log. This standard deduction used by the DFO is accepted by the IPHC, the international body entrusted with primary responsibility for managing halibut. Processors in the U.S. have also used the 2 percent deduction when purchasing halibut with ice and slime.

### **1.2.2 Revision of the Adjustment Policy**

#### **1.2.2.1 Alternative 1: No Action--adjustment policy would remain as currently provided in § 679.40(d)**

The IFQ program currently provides that an administrative adjustment for overages and underages. An administrative adjustment for an overage will occur if a person lands (or harvests) a greater amount of IFQ species (in pounds) than is available in that person's account and the amount of IFQ species landed that exceeded the IFQ account does not exceed 10 percent of the amount available in the IFQ account at the time of landing. In such a case, the adjustment would be a subtraction of that amount from the formula used to determine the annual allocation of IFQ.

For example, an IFQ participant has an IFQ account balance of 900 lb. This participant lands 950 lb of IFQ product. The 950 lb landed exceeds the 900 lb left in the account and 50 lb (the amount that exceeded the balance) is less than 90 lb (10 percent of the balance of the account). Therefore, 50 lb would be subtracted from the formula used to determine the next year's annual allocation of IFQ. However, if an IFQ participant has the same balance (900 lb) and lands 1000 lb of IFQ product, then nothing would be subtracted from the formula used to determine the next year's annual allocation of IFQ because the amount that exceeded the balance (100 lb) is greater than 10 percent of the balance (90 lb).

The administrative adjustment for an underage will occur if IFQ from the previous year's annual allocation of IFQ remains in an IFQ account at the time the next year's annual allocation of IFQ is calculated. In such a case, the adjustment would be an addition of that amount, up to 10 percent of the previous year's annual allocation of IFQ, to the formula used to determine next year's annual allocation of IFQ.

For example, an IFQ participant's annual allocation of IFQ is 1000 lb. This IFQ participant harvests 500 lb of IFQ product for that year. The administrative adjustment would be an addition of 100 lb to the formula used to determine the annual allocation of IFQ. Notice the administrative adjustment is 100 lb (10 percent of the previous year's annual allocation of IFQ) and not 500 lb (the total amount remaining in the IFQ account). If the IFQ participant starts with the same annual allocation (1000 lb) and harvests 910 lb of IFQ product, then the administrative adjustment would be an addition of 90 lb to the formula used to determine the annual allocation of IFQ.

**1.2.2.2 Alternative 2: Adjustment policy would be revised so that any amount of IFQ species harvested above the amount in an IFQ account would be deducted from the formula used to determine the next year's annual allocation of IFQ**

This alternative would revise the administrative adjustment policy so that any amount of IFQ species harvested above the amount available in an IFQ account would be deducted from the formula used to determine the annual allocation of IFQ. This alternative would not affect the method of adding underages to the formula used to determine the annual allocation of IFQ.

For example, an IFQ participant has an IFQ account balance of 900 lb. This participant harvests 1000 lb of IFQ product. Unlike the example cited under the status quo alternative (Alternative 1) where nothing was deducted, under Alternative 2, 100 lb would be deducted from the formula used to determine the annual allocation of IFQ. The deduction under Alternative 2 would be the full amount that exceeded the balance of the IFQ account, regardless of the amount. The algebraic representation of the formula is as follows:

$$IFQ_{pav} = [(TAC_a - CDQR_a) \times (QS_{pav}/QSP_a)] \pm ADJ$$

Where:

$IFQ_{pav}$	=	annual allocation of IFQ specific to QS holder, IFQ regulatory area, and vessel category
$TAC_a$	=	fixed gear allocation of the total allowable catch for sablefish specific to IFQ regulatory area or annual catch limit for halibut specific to IFQ regulatory area
$CDQR_a$	=	community development quota reserve for sablefish specific to IFQ regulatory area or community development quota reserve for halibut specific to IFQ regulatory area
$QS_{pav}$	=	quota share specific to QS holder, IFQ regulatory area, and vessel category
$QSP_a$	=	quota share pool specific to IFQ regulatory area
$ADJ$	=	adjustment to annual allocation of IFQ pursuant to paragraph (d) of this section

Alternative 2 would be truer accounting method than the current adjustment policy. Ensuring that any amount of IFQ product harvested that exceeds that amount of IFQ remaining in an IFQ account is adjusted in the following year's calculation of the annual allocation of IFQ should provide some incentive to person to avoid harvesting a greater amount of IFQ product than is authorized by that person's IFQ account. However, unless

penalties are also assessed, a mere deduction may not be sufficient incentive to deter persons from "strategic overharvesting" that may occur because (1) the present value of the IFQ product is anticipated to exceed its future value or (2) the person is planning to transfer QS and will not be affected by the adjustment.

