Public Testimony Sign-Up Sheet
Agenda Item D-3 Salmon Bycatch

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NOTE to persons providing oral or written testimony to the Council: Section 307(1)(I) of the Magnuson-Stevens Fishery Conservation and Management Act prohibits any person " to knowingly and willfully submit to a Council, the Secretary, or the Governor of a State false information (including, but not limited to, false information regarding the capacity and extent to which a United State fish processor, on an annual basis, will process a portion of the optimum yield of a fishery that will be harvested by fishing vessels of the United States) regarding any matter that the Council, Secretary, or Governor is considering in the course of carrying out this Act.

AGENDA D-3
FEBRUARY 2007

MEMORANDUM

TO: Council, SSC and AP Members

FROM: Chris Oliver
Executive Director

ESTIMATED TIME
2 HOURS

DATE: January 30, 2007

SUBJECT: Salmon Bycatch

ACTION REQUIRED
(a) Update on BSAI Amendment 84
(b) Review discussion paper on spatial analysis/interim caps and refine alternatives as necessary
(c) EFP Enforcement Audit Report

BACKGROUND

(a) Update on Amendment 84

In October 2005, the Council took final action on Amendment 84, electing to exempt vessels participating in a voluntary rolling hot spot (VRHS) system from regulatory salmon savings area closures. Regulations to promulgate this exemption since then have been delayed due to concerns regarding inclusion of key operational components of the salmon bycatch reduction Inter-Cooperative Agreement (ICA). Specifically, during the course of Alaska Region review of Amendment 84, legal concerns arose with draft implementing regulations. These legal concerns focus on meeting minimum standards to ensure program integrity, while maintaining flexibility for the pollock fleet to dynamically adapt business practices to avoid salmon bycatch. Alaska Region and NOAA GC staffs have been working with industry, and have largely resolved these concerns. A proposed rule to implement Amendment 84 is currently being drafted and is expected to be published in the *Federal Register* in the near future.

As a short-term measure to evaluate the operational flexibility needed to efficiently reduce salmon bycatch under these key components, an exempted fishing permit (EFP) was issued for the 2007 season. The EFP will sunset in the event that regulations for Amendment 84 are in place prior to the end date of the EFP.

In conjunction with actions to implement Amendment 84 and implementation of the EFP, a supplemental Biological Opinion was completed which considered new information related to the effects of the BSAI groundfish fisheries on ESA listed salmonids. This consultation was reinitiated due to the BSAI groundfish fisheries exceeding the level of incidental take as specified in the November 30, 2000 Biological Opinion. NMFS concluded that the BSAI groundfish fisheries are not likely to jeopardize the continued existence of Lower Columbia River (LCR) Chinook or Upper Willamette River (UWR) Chinook and will either have no effect, or are not likely to adversely affect, other ESA listed salmon and steelhead species. NMFS concluded that the take of listed species of LCR and UWR Chinook salmon in BSAI groundfish fisheries is best characterized by the range of recent observations (rather than the specified incidental take indicator of 55,000 Chinook) and that in judging the fishery in future years the agency will use the range (36,000 to 87,500) to assess whether there have been significant increases in the take of listed Chinook. The supplemental Biological Opinion is attached as **Item D-3(a)(1)** and the 2006 annual report of salmon harvested in the Alaska groundfish fisheries as **Item D-3(a)(2)**. This annual report fulfils one of the terms and conditions of the supplemental biological opinion described above.

(b) Review discussion paper/Refine alternatives

In December 2005, the Council revised the existing draft suite of alternatives for the next phase of the salmon bycatch analysis (currently referred to as Amendment 84B). This amendment package is intended to follow up on remaining measures that were not analyzed under Amendment 84. The current problem statement and draft suite of alternatives for these amendment packages are attached as **Item D(3)(b)(1)**. In October, 2006 the Council indicated its intent to move forward with refining the alternatives for analysis under amendment package B-1. In doing so, the Council therefore tasked staff to prepare discussion paper summarizing information pertinent to salmon bycatch and with guidance from the SSC comments following the 2006 salmon bycatch workshop. This discussion paper is attached as **Item D-3(b)(2)**. The discussion paper provides the following information: pollock fishery and salmon bycatch patterns by species; patterns of spatial persistence in salmon bycatch from 2001-2006 by species; preliminary analysis of patterns in age/length of salmon bycatch by species; a discussion of alternatives for establishing trigger caps as catch limits by species; and a review of alternatives before the Council under the forthcoming bycatch reduction amendment analyses. The purpose of this paper is to provide information necessary to refine alternatives under amendment package B-1, including a process to evaluate new closure systems and trigger limits for salmon bycatch by species. The Council at this meeting may choose to refine these alternatives for analysis.

Endangered Species Act (ESA) Section 7 Consultation –
Supplemental Biological Opinion

Action Agency: National Marine Fisheries Service, Alaska Region (NMFS)

Species/Evolutionarily Significant Units Affected:

Species	Evolutionarily Significant Unit	Status	Federal Register Notice	
Chinook Salmon (*O. tshawytscha*)	Lower Columbia River	Threatened	70 FR 37160	6/28/05
	Upper Willamette River	Threatened	70 FR 37160	6/28/05

Activities Considered: Supplemental Biological Opinion Reinitiating Consultation on the November 30, 2000 Biological Opinion regarding Authorization of Bering Sea/Aleutian Islands Groundfish Fisheries

Consultation Conducted by: NMFS, Sustainable Fisheries Division, Northwest Region.

Consultation Number: F/NWR/2006/06054

In this supplemental biological opinion NMFS considers new information related to the effects of the BSAI groundfish fisheries on ESA listed salmonids. NMFS reinitiated consultation on its November 30, 2000 biological opinion because the level of incidental take of ESA listed Chinook salmon specified in the opinion was exceeded. The North Pacific Fishery Management Council and NMFS Alaska Region are considering changes to management practices in the current Fishery Management Plan (FMP) that are designed to reduce the bycatch of Chinook. The details of these changes are proposed for implementation, in the near term, through an Exempted Fishing Permit, and eventually through Amendment 84a to the BSAI Groundfish FMP. In this opinion NMFS concludes that the proposed action is not likely to jeopardize Upper Willamette Chinook or Lower Columbia River Chinook, and is not likely to affect other ESA listed salmonids. This supplemental biological opinion has been prepared in accordance with section 7 of the Endangered Species Act , as amended (16 U.S.C. 1531 et seq.). A complete administrative record of this consultation is on file with NMFS, Sustainable Fisheries Division in Seattle, Washington.

