AGENDA D-1(d)
DECEMBER 2005

MEMORANDUM

TO: Council, SSC and AP Members

FROM: Chris Oliver
Executive Director

ESTIMATED TIME
1 HOUR

DATE: November 28, 2005

SUBJECT: BSAI Pollock A-Season Start

ACTION REQUIRED

Receive revised discussion paper on BSAI pollock fishery "A" season start date and take action as appropriate.

BACKGROUND

At its June 2005 meeting, the Council received a request from industry to consider initiating analyses and possible future changes in regulations to allow the BSAI pollock fishery "A" season to begin 5 days earlier. An earlier start date for the "A" season would give more flexibility to the fleet in harvesting pollock with higher quality roe and thus market a more economically valuable product. At its October 2005 meeting, the Council received a discussion paper that examined the various potential issues associated with starting the BSAI pollock "A" season fishery 5 days earlier, and the Council received public comments. The Council developed a problem statement and three alternatives, and asked staff to revise the discussion paper. The Council also asked NMFS to review the proposed alternatives to determine if they might trigger the need for formal Section 7 consultation under the Endangered Species Act.

Staff has updated the discussion paper, and NMFS has provided an analysis of the alternatives and has concluded that any of those alternatives likely would require reinitiation of formal consultation. The NMFS response is attached as Item D-1(d)(1) and the revised discussion paper is attached as Item D-1(d)(2). NMFS and Council staff will be available to answer questions.

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

AGENDA D-1(d)(1)
DECEMBER 2005

November 25, 2005

Chris Oliver
Executive Director
North Pacific Fishery Management Council
605 West 4th Avenue, Suite 306
Anchorage, Alaska 99501-2252

Re: Proposed Changes to the BSAI Pollock A Season Dates

Dear Chris:

Our Protected Resources Division has completed a technical assistance review of the pollock A season proposal submitted by the North Pacific Fishery Management Council (Council) on October 18, 2005. Enclosed are the results of the review that examined whether any of the alternatives may require reinitiation of formal consultation under section 7 of the Endangered Species Act (ESA).

In summary, we have determined that the proposed alternatives likely would require reinitiation of formal consultation under section 7 of the ESA. The proposal would be a change in the action that was previously analyzed in biological opinions (BiOps) in 2000 (FMP BiOp), 2001, and in the 2003 supplement to the 2001 BiOp. The proposed action likely would result in effects on endangered Steller sea lions, their critical habitat, and endangered or threatened salmon that were not considered in previous consultations. We cannot discount these effects or consider them insignificant.

The initial conclusions reached in the review are based on the triggers for reinitiation of consultation as specified in regulation at 50 CFR 402.16(c). Those triggers are not related to the standards for decisions reached during formal consultation. The reinitiation triggers serve as a guide to determine when a more formal review is necessary in order to properly describe the expected effects of the action and determine if the action is likely to jeopardize the continued existence of a listed species or adversely modify its critical habitat. The determination that a formal consultation is necessary in no way prejudges the conclusions of that consultation.

Considering the Council's October 18, 2005, request to reinitiate consultation on the groundfish fishery management plans, it may be more efficient to add this proposed action to actions that will be considered by the Steller Sea Lion Mitigation Committee. This would allow the

proposed action to be considered in context with all proposed changes in the Steller sea lion protection measures that may develop as we proceed with the program level consultation.

Sincerely,

Robert D. Mecum
Acting Administrator, Alaska Region

Enclosure

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

November 23, 2005

MEMORANDUM FOR: Susan Salveson
Assistant Regional Administrator
For Sustainable Fisheries

FROM: Kaja Brix
Assistant Regional Administrator
For Protected Resources

SUBJECT: Endangered Species Act (ESA) Technical Assistance Regarding Proposed Changes to the Bering Sea and Aleutian Islands (BSAI) Pollock Fishery A Season

On October 20, 2005 you requested a review of a proposed change to the BSAI pollock A season dates. The North Pacific Fishery Management Council (Council) provided a problem statement and three alternative dates for the beginning and ending of the BSAI pollock A season. Your memo included the motion passed by the Council and a short discussion paper on alternatives and some of the impacts of the proposed changes to the fishery (Wilson, 2005). The proposed action would move the start and ending dates of the fishery 3 to 7 days before the current season dates, depending upon the alternative chosen. Because pollock roe appears to be ripening earlier in the Eastern Bering Sea (EBS), the pollock industry has proposed this change to allow harvest when the pollock roe is at or near its peak. As you described, pollock is an important prey species for Steller sea lions in the BSAI, and the winter is an important foraging time for juveniles and adult females.

You requested assistance in determining if this 3 to7 day shift in the starting date may constitute an action affecting the endangered western distinct population segment (DPS) of Steller sea lion or their critical habitat in a manner not considered in the 2001 Biological Opinion and whether reinitiation of formal consultation would be required under the ESA (50 CFR § 402.16(c)). In addition, the January 20 start date for the pollock trawl fishery was intended in part to reduce bycatch of chinook salmon which had been found to be higher in the first two weeks of the year (Wilson, 2005; NPFMC 2005). Thus, review of potential effects on listed salmon evolutionary significant units (ESUs) is necessary.

Consultation history
All Federal actions that may affect listed species under the ESA, including management of groundfish fisheries, must be reviewed under section 7(a)(2) of the ESA. In doing so, each Federal agency must insure that its actions are not likely to jeopardize the existence of threatened or endangered species or destroy or adversely modify their critical habitat. The following biological opinions resulted from formal consultations on the fishery management plans and fisheries specific levels for the Federal groundfish fisheries under section 7 of the ESA:

- November 2000 Biological Opinion on the fishery management plans and associated regulations for the groundfish fisheries in the Bering Sea and Aleutian Islands Area and the Gulf of Alaska.
- October 2001 Biological Opinion on the Federally managed pollock, Pacific cod, and Atka mackerel fisheries in the Bering Sea and Aleutian Islands Area and the Gulf of Alaska and

parallel fisheries for pollock, Pacific cod, and Atka mackerel as authorized by the State of Alaska within 3 nm of shore.

- June 2003 Supplement to the October 2001 Biological Opinion on the pollock, Pacific cod, and Atka mackerel fisheries in the Bering Sea and Aleutian Islands Area and the Gulf of Alaska.

A series of consultations currently exist which insure protection for Steller sea lions and listed salmon ESUs based on regulations at 50 CFR § 679. Changes to the action (groundfish fishery) must be evaluated to determine whether the consultations would remain valid or would need to be reinitiated in order to update them with the proposed changes. Regulations at 50 CFR § 402.16 describe a series of triggers, which when met, would require NMFS to reinitiate consultation under section 7 of the ESA:

> (a) the amount or extent of taking specified in an incidental take statement is exceeded;
> (b) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered;
> (c) the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the biological opinion; or
> (d) a new species is listed or critical habitat designated that may be affected by the identified action.

The third trigger (c) above applies to the proposal being considered by the Council for changes to BSAI pollock fisheries. The expert agency (NMFS) is required to determine whether the proposed change to the action consulted on would modify the action in a manner that would cause an effect to Steller sea lions or their critical habitat or other listed species that was not considered in previous biological opinions (NMFS, 2000; NMFS 2001). Generally, if the potential effect is discountable, insignificant, or completely beneficial then reinitiation of consultation would not be required.[1]

Since the last formal consultation in 2001, informal consultations have occurred on proposed changes to fisheries inside Steller sea lion critical habitat, and changes were made in 2004 in the Gulf of Alaska (January 13, 2004 informal consultation). Additionally, NMFS provided a response to a proposal to open areas near Cook Inlet to pollock fishing (July 13, 2005). In that memorandum, NMFS initially determined that the action, as proposed by the State of Alaska, would be unlikely to trigger a reinitiation of consultation of the 2001 Biological Opinion. Numerous other measures have been considered and determined to require formal consultation such as an Aleutian Islands pollock fishery inside critical habitat and other open areas in the Gulf of Alaska (as considered by the Council and Alaska State Board of Fish joint protocol committee in October 2005).

The proposed action

The alternatives in the proposal (Council October 2005 motion) would move the start and ending dates of both the EBS and Aleutian Islands (AI) pollock fisheries 3 to 7 days before the current season dates. Because pollock roe appears to be ripening earlier, the pollock industry has proposed this change to allow harvest when the pollock roe is at or near its peak. The proposed action would move the pollock start date further into the winter no trawl period from November 1 to January 20 (NMFS, 2003; their Table IV-1). Wilson (2005) describes the January EBS pollock fishery and other potential issues such as the increase in bycatch of salmon, halibut, herring, crab and other species during early January. Higher chinook bycatch amounts may close the Chinook Salmon Savings area prior to April 15 (Wilson, 2005).

[1] See the ESA Section 7 Consultation Handbook at page 3-12 (1998); 50 CFR § 402.14(l)(3).

ESA consultation and the winter closure (November 1 – January 20)
The proposed action would reduce the winter trawl closure period (November 1 through January 20) by 3 to 7 days, thus increasing the time that Steller sea lions compete for prey resources with trawl fisheries. The new start date would constitute a change to the action that was specifically the subject of previous formal section 7 consultations (NMFS, 2000; NMFS 2001; NMFS 2003).

In 1998 and in 2000, NMFS concluded under two biological opinions that the EBS pollock fishery was likely to jeopardize the continued existence of the western DPS of Steller sea lion and adversely modify its designated critical habitat. In 2001, conservation measures were implemented for this fishery which succeeded in avoiding jeopardy and adverse modification. Those measures included seasonal apportionment of harvest, critical habitat catch limitations, closure areas, and specific seasonal start and end dates in order to mitigate impacts to foraging Steller sea lions, particularly in the winter time period.

The underlying assumption of the 1998 Biological Opinion was that as long as certain time periods (early winter) and areas (around rookeries and major haulouts) were protected from competition, and the catch was otherwise dispersed temporally and spatially, the fisheries would not jeopardize the Steller sea lion or other listed species, or adversely modify Steller sea lion critical habitat. Based on guidelines in the 1998 Biological Opinion, the Council developed measures to 1) avoid competition during the early winter season and around rookeries and major haulouts by closing that period and those areas to pollock trawling, 2) disperse the fisheries spatially, and 3) disperse the fisheries temporally (NMFS, 1999).

In the 2001 Biological Opinion, temporal dispersion was an important element of the management measures based in part on two considerations: (1) sea lions are thought to be more susceptible to competition for prey during critical seasons, and (2) localized depletions are more likely when catch is concentrated in one season (NMFS, 2001; in section 5.2.1.5 and Table 5.2). Table 5.3 (NMFS, 2001) and Table IV-1 (NMFS, 2003) outline the various temporal dispersion elements of the action, including a "seasonal closure" from November 1 – January 20. This element was intended to minimize impacts on juveniles during the winter/spring period when juveniles may be most susceptible to competition with fisheries. At this time they may be foraging on their own, and due to their inexperience and limited diving ability are more at risk than adults. The winter may also be a critical time period for lactating females with pups, as they are limited to the distance they can travel from shore.

A major consideration when evaluating the EBS pollock fishery in the 2001 Biological Opinion was the effectiveness of the American Fisheries Act (AFA) in slowing harvest rates and dispersing the pollock fishery (NMFS, 2001). However, the AFA measures do not apply to the AI pollock fishery which would also be affected by this reduction in the winter trawl closure.

Description of the fishery and conservation measures
A description of the EBS fishery can be found in Wilson (2005), although information is lacking on the AI fishery. Additional information is provided here on the temporal and spatial nature of the EBS fishery as it relates to potential impacts on Steller sea lion prey. In general, the EBS pollock A season fishery occurs in Steller sea lion critical habitat (Wilson, 2005; his Figure 6). We would expect that any proposed fishery in early January before January 20 would also occur primarily within critical habitat at roughly the same rate as the current first week catch data (Table 2). Although the catch inside critical habitat from 0-20 nm has decreased in the last few years, catch has been concentrated to some extent inside the Steller sea lion conservation Area (SCA) (Figure 1). The average daily catch from 2004, January 20 – March 31, was 8,377 mt. Thus, a 3-7 day early start may represent about 25,131 to 58,639 mt. For perspective, the 7 day total represents about 70% of the entire GOA pollock total allowable catch (TAC) in 2005. The AI fishery has been very small in recent years due to the prohibition on catch inside critical habitat and a prohibition on directed fishing until 2005. In 2005, the AI incidental catch allowance of 1,400 mt was

fully harvested (1,415 mt), of which 1,058 mt was harvested inside critical habitat (NMFS, 2005; inseason data). Only 15% of the Aleut Corporation's allocation of pollock was harvested in 2005 (195 mt out of 1,200 mt) and the CDQ pollock allocation was shifted to the EBS and harvested there.

The temporal dispersion of the EBS pollock fishery as modified by the AFA amendments has been reviewed under previous biological opinions. This analysis provides an update to those discussions. Figure 2 shows the average daily catch rate both inside and outside of critical habitat from 1998 and 2004, before and after implementation of the AFA measures. The catch rate is defined here as the daily catch amount divided by the annual harvest amount authorized for the fishery. Clearly the fishery has been altered, such that both the A and B seasons are elongated with lower daily catch rates, the goal of Steller sea lion conservation measures. Figure 3 provides daily catch rates for all years 1998-2004.

To determine if the fishery is currently more dispersed, NMFS performed an analysis which compared the daily catch rate between years (Figure 4; NMFS unpublished data). Seasons were defined as: (A) 20 Jan-31 Mar; (B) 1 Jun-31 Oct; and all year as January 1 to December 31. The maximum dispersed rate (MaxDisp) that the fishery could potentially be was defined as 1/285 of the catch quota (0.35%). This value represents the spreading out of the harvest over the total number of days that the fishery is open (285 days given the current ban on fishing from November 1 through January 20). Thus, if the fishery was dispersed equally throughout the fishing year, 0.35% of the quota would be taken each day.

The analysis was initiated to determine:

1. The number of days when more than 1/10 the MaxDisp rate was taken. If the fishery is more dispersed, then this number should go up. When a fishery is concentrated in time, the result is that many of the days during the year have little or no fishing. A more dispersed fishery would have more days when some fishing occurred.
2. The number of days when more than 3X the MaxDisp rate was taken. If the fishery is dispersed, then this number should go down. A concentrated fishery would have more days with high catch rates per day, thus a more dispersed fishery would have fewer days.
3. The number of days when the fishery was within 50% of the MaxDisp rate. If the fishery is dispersed, then this number should go up and be a large amount of the time the fishery was open. If the ultimate goal were to be a maximum dispersed fishery, then movement towards this goal of having daily catch rates close to the MaxDisp rate would represent a more dispersed fishery.