### 1.2.2.3 Alternative 3: Revising the regulations to eliminate the adjustment policy

This alternative would revise the regulations to eliminate any adjustment to the formula used to determine the annual allocation of IFQ. Under this alternative, a person's annual IFQ account would be operative only for the calendar year in which it was issued. Any IFQ remaining in the account at the end of the year would extinguish. If a person harvested IFQ product in excess of the amount of IFQ available in that person's account, then the IFQ product harvested in excess would be confiscated and a penalty would be assessed.

Eliminating the adjustment policy would simplify management of the IFQ program. An annual IFQ account would no longer be dependent on actions that occurred in the previous year, but rather would be calculated based on the fixed gear allocation of the total allowable catch minus the community development quota reserve multiplied by the ratio of a person's QS holdings to the QS pool. The algebraic representation of this formula would be (based on the components in Alternative 2):

$$IFQ_{pav} = (TAC_a - CDQR_a) \times (QS_{pav}/QSP_a)$$

Since the annual IFQ account would not be dependent on what occurred in the previous year, tracking transferred QS for adjustment purposes would no longer be necessary. Also, annual allocation of IFQ could be calculated in a more summary manner because there are less variables in the formula. Challenges based on disputed landings would no longer affect the timing or calculation of the annual allocation of IFQ, which would be based on readily identifiable amounts, i.e., the fixed gear allocation of the total allowable catch, the community development quota reserve, the person's QS holdings, and the QS pool.

Alternative 3 would pose no greater threat to the overall biomass of the halibut or sablefish fisheries than Alternatives 1 or 2. Currently, fishing that occurs above the annual allocations of IFQ are adjusted individually in the following year's annual allocation. Under alternative 3, fishing that occurs above the annual allocations of IFQ would be adjusted in total, i.e., the amount of fishing that occurred that exceeded the total of all annual allocations would be considered when determining the TAC in future years. In many years the cumulative total amount of IFQ in annual accounts that is not used to harvest IFQ product will exceed the cumulative total amount of IFQ product that was harvested in excess of the amount of IFQ in annual accounts. For example, in 1995, 13 percent of the halibut catch limit was not harvested, and 10 percent of the sablefish fixed gear allocation was not harvested. Although future consolidations in the IFQ fisheries will most likely reduce the amount not harvested, it is anticipated that in most years there should be a remainder (net gain) when cumulative "overages" are subtracted from cumulative "underages."

## 2.0 NEPA REQUIREMENTS: ENVIRONMENTAL IMPACTS OF THE ALTERNATIVES

An environmental assessment (EA) is required by the National Environmental Policy Act of 1969 (NEPA) to determine whether the action considered will result in significant impact on the human environment. If the action is determined not to be significant based on an analysis of relevant considerations, the EA and resulting finding of no significant impact (FONSI) would be the final environmental documents required by NEPA. An environmental impact statement (EIS) must be prepared for major Federal actions significantly affecting the human environment.

An EA must include a brief discussion of the need for the proposal, the alternatives considered, the environmental impacts of the proposed action and the alternatives, and a list of document preparers. The purpose and alternatives were discussed in Sections 1.1 and 1.2, and the list of preparers is in Section 8. This section contains the discussion of the environmental impacts of the alternatives including impacts on threatened and endangered species and marine mammals.

## 2.1 Environmental Impacts of the Alternatives

The environmental impacts generally associated with fishery management actions are effects resulting from (1) harvest of fish stocks which may result in changes in food availability to predators and scavengers, changes in the population structure of target fish stocks, and changes in the marine ecosystem community structure; (2) changes in the physical and biological structure of the marine environment as a result of fishing practices, e.g., effects of gear use and fish processing discards; and (3) entanglement/entrapment of non-target organisms in active or inactive fishing gear.