Approved by: D. Robert Lohn

D. Robert Lohn, Regional Administrator

Date: 1/11/07

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1. INTRODUCTION

This supplemental biological opinion (BiOp) is a consultation with the National Marine Fisheries Service (NMFS) regarding NMFS' authorization of the Bering Sea and Aleutian Island (BSAI) Groundfish Fishery Management Plan (FMP) which is implemented pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson Act). NMFS is reinitiating consultation on its most recent biological opinion because the level of incidental take of ESA listed Chinook salmon specified in the BiOp has been exceeded each year since 2004. The North Pacific Fishery Management Council (NPFMC) and NMFS Alaska Region are considering changes to management practices in the current FMP that are designed to reduce the bycatch of Chinook. The details of these changes are proposed for implementation, in the near term, through an Exempted Fishing Permit, and eventually through Amendment 84a to the BSAI Groundfish FMP.

There are two recent BiOps that considered the effect of BSAI fisheries on listed salmonids. NMFS consulted on the take of listed salmon in the groundfish fisheries conducted under the BSAI FMP and the Gulf of Alaska (GOA) FMP in a December 22, 1999 BiOp (NMFS 1999). This opinion focused only on the effects on ESA listed salmonids. NMFS issued a subsequent opinion on the BSAI FMP and GOA FMP, dated November 30, 2000, that considered the effects on stellar sea lions, marine mammals, and other non-salmonids (NMFS 2000)[1]. The November 30, 2000 BiOp, summarized considerations for listed salmonids from the 1999 BiOp, and reiterated the Chinook salmon bycatch limits and other terms and conditions contained therein. Both BiOps have the same annual expected bycatch specified in the incidental take statement of 55,000 Chinook salmon for the BSAI groundfish fishery. However, the 2000 BiOp did modify the incidental take statement by inclusion of an additional reasonable and prudent measure. The 2000 BiOp is therefore the current operative opinion. The more detailed information contained in the 1999 BiOp is incorporated by reference.

Chinook bycatch in the BSAI fishery averaged about 35,000 from 2000 – 2003. In 2004, however, Chinook bycatch totaled just over 63,100. As a consequence, the NMFS Alaska Region (herein after "Alaska Region") asked that the NMFS Northwest Region (herein after "Northwest Region) reinitiate consultation on the BSAI FMP (Balsiger 2004). (In fact, the Chinook bycatch estimated for 2003 was recently revised from 54,911 (Mecum 2006a) to 55,584 (Mecum 2006d) indicating that the 55,000 bycatch level specified in the incidental take statement was exceeded in 2003 as well.) At the time the regions were unsure whether the higher bycatch was a transient event or an indicator of an increasing trend in Chinook bycatch. The regions agreed to jointly monitor the circumstance during the 2005 season.

On June 29, 2005 (Balsiger 2005) the Alaska Region reported that the bycatch of

[1] The December 22, 1999 BiOp and November 30, 2000 BiOp both consulted on authorization of the BSAI FMP and GOA FMP. Authorization of these FMPs are separate actions, but were considered together to provide a more comprehensive overview of the effects of groundfish fisheries on listed species in the Alaska EEZ. Events considered in this supplemental BiOp pertain only to the BSAI FMP.

Chinook through June 11, 2005 was 27,700, slightly less than reported in 2004 with a projected year end total of about 55,000. Provisions under the FMP for reducing salmon bycatch in the BSAI fishery have many details, but rely primarily on the use of a Chinook Salmon Savings Area (CSSA). This is an area where, based on previous experience, Chinook bycatch was relatively high. Under the current FMP, if Chinook bycatch in the fishery is projected to exceed 29,000 and depending on when that occurs, the area is closed to further directed fishing for pollock. Because bycatch was expected to exceed the 29,000 trigger level by July 2005, the Chinook Salmon Savings Area was closed to directed fishing for pollock. Because of the closure and other voluntary measures taken by the industry, the Alaska Region was cautiously optimistic that the Chinook bycatch in 2005 would remain below 55,000. The Northwest Region reviewed the information provided, and concurred with the conclusions (Lohn 2005). Unfortunately, closure of the CSSA during the latter part of 2005 seemed to exacerbate the bycatch problem. By the end of 2005 bycatch totaled nearly 75,000 Chinook.

When it became apparent in 2005 that the higher bycatch observed in 2004 was not just a transient event, the NPFMC recommended changes to the existing salmon bycatch management measures that are now being developed through Amendment 84a to the BSAI Groundfish FMP. The purpose of the Amendment is to implement regulatory changes designed to reduce the incidental catch of salmon in the pollock trawl fishery where virtually all of the salmon bycatch occurs. Amendment 84a was initiated in response to new information about the distribution of bycatch, and to implement management measures that would be more flexible and effective at reducing Chinook bycatch in the fishery.

The original intent of the NPFMC and the Alaska Region was to implement Amendment 84a prior to, or at least during, the 2006 season. However, for various reasons it was not implemented in 2006 (Mecum 2006c). Chinook bycatch rates during the first half of 2006 remained high, and there was general concurrence that taking action to reduce bycatch was a priority. Because of the delay in implementing Amendment 84a the pollock harvest cooperatives submitted an Exempted Fishing Permit (EFP) to allow for earlier implementation of the management provisions of the current draft Amendment 84a, and to better assess the ability of the fleet to identify 'hot spot' salmon closures areas, and monitor and enforce compliance among the participating vessels. The provisions described in the EFP were unchanged from those contemplated under the draft Amendment 84a. However, the EFP applied only to the remainder of the 2006 pollock season, which extended from August 1 to October 31, 2006.

Because of the above described circumstances, the Alaska Region asked that the Northwest Region conduct an informal consultation related to the EFP and its implementation for the remainder of the 2006 fishing season (Mecum 2006a, Mecum 2006b). In response, the NMFS Northwest Region concluded that implementing the BSAI FMP including further provisions required under the EFP for the remainder of 2006 would either have no effect or was not likely to adversely affect ESA listed Chinook, coho, sockeye, or chum salmon Evolutionarily Significant Units (ESU) or steelhead Distinct Population Segments (DPS) (Lohn 2006). The Northwest and Alaska

Regions anticipated the need for continuing consultation on Amendment 84a as it developed, and the associated management provisions that would presumably be implemented for 2007 and beyond. This supplemental biological opinion responds to the Mecum (2006b, 2006c) request for consultation and addresses the need to reinitiate consultation on the BSAI Groundfish FMP including consideration of the additional management provisions being proposed for 2007 and beyond.