Conclusions from the analysis:

1. Number of days when more than 1/10 of MaxDisp rate was taken each year has gone up since 1998 from about 150 to about 200 days each year (Figure 4a). This is consistent with temporal dispersion.
2. Number of days when more than 3X the MaxDisp rate was taken each year has gone down since 1998 from about 40 total to virtually none since 2000 (Figure 4b). This is consistent with temporal dispersion and the main goal of the temporal dispersion measures (i.e., reduce the high catch rates that were exhibited in the fishery in the late 1990s).
3. Number of days within 50% of MaxDisp rate has gone up for the "all year" time period and in the B season, but not for the A season (Figure 4c). For "all year," only 70 of 285 days available were within 50% of MaxDisp with most of these days occurring in the B season. The suggests that the A season is somewhat more compressed than the B season.

In summary, the maximum daily rates (as defined as the catch per day divided by the total allowable harvest amount) have been reduced substantially from where they were in 1998 in both the A and B seasons, and the catch has been spread over a longer time period. However, the A season is somewhat more compressed than the B season.

Steller sea lions: competition and the winter season

Changes in behavior, foraging patterns, distribution, and metabolic or physiological requirements during the Steller sea lion annual cycle are all pertinent to consideration of the potential impact of prey removal by commercial fisheries. Steller sea lions, at least adult females and juveniles, are not like some marine mammals that store large amounts of fat to allow periods of fasting. They need more or less continuous access to food resources throughout the year. Nevertheless, the sensitivity of sea lions to competition from fisheries may be higher during certain times of the year. Reproduction likely places a considerable physiological or metabolic burden on adult females throughout their annual cycle. Following birth of a pup, the female must acquire sufficient nutrients and energy to support both herself and her pup. The added demand may persist until the next reproductive season, or longer, and is exaggerated by the rigors and requirements of winter conditions. The metabolic requirements of a female that has given birth and then become pregnant again are increased further to the extent that lactation and pregnancy overlap and the female must support her young-of-the-year, the developing fetus, and herself. And again, she must do so through the winter season when metabolic requirements are likely to be increased by harsh environmental conditions.

Behavioral observations indicate that lactating females spend more time at sea during winter than in the summer. Attendance cycles (consisting of one trip to sea and one visit on land) averaged about 3 days in winter and 2 days in summer (Trites and Porter 2002, Milette and Trites 2003). Time spent on shore between trips to sea averaged about 24 hours in both seasons. The winter attendance cycle of dependent pups and yearlings averaged just over 2 days, suggesting that sea lions do not accompany their mothers on foraging trips. Foraging trips by mothers of yearlings were longer on average than those by mothers of pups.

Weaned pups may be independent of their mothers, but may not have developed adequate foraging skills. They must learn those skills, and their ability to do so determines, at least in part, whether they will survive to reproductive maturity. This transition to nutritional independence is likely confounded by a number of seasonal factors. Seasonal changes may severely confound foraging conditions and requirements; winter months bring harsher environmental conditions (lower temperatures, rougher sea surface states) and may be accompanied by changing prey concentrations and distributions (Merrick and Loughlin, 1997). Weaned pups' lack of experience may result in greater energetic costs associated with searching for prey. Their smaller size and undeveloped foraging skills may limit the prey available to them, while at the same time, their small size results in relatively greater metabolic and growth requirements.

Other times of the year are also important for Steller sea lions. For example, the observed increases in consumption by captive animals in the fall months indicate that preparation for winter is important. Spring is also important as pregnant females will be attempting to maximize their physical condition to increase the likelihood of a large, healthy pup (which may be an important determinant of the subsequent growth and survival of that pup). Similarly, those females that have been nursing a pup for the previous year and are about to give birth may wean the first pup completely, leaving that pup to survive solely on the basis of its own foraging skills. Thus, food availability is surely important year-round, although it may be particularly important for juvenile animals and pregnant-lactating females during the winter.

Potential effects of the proposed action on listed species and critical habitat

Concentrated harvest of important prey during particular seasons may adversely affect sea lions. For example, during the winter months sea lions may have relatively infrequent foraging opportunities and may be less able to travel large distances in search of food. Similarly, juvenile sea lions may rely on easy feeding opportunities during periods when they are learning to forage independently. Substantial harvests

of sea lion prey during these times may lead to nutritional stress, even if ample food is available at other times of the year.

Competition for available fish between the BSAI pollock fisheries and sea lions can occur at a variety of spatial scales. At the macro-scale, potential impacts of fishing include competition for a common resource and/or shifts in predator-prey relationships that may change the carrying capacity of the ecosystem. Observation of these effects is complicated by natural variability of the ecosystem. At the meso-scale, fisheries can affect the distribution and abundance of groundfish in a region such as Shelikof Strait or Bristol Bay that is important to local groups of sea lions. Finally, at a micro-scale fishing vessels can affect the distribution and abundance of groundfish in specific locations, making it harder for sea lions to prey upon groundfish in those areas. The effects of fisheries on the distribution and abundance of fish species have shorter duration as the spatial scale of impact decreases. Nevertheless, localized depletions of fish that are prey for sea lions can be important for the affected individuals, especially during vulnerable life stages (e.g., juveniles or nursing mothers) and near important habitat areas (e.g., haulouts).

If these reductions in pollock schools occur within the foraging areas of Steller sea lions, the reduced availability of prey may reduce their foraging effectiveness. The effects of these reductions become more significant the longer they last and the reductions are likely to be most significant for juvenile and adult female Steller sea lions during the winter months when these animals have their highest energetic demands.

Take of listed salmon ESUs has been reviewed and authorized under an incidental take statement (NMFS, 2000). Given that the take of listed salmon ESUs occurs only rarely in the groundfish fisheries while relatively large amounts of native Alaska stocks are taken, and that it is impossible aboard ship to differentiate a listed salmon from a non-listed salmon, the take is authorized as an amount of total chinook salmon. Based on the evidence provided (Wilson, 2005), it appears that by moving the start date earlier into the no trawl period, chinook salmon bycatch may increase. This raises the questions whether more listed salmon would be taken by the fishery. Further analysis is needed to determine if this is in fact a likely result, and data may be available through coded wire tag recoveries of listed salmon (or their surrogate stocks) to determine whether those ESUs are found in Alaska during that time of year.

Initial conclusions

The proposed action would cause effects to listed species and critical habitat that were not considered in previous biological opinions (NMFS, 1998; NMFS, 2000; NMFS, 2001; NMFS, 2003). The "no jeopardy" and "no adverse modification of critical habitat" findings were based on a proposed action that included a winter closure for trawl fisheries from November 1 – January 20 (NMFS, 2003; their Table IV-1) which represented a no competition time period between Steller sea lions and trawl fisheries. The proposed action would decrease this time period by 4-9%.

Steller sea lion non-pup (i.e., adults and juveniles) counts were down 9.2% from 1991-2000 in the eastern Aleutian Islands, while from 2000-2004 non-pup counts were up 22.6% (Table 1). Numerous listed and non-listed haulouts and rookeries occur close to the area proposed to be open for pollock fishing. It is likely that most of the expected pollock catch will be removed from critical habitat within the SCA (Wilson, 2005).

The EBS and AI pollock stocks are the essential feature of critical habitat which may be affected by the fisheries. Sinclair and Zeppelin (2002) report pollock in 54.0% of Steller sea lion scats in the eastern Aleutian Islands area during the summer and 59.1% of scats collected in the winter. Pollock is the dominant prey item for sea lions in the EBS, followed by Atka mackerel and Pacific cod. Atka mackerel becomes dominant in the AI followed by Pacific cod and pollock. In general, the EBS pollock stock has

been abundant for a number of years, while the AI stock declined through the 1990s and has been increasing since the prohibition on harvest inside critical habitat (also no directed fishery was authorized for most years). The 2005 abundance for EBS pollock from the 2004 SAFE document was lower overall than estimated in 2003 and the projected 2005 biomass is the lowest estimated since 1992 (Ianelli et. al., 2004). The 2000 year class appears to be above average and the main age group available to the fishery. Subsequent year classes are currently estimated to be below average and will result in further short-term declines in abundance. Projections indicate the ABC could be below 1.1 million mt by 2007 (Ianelli et. al., 2004).

Information about the potential impacts of trawl fisheries on sea lion prey is mixed (Logerwell, 2005[2]). Since the last formal consultation on the fisheries (NMFS, 2003), NMFS has conducted experiments to determine whether trawl fisheries do in fact alter the prey field. For pollock fisheries, of the two years that the experiment was completed, one year resulted in a change to the prey field and one year did not. Mixed results were also found for the Atka mackerel fishery in the Aleutian Islands (testing of closure areas), while no indication of localized depletion was found for the Pacific cod fishery in the Eastern Bering Sea experiment. However, conclusions based on the Pacific cod study conflict with an analysis of the Pacific cod fishery using winter survey data from 2001 (Fritz and Brown, 2005).

The 2001 Biological Opinion explicitly states that trawl fishing is the most likely fishing activity to negatively impact Steller sea lions both indirectly by removing large quantities of pollock from foraging areas and directly by entanglement in fishing gear. A trawl fishery for pollock within critical habitat has a potential to negatively impact juveniles and adult females. In the winter, satellite telemetry data indicates that adults spent about 20.9% (n=96 locations) of the time at-sea beyond 10 nm from land (2003 Supplement, their Table II-5). Juveniles older than 10 months, spent 32.1% (n=586 locations) of the time at-sea beyond 10 nm from land (2003 Supplement, their Table II-6). Previous analyses from the 1990s indicated that adult females spend 66.7% of their time greater than 20 nm from shore (2003 Supplement, their Table II-1).

Juveniles and adult females have been defined as the most likely groups to be negatively impacted by competition with fisheries. A decline in juvenile survival and lower reproductive success for adult females, due to reduced prey availability, have been identified as possible causes for the decline in the 1990s. There appears to be a positive correlation between the implementation of conservation measures in the late 1990s and early 2000s and stabilization and recovery in the western DPS. However, it is too early to conclude whether the recent apparent leveling off is real or necessarily due to the conservation measures implemented. Based on available survey data, the current rate of increase would have to continue for four more years (and be surveyed at two-year intervals during that period) for the increase in numbers to be statistically significant. If the recovery does continue, it will be important to sustain the management measures unless new information reveals that fishing in areas utilized by Steller sea lions is not a threat to that recovery.

In summary, the proposal would open critical habitat areas to pollock trawl fishing in an area with numerous sea lion haulout and rookery sites nearby, and within the Bogoslof Foraging Area (critical habitat). Pollock is the dominant prey item for sea lions in the EBS, and is a year-round staple in their diet (based on frequency of occurrence). Additionally, the change in season start dates would reduce the important winter trawl closure by 3-7 days (4-9%). Fisheries for pollock during these additional days would be likely to remove an important prey resource that is an important component of critical habitat within this area. Fisheries, are likely to remove substantial quantities of pollock (potentially 60,000 mt or more in the EBS), thereby potentially adversely affecting critical habitat. Given that this area and time has

[2] Presentation and document presented by Libby Logerwell (Alaska Fisheries Science Center) to the Council in June 2005. Document dated June 6, 2005; 18 pages.

already been explicitly considered to be important (NMFS, 2000; NMFS, 2001), additional pollock fisheries in critical habitat during the winter no-trawl period may have adverse impacts on Steller sea lions and their critical habitat that were not considered in previous biological opinions. This proposal would likely trigger a reinitiation of the 2001 Biological Opinion in order to consider the impacts on the endangered western DPS of Steller sea lion and its critical habitat.

Any measure which may increase catch of ESA-listed salmon is likely to require formal consultation. Further investigation is needed into the likelihood of catching listed salmon in the proposed fishing time period. Previous analyses indicate that chinook salmon catch rates may be higher during mid-winter months than at times later in the year (Wilson, 2005; NPFMC, 2005).

The initial conclusions reached here are based on the triggers for reinitiation of consultation as specified in regulation at 50 CFR § 402.16(c). Those triggers are not related to the standards for decisions reached during formal consultation. The reinitiation triggers serve as a guide to determine when a more formal review is necessary in order to properly describe the expected effects of the action and determine if the action is likely to jeopardize the continued existence of a listed species or adversely modify its critical habitat. The determination that a formal consultation is necessary in no way prejudges the conclusions of that consultation.

Literature Cited

Fritz, L. W., and E.S. Brown. 2005. Survey- and fishery-derived estimates of Pacific cod (*Gadus macrocephalus*) biomass: implications for strategies to reduce interactions between groundfish fisheries and Steller sea lions (*Eumetopias jubatus*). Fish. Bull. 103: 501-515.

Ianelli, J. N., S. Barbeaux, G. Walters, T. Honkalehto, and N. Williamson. 2004. Eastern Bering Sea Walleye Pollock Stock Assessment. November 2004. Alaska Fisheries Science Center. National Marine Fisheries Service, P. O. Box 15700, Seattle, WA 98115-0070.

Logerwell, L. 2005. Presentation and document presented to the Council in June 2005 on the results of fisheries experiments by the Alaska Fisheries Science Center. Document dated June 6, 2005; 18 pages.

Merrick, R.L., and T.R. Loughlin. 1997. Foraging behavior of adult female and young-of-the-year Steller sea lions (*Eumetopias jubatus*) in Alaskan waters. Can. J. of Zool. 75 (5):776-786.

Milette, L. L., and A.W. Trites. 2003. Maternal attendance patters of Steller sea lions (*Eumetopias jubatus*) from stable and declining populations in Alaska. Can. J. Zool. 81: 340-348.

NMFS. 1998. Section 7 consultation on the authorization of the Bering Sea and Aleutian Islands groundfish fishery for walleye pollock under the BSAI FMP, on the authorization of the Bering Sea and Aleutian Islands Atka mackerel fishery under the BSAI FMP, and the authorization of the Gulf of Alaska groundfish fishery for walleye pollock under the GOA FMP, between 1999 and 2002. Office of Protected Resources, NMFS. Dec. 3, 1998.

NMFS. 1999. Revised Final Reasonable and Prudent Alternative to the 1998 Biological Opinion. Office of Protected Resources, NMFS. October, 1999.