A summary of the effects of the annual groundfish total allowable catch amounts on the biological environment and associated impacts on marine mammals, seabirds, and other threatened or endangered species are discussed in the final environmental assessment for the annual groundfish total allowable catch specifications.

No biological or environmental changes will occur by adopting the preferred alternatives.

## 2.2 Impacts on Endangered, Threatened or Candidate Species

Endangered and threatened species under the ESA that may be present in the GOA and BSAI include:

### Endangered

Northern right whale	<i>Balaena glacialis</i>
Sei whale	<i>Balaenoptera borealis</i>
Blue whale	<i>Balaenoptera musculus</i>
Fin whale	<i>Balaenoptera physalus</i>
Humpback whale	<i>Megaptera novaeangliae</i>
Sperm whale	<i>Physeter macrocephalus</i>
Snake River sockeye salmon	<i>Oncorhynchus nerka</i>
Short-tailed albatross	<i>Diomedea albatrus</i>

### Threatened

Steller sea lion	<i>Eumetopias jubatus</i>
Snake R. spring and summer chinook salmon	<i>Oncorhynchus tshawytscha</i>
Snake R. fall chinook salmon	<i>Oncorhynchus tshawytscha</i>
Spectacled eider	<i>Somateria fischeri</i>

### Candidate

Steller's eider	<i>Polysticta stelleri</i>
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The status of the ESA section 7 consultations required to assess the impact of the groundfish fisheries on endangered, threatened, or candidate species is updated annually.

Fishing activities conducted under this rule would not affect endangered or threatened species or critical habitat in any manner not already considered in prior consultations on this fishery.

### **2.3 Impacts on Marine Mammals**

Marine mammals not listed under the Endangered Species Act that may be present in the GOA and BSAI include cetaceans, [minke whale (*Balaenoptera acutorostrata*), killer whale (*Orcinus orca*), Dall's porpoise (*Phocoenoides dalli*), harbor porpoise (*Phocoena phocoena*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), and the beaked whales (e.g., *Berardius bairdii* and *Mesoplodon spp.*)] as well as pinnipeds [northern fur seals (*Callorhinus ursinus*), and Pacific harbor seals (*Phoca vitulina*)] and the sea otter (*Enhydra lutris*).

None of the alternatives are expected to have a significant impact on marine mammals.

### **2.4 Coastal Zone Management Act**

Implementation of the preferred alternatives would be conducted in a manner consistent, to the maximum extent practicable, with the Alaska Coastal Management Program within the meaning of Section 30(c)(1) of the Coastal Zone Management Act of 1972 and its implementing regulations.

### **2.5 Finding of No Significant Impact**

None of the alternatives are likely to significantly affect the quality of the human environment, and the preparation of an environmental impact statement for the proposed action is not required by Section 102(2)(C) of the National Environmental Policy Act or its implementing regulations.

## **3.0 REGULATORY IMPACT REVIEW: ECONOMIC AND SOCIOECONOMIC IMPACTS OF THE ALTERNATIVES**

This section provides information about the economic and socioeconomic impacts of the alternatives including identification of the individuals or groups that may be affected by the action, the nature of these impacts, quantification of the economic impacts if possible, and discussion of the trade offs between qualitative and quantitative benefits and costs.

The requirements for all regulatory actions specified in E.O. 12866 are summarized in the following statement from the order:

In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating. Costs and benefits shall be understood to include both quantifiable measures (to the fullest extent that these can be usefully estimated) and qualitative measures of costs and benefits that are difficult to quantify, but nevertheless essential to consider. Further, in choosing among alternative regulatory approaches, agencies should select those approaches that maximize net benefits (including potential economic, environment, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach.



This section also addresses the requirements of both E.O. 12866 and the Regulatory Flexibility Act to provide adequate information to determine whether an action is "significant" under E.O. 12866 or will result in "significant" impacts on small entities under the RFA.

E. O. 12866 requires that the Office of Management and Budget review proposed regulatory programs that are considered to be "significant." A "significant regulatory action" is one that is likely to:

- (1) Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;
- (2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- (3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- (4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.