1.1 Proposed Action

NMFS Alaska Region and the NPFMC manage the groundfish fisheries in the exclusive economic zone (EEZ) off Alaska under the Groundfish Fishery FMPs for the BSAI and GOA. The NPFMC prepared the FMPs under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson Act), 16 U.S.C. 1801, et seq., implemented by regulations appearing at 50 CFR part 679. Regulations governing U.S. fisheries and implementing the FMPs appear at 50 CFR parts 600 and 679. The proposed action evaluated in the November 30, 2000 BiOp was authorization of fishery regulations for BSAI groundfish fisheries based on the associated FMP.

The objective of this supplemental biological opinion is to reinitiate consultation on the BSAI Groundfish FMP in response to recent observation of higher Chinook salmon bycatch, and to consider the effect of the additional management provisions that are proposed for 2007 and beyond, initially through an EFP and ultimately through Amendment 84a to the BSAI Groundfish FMP. The Alaska Region received an application for an EFP in 2007 (Mecum 2006b). (For a copy of, detailed information on the EFP, see the associated Environmental Assessment (NMFS 2006b, Mecum 2006b)). The provisions of the EFP are the same as the 2006 EFP except that the EFP would apply to the full fishing year, not just the "B" season as was the case in 2006. (The pollock trawl fishery is generally divided into an A and B season with the A season extending from January 20 to June 10, and the B season extending from June 10 to November 1 of each year.)

Management provisions related to Chinook salmon bycatch in the current FMP rely on use of specified Chinook Salmon Savings Areas that are closed when the bycatch reaches particular trigger levels. Experience from recent years indicates that these measures are not effective, and often seem counter productive. As an alternative to either opening or closing the CSSA, Amendment 84a would rely on a salmon bycatch management system developed by Bering Sea pollock harvesting cooperatives to identify areas of elevated salmon bycatch during the course of the Bering Sea pollock fishery and close fishing in those areas. High salmon bycatch "hotspots" are identified and reported to participating vessels in near real time. Vessels in the program are required to move immediately in response to these hotspot closures. The program would be implemented through an intercooperative agreement (ICA) among participating vessels. The ICA is integral to the EFP, and is binding on participating vessels and requires that they respond to closure announcements. If approved, Amendment 84a would provide exemptions from the closures in the CSSA for participating vessels, and would instead implement a management system based on real time, site specific information. This sort of real time, hotspot management has been effective at reducing bycatch in the west coast whiting

fishery. Details related to the ICA and associated management provisions proposed for implementation through the EFP and Amendment 84a can be found in the respective Environmental Assessments (NMFS 2006, Balsiger 2005).

The 2007 EFP would give the industry further opportunity to test the proposed regulations in both the A and B seasons, and provide additional experience and presumably confidence to the participants that the associated regulations would be reasonable and effective. The Alaska Region expects to complete Amendment 84a prior to the start of the 2008 season. The exact date depends on the ongoing evaluation. The Alaska Region does not expect any substantive changes in management practice from the EFP to Amendment 84a that would lead to different conclusions about the effect of the action on ESA-listed salmon. The issues being examined with the EFPs are primarily administrative. If changes are warranted based on the EFP results that would substantially change the action, the Alaska Region will consult further with the Northwest Region (Mecum 2006c).

1.2 Action Area

The action area means "all areas to be affected directly or indirectly by the Federal action, and not merely the immediate area involved in the action" (50 CFR 402.02(d)). As such the action area for the Federally managed BSAI groundfish fisheries effectively covers all of the Bering Sea under U.S. jurisdiction, extending southward to include the waters south of the Aleutian Islands west of 170° W long. to the border of the U.S. EEZ.

2. SPECIES STATUS

As discussed in the following Effects section, the only ESA listed salmon or steelhead likely to be affected by the BSAI groundfish fishery are Upper Willamette River (UWR) Chinook and Lower Columbia River (LCR) Chinook. This section on species status is therefore limited to a review of information related to the status of those two ESUs. Information related to the status of UWR and LCR Chinook is summarized in the NMFS 1999 BiOp (NMFS 1999). Additional information can be found in a more recent biological opinion (NMFS 2005a), an updated status report of listed ESUs (Good et. al. 2005), and the Interim Regional Recovery Plan for Washington management units of the listed ESUs in the LCR (LCFRB 2004).

2.1 Upper Willamette River Chinook Salmon

ESU Description

The UWR Chinook salmon ESU includes all naturally spawned populations of spring-run Chinook salmon in the Clackamas River and in the Willamette River, and its tributaries, above Willamette Falls, Oregon (NMFS 2005b).

The Willamette/Lower Columbia Technical Recovery Team (W/LC TRT) identified seven independent populations within this ESU: Clackamas River, Molalla River, North Fork Santiam River, South Fork Santiam River, Calapooia River, McKenzie River, and Middle Fork Willamette River (Myers et al. 2006). The status of each of these

populations is described in Good et al. (2005). Of the independent populations, the W/LC TRT designated the Clackamas River, North Santiam River, McKenzie River, and Middle Fork Willamette River populations as core populations. Core populations historically represented substantial portions of the ESU's abundance or contained life-histories specific to the ESU. In addition, due to its genetic integrity, the W/LC TRT designated the McKenzie River population as a genetic legacy population (McElhany et al. 2003).

Historically, natural origin spring Chinook spawned in nearly all east side Willamette tributaries above Willamette Falls. During 1952-1968 the U.S Army Corps of Engineers constructed dams on all the major east side tributaries above Willamette Falls, blocking over 400 stream miles of rearing area for natural origin spring Chinook. Some residual spawning areas remain, including about two-thirds of the McKenzie River and about one-quarter of the North Fork Santiam River. However, these areas are affected by upstream dams through alteration of flows and temperature. Additionally, the majority of the Clackamas River, which is below Willamette Falls, remains accessible, although the 3-dam complex (River miles 23-31) has impacted migration and rearing conditions in the mainstem Clackamas.

Seven artificial propagation programs are considered to be part of the ESU: the McKenzie River Hatchery (Oregon Department of Fish and Wildlife (ODFW) stock # 24), Marion Forks/North Fork Santiam River (ODFW stock # 21), South Santiam Hatchery (ODFW stock # 23) in the South Fork Santiam River, South Santiam Hatchery (ODFW stock # 23) in the Calapooia River, South Santiam Hatchery (ODFW stock # 23) in the Mollala River, Willamette Hatchery (ODFW stock # 22), and Clackamas hatchery (ODFW stock # 19) spring-run Chinook hatchery programs (NMFS 2005b).