NMFS. 2000. Section 7 consultation on the authorization of the Bering Sea and Aleutian Islands groundfish fishery under the BSAI FMP and the authorization of the Gulf of Alaska groundfish fishery under the GOA FMP. Office of Protected Resources, NMFS. Nov. 30, 2000.

NMFS. 2001. Section 7 consultation on the authorization of the Bering Sea/Aleutian Islands groundfish fisheries based on the Fishery Management Plan for the Bering Sea/Aleutian Islands Groundfish as modified by amendments 61 and 70; authorization of Gulf of Alaska groundfish fisheries based on the Fishery Management Plan for Groundfish of the Gulf of Alaska as modified by amendments 61 and 70; and parallel fisheries for pollock, Pacific cod, and Atka mackerel, as authorized by the State of Alaska within 3 nm of shore. Office of Protected Resources, NMFS. Oct. 19, 2001.

North Pacific Fishery Management Council. 2005. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis for Modifying existing Chinook and Chum Salmon Savings Areas. August 31, 2005. NPFMC 605 W. 4th Ave., Ste. 306, Anchorage, AK 99501.

Sinclair, E., and T. Zeppelin. 2002. Seasonal and spatial differences in diet in the western stock of Steller sea lions (*Eumetopias jubatus*). J. Mammal. 83(4):973-990.

Trites, A. W., and B.T. Porter. 2002. Attendance patterns of Steller sea lions (*Eumetopias jubatus*) and their young during winter. J. Zool. Lond. (2002) 256: 547-556.

Wilson, B. 2005. Issues associated with changing the start date of the Eastern Bering Sea Pollock Fishery "A" season from January 20 to January 15. North Pacific Management Council, Agenda D-1(d)(1) October 2005.

Table 1. Counts of adult and juvenile (non-pup) Steller sea lions observed at 1970s trend sites in seven sub-areas of Alaska during June and July aerial surveys from 1985 to 2004. Also shown are overall percent changes between various pairs of years and estimated annual rates of change between 1991 and 2000 and between 2000 and 2004. Annual rates of change that are significantly different from zero ($P < 0.05$) are shown in bold. ND = no data. Data shown for 2004(*) have been adjusted to account for film format-count differences (from Fritz and Stinchcomb 2005).

	Gulf of Alaska			Aleutian Islands				Western
Year	Eastern	Central	Western	Eastern	Central	Western	Kenai to Kiska	Stock in AK
1985***	ND	19,002	6,275	7,505	21,956	4,526	54,738	
1990	5,444	7,050	3,915	3,801	7,988	ND	22,754	
1991	4,596	6,270	3,732	4,228	7,496	3,083	21,726	29,405
1992	3,738	5,739	3,716	4,839	6,398	2,869	20,692	27,299
1994	3,365	4,516	3,981	4,419	5,820	2,035	18,736	24,136
1996	2,132	3,913	3,739	4,715	5,524	2,187	17,891	22,210
1998**	2,110	3,467	3,360	3,841	5,749	1,911	16,417	20,438
2000	1,975	3,180	2,840	3,840	5,419	1,071	15,279	18,325
2002	2,500	3,366	3,221	3,956	5,480	817	16,023	19,340
2004*	2,536	2,944	3,512	4,707	5,936	898	17,099	20,533
Percent change								
1985-2000		-83.3%	-54.7%	-48.8%	-75.3%	-76.3%	-72.1%	
1985-2004		-84.5%	-44.0%	-37.3%	-73.0%	-80.2%	-68.8%	
1991-2000	-57.0%	-49.3%	-23.9%	-9.2%	-27.7%	-65.3%	-29.7%	-37.7%
1991-2004	-44.8%	-53.0%	-5.9%	11.3%	-20.8%	-70.9%	-21.3%	-30.2%
2000-2004	28.4%	-7.4%	23.7%	22.6%	9.5%	-16.1%	11.9%	12.1%
Estimated annual rates of change: 1991 to 2000								
Rate	**-9.3%**	**-7.4%**	-2.7%	-1.8%	**-2.9%**	**-9.5%**	**-3.8%**	**-4.9%**
+95% CI	-5.1%	-5.7%	0.2%	1.1%	-0.3%	-4.0%	-3.3%	-4.3%
-95% CI	-13.3%	-9.1%	-5.5%	-4.7%	-5.4%	-14.6%	-4.2%	-5.5%
P	< 0.01	< 0.001	> 0.05	> 0.10	< 0.05	< 0.01	< 0.001	< 0.001
Estimated annual rates of change: 2000 to 2004								
Rate	6.3%	-1.9%	5.3%	5.1%	2.3%	-4.4%	2.8%	**2.8%**
+95% CI	59.8%	39.2%	13.3%	37.0%	16.0%	87.0%	6.2%	4.0%
-95% CI	-29.1%	-30.9%	-1.9%	-19.2%	-9.8%	-51.0%	-0.4%	1.8%
P	> 0.30	> 0.60	> 0.05	> 0.20	> 0.20	> 0.50	> 0.05	< 0.05

** For eastern Gulf of Alaska in 1998, counts made in 1999 were substituted for those sites not surveyed in 1998.

*** For western Aleutian Islands in 1985, counts made in 1988 were substituted for Buldir.

Table 2. Harvest of pollock from 2003-2005 during the first week of the A season and the percent of the SCA limit harvested. First week harvest is from the entire EBS of which nearly all of the amount is harvested from the SCA (NMFS unpublished data).

Sector	1st week harvest mt	SCA limit mt	Percent harvested
2005			
CP	37375.84	144040	26
inshore	35073.72	180050	19
motherships	11327.28	36010	31
2004			
CP	30716.48	145506	21
inshore	33674.28	181882	18
motherships	8937.4	36376	24
2003			
CP	30143.27	145106	21
inshore	32812.04	181383	18
motherships	7916.46	36277	22

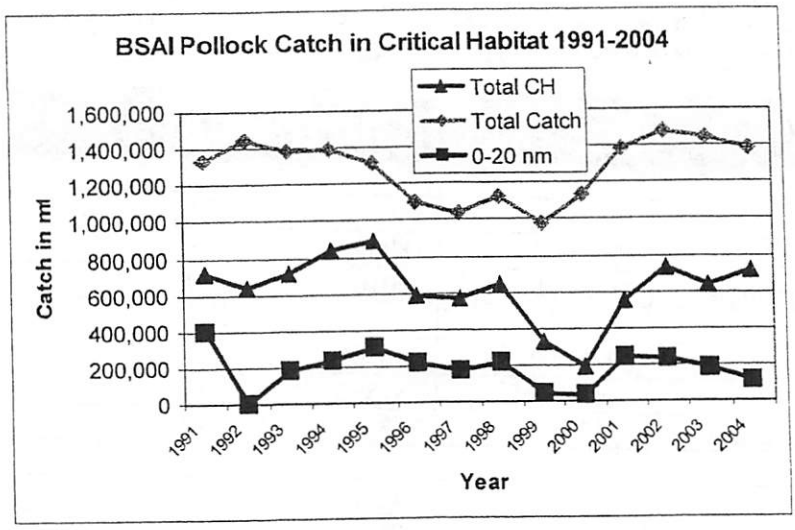


Figure 1. Harvest of pollock in the EBS from 1991-2004. Catch is provided as the amount in mt inside 0-20 nm from Steller sea lion rookeries and haulouts (critical habitat), all of critical habitat including the foraging areas, and total catch.

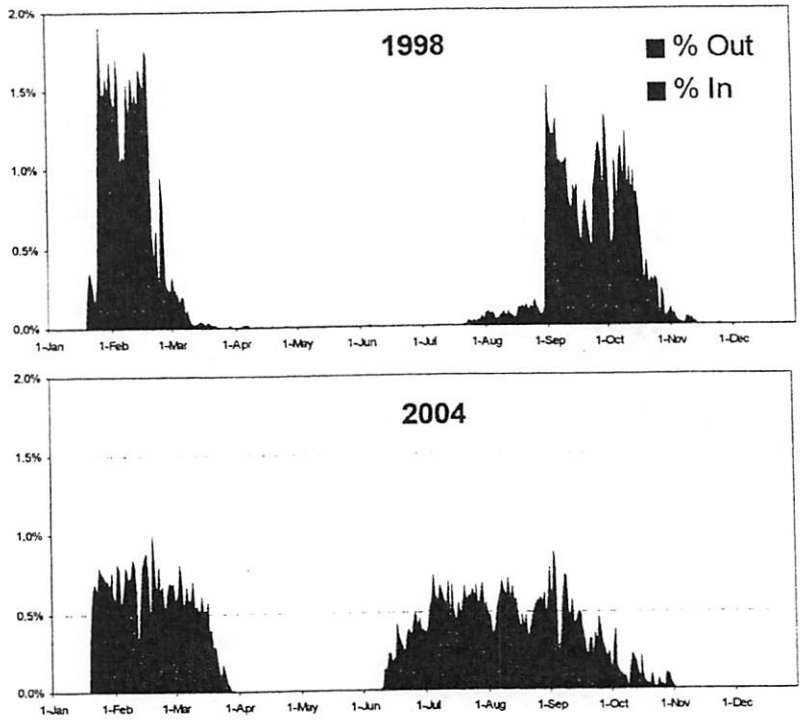


Figure 2. Daily catch rate of pollock in the EBS for1998 and 2004. Y axis represents the percent of annual catch taken daily in the fishery. Bars are stacked with the bottom bars in red representing catch inside Steller sea lion critical habitat.

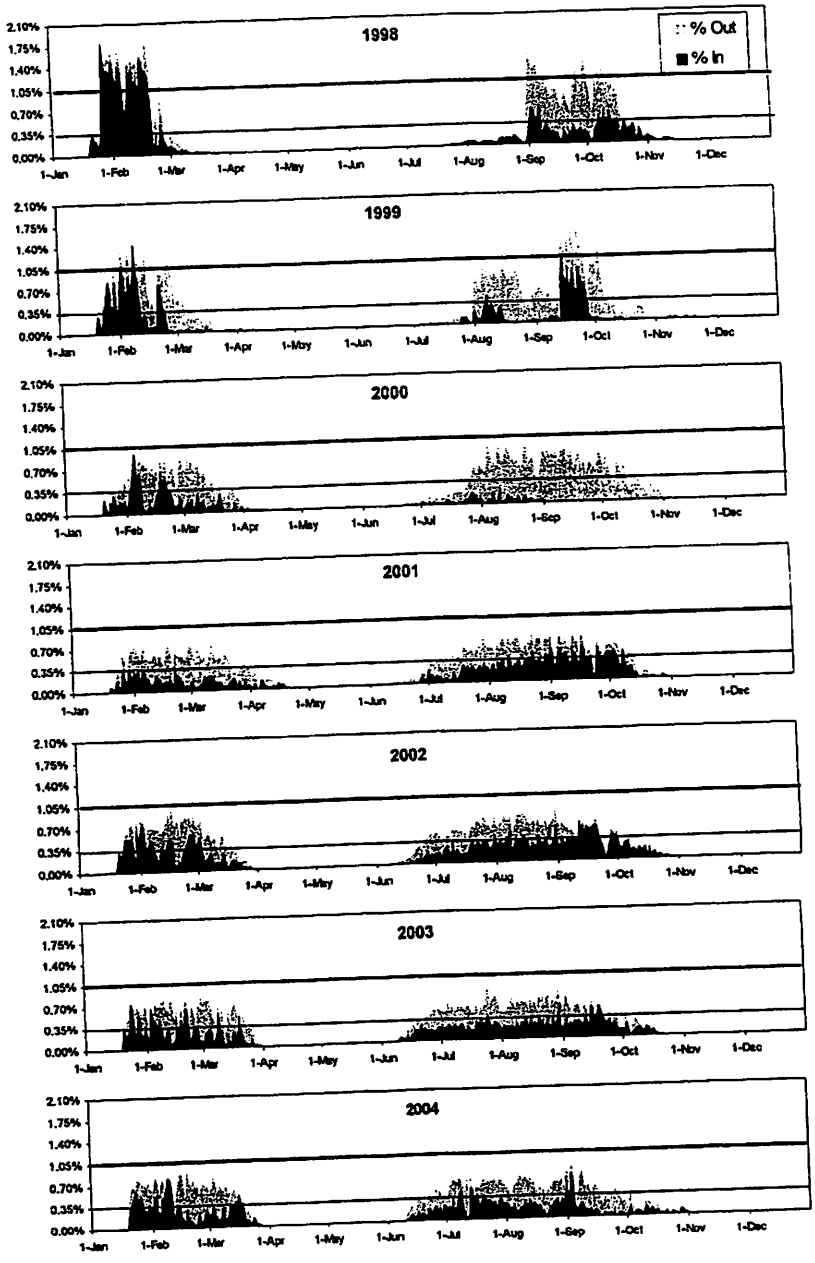
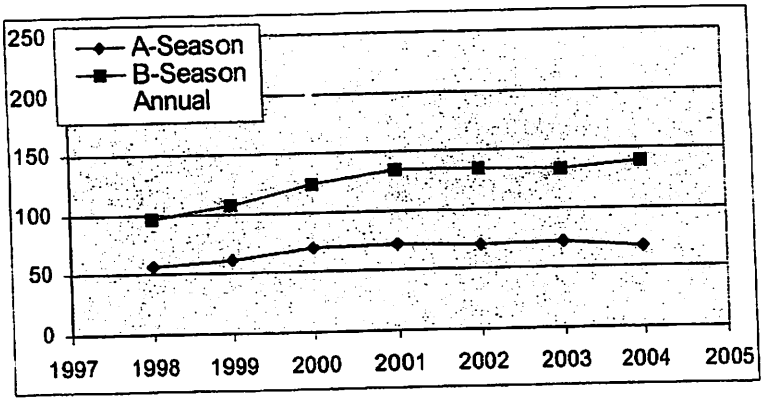
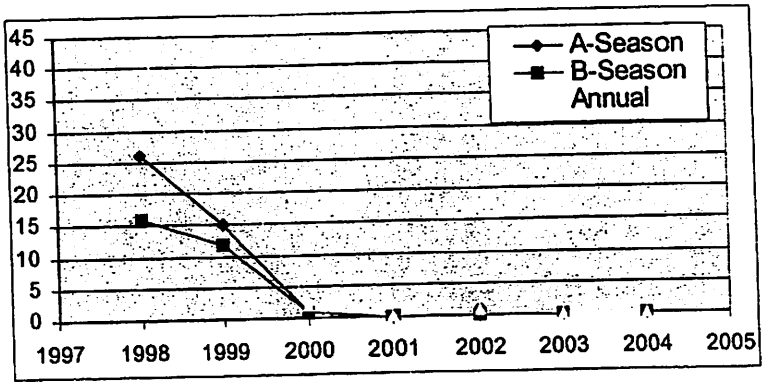


Figure 3. Daily catch rate of pollock in the EBS for1998 through 2004. Y axis represents the percent of annual catch taken daily in the fishery. Bars are stacked with the bottom dark bar representing catch inside Steller sea lion critical habitat.