A regulatory program is "economically significant" if it is likely to result in the effects described above. The RIR is designed to provide information to determine whether the proposed regulation is likely to be "economically significant."

### **3.1 Management Alternatives**

#### **3.1.1 Standard Deductions for Ice and Slime**

##### **3.1.1.1 Alternative 1: No Action--no provision for standard deductions for ice and slime**

Under Alternative 1 (no action), the regulations would not be revised. Therefore, there will be no change in the impacts to affected persons under this alternative.

##### **3.1.1.2 Alternative 2: (Preferred Alternative) 2 percent allowance for ice and slime for halibut [and sablefish]**

Under Alternative 2 (preferred alternative), the regulations would be revised to allow a 2 percent deduction for ice and slime for halibut [and sablefish]. This revision would affect all persons harvesting and delivering for market halibut [and sablefish] with IFQ resulting from QS issued to vessel categories "B", "C", or "D". Further, this revision would affect all persons harvesting and delivering to market fresh (unprocessed) halibut [and sablefish] with IFQ resulting from QS issued to vessel category "A."

Although this revision would affect the majority of persons delivering IFQ halibut [and sablefish], this affect would not be of a magnitude to significantly alter their socio-economic position. In fact this revision would level the "playing field" by ensuring that all persons would receive a similar deduction for IFQ product delivery. Misuse of ice and slime deductions, which has been used in the past to provide unfair incentives, would no longer be permitted.

Furthermore, this revision would bring the IFQ program more in line with the industry standard of allowing a 2 percent deduction for ice and slime. This industry standard is recognized by Canada's DFO and by the IPHC, the international organization charges with halibut management.

### **3.1.2 Revision of the Adjustment Policy**

#### **3.1.2.1 Alternative 1: No Action--adjustment policy would remain as currently provided in § 679.40(d)**

Under Alternative 1 (no action), the regulations would not be revised. Therefore, there will be no change in the impacts to affected persons under this alternative.

#### **3.1.2.2 Alternative 2: Adjustment policy would be revised so that any amount of IFQ species harvested above the amount in an IFQ account would be deducted from the formula used to determine the next year's annual allocation of IFQ**

Under Alternative 2, the adjustment policy would be revised so that any amount of IFQ species harvested above the amount in an IFQ account would be deducted from the formula used to determine the next year's annual allocation of IFQ. This revision would not affect the adjustment policy for the amount of IFQ remaining in an IFQ account at the time the calculation for the annual allocation of IFQ is made, i.e., only that amount of IFQ that does not exceed 10 percent of last year's annual allocation of IFQ is added to the formula used to determine this year's annual allocation of IFQ.

This revision could affect all persons who hold IFQ. Specifically, this revision to the adjustment policy would affect all persons who harvest IFQ species in excess of their IFQ account, and that excess is greater than 10 percent of the amount of IFQ that remained in the IFQ account prior to the excess harvest. Although this provision has the potential of affecting all IFQ holders, in fact only those persons who violate the regulations, i.e., exceed the amount of IFQ in their account, are subject to these effects. If an IFQ holder did not exceed his or her IFQ account then a deduction would not be necessary. Therefore, any socio-economic impacts that would occur through the adjustment policy would be nullified by compliance with the regulations.

#### **3.1.2.3 Alternative 3: Revising the regulations to eliminate the adjustment policy**

Under Alternative 3, the current adjustment policy would be eliminated. A person's annual IFQ account would be operative only for the calendar year in which it was issued. Any IFQ remaining in the account at the end of the year would extinguish. If a person harvested IFQ product in excess of the amount of IFQ available in that person's account, then the IFQ product harvested in excess would be confiscated and a penalty would be assessed.

Eliminating the adjustment policy could affect all persons who hold IFQ. Specifically, the eliminating the adjustment policy would affect all persons who harvest IFQ species in excess of their IFQ accounts and all persons who harvest less IFQ species than IFQ available in their IFQ account. Although this provision has the potential of affecting all IFQ holders, in fact only those persons who violate the regulations, i.e., exceed the amount of IFQ in their account, or persons who choose not to harvest their full amount, are subject to these effects. If an IFQ holder did not exceed his or her IFQ account, then an adjustment would not be necessary. Similarly, an adjustment would not be necessary if an IFQ holder chose to harvest the full amount IFQ allocated to him or her, rather than leaving some of the IFQ unused. Therefore, any socio-economic impacts that would

occur through the elimination of the adjustment policy would be nullified either by compliance with the regulations or by behavior not affected by the regulatory language.