Life History Types

The UWR Chinook salmon ESU exhibits one life history type. As cited in Myers et al. (2006), Chinook salmon native to the UWR are considered to be ocean-type. Ocean-type salmon out-migrate to the ocean during their first year and tend to migrate along the coast. Marine recoveries of CWT marked UWR Chinook salmon occur off the British Columbia and Alaska coasts (Myers et al. 2006). Ocean-type Chinook in the UWR historically returned in February and March, but did not ascend Willamette Falls until April and May. UWR Chinook salmon mature during their fourth and fifth years.

Current Viability

As noted above, the W/LC TRT identified seven independent populations within the UWR Chinook salmon ESU. According to a W/LC TRT report, none of these independent populations were considered viable (McElhany et al. 2004). For the evaluation, populations were ranked for absolute extinction risk on a scale of 0 to 4, with 0 meaning extinct or at a very high risk of extinction and 4 meaning a very low extinction risk in 100 years. To estimate population extinction risk, the W/LC TRT evaluated four key attributes: abundance and productivity, diversity, spatial structure, and habitat. The four main population attributes were evaluated on the same 0–4 risk scale. To obtain the overall population score, individual population attribute scores were integrated using a

simple weighted mean; the abundance and productivity scores were weighted at twice the other scores (McElhany et al. 2004). The scores for the populations are in Table 1.

Table 1. Willamette/Lower Columbia TRT Viability Assessment for UWR Chinook.

Population	Viability Score
Clackamas River	1.66
Molalla River	0.62
North Santiam River	0.71
South Santiam River	0.84
Calapooia River	0.65
McKenzie River	1.85
Middle Fork Willamette River	0.64

Good et al. (2005) concluded that the Molalla and Calapooia populations were likely extirpated or nearly so, the North Santiam, South Santiam, and Middle Fork Willamette populations were not self sustaining, and that the Clackamas and McKenzie populations had undergone substantial increases in abundance in recent years (Figures 1 and 2).

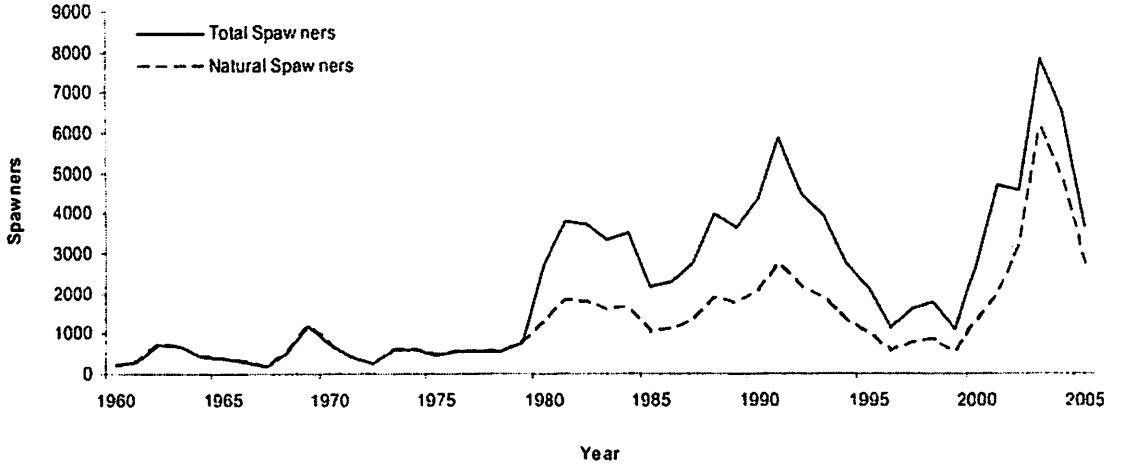

Figure 1. Clackamas River Spring Chinook spawners by year.

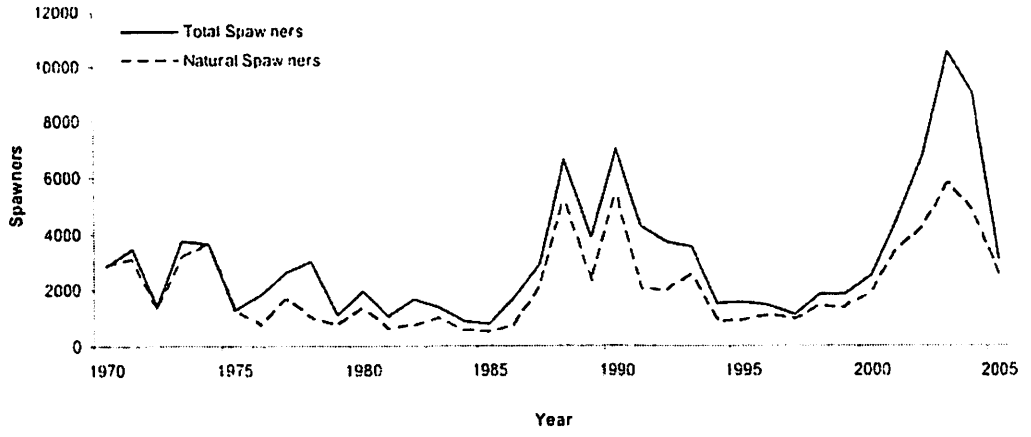

Figure 2. McKenzie River Spring Chinook spawners by year.

There have been substantial changes in harvest management practices in recent years that affect UWR Chinook resulting in an overall reduction in harvest mortality. Harvest has decreased as a result of reductions in ocean fisheries, particularly as a result of changes made in the Pacific Salmon Treaty in 1999. Further reductions have occurred in fisheries in the Columbia and Willamette Rivers as a result of efforts to mass mark all hatchery produced fish, and implementation of mark-selective fishery techniques that require the release of all unmarked, and presumably natural origin fish (Figure 3). From 1970-1994 harvest mortality in all ocean and inriver salmon fisheries averaged 53%, from 1995-2001 the mortality averaged 28%, and from 2002-2005 when mark-selective fisheries were implemented in the Columbia Basin harvest mortality averaged 18%.