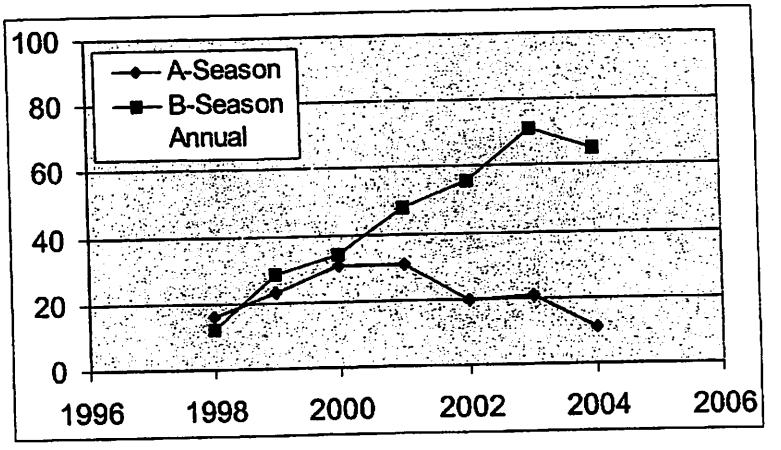


Figure 4(a,b,c). Analysis of pollock harvest data in the EBS fishery to determine whether the fisheries are more dispersed under the AFA measures. The x-axis is the number of days during the year with a specified rate. Figure 4a (top panel), describes the number of days with more than 1/10 the maximum dispersion rate (MaxDisp; see text for discussion). Figure 4b (middle panel) describes the number of days when more than three times the MaxDisp rate was taken. Figure 4c (bottom panel) describes the number of days within 50% of the MaxDisp rate (NMFS unpublished data).

Revised Discussion Paper: Issues Associated with Changing the Start Date of the Eastern Bering Sea Pollock Fishery "A" Season from January 20 to January 15

Prepared by:
Bill Wilson
North Pacific Fishery Management Council
December 2005

During its October 2005 meeting, the North Pacific Fishery Management Council received a discussion paper that described issues associated with changing the start date for the BSAI pollock fishery "A" season. The Council decided to revisit this proposal at its December 2005 meeting, and tasked staff with revising the discussion paper to include alternatives and a problem statement. The Council's alternatives and suggested problem statement are provided below.

The Council also requested that NMFS review the proposed action and alternatives and determine whether any or all of the alternatives would likely trigger a formal Section 7 consultation under the Endangered Species Act.

Draft Problem Statement

The eastern Bering Sea pollock fishery accounts for a major proportion of the harvest tonnage in the BSAI region and a large amount of the ex-vessel revenues generated from the BSAI groundfish fisheries. Pollock roe is a valuable by-product from the EBS pollock fishery, nearly all of which comes from the "A" season. Current fishery regulations prohibit fishing for pollock before January 20. The eastern Bering Sea pollock fleet is concerned that a portion of the peak roe production is missed due to the January 20 start date, partly because roe-bearing pollock appear to be maturing earlier. An earlier start date, as little as five days, could enable the fleet to better maximize its production of high quality roe. In this proposed action, to the extent possible, the Council intends to avoid negative effects on other fisheries, minimize impacts on the support industry, and avoid negative effects on protected resources.

Draft Alternatives

The BSAI groundfish Fishery Management Plan would be amended to change the start date of the BSAI pollock "A" season, including CDQ pollock fisheries, from January 20 to one of three alternative start (and end) dates:

1. January 15 start date with an end date of June 5 (preferred alternative)
2. January 13 start date with an end date of June 3
3. January 17 start date with an end date of June 7

For each alternative the following provision also applies: For each day prior to January 20th a vessel fishes in an early opening, the vessel would be required to stand down for an equal number of days after completing a delivery/offload of pollock before beginning fishing for other groundfish in either the GOA or the BSAI.

An optional provision for each of the above alternatives would be to require that trawling for groundfish in the BSAI during any time period before January 20 would be for pollock only.

Fishery Management Issues

Any of the alternatives would have similar effects and raise similar issues to those discussed in the October 2005 discussion paper. However, the stand down provision and/or the pollock-only restriction before January 20 could alleviate many of the concerns discussed previously or raised during public testimony at the October 2005 Council meeting. Some of these are discussed below.

Requiring a stand down for AFA vessels after completing the "A" season could alleviate some concerns over early entry of pollock fishing or processing vessels into other fisheries. Some were concerned that providing an early start to the "A" season would allow AFA vessels to begin fishing their sideboards early, perhaps resulting in additional competition for fish or fishing area. Some felt that larger portions of some sideboards might be harvested with an early start. With a stand down provision, however, those concerns would largely be reduced since fishing for species other than pollock could not commence until three, five, or seven days passed. Some public comment suggested that any stand down period should commence after a "normal" offload period ended. For example, some AFA vessels currently return to port upon completing the "A" season and offload, refuel, change fishing gear or other equipment, and change some personnel in preparation for the next fishery. This offload period likely occurs over a one or more day period of time. Thus, some believe that any stand down provision should exclude this "normal" offload period and begin after such a block of time – e.g. a 5-day stand down would commence 6 or 7 days after the AFA vessel completes fishing activity.

Some shorebased processors indicated to the Council that moving workers and other staff into the various communities where plants are located or where personnel staging occurs could be made more difficult if the "A" season were started early. During this period of time, aircraft are full and available flights are almost wholly dedicated to moving employees and other freight necessary for starting the fishing year. Communities receiving this influx of workers are also stressed for accommodations space, health and recreational facilities use, etc. This issue could be further exacerbated if the "A" season were started as many as seven days early. Also, starting the "A" season on January 13 would further encroach on the holiday season and exacerbate logistical difficulties in moving crew to the vessels and processing facilities. It also would overlap to a greater extent with the transportation and other staging activities of the longline fleet whose season starts January 1. Starting the "A" season only three days earlier, on January 17, would reduce these concerns.

If vessels in the AFA fleet chose to fish other species during the days available to them prior to January 20, those species quotas could be reduced quicker and would disadvantage fishermen targeting those species, particularly for cod. The optional provision to restrict the AFA fleet to pollock only prior to January 20 could alleviate that concern. While the Council could choose another alternative – to allow other groundfish trawl fisheries to start on the same date as the pollock fleet – this could greatly complicate fishery management with multiple fisheries now starting early, perhaps exacerbate PSC or other species bycatch, require earlier deployment of crew and other workers associated with other fisheries, require deployment of observers earlier in the season, and other related issues. Also, some suggest that allowing an early start for some fisheries other than pollock could provide little or no advantage if the target species were not of optimal quality or markets were not available at that time of year. Also, were these fisheries to start early, and then finish early, vessels or companies would have to change fishing strategies, with possible economic consequences if a fishery ended early and a vessel had to wait for a new fishery opening.

Starting the season even earlier than the five days considered in an earlier draft of this discussion paper – e.g. on January 13 – would increase the overlap of the AFA fishing activities with longline fisheries that start January 1. This could further exacerbate those issues raised earlier such as competition for fishing grounds or potential effects of trawling on dispersal of targets such as P. cod.

Qualified AFA vessels that may move into the GOA could do so earlier under a January 13 start date alternative. This could further exacerbate concerns raised previously, although it remains likely that GOA fishery quotas that would be the targets for such vessels would likely be fished and thus unavailable, and a change from January 15 to January 13 would likely not be a significant change in this issue.

Other issues or concerns raised in the October 2005 discussion paper or raised during public testimony at the October 2005 Council meeting could increase or decrease under the various alternatives, but would be further evaluated in any future analysis.

Protected Resources Issues

The Council is particularly concerned about the possibility that one or more of the alternatives could trigger a formal Section 7 consultation under the ESA. NMFS Office of Protected Resources Conservation reviewed the Council's alternatives and problem statement and provided a response in a letter dated November 25, 2005. NMFS has determined that the proposed alternatives likely would require reinitiation of formal consultation since the proposal would constitute a change in the action that was previously analyzed in the 2000 and 2001 Biological Opinions and the 2003 Supplement to the 2001 BiOp. NMFS has determined that the proposed action likely would result in effects on Steller sea lions and their critical habitat and on ESA-listed salmonid ESUs that were not considered in these previous consultations. NMFS believes that such

effects cannot be discounted nor considered insignificant, and thus a formal consultation process would be required to further evaluate the proposed action.

Conclusion

The above provides the additional information requested by the Council at its October 2005 meeting. The remainder of this discussion paper is essentially unchanged from the version received by the Council at the October meeting.

A. Issues Associated with an Early "A" Season Start Date - Introduction

The eastern Bering Sea pollock fishery accounts for a major proportion of the harvest tonnage in the BSAI region and a large amount of the ex-vessel revenues generated from the BSAI groundfish fisheries. Pollock roe is a valuable by-product from the EBS pollock fishery, nearly all of which comes from the "A" season. Current fishery regulations prohibit fishing for pollock before January 20. The eastern Bering Sea pollock fleet is concerned that a portion of the peak roe production is missed due to the January 20 start date, partly because roe-bearing pollock appear to be maturing earlier. An earlier start date, as little as five days, could enable the fleet to better maximize its production of high quality roe. Industry's interest is to start this fishery, on January 15, with an "A" season closure 5 days earlier as well (June 5). There would be no changes to the "B" season (June 10-November 1). The presumption is there could be a 5-day "stand down" between seasons as a result, although this issue needs to be addressed. This discussion paper outlines some of the issues associated with changing the opening date for the EBS pollock fishery "A" season as requested by the Council at its June 2005 meeting.[1]

The Aleutian Islands portion of the BSAI pollock fishery has its own quota which is allocated to the Aleut Corporation by statute. Beginning with the 2005 fishing season, the AI pollock allocation was available for harvest but only a very small amount of pollock was harvested (about 200 mt in the directed fishery). It is assumed that any early start of the pollock "A" season would apply to the AI fishery as well. However, this discussion paper largely focuses on the Bering Sea pollock fishery.

B. Brief Overview of the Eastern Bering Sea Pollock Fishery

The EBS pollock fishery is the largest fishery managed by the Council, accounting for 65 percent of the nearly 2.3 million mt combined TAC for the BSAI and GOA groundfish fisheries for 2005. Prior to 1990, the EBS pollock fishery opened January 1 and the fishery was prosecuted in a single season. In 1990, the Council approved Amendment 14 to the BSAI FMP which prohibited pollock roe stripping and divided the EBS pollock fishery into a roe fishery ("A" season) and a non-roe fishery ("B" season). In 1992 under

[1] Note that regulations at 50 CFR 679.23(c) prohibit trawling between January 1 and 20 in the BSAI and GOA; these regulations would have to be changed if the BSAI pollock "A" season start date is earlier than January 20.

Amendment 19 to the BSAI FMP, the Council changed the starting date for some EBS trawl fisheries, including pollock, to January 20 (from January 1). In 1998, Steller sea lion protection measures were proposed and later implemented that established a 40/60 percent split of the pollock TAC between the "A" and "B" seasons. Also in 1998 under the American Fisheries Act (AFA) the Council approved allocating 10 percent of the BSAI pollock quota to CDQ groups; after subtracting incidental catch allowance amounts for other fisheries, the remainder of the quota is apportioned 10 percent to catcher vessels delivering to motherships, 40 percent to catcher/processors processing offshore, and 50 percent to catcher vessels delivering inshore. Vessels harvesting pollock for their roe content are required to fully retain all fish under IR/IU requirements.

The AFA also provided for a system of pollock fishery cooperatives for each fishing sector, and prohibited the entry of new vessels into the fishery. The AFA also provided a system of harvesting and processing restrictions or "sideboards" on fishermen and processors who received the exclusive fishing rights under AFA to protect the interests of fishermen and processors who have not directly benefited from AFA.

In summary, under current regulations and provisions in the BSAI FMP, the EBS pollock fishery is entirely prosecuted by AFA fishing vessels – either through AFA-style harvesting cooperatives, or in connection with the CDQ program. The "A" season AFA pollock roe fishery is prosecuted by a fleet comprised of catcher vessels that deliver pollock to shoreside processors, catcher-processors, and catcher vessels delivering pollock to motherships. The fishery is entirely rationalized and vessels participate in this fishery under a cooperative management system. The "A" season begins January 20 and ends June 10. After reducing the annual TAC by 10 percent for the CDQ fisheries, and a certain amount for incidental catch allowances for other fisheries (3.35 % in 2005), the remaining directed fishing allowance (DFA) is divided so that 40 percent may be harvested in the "A" season and the remaining 60 percent in the "B" season. In 2005, the "A" season pollock roe fishery DFA (including CDQ) was 573,569 mt.

C. Origin of January 20 Start Date

Under Amendment 19 to the BSAI FMP (September 23, 1992), among several other management measures, the Council changed the opening date for certain trawl fisheries in the EBS from January 1 to January 20. The primary purpose for such a change was to reduce bycatch of halibut and salmon (especially Chinook salmon) as well as crab and herring in the EBS trawl fisheries. The amendment analysis also noted that the pollock fishery could benefit from a season delay "...that results in more of the harvest occurring later in the first quarter when the roe is at peak quality and value." For the years analyzed in the Amendment 19 EA, Chinook salmon bycatch rates were highest in the first few weeks of the year. The analysis also showed savings in halibut, crab, and other salmon bycatch with a later starting date in EBS trawl fisheries (excluding flatfish), but these results were more variable. Chinook bycatch seemed to be the primary motivation for moving the start date to January 20. Note that some concerns over halibut and crab bycatch were alleviated under Amendment 57 (June 2000) which prohibited the use of nonpelagic trawl gear in the directed pollock fishery.

Another consideration involved in changing the start dates to January 20 was the desire for both the BASI and the GOA trawl fisheries to start on the same date. If the GOA season opened earlier than the BSAI, the GOA fleet was concerned that the large-capacity BSAI trawl fleet could harvest a large proportion of the GOA quota and then move to the BSAI and continue to fish, potentially disadvantaging the GOA fleet. Such concerns may have been reduced to some extent by the subsequent implementation of the inshore/offshore amendments and AFA sideboard provisions which limit the ability of certain BSAI vessels to fish in the GOA.