### **3.2 Administrative, Enforcement and Information Costs**

Alternative 1 for standard deductions for ice and slime and Alternative 1 for the adjustment policy (status quo alternatives) will not affect administrative, enforcement, or information costs. Alternative 2 for standard deductions for ice and slime and Alternative 2 for the adjustment policy are also not expected to affect administrative, enforcement, or information costs. Alternative 3 for the adjustment policy will reduce administrative costs by eliminating the adjustment policy; however, enforcement costs may increase if overages occur at current rates. Information costs would be unaffected under Alternative 3 for the adjustment policy.

### **3.3 Economic Impact on Small Entities**

The objective of the Regulatory Flexibility Act is to require consideration of the capacity of those affected by regulations to bear the direct and indirect costs of regulation. If an action will have a significant impact on a substantial number of small entities an Initial Regulatory Flexibility Analysis (IRFA) must be prepared to identify the need for the action, alternatives, potential costs and benefits of the action, the distribution of these impacts, and a determination of net benefits.

NMFS has defined all fish-harvesting or hatchery businesses that are independently owned and operated, not dominant in their field of operation, with annual receipts not in excess of \$2,000,000 as small businesses. In addition, seafood processors with 500 employees or fewer, wholesale industry members with 100 employees or fewer, not-for-profit enterprises, and government jurisdictions with a population of 50,000 or less are considered small entities. A "substantial number" of small entities would generally be 20% of the total universe of small entities affected by the regulation. A regulation would have a "significant impact" on these small entities if it reduced annual gross revenues by more than 5 percent, increased total costs of production by more than 5 percent, or resulted in compliance costs for small entities that are at least 10 percent higher than compliance costs as a percent of sales for large entities.

As analyzed above in the regulatory impact review, none of the alternatives reviewed will have a significant economic impact on a substantial number of small entities. A standard deduction for ice and slime merely formalizes and codifies an existing industry standard. The adjustment policy alternatives affect future allocations of IFQ. These changes are administrative in nature and will not affect annual gross revenues or compliance costs of small entities.

## **4.0 SUMMARY AND CONCLUSIONS**

This document analyzes alternatives to the accounting methods used for the IFQ program. The first two alternatives relate to the standard deduction for ice and slime found of IFQ species delivered fresh. Alternative 1 would maintain the status quo, i.e., no standard deductions for ice and slime. Alternative 2 would allow a standard deduction of 2 percent, an industry standard recognized by the IPHC. The wide variations used for ice and slime deductions under the current regulations prompted the proposal of Alternative 2. Alternative 2 is the preferred alternative for this issue.

The next three alternatives relate to the policy used to adjust a person's annual allocation of IFQ based on the previous year's behavior. Alternative 1, the status quo, adjusts an account for overages only if the IFQ amount harvested that exceeds the amount of IFQ in a person's account does not exceed 10 percent of the amount of IFQ in the account at the time of harvesting. This method of adjustment is confusing and has been criticized as not

being equitable to all participants. Two alternatives have been suggested to solve this issue. Alternative 2 would revise the adjustment policy so that any amount of IFQ harvest that exceeded the amount in a person's IFQ account would be deducted. Alternative 3 would eliminate the adjustment policy. Both Alternatives 2 and 3 would solve the equity problem. Alternative 2 would ensure that all persons who exceeded their account would receive a deduction, rather than only those who exceeded their account within the specified amount. Alternative 3 would not have any adjustments and would rely solely on enforcement actions to stop persons from exceeding their IFQ accounts. Alternative 3, by eliminating any adjustment to the basic IFQ calculation, would be administratively easier to administer. It would save time when issuing annual allocations of IFQ, as well as eliminate confusion that occurs because of the adjustment policy.

None of the alternatives is expected to result in a "significant regulatory action" as defined in E.O. 12866.

## **5.0 AGENCIES AND INDIVIDUALS CONSULTED**

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