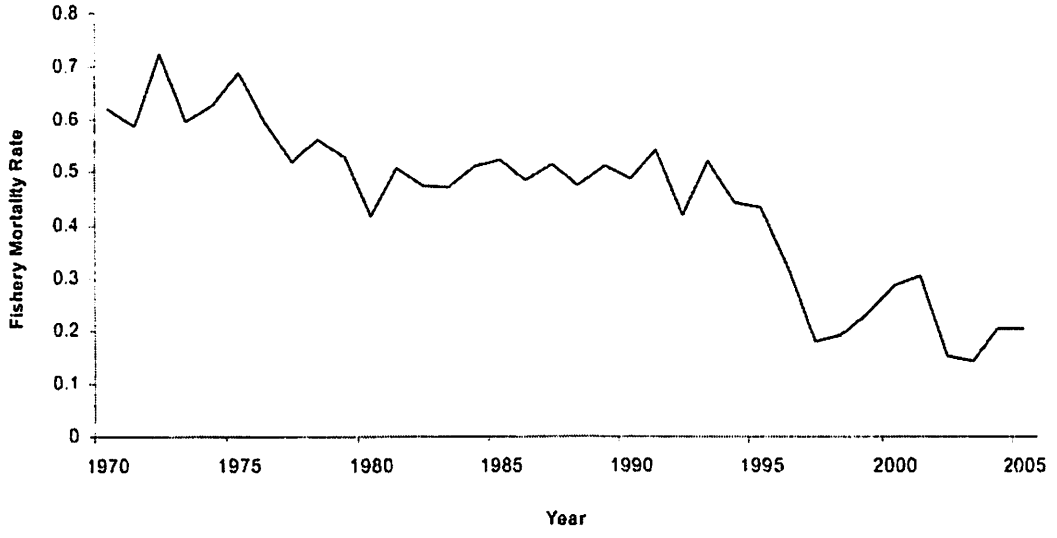

Figure 3. Upper Willamette Spring Chinook fishery mortality rate from 1970 through 2005.

The UWR Chinook ESU is dominated by hatchery production from releases designed to mitigate for the loss of habitat above federal hydroprojects. Recent estimates of the percentage of natural origin fish in the current UWR run are 10-12%, with the majority of the natural production returning to the McKenzie River (JCRMS 2006). This hatchery production is considered a potential risk to the ESU (Good et. al. 2005). However, the status of the habitat is such, particularly given the hyrdoprojects in the basins, that production exists in the basins only because of the contribution of hatchery programs.

Limiting Factors
A recent Report to Congress related to the use of Pacific Coastal Salmon Recovery Funds for recovery projects summarizes the status of all of the listed ESUs and the major factors limiting recovery (NMFS 2005c). For UWR Chinook the major limiting factors include:

- Reduced access to spawning/rearing habitat in tributaries
- Altered water quality and temperature in tributaries
- Lost/degraded floodplain connectivity and lowland stream habitat
  Altered streamflow in tributaries
  Hatchery impacts

Critical Habitat
Critical habitat for UWR Chinook was designated on September 2, 2005 (70 FR 52858). Offshore marine areas, including those in the BSAI, were not included as designated critical habitat.

2.2 Lower Columbia River Chinook Salmon

ESU Description
The LCR Chinook salmon ESU includes all naturally spawned populations of Chinook salmon from the Columbia River and its tributaries from its mouth at the Pacific Ocean upstream to a transitional point between Washington and Oregon east of the Hood River and the White Salmon River, and includes the Willamette River to Willamette Falls, Oregon (excluding spring Chinook salmon in the Clackamas River) (NMFS 2005b). Not included in this ESU are stream-type spring Chinook salmon found in the Klickitat River (which are considered part of the Middle Columbia River Spring Chinook ESU) or the introduced Carson spring Chinook salmon strain. Tule fall Chinook salmon in the Wind and Little White Salmon rivers are included in this ESU, but not introduced upriver bright fall Chinook salmon populations in the Wind, White Salmon, and Klickitat rivers. The Cowlitz, Kalama, Lewis, Washougal, and White Salmon rivers constitute the major systems on the Washington side; the lower Willamette and Sandy rivers are foremost on the Oregon side.

Seventeen artificial propagation programs releasing hatchery Chinook salmon are considered part of the LCR Chinook salmon ESU. All of these programs are designed to produce fish for harvest, and three of these programs are also intended to augment naturally spawning populations in the basins where the fish are released. These three programs integrate naturally produced spring Chinook salmon into the broodstock in an

attempt to minimize the genetic effects of returning hatchery adults that spawn in the wild (NMFS 2005b).

Life History Types
The LCR Chinook salmon ESU exhibits three major life history types: fall-run ("tules"), late fall-run ("brights"), and spring-run. As discussed in the following section on Effects, only the spring component of the LCR ESU is affected by the BSAI fisheries. (As discussed in more detail below, all of the observed coded wire tag (CWT) recoveries from ESA-listed ESUs in the BSAI fishery are from the spring-run populations. This is consistent with information that fall-run populations generally have a more southerly ocean distribution). The following discussion therefore emphasizes information related to the status of the spring populations in the LCR ESU.

Spring Chinook salmon on the LCR, like those from coastal stocks, enter fresh water in March and April, well in advance of spawning in August and September. Historically, the spring migration was synchronized with periods of high rainfall or snowmelt to provide access to upper reaches of most tributaries, where spring stocks would hold until spawning.

Fall Chinook salmon predominate in the LCR salmon runs. Tule-type fall Chinook salmon, differentiated from bright fall Chinook salmon by their dark skin coloration and advanced state of maturation at the time of freshwater entry, begin returning to the Columbia River in mid-August and spawn within a few weeks. Bright fall Chinook salmon populations typically return to the fresh water later than tule fall Chinook salmon and spawn between late September and early November. Most fall Chinook salmon emigrate to the marine environment as subyearlings. Adult fall tule Chinook salmon return to tributaries in the LCR at 3 and 4 years of age, compared to 4 to 5 years for bright Chinook salmon and spring-run fish. Marine coded-wire-tag recoveries for LCR tule stocks tend to occur off the British Columbia and Washington coasts, although a small proportion of the tags are recovered in Alaskan waters.

Current Viability
The remaining spring-run Chinook salmon stocks in the LCR Chinook salmon ESU are found in the Sandy River, Oregon, and in the Lewis, Cowlitz, and Kalama rivers, Washington. Spring Chinook salmon in the Clackamas River are considered part of the UWR Chinook salmon ESU. Despite the substantial influence of fish from hatcheries in the UWR ESU in past years, naturally spawning spring Chinook salmon in the Sandy River are included in the LCR Chinook salmon ESU because they probably contain the remainder of the original genetic legacy for that system. Returns of natural origin fish to the Sandy River averaged about 1,400 from 2000 to 2004 (Figure 4). The W/LCTRT provided recommendations for minimum abundance thresholds (MAT). For Chinook populations in a medium sized basin like the Sandy, the MAT is 500-1000 (for persistence category 3) measured as a geometric mean over a long time period (e.g., 20 years). Assessing population viability also requires consideration of productivity, spatial structure and diversity, but the abundance and trend information, at least, indicates that the status of the Sandy population is improving.