D. Issues Associated with a January 15 EBS Pollock Fishery Start Date

Much of the following information was obtained from discussions with various sectors of the industry. Some of these issues may be tempered by certain future management regimes such as new rationalization programs, IR/IU amendments, etc.

The primary benefit of opening the EBS pollock fishery "A" season would be allowing the AFA fleet the opportunity to harvest roe-bearing pollock closer to the time the roe is of optimal quality. But some industry representatives believe that by implementing such a measure, other fishery sectors may be disadvantaged. Some of these concerns are outlined below. A shift in the "A" season dates also may have bycatch, protected resources, and other effects. The following provides a brief summary of these issues. Environmental and socioeconomic analyses would be required to determine the full nature and magnitude of these effects.

1. Increased Economic Return to the Pollock Fishery

The Roe Fishery

Under BSAI FMP Amendment 11 (52 FR 45966, December 3, 1987) and later Amendment 14, the EBS pollock fishery was divided into an "A" season and a "B" season. The "A" season is primarily a fishery for roe-bearing female pollock. During the roe-bearing time of year, pollock group into spawning aggregations, and can be harvested with less fishing effort than later in the year; in the "A" season these fish are harvested primarily for roe which provides for a profitable market overseas, mainly in Japan. Roe is a term for female ovaries that are filled with maturing individual eggs held in sacs or skeins. Male testes ("milt") may be mature during the "A" season as well, and also are marketed, but roe provides the greatest economic return from the suite of pollock products from the "A" season. While the "A" season is focused on roe (and some milt), fillets and surimi are also produced. Approximately 14-15 % by weight of a headed/gutted mature gravid female pollock can be roe. Roe and milt combined range from 3.5 to 5 % of the catch by weight of fish in the round. These figures are averages, as the recovery of roe (and milt) can be highly variable as can the ratio of male to female fish taken during fishing operations. Larger horsepower vessels that can fish deeper waters may harvest pollock that can yield 5-6 % roe. Some roe is produced from pollock

harvested in the "B" season as well, but recovery is significantly lower (generally around 0.5 % of round weight) during that time of year.

The average product mix from pollock in the Bering Sea is shown on Figures 1 and 2 based on data from the Pollock Conservation Cooperative. For the years 2002 through 2004, roe constituted 6 to 6.7 percent of products generated from the annual pollock harvest.

Figure 1. Pollock products marketed from Bering Sea fishery, 2002-2004 (Source: Figure 2 in Pollock Conservation Cooperative Annual Report for 2004)

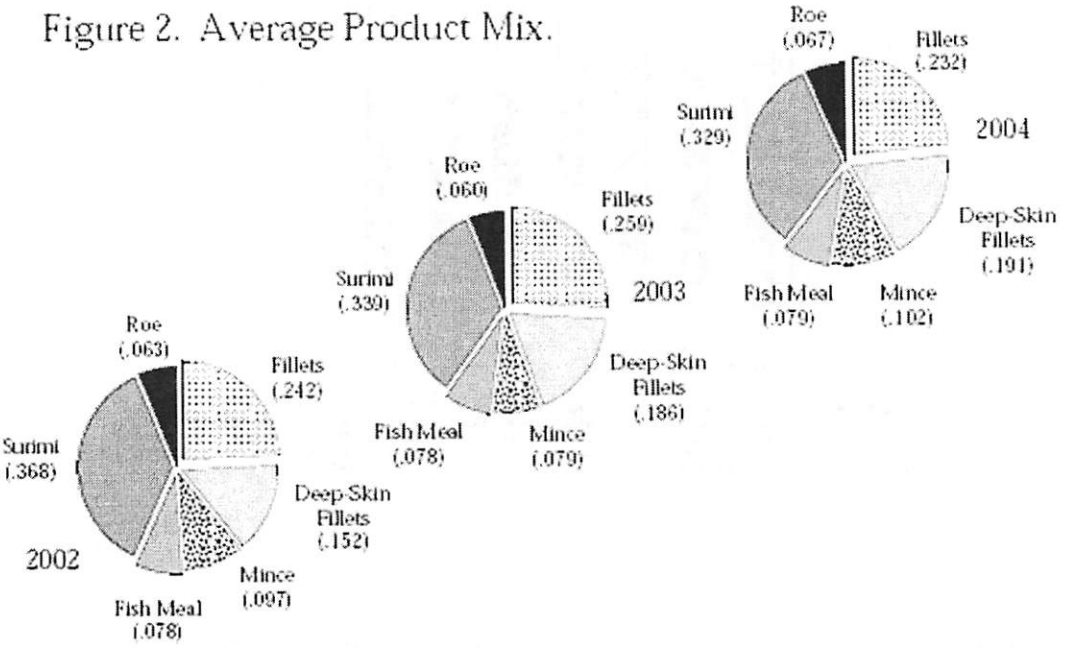
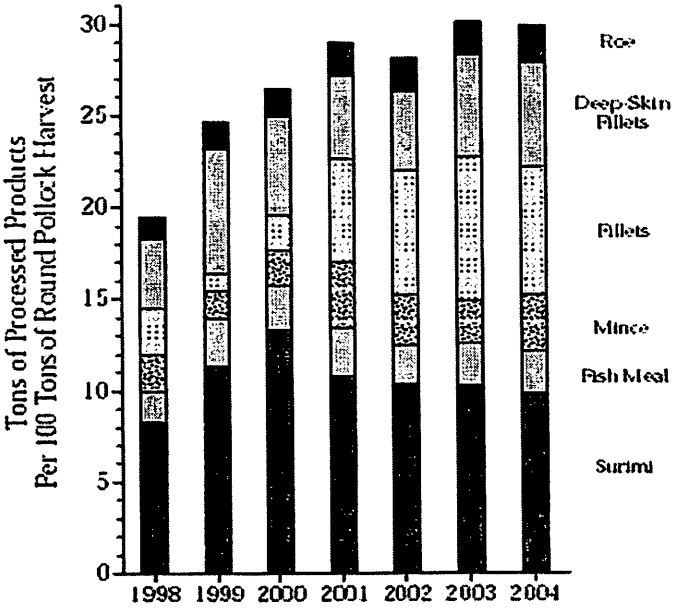


Figure 2. Range of products and recovery rates from pollock harvested in the Bering Sea fishery, 1998-2004. (Source: Figure 3 in Pollock Conservation Cooperative Annual Report for 2004)

Figure 3. Total Product Recovery and Mix.



During 2001-2004 total product recovery is estimated to have increased by 50% over the 1998 open-access "race-for-fish" baseline.

Source: SeaState, Inc. PCC and CDQ catch per haul 1998-2004; NMFS AK Region Pacific cod and pollock products by processing mode. 1998-2004, BSAI groundfish quotas and preliminary catch in round metric tons 1999-2004, and CDQ participation and catch by gear. 1999-2004. Note that this figure does not show product recovery rates, but instead the average product mix produced from the total amount of pollock harvested throughout the entire year by all PCC member vessels.

Catcher vessels and catcher/processor vessels harvest pollock with pelagic trawls. Generally fishermen try to avoid filling the nets to capacity so as to minimize potential bruising and crushing of the fish – a practice which improves roe quality. Pollock delivered to processors onshore or to motherships or on board catcher/processor vessels are processed by automatic fillet machines, and viscera are hand sorted by specially trained crew members. Headed/gutted pollock continue through filleting machines and fillets are packed or further processed into surimi. Milt and roe are separated from the viscera, graded, packed, and frozen. Frozen lots are packaged and shipped to distribution centers to await auction. Samples from each lot are retained for examination by buyers during the auction process; auctions generally occur in February and April each year.

From 1992-1998, the pre-rationalization period that was characterized by the "race for fish", the duration of the EBS pollock "A" season gradually shortened from 46 days to 25 days for the offshore sector and from 46 days to 30-37 days for the inshore sector. After

the AFA and new Steller sea lion protection measures came into place in the late 1990s, the "A" season lasted longer: 58-68 days for the mothership sector, 79-96 days for the catcher-processor sector, and 75-88 days for the inshore sector (2001-2003, excluding CDQ fisheries).

Roe Maturation

The industry's goal for the "A" season is to harvest as much of the seasonal pollock quota as possible, when roe is in optimum condition. Pollock roe is graded on multiple factors, including size, color, condition of the eggs (maturity), and damage. The optimal grade that would enjoy the highest value in the overseas market is generally a combination of these factors, with highest value from roe that are large mature skeins with no damage and good color. Combinations of these factors can lead to many possible roe grades, but industry has settled on approximately 16-17 grades. "Mako" grade is considered the premium, but buyers are the final determinant of quality, and thus price. Pollock fishermen and processors make pre-season and in-season decisions that attempt to optimize economic return.

In recent years, industry has encountered changing environmental conditions in the Bering Sea. Whether from climate regime shifts or other factors, industry has reported that Bering Sea waters seem to be warmer and more ice free in winter, and some suggest that warming trends may have affected the onset of pollock egg and sperm maturation. This effect has been noticed by the fleet in recent years as it has generally found more mature and higher quality roe-bearing pollock earlier in the season and in the cooler, more northern waters, particularly around the Pribilof Islands or even further north. The geographic location of fishing is not only determined by locations of highly concentrated pollock schools, but fishing also may be constrained geographically if salmon bycatch levels are reached that trigger closure of the Chinook Salmon Savings Area (CSSA), forcing the fleet to vacate the closed areas. The fleet also is constrained geographically by regulations restricting the amount of the "A" season TAC that can be harvested from the Steller Sea Lion Conservation Area (SCA).

In recent years, the quality of roe has become more unpredictable, and in some areas early in the "A" season, parts of the fleet have occasionally encountered spawned out schools while in other parts of the Bering Sea pollock schools harvested at the same time have yielded marketable roe. Given the geographic and temporal uncertainty in locations of optimal roe-bearing pollock, coupled with increased fuel and other costs to fish further from port, particularly for the shore-based fleet, the pollock industry believes that more harvesting efficiency, and therefore higher economic return, from the "A" season pollock quota could be achieved by allowing more flexibility in the start date of the "A" season. Given the small window of opportunity to harvest pollock during the period of peak roe maturity, an earlier start date for the "A" season would allow the industry the opportunity to capitalize on what appears to be a trend toward earlier maturity and enjoy greater economic return from the "A" season pollock quota.

Roe Value and Markets

The pollock fishery is unique and is affected by many factors. Each pollock fishing company develops its own fishing strategies as to where and when it will fish – decisions that remain proprietary to the individual fishing companies. As a consequence, each individual vessel, even those fishing for the same processor partner, will likely employ its own particular strategies to optimize return from the "A" season pollock fishery. For example, some roe buyers may prefer roe produced from a particular vessel because of its past performance, crew experience, or other factors, and thus that vessel and crew may seek to repeat past successful fishing strategies. Some indicate that given the changing conditions in the Bering Sea, the fleet has encountered more difficulty in repeating these strategies that may have worked well in past years. Some reports indicate that roe packed from the 2000 "A" season was much higher in quality than the roe packed from the 2004 season; for some companies 80% of the 2000 season was mako quality while 40% was marketed at that grade in 2004. According to the Southwest Regional Office, NMFS, the January-April 2004 average wholesale price for pollock roe marketed at several major central wholesale markets in Japan was 2,178 yen/kg. High quality roe can command significantly higher market value; some report that mako grade roe can command 2,400 yen per kilogram or higher, while the lowest grades wholesale at 400-500 yen per kilogram. The average price for pollock roe was 3,077 yen/kg in late 2000 (State of Alaska, Japan Office 2001).[2] Of course, exchange rates will affect roe value in overseas markets.[3] Industry reports that earlier season fishing routinely produces a higher percentage of prime quality roe, while late season fishing routinely produces a higher percentage of lower quality roe (and spawned-out fish).

Some vessels or fishing companies that have encountered a higher proportion of lower quality roe in recent years have sought to produce higher quantities of lower grades to compensate. The spectrum of factors including sea ice and temperature changes, geographic closures (CSSA and SCA), and highly variable roe maturity from school to school appear to have created a narrower window of prime roe production than existed in the 1990s. Industry believes that that window can be widened if the start date for the "A" season is moved to an earlier date than January 20.

According to industry, the economic value of the 2005 "A" season roe fishery was about $230 million. Roe is a significant proportion of the total economic return from the overall Alaskan pollock fishery (Figure 3). Some fishing companies report a threefold higher value of roe from the first 10 days of the season versus the last ten days based on a blend of shoreside and at-sea product values. Markets are primarily in Japan and Korea (Figure 4), although roe is also sold in Canada, China, and Europe. February and March are the largest export value months of the year for pollock roe (Figure 5). According to the U.S. Department of Agriculture Fishery Products Market News, U.S. pollock product exports totaled $519 million in 2004, increasing 19 percent from 2003 exports. The European Union, Japan and Korea accounted for over 95 percent of U.S. exports in 2004. Pollock exports through the first five months of 2005 are up eight percent over

[2] Biweekly Seafood Narrative Report Vol 3, No 2, January 26, 2001.
[3] Yen/dollar on September 26, 2005 was 112.17.

2004 exports through May. Pollock roe and fillets account for the majority of the exports with fillet exports increasing from $21 million in 2000 to over $212 million in 2004. The roe exports were valued at $287 million in 2004 (Fishery Products Market News).

Other countries have a pollock roe fishery, primarily Russia, and China and Japan also harvest pollock for roe. Russia's fishery is principally in the Sea of Okhotsk; Japan is their primary market. Some secondary processing of the Alaskan roe pack is conducted in China or South Korea.

Other Potential Benefits

A 5-day earlier "A" season could be an advantage to AFA vessels that may choose to enter other fisheries earlier than they would have without the 5-day early start to the "A" season. However, some in the EBS pollock industry have indicated a desire to avoid such a scenario, and the Council could institute a stand-down requirement for the pollock fleet to eliminate such concerns.

There may be other advantages to the EBS pollock fleet including increased opportunity to better schedule product offloads or stagger offloads to optimize fishing time (e.g. less time spent waiting for freighter arrival).

There also may be a tax revenue advantage to the State of Alaska which taxes fish landed shoreside. A higher value roe pack could generate higher tax revenues.

Other sectors of the fishing industry that derive economic benefits from the BSAI pollock fishery could benefit from any higher revenues generated from a higher value "A" season fishery including crews, processing plants and associated businesses, coastal communities, etc.