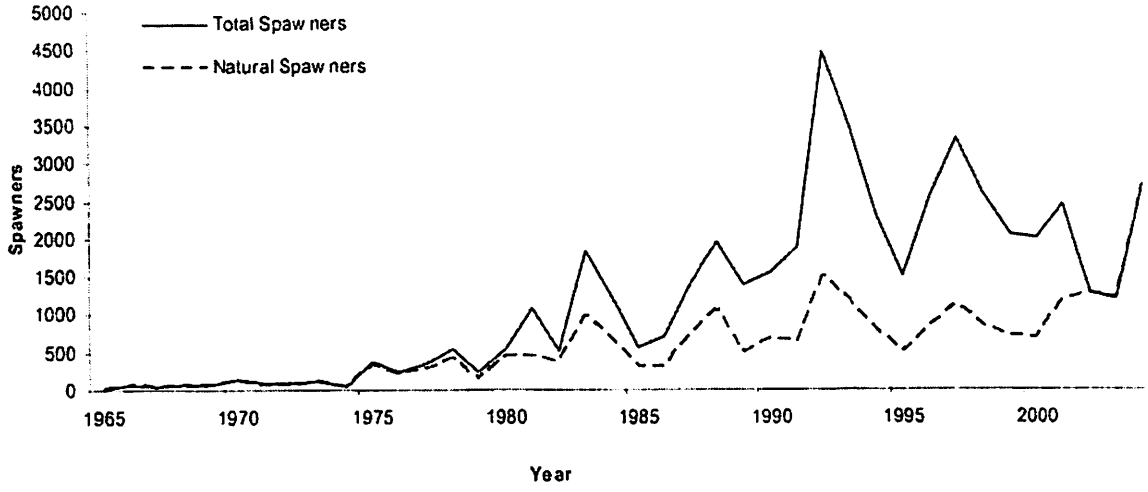

Figure 4. Sandy River spring Chinook spawners from 1965 – 2004.

On the Washington side, spring Chinook salmon were native to the Cowlitz and Lewis rivers and there is anecdotal evidence that a distinct spring run existed in the Kalama River subbasin. The Lewis River spring run was severely affected by dam construction. During the period between the construction of Merwin Dam in 1932 and Yale Dam in the early 1950s, the Washington Department of Fisheries (WDF) attempted to maintain the run by collecting adults at Ariel/Merwin for hatchery propagation or (in years when returns were in excess of hatchery needs) release to the spawning grounds. As native runs dwindled, Cowlitz spring-run Chinook salmon were reintroduced in an effort to maintain them. In the Kalama River, escapements of less than 100 fish were present until the early 1960s when spring-run hatchery production was initiated with a number of stocks from outside the basin. The number of naturally spawning spring Chinook salmon in the Cowlitz, Kalama, and Lewis rivers averaged 854, 495, and 488 from 2000 to 2005, respectively (Figures 5, 6, 7). However, a large proportion of the natural spawners in each system are believed to be composed of hatchery strays. Natural production is likely quite limited relative to the overall abundance of hatchery-origin fish returning to each basin. Although the Lewis and Kalama hatchery stocks have been mixed with out-of-basin stocks, they are included in the ESU. The Cowlitz River hatchery stock is largely free of introductions.

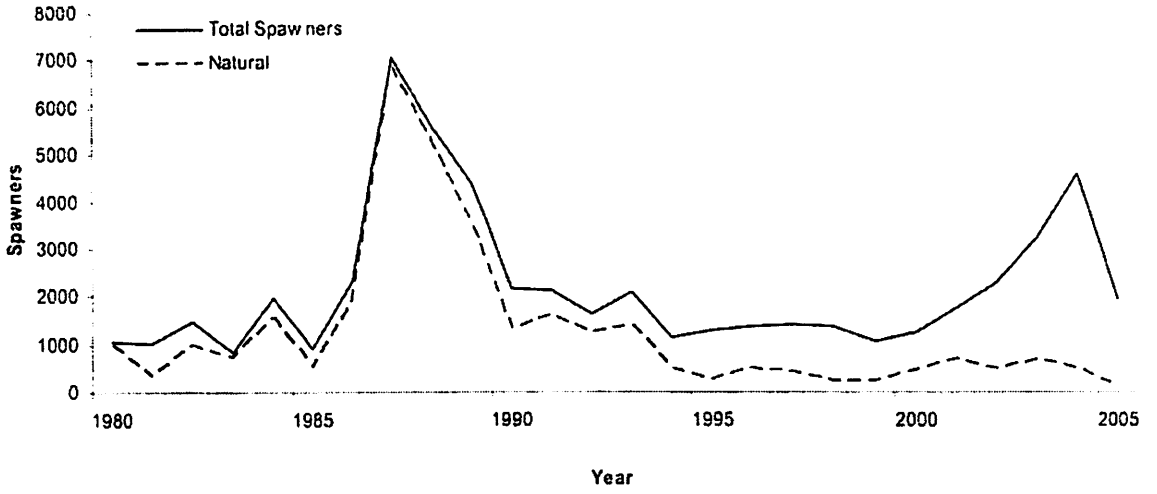

Figure 5. Lewis River spring Chinook spawners from 1980 – 2005.

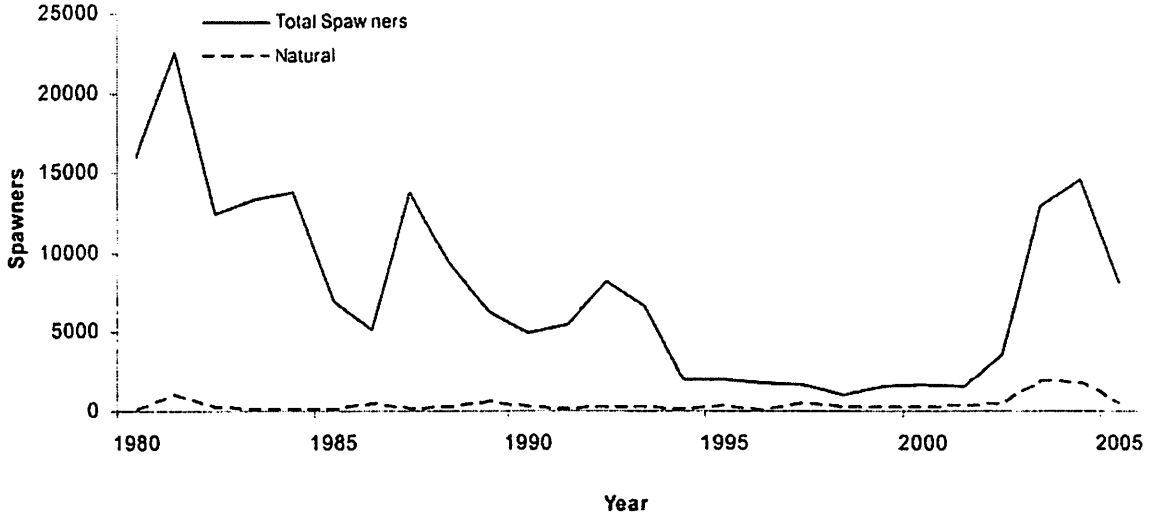

Figure 6. Cowlitz River spring Chinook spawners from 1980 – 2005.

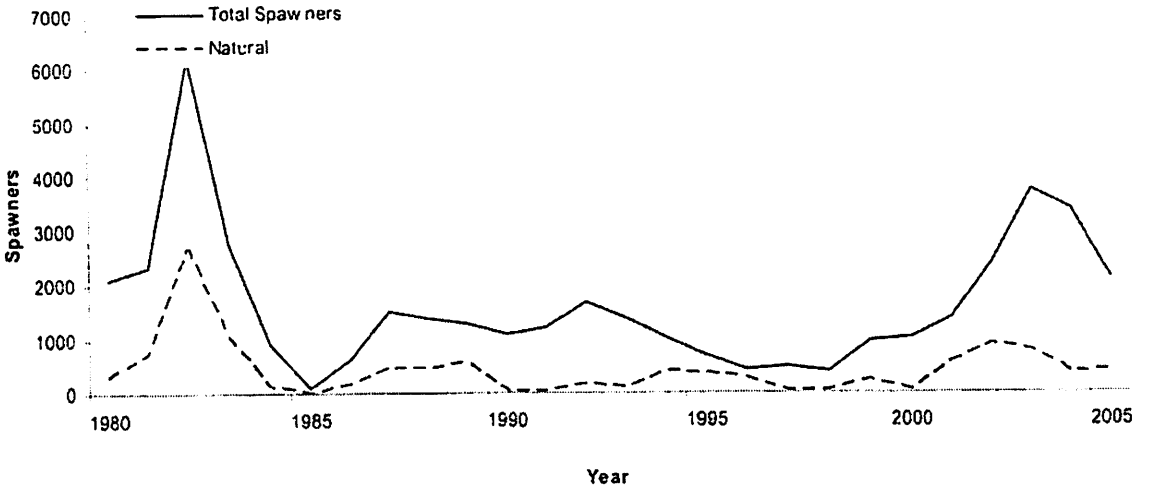

Figure 7. Kalama River spring Chinook spawners from 1980 – 2005.

The Interim Regional Recovery Plan identifies each of the existing spring Chinook populations as high priorities for recovery (LCFRB 2004). Most of Washington's spring Chinook populations occurred historically in habitats upstream of current hydrosystem projects. Recovery will therefore rely on reintroduction efforts. Reintroduction programs have been initiated on the Cowlitz while those on the Lewis River have not yet begun. The best spring Chinook habitat on the Kalama was historically located above Kalama Falls. However, some natural spawning currently occurs and a hatchery program in the basin provides an opportunity for conservation-based efforts. The LCFRB (2004) highlights the need for better integration of natural spawners into the broodstock as part of a near term recovery effort.

Because of the importance of the hatchery stocks as genetic reserves for each of Washington's spring Chinook populations, it is important that the hatchery stock be maintained and managed to meet current and evolving hatchery production needs designed to meet recovery efforts. As a consequence, fisheries are managed for the time being to ensure that hatchery escapement goals are met. The harvest mortality on spring Chinook has been reduced significantly in recent years (see Figure 3 for example) in large part due to implementation of mark-selective fisheries. Hatchery escapement goals for these stocks are routinely met.

Harvest estimates for LCR spring Chinook differ between populations, but all have benefited from harvest reductions in recent years. From 1985 to 1995, exploitation rates on the Washington spring Chinook populations ranged from 39% to 62%; in recent years, exploitation rates in all ocean and inriver salmon fisheries ranged from 29% to 40%.

Limiting Factors

The status of all of the listed ESUs and the major factors limiting recovery is summarized in the recent Report to Congress related to the use of Pacific Coastal Salmon Recovery Funds for recovery projects (NMFS 2005c). For LCR Chinook, the major limiting factors include:

- Reduced access to spawning/rearing habitat in tributaries,
- Hatchery impacts,
- Loss of habitat diversity and channel stability in tributaries,
- Excessive sediment in spawning gravel,
- Elevated water temperatures in tributaries, and
- Harvest impacts to fall Chinook

Critical Habitat

Critical habitat for LCR Chinook was designated on September 2, 2005 (70 FR 52858). Offshore marine areas, including those in the BSAI, were not included as designated critical habitat.

3. ENVIRONMENTAL BASELINE

Environmental baselines for biological opinions include the past and present impacts of all state, federal or private actions and other human activities in the action area, the anticipated impacts of all proposed federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of state or private actions which are contemporaneous with the consultation in process (50 CFR §402.02). Information regarding the environmental baseline is included in the December 22, 1999 and November 30, 2000 BiOps (NMFS 1999, 2000). Additional information can be found in a Programmatic Supplemental Environmental Impact Statement on the BSAI fisheries (NMFS 2004) and the Alaska Groundfish Harvest Specifications draft Environmental Impact Statement (NMFS 2006b). This information is incorporated by reference. As indicated above, designated critical habitat for UWR and LCR, or any of the other listed Chinook ESUs, does not include the BSAI action area.

4. EFFECTS OF THE ACTION

It is apparent from past consultations and additional information provided as part of the current review that Chinook salmon are the only ESA listed salmonid species likely to be affected by the BSAI fishery. The bycatch of coho and sockeye salmon, and steelhead in the BSAI groundfish fishery totals a few tens of fish, or at most a few hundreds of fish per year (Mecum 2006a). The BSAI area is far removed from the primary areas of known ocean distribution for listed coho, sockeye, and steelhead originating from Washington, Oregon, Idaho, and California (Groot and Margolis 1991). Given the very low levels of bycatch that occur, and the separation in space between the fishery and areas of known ocean distribution, NMFS concludes that the BSAI groundfish fishery will likely have no effect on ESA listed coho and sockeye salmon, and steelhead.