Any Down Side for the Pollock Fleet?

Vessels participating in an earlier "A" season in the EBS would need to sail to the fishing grounds that much earlier. If that season opened January 15, some operations might need to mobilize early in January, potentially affecting crew holidays. This might be felt more acutely by larger AFA vessels, particularly motherships or larger catcher/processors with large crews. Fishery managers also would have to gear up earlier, and observers would be required to be deployed earlier in the year.

Figure 3. Primary market countries for pollock in recent years. (Source: Fishery Products Market News http://www.fas.usda.gov/ffpd/Fish-Circular/Market_News/market.html)

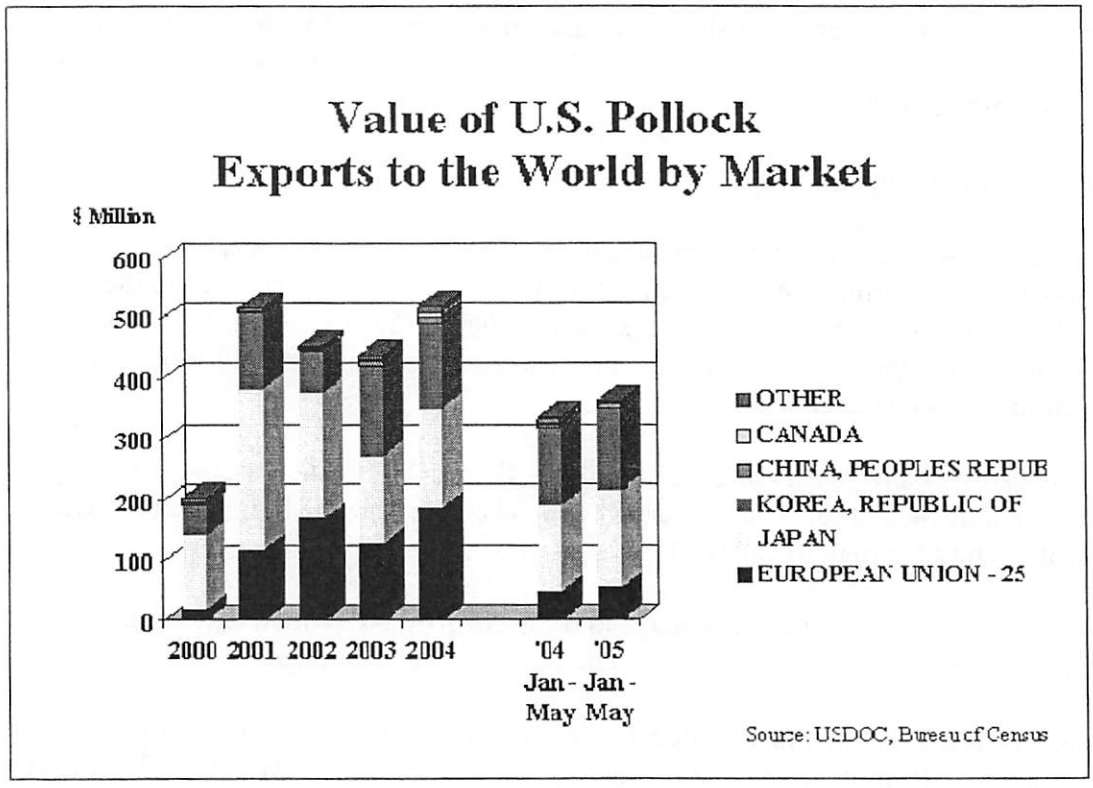


Figure 4. Value of pollock roe, fillets, and other products combined 2000-2004 and "A" season 2004 and 2005 compared. (Source: Fishery Products Market News http://www.fas.usda.gov/ffpd/Fish-Circular/Market_News/market.html)

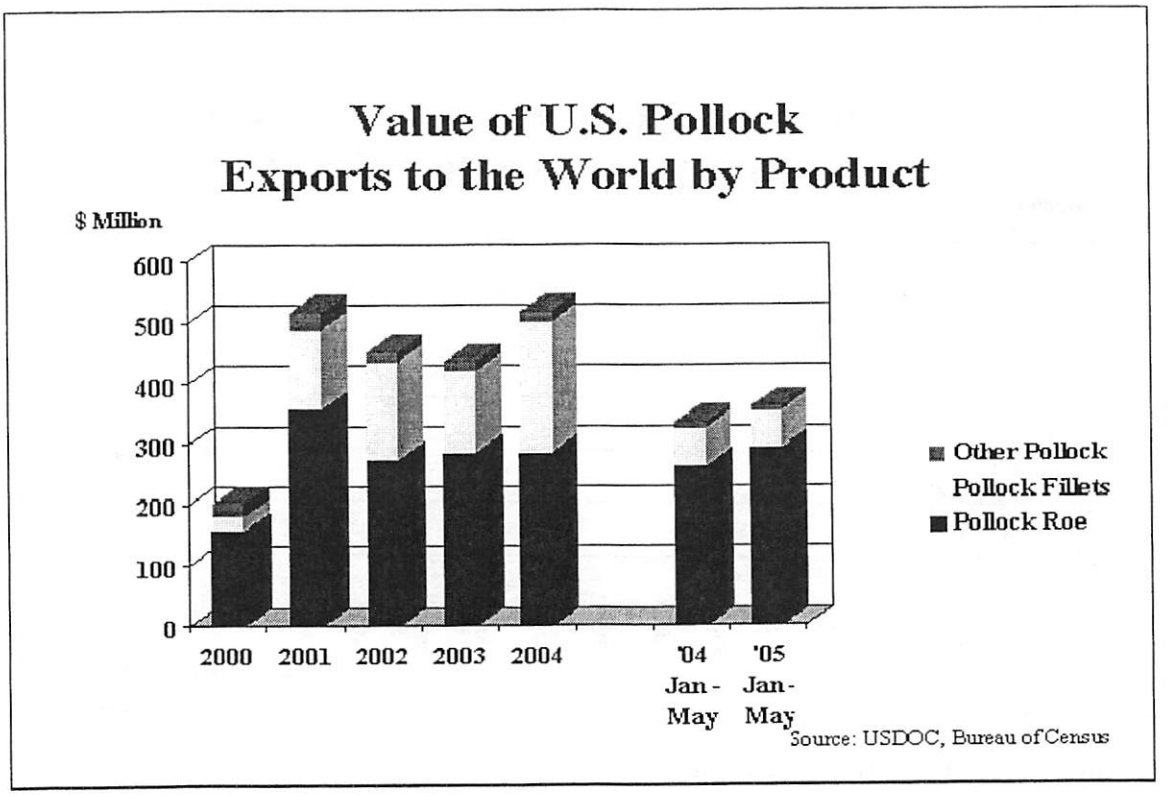
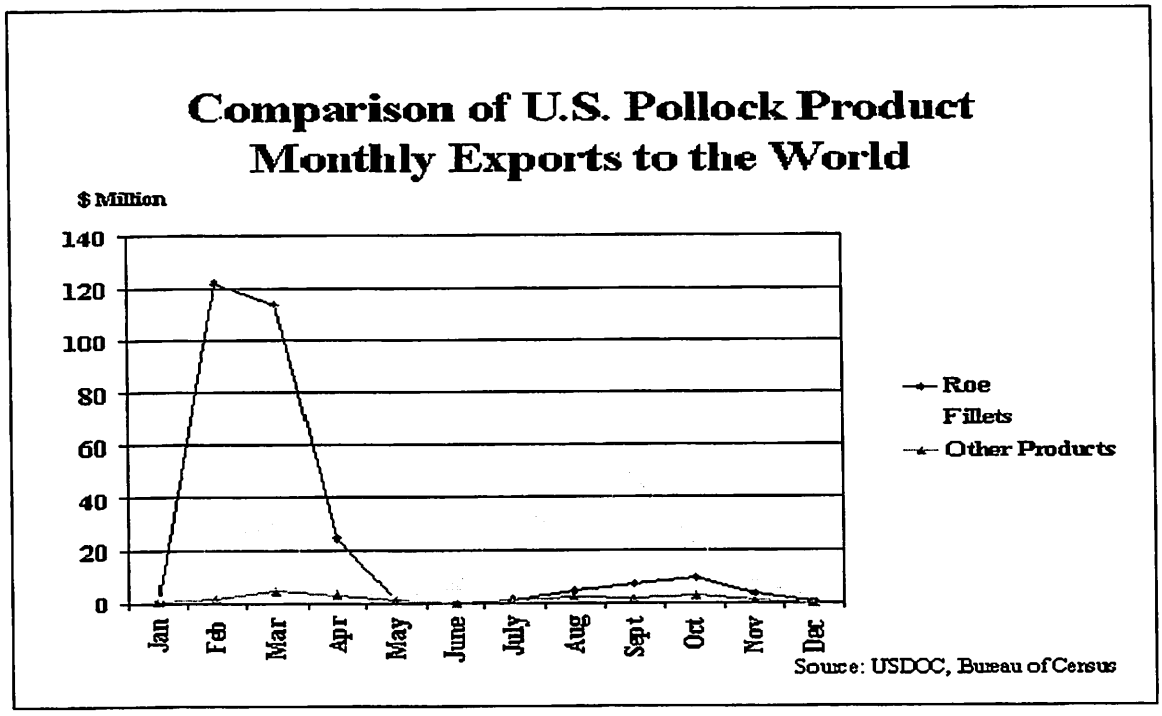


Figure 5. Monthly pollock export value by product type in 2004. (Source: Fishery Products Market News http://www.fas.usda.gov/ffpd/Fish-Circular/Market_News/market.html)



2. Impacts on Other BSAI Fisheries

Would the Season Change be for the Pollock Fishery Only?

An initial question for the Council to address is whether this 5-day earlier "A" season would be for the pollock fishery only or should it be applicable to other fisheries as well. Some industry sectors suggest that the Council should consider adjusting the start date for the "A" season for other groundfish trawl fisheries in the EBS so that they too commence with the pollock fishery.

Impacts on Other Trawl Fisheries

In effect, an earlier start of the pollock "A" season would provide an additional five days of fishing for the AFA fleet since the "A" season pollock quota is generally gone well before the regulatory end of the season. Some are concerned that providing an early start to the pollock season could result in listed AFA pollock catcher/processor vessels completing their harvest earlier, freeing these vessels to fish for other species such as yellowfin sole or P. cod earlier, or more intensively, than they would under the current season dates. Figure 6 illustrates locations of pollock harvesting activities during January 20-24 and Figure 7 shows P.cod and rock sole trawl locations during the same time period. Other sectors have expressed concern over the potential additional competition

for harvesting. The AFA pollock fleet has a large harvesting and processing capacity which could disadvantage other fisheries in a race for a particular species. Although sideboards for these species are in place, these AFA vessels have not always reached those limits; some believe that an earlier start by listed AFA catcher/processors in a sideboard fishery could result in them harvesting a larger proportion of the sideboard limits, reducing the volume of fish available to other fleets and increasing competition. Fisheries with sideboards for listed AFA catcher/processor harvests include primarily Pacific cod, yellowfin sole, rockfish, and several other flatfish fisheries.

Figure 6. Locations of pollock trawl locations during the period January 20-24 for the years 2001, 2002, and 2004.

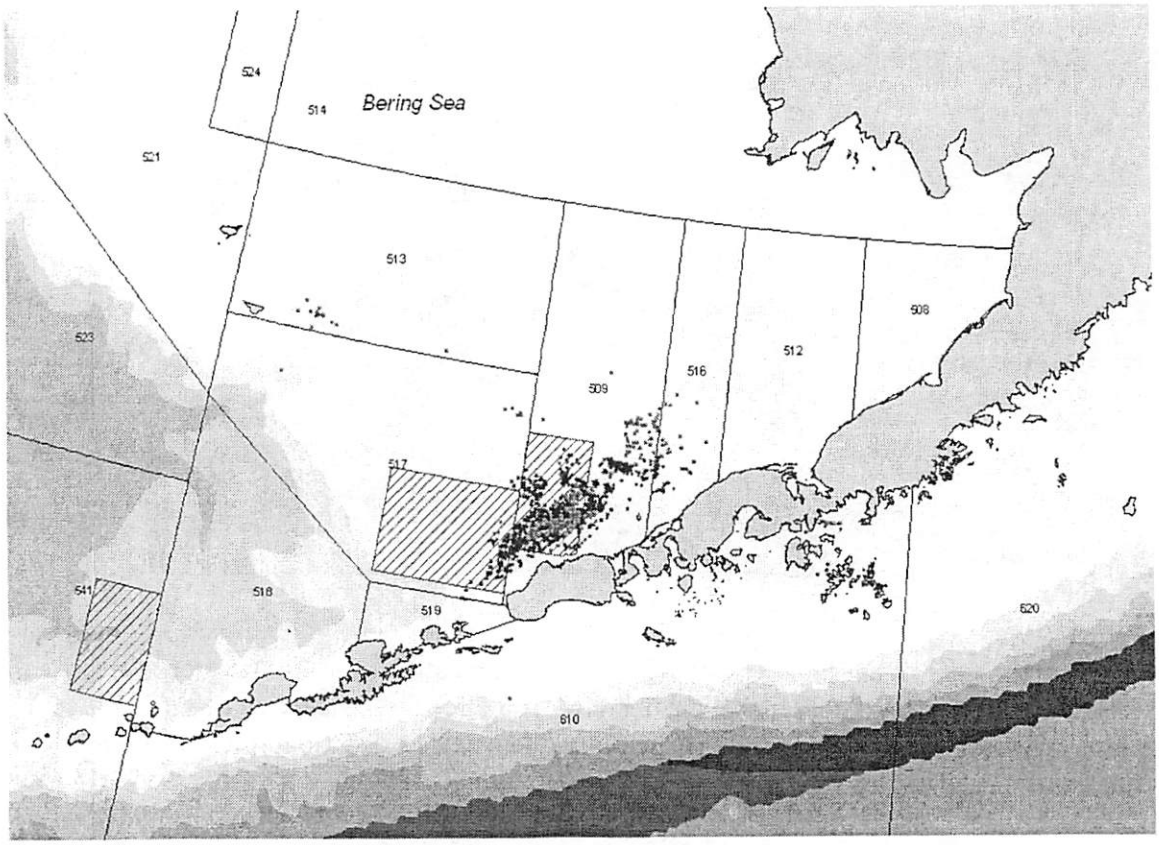
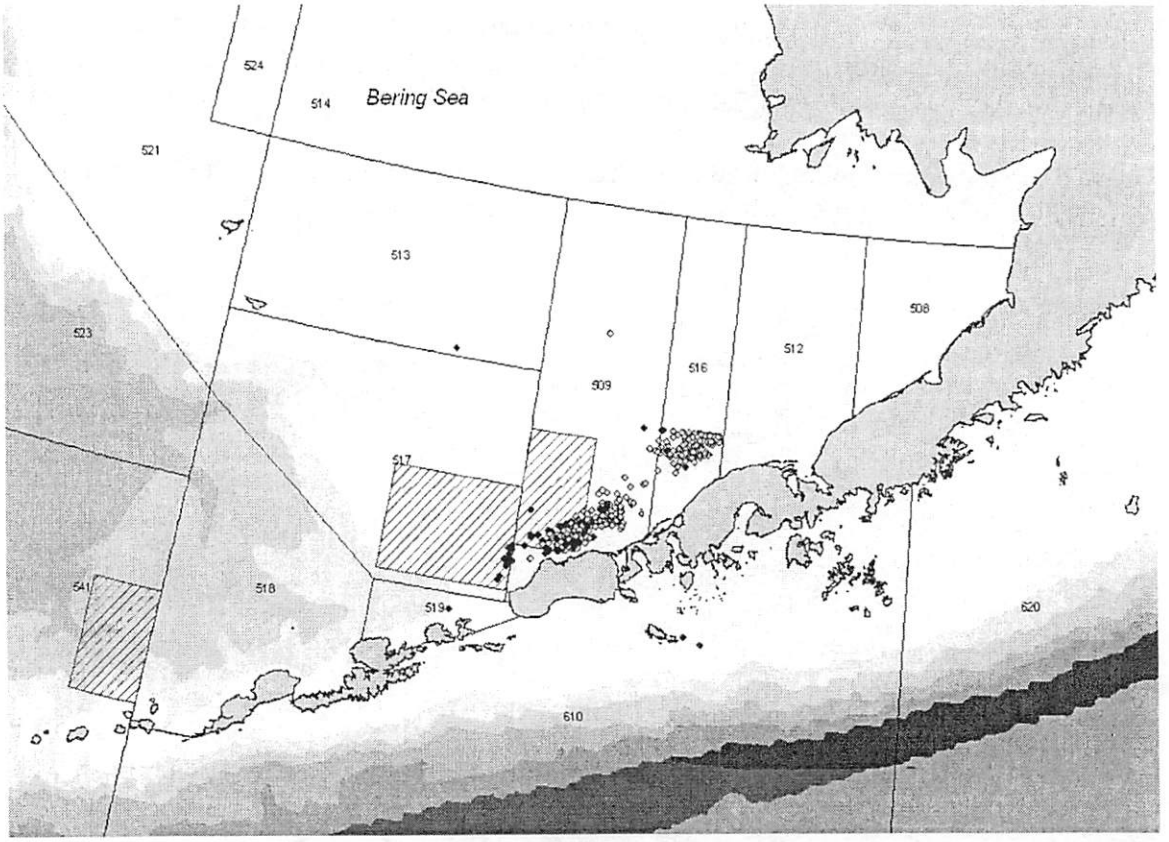


Figure 7. Locations of Pacific cod and rock sole trawl locations during the period January 20-24 for the years 2001, 2002, and 2004.



AFA catcher vessels are similarly restricted from harvesting other target groundfish stocks in the BSAI and have harvest sideboard limits for these fisheries. Similar effects from AFA catcher vessels on other fisheries could occur as described for listed AFA catcher/processors.

Some have raised a concern that in those years when pollock roe was not of optimal quality at the beginning of the "A" season, the AFA fleet (or portions of the fleet) could choose to delay fishing for pollock until roe maturity improved, and those vessels would instead focus on other groundfish. If the "A" season were set to begin even 5 days earlier, then under such a scenario other sectors might be further affected by the increased competition. Some in the pollock industry have suggested that this scenario could be eliminated by a provision limiting early "A" season AFA vessel fishing activity to pollock only.

Some industry representatives believe that, in practice, the BSAI currently experiences a race for P. cod among non-AFA vessels, AFA exempt vessels, and some AFA non-exempt vessels. Some assert that an earlier pollock "A" season would be a possible

advantage to AFA non-exempt vessels, because they could complete the pollock fishery and then move that much earlier into P. cod, adding competitive pressure to those already participating.

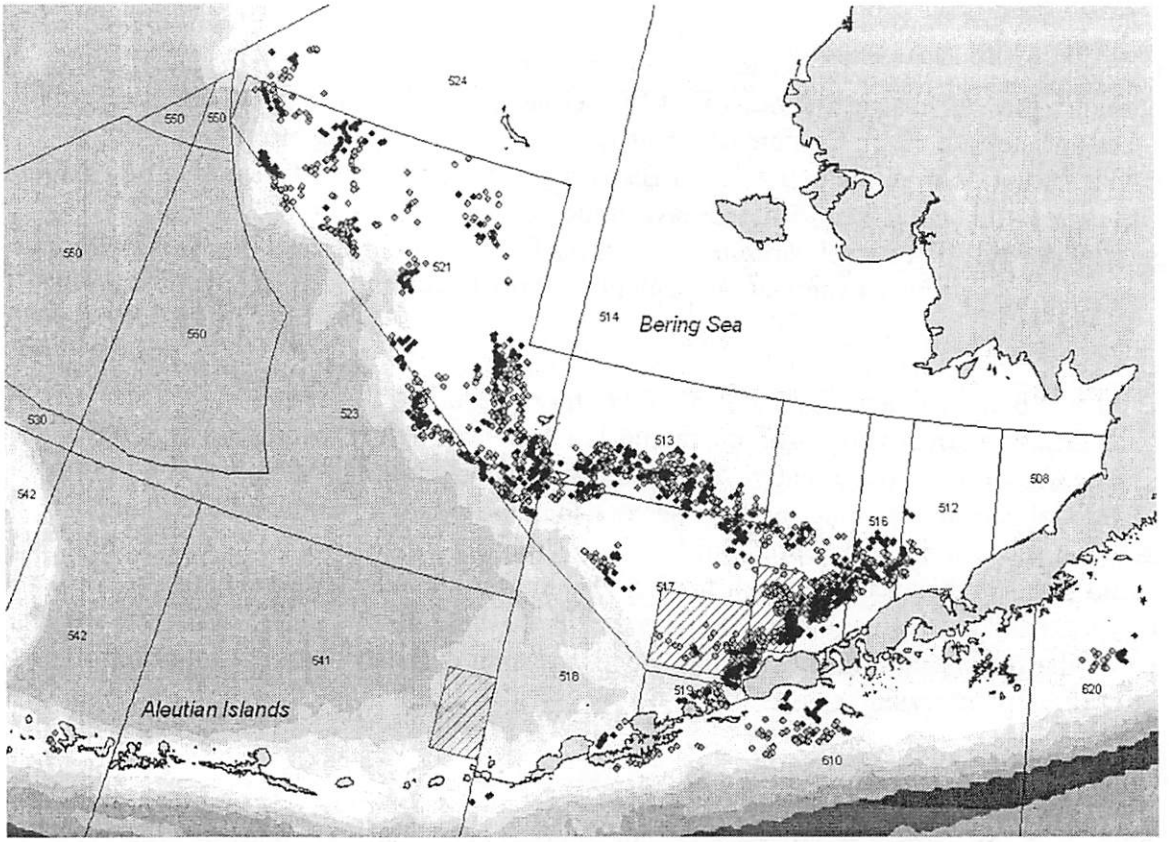
Options the Council could consider to reduce interactions between an AFA fleet fishing earlier in the "A" season and other BSAI fishermen might include a stand-down period or other measures to retain the current length of time listed AFA catcher/processor or catcher vessels can participate in other BSAI fisheries. Or some of these other non-AFA fisheries could be allowed to start 5 days earlier as well, either with or without restrictions on AFA vessel participation. Or the Council could restrict the AFA pollock fleet to a pollock-only fishery at the beginning of the EBS trawl season or for 5 days at the end.

But some believe that an early start for other trawl fisheries might have little or no compensating effect. For example, in mid January, some target species may not be aggregated or may not be mature, or markets may not be optimal, and thus providing an additional period of fishing for these sectors could have little or no benefit to them. Another scenario is that by providing an early start date for other trawl fisheries, this could result in their reaching their respective quotas more quickly. This could be considered a disadvantage if it lengthens the period these vessels must wait at the end of a particular fishery until the next fishery opens, causing vessels to stand down or return to port, thereby increasing cost.

Impacts on Fixed Gear Fisheries

Some assert that fixed gear fisheries could be affected to some extent by an earlier start date for the EBS pollock fishery. The longline fishing season opens in the Bering Sea on January 1, and the longline fleet has about 20 days of fishing time to prospect and locate optimal fishing grounds before trawl gear is deployed in the Bering Sea. Some in the fixed gear fishery sector believe they could be disadvantaged if that 20-day fishing period open only to fixed gear is shortened. The pollock trawl fleet might operate in some areas where fixed gear fisheries would operate, perhaps changing cod schooling behavior or preempting some areas of the fishing grounds and displacing fixed gear fisheries earlier than would occur under the status quo (Figure 8). Overlap of trawl and longline fisheries could be exacerbated in years when more geographically extensive ice conditions reduced the area of fishing grounds in the Bering Sea.

Figure 8. Locations of P. cod longline sets during January 1-20 for the years 2001, 2002, and 2004.



Impacts on Crab Fisheries

The EBS pollock "A" season occurs at the same time as the scheduled opilio and bairdi Tanner crab and brown king crab seasons, and may overlap spatially with these crab fisheries. While this overlap occurs currently, gear conflicts or grounds preemption issues have largely been avoided. It is unlikely that a 5-day earlier pollock "A" season would exacerbate this situation.

Now that a rationalization program is in place for the crab fisheries, it is unclear if there might be some kind of future effects of an earlier EBS "A" season on these crab fisheries. It may take some time for the crab fisheries to evolve and establish specific patterns of fishing activity in time and space before a clear answer might emerge. The complex interplay between weather, processor needs, markets, and other fisheries would require more research and analysis to better characterize how these issues might play out if there is a change in the EBS pollock "A" season.

3. Effects on Sideboard Fisheries in the GOA

If the EBS pollock fishery starts earlier, it is possible that the fishery could be completed earlier, allowing non-exempt and exempt AFA catcher vessels an earlier opportunity to move into the GOA and harvest groundfish there. To what extent earlier participation of these vessels in the GOA might affect the GOA-based fleet is unknown but could be similar to concerns listed above for other groundfish fishery sectors in the Bering Sea.

Under provisions of the AFA, non-exempt AFA catcher vessels have harvesting sideboard limitations in the GOA. AFA vessels that harvest pollock in the Bering Sea can fish in the GOA, but only up to specific quota limits. These limits protect GOA fishery sectors that have not benefited from provisions in the AFA from fishermen who have received exclusive harvesting privileges under the AFA. There is a segment of the AFA catcher vessel fleet that is exempt from harvesting sideboards – these are catcher vessels less than 125 ft LOA that have smaller harvesting privileges in the EBS pollock fishery and have significant historic participation in the GOA fisheries. There are approximately 16 exempt AFA catcher vessels.

Besides AFA catcher vessels being sideboarded based on harvesting history, there are additional restrictions that apply. Any catcher vessel fishing groundfish in the Bering Sea, when the Bering Sea is open to directed pollock fishing, cannot trawl in the WGOA or CGOA until three days after landing or offloading all groundfish. AFA catcher vessels are further restricted for pollock fishing in the GOA and are prohibited from fishing in the roe season or the non-roe season in both the EBS and the GOA during the same year. A vessel must choose between fishing in the EBS from January 20 to June 10 or fishing in the GOA from January 20 to May 31 for the roe season or fishing June 10 to November 1 in the EBS or August 25 to November 1 in the GOA for the non-roe season. Vessels less than 125 feet LOA are exempt from this restriction when fishing east of 157 degrees W (basically east of Sutwik Island at the eastern edge of the Shumagin Islands). Thus the pollock sideboard protection measures are more restrictive to AFA catcher vessels in the WGOA and part of the CGOA, and thus any possible effects of an earlier EBS pollock "A" season may be less in these areas. The above scenarios are largely theoretical. In practice, the GOA quotas for many fisheries for which AFA vessel sideboards exist close well before any AFA vessels could participate.

Given the above restrictions, and with a 5-day early start to the EBS pollock "A" season, an AFA cooperative could structure an intra-coop agreement that apportioned its pollock quota to all but, say, one of its member vessels, freeing that vessel to fish the GOA during the A/B season while the remaining coop vessels fished the coop's EBS quota – using the extra 5 days of fishing time to harvest what the excluded vessel would have fished. Such a situation could result in greater harvesting capacity introduced into the GOA.

4. Impacts on PSC or Other Species Bycatch

When the Council approved Amendment 19 to the BSAI FMP (1992), the Council had determined that BSAI trawl fisheries bycatch rates for halibut, salmon, crab, and herring

often were higher early in the year, and decided to delay the start of the BSAI trawl fisheries to reduce those bycatch rates. While the Council recognized that bycatch rates were variable from year to year, the Council determined that delaying the start of trawl fisheries from January 1 to January 20 would benefit these PSC species, particularly Chinook salmon which showed the greatest potential benefit from a later season start date. Fixed gear fisheries were not considered a major concern and their start dates were left at January 1.

Today the Bering Sea pollock fishery is prosecuted under different conditions than were extant at the time Amendment 19 was implemented. The fishery in the early 1990s occurred before the American Fisheries Act and before the advent of pollock fishing cooperatives, and occurred under the Olympic system and its race for fish. Harvesting patterns and PSC bycatch rates and locations likely were different then than now. Also, Amendment 57 prohibited the use of nonpelagic trawl gear in the directed pollock fishery, thereby reducing concerns over bycatch of halibut and crab. In recent years, Chinook bycatch rates have been fairly level over the early part of the "A" season, occasionally spiking higher later in the "A" season (see Figure 9). It is probably reasonable to assume that the Chinook bycatch rate for the period January 15-20 would be similar to the recent January 20-25 rates.

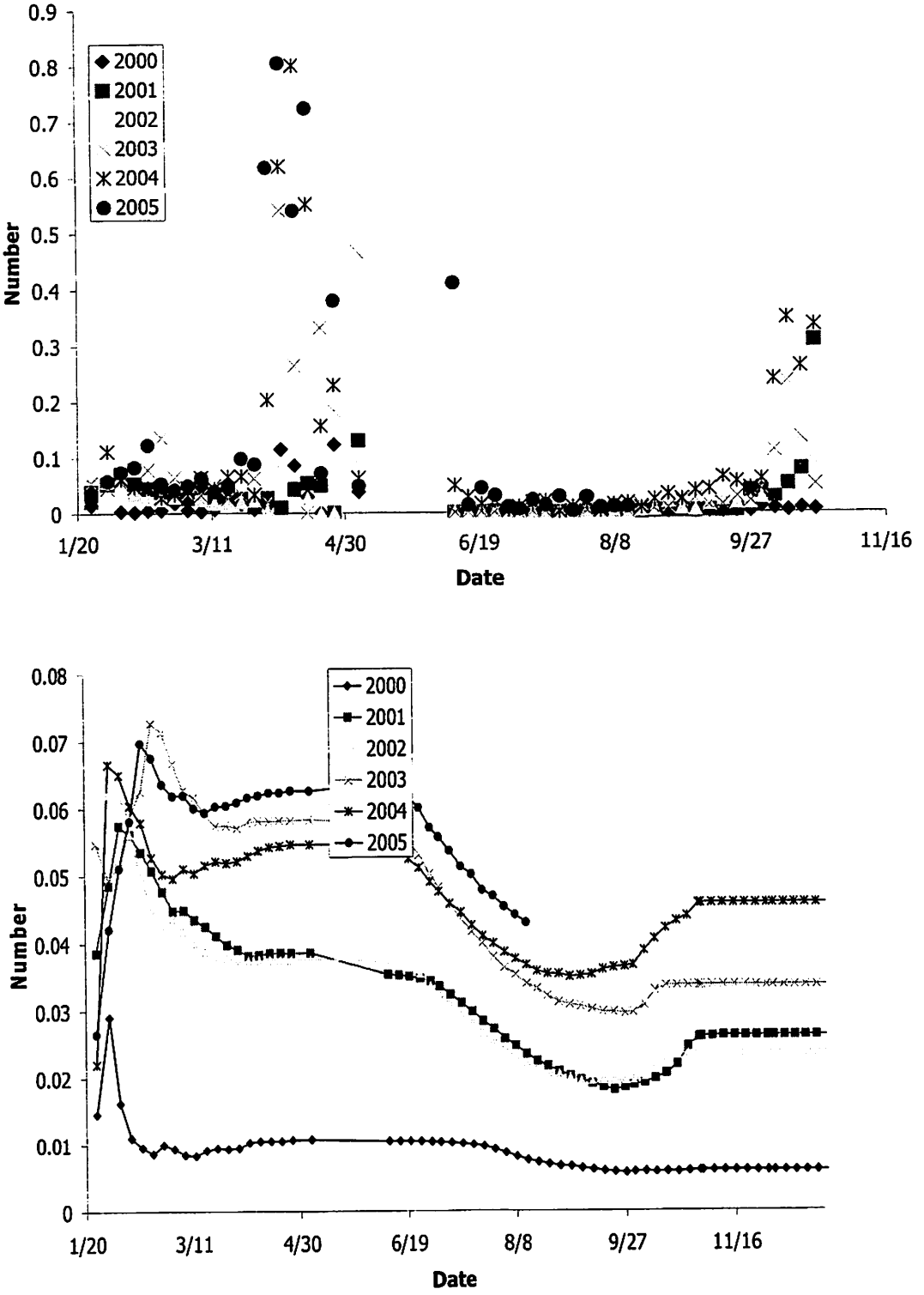


Figure 9. Chinook salmon catch rate (number per ton of pollock) based on observed vessels only (2000-2005). Top panel represents the average bycatch at 5-day intervals while the bottom panel represents the cumulative number per ton of pollock. Data for 2005 are preliminary and extend to Aug. 13, 2005.

A related issue is the potential for an earlier closure of the Chinook Salmon Savings Area (CSSA) in the Bering Sea. If a 5-day earlier fishery results in sufficiently-increased Chinook bycatch amounts such that the Chinook cap is hit prior to April 15, then the CSSA would close prior to April 15. In recent years that trigger has not been pulled but it was close in 2003-2005 (table below). Perhaps starting the pollock fishery earlier could provide an opportunity for increased Chinook bycatch such that the cap is reached before April 15, causing the fishery to be excluded from the CSSA during part of the "A" season. This could force the fleet into less desirable fishing areas, possibly into areas with higher PSC or other target species bycatch rates. If the Council chooses to start other trawl fisheries early as well, those fisheries also could encounter higher Chinook bycatch rates.

Year	Chinook non-CDQ Bycatch cap to Close CSSA	Non-CDQ Chinook Bycatch Jan 20-April 15
2001	37,925	16,679
2002	34,225	20,378
2003	30,525	32,103*
2004	26,825	22,822
2005	26,825	26,346

* CSSA not closed prior to Apr 15 in 2003; bycatch amount calculated later in year
Note: 2000-2001 data from blend; 2003-2005 from Catch Accounting System

Another factor to consider is that the cumulative annual Chinook and "other" salmon bycatch has increased in recent years; the reasons for these increases and potential measures to reduce bycatch are currently being examined by the Council. Under current salmon bycatch management in the EBS, the AFA cooperative fleet uses a voluntary hotspot salmon bycatch avoidance system, which would likely continue regardless what fishing season start dates were in place and perhaps maintain current rates. The Council is considering a change in how salmon bycatch is managed in the Bering Sea, possibly involving an expanded voluntary hot spot bycatch management program without salmon savings areas in place, and this future program also could affect salmon bycatch patterns. In turn, the analysis supporting the Council's preferred new alternative salmon bycatch program in the Bering Sea could be affected by a pollock fishery season change, and the new salmon bycatch program might be reevaluated accordingly. And the seasonal distribution of salmon may be different now because of changes in ocean conditions or salmon behavior, further affecting potential bycatch rates. Analysis of these factors and their various permutations would be required to better characterize the implications to salmon or other PSC bycatch from a change in the BSAI pollock fishery "A" season. An analysis of recent EBS pollock fishery salmon bycatch rates has been conducted by the Council; that analysis might be expanded to include alternative fishery start dates to examine potential effects on salmon bycatch.

Another possibility is that, with an earlier season start, and assuming pollock roe were in optimal quality and the harvest was more efficient and harvest amounts were higher early in the season, the pollock fleet might harvest its "A" season quota more quickly, shortening the season and potentially reducing PSC bycatch.

Industry is experimenting with alternative pollock trawl designs that include salmon excluder devices. If the industry sees a benefit from a salmon excluder in reducing salmon bycatch rates, it is likely that this new gear would affect salmon bycatch rates regardless what the season opening date was.

Listed AFA catcher/processors that harvest other target groundfish stocks in the BSAI area have PSC sideboard limits. PSC caught by listed AFA catcher/processors that participate in most BSAI groundfish fisheries other than pollock accrue PSC bycatch toward these PSC sideboard limits. Some of these listed AFA catcher/processors may fish earlier, or for a longer period of time, as a consequence of starting the EBS pollock "A" season earlier, perhaps encountering higher PSC bycatch rates. Harvest of sideboard quotas by these vessels could change if PSC limits are reached earlier. It is unclear that attaining sideboard PSC limits faster would affect other fisheries. Currently other groundfish fisheries experience seasons with low participation from AFA vessels, but if that changes to some degree, then the fishing opportunities they have also may change.

AFA catcher vessels are similarly restricted from harvesting other target groundfish stocks in the BSAI and have PSC sideboard limits for these fisheries. And non-exempt AFA catcher vessels that fish sideboard quotas in the GOA have PSC sideboard limitations. If these vessels fish earlier in the GOA, it is possible they may encounter different PSC bycatch rates that could affect how soon those PSC limits are reached. Again, it is unclear whether such scenarios could affect other fisheries.

As with salmon, other PSC bycatch rates could be different if the pollock fishery started earlier. Halibut, crab, other salmon, and herring bycatch rates would likely remain at similar rates during a fishery that occurred 5 days earlier, and higher bycatch amounts could accrue earlier in the season as a result. Bycatch of non-target groundfish also could change with a pollock season change.

If the Council extends the 5-day earlier season to other trawl fisheries, bycatch could change in each of those fisheries also. Or if the early season is not allowed in other trawl fisheries, but some level of grounds preemption or displacement occurs, other fisheries might incur different PSC or other target species bycatch rates in these other fishing areas. Analysis of historic bycatch rates in these fisheries could provide some insights into possible domino effects.

5. Effects on CDQ Fisheries

CDQ fisheries likely could be affected in ways similar to those discussed above. While these are individually smaller fisheries, CDQ groups may experience different effects on their fisheries performance depending on the nature of each group's fishing plans for a particular "A" season. For the most part, CDQ pollock fisheries are prosecuted by the same AFA vessels fishing the directed pollock quotas, so conflicts are unlikely. Some suggest that the CDQ fisheries could benefit from an enhanced economic return that could accrue to the overall pollock industry from a 5-day earlier start to the "A" season.

The CDQ pollock season in the BSAI is the same as the EBS pollock season, starting January 20. Would the Council consider changing the start date for the CDQ pollock fishery also if it chooses to begin the EBS pollock season earlier? And if other trawl fishery start dates are changed to match the EBS pollock fishery, would this apply to other CDQ fisheries? And to what extent might changes in CDQ fisheries affect the rates of PSQ bycatch in these fisheries? Currently CDQ fisheries are allocated 7.5 percent of the PSC for Chinook and other salmon and for halibut and the crab species.

6. Effects on Protected Species

Seabirds and marine mammals could be affected by an earlier pollock "A" season in the EBS. Additional fishing effort in the EBS could increase seabird injury or mortality, but probably at the rate currently experienced in this region in the mid- to late-January time period. An earlier closure of the season could reduce seabird and marine mammal interactions.

Similar interactions with marine mammals could be an issue of concern, particularly with Steller sea lions. In the 2001 Biological Opinion, NMFS determined that pollock is an important prey item for SSLs and established restrictions on the pollock fleet to buffer fishing activities from SSL prey in Critical Habitat. SSL researchers have determined that the winter season between November and April/May is a particularly sensitive time period for juvenile and lactating female sea lions that are foraging on pollock and other prey items. SSL protection measures provide for a closure of the GOA and BSAI to pollock fishing November 1-January 20. Starting the EBS pollock season earlier than January 20 would result in earlier removals of pollock from the EBS, possibly reducing the foraging opportunities for some SSLs. This issue could require a formal Section 7 consultation under the ESA to determine any possible concerns over jeopardizing SSLs or adversely modifying their critical habitat.

It is unclear how an earlier EBS pollock "A" season would affect the regulatory apportionment of the pollock DFA. Under Steller sea lion protection measures, only 40 percent of the quota can be harvested in the "A" season. And under regulations at 679.22(a)(7)(vii), the pollock harvest from the Steller sea lion conservation area (SCA) is limited to no more than 28 percent of the annual DFA before April 1. A 5-day longer pollock "A" season could speed the attainment of the 40 percent limit, or even the 28 percent limit in the SCA, although vessels in the SCA could simply move out to other fishing grounds. Historic patterns of fishing inside and outside the SCA, including PSC and other bycatch rates, would be required to better characterize this potential issue.

Also, endangered species of salmon and steelhead originating from streams in the Northwest U.S. may occur in the Bering Sea. In a 1999 Biological Opinion, NMFS determined that a Chinook bycatch limit of 55,000 would likely protect these ESUs from excessive bycatch mortality in groundfish fisheries in the BSAI region. The 1999 Incidental Take Statement (ITS) was superseded by the FMP 2000 BiOp and ITS which set a limit of 55,000 Chinook salmon in the BSAI groundfish fisheries. However, in

2004 this limit was exceeded, triggering a reinitiation of formal consultation between the NMFS Alaska Region and NMFS Northwest Region. At the current rate of Chinook salmon bycatch, the limit could be exceeded in 2005 as well, perhaps requiring another consultation depending on the actual level of bycatch. The bycatch of Chinook salmon was 40,866 as of September 17, 2005. An early start date for the pollock fishery could raise ESA issues with endangered or threatened salmonid ESUs if the bycatch of Chinook salmon were to increase as a result.

7. Effects on the Benthic Environment

Pollock harvest in the BSAI may only be conducted with pelagic trawls (regulations at 679.24(b)(4)) and operated within the trawl performance standard at 679.7(a)(14). This standard requires that no more than 20 crabs with a carapace width of >1.5 inches can be on board at any one time. Pelagic trawls can be fished near or on the seafloor, depending on where pollock targets occur or whether the seafloor is too rugged to risk fishing near bottom. While it may be unlikely that starting the "A" season earlier will result in more bottom contact, if pollock aggregations are found to be closer to the bottom earlier in the season, the potential increased bottom contact could affect benthic habitat.

Some Thoughts on the Current Fishery Management Balance

Based on the preceding discussion and the current state of the FMPs, one thing that is evident is the state of regulatory equilibrium. Some might characterize the status quo groundfish fisheries in the BSAI and GOA as being in a delicate but necessary "balance" among the many different and competing interests. Over a period of nearly 30 years under the Council process, gear groups have each established fishing patterns that "work" for them. The AFA has rationalized a large BSAI fishery and to some extent made fishing practices of the vessels involved in the AFA fishery more predictable. In all of the BSAI and GOA fisheries, PSC limits and apportionments have been developed through years of trials. Target species quotas and apportionments to sectors, seasons, CDQ groups, and as ICA for various fisheries have been established and many of the allocative decisions are largely suggested by industry itself. In short, the GOA and BSAI fisheries exist in a state of regulatory equilibrium.

Generally, change in a fishery, no matter how small it may be, may have consequences that alter this regulatory equilibrium. In rationalized fishery systems, every sector participating in those fisheries each has received a level of control over its own fishery. Change in a particular fishery sector, then, would be "felt" primarily in that sector and would be "worked out" within the sector in most cases. However, in a system not yet fully rationalized, where rationalized fisheries are prosecuted concurrently with fisheries that are still in a race for fish, even a change that may appear small and inconsequential in one sector, particularly a rationalized sector, can still have, or at least initially can be perceived to have, undesirable consequences to another sector. Thus, as is usually the case, a socio-economic review and analysis of the balance among these systems in the Bering Sea, as it might relate to a change in fishing seasons, would identify these issues.