There are two chum salmon ESUs that are listed under the ESA including Hood Canal Summer-run and Columbia River chum. The bycatch of chum salmon in the BSAI averaged 69,000 from 1990 – 2001, but increased significantly in recent years. The

bycatch of chum in the BSAI groundfish fishery averaged 250,000 from 2002 – 2004 (Balsiger 2005). In 2005 the bycatch of chum salmon in the BSAI fishery was over 700,000, the highest amount to date (Mecum 2006c). The bycatch in 2006 was lower with approximately 310,000 caught through September 16, 2006. However, despite the varying magnitude of the bycatch of chum, available information on the listed chum ESUs indicates that their ocean distribution does not extend as far north as the Bering Sea and Aleutian Islands (Groot and Margolis 1991). Based on our understanding of the ocean distribution of chum salmon and absence of information indicating that listed chum salmon are present in the BSAI, it is apparent that the effects of the BSAI groundfish fishery are discountable in that the take of listed chum salmon is extremely unlikely to occur.

There are currently nine ESA listed Chinook salmon ESUs. The primary source of information for the stock specific ocean distribution of Chinook salmon is from CWTs, and particularly their intensive use for management in coast wide salmon fisheries over the last twenty to twenty five years. The Alaska Region, with assistance from the Alaska Fisheries Science Center, Auke Bay Laboratory, recently completed a comprehensive review of CWT recoveries in the BSAI and GOA groundfish fisheries (Mecum 2006a). The CWT analysis was recently updated resulting in some minor revisions to the prior estimates (Mecum 2006c). Of the nine listed Chinook salmon ESUs, only the UWR and LCR ESUs have been recovered in the BSAI fishery. No fish from the seven other ESA-listed ESUs have ever been recovered in the BSAI fishery.

Chinook salmon from the UWR and LCR ESUs are observed more frequently in the GOA fishery than the BSAI fishery because the Gulf of Alaska is closer to the streams from which these stocks originate. With the exception of one observed CWT recovery from the Upper Columbia River Spring Chinook ESU in the GOA in 1998, no Chinook salmon from ESA-listed ESUs other than UWR and LCR have ever been recovered in either the GOA or BSAI fisheries. Consistent with the general conclusions from past consultation, and based on the absence of observed recoveries in the BSAI fishery and few recoveries in the GOA fishery over the last 23 years, and our general understanding of the ocean distribution of these ESUs, it is apparent that the effects of the BSAI groundfish fishery on Sacramento River Winter-run Chinook, Upper Columbia River Spring-run Chinook, Snake River Fall-run Chinook, Snake River Spring/Summer-run Chinook, Puget Sound Chinook, Central Valley Spring-run Chinook, or California Coastal Chinook salmon are discountable in that the take of listed Chinook salmon from these ESUs is extremely unlikely to occur.

Since 1984 there have been ten and nine observed CWT recoveries in the BSAI fishery of UWR and LCR Chinook, respectively (Mecum 2006c). When observed recoveries are expanded for sampling fraction in the fishery and mark rate (the proportion of the release group that is tagged) the total number of *estimated* recoveries is 70 UWR Chinook and 15 LCR Chinook (Table 2). One or more recoveries were observed in eight out of 23 years for UWR Chinook, and five out of 23 years for LCR Chinook. As a result, the CWT information can be used to characterize that the take of listed UWR and LCR Chinook in the fishery as an occasional, but relatively rare event.

The LCR Chinook ESU includes both spring-run and fall-run life history types. All of the recoveries from the LCR ESU are from spring-run populations. UWR Chinook also have a spring-run life history. This suggests that spring-run populations from the LCR (the Willamette River is a tributary that enters the lower Columbia River near Portland, Oregon) are distinct in having the most northerly distribution, at least among the ESA listed Chinook from the southern U.S.

Table 2. The Bycatch of Chinook salmon in the BSAI groundfish fishery, observed CWT recoveries and total estimated contribution, for LCR and UWR Chinook. Bycatch data from ((NMFS 1995, NMFS 1999, Mecum 2006a, Mecum 2006d); CWT recovery data from (Mecum 2006c).

		LCR Spring Chinook		UWR Chinook	
Year	Chinook Bycatch	Observed CWT Recoveries	Total Estimated Contribution	Observed CWT Recoveries	Total Estimated Contribution
1984		0	0	1	2.7
1985		0	0	0	0
1986		0	0	0	0
1987		0	0	0	0
1988		0	0	0	0
1989		0	0	0	0
1990	13,990	0	0	0	0
1991	48,880	0	0	0	0
1992	41,955	0	0	0	0
1993	46,014	0	0	0	0
1994	44,487	0	0	0	0
1995	23,436	0	0	0	0
1996	63,205	0	0	1	2.6
1997	50,530	0	0	0	0
1998	58,971	0	0	0	0
1999	14,599	0	0	1	2.2
2000	8,223	0	0	1	2.5
2001	40,548	1	2.7	1	2.7
2002	36,385	1	2.0	2	24.3
2003	55,584	0	0.0	0	0
2004	63,133	3	5.6	1	14.9
2005	74,717	3	5.0	2	17.7
2006 (preliminary)	87,500	1		0	
Total	772,157	9	15	10	70

The probability that a listed Chinook will be taken in the BSAI fishery depends on the duration of the time period considered and the cumulative total Chinook bycatch over that time. The longer the period of consideration, the more likely that take will occur. During 1990-2006, the total catch of Chinook in the fishery was 770,000 (Table 2). Based on this and the total estimated recoveries of Chinook from the listed ESUs (70 and

15), the expected number of UWR and LCR Chinook caught per 100,000 Chinook in the BSAI fishery is 9.1 and 2.0 fish, respectively. The bycatch of Chinook salmon in the BSAI fishery has averaged approximately 45,400 per year since 1990, but has been increasing and exceeded 55,000 since 2003. The bycatch of Chinook in 2005 and 2006 was 75,000 and 87,500, respectively. From Table 2 it is also apparent that recoveries of CWTs from listed LCR and UWR Chinook are also a more recent event. All of the recoveries of LCR spring Chinook have occurred since 2001; eight out of ten recoveries from UWR Chinook have occurred since 1999. Reasons for these recent increases in Chinook bycatch and CWT recoveries are unknown. Because of these changes, more recent observation may be a better source for characterizing expected impacts in the future. From 2001-2006, the catch of Chinook in the fishery has ranged from 36,000 to 87,500, and totalled 358,000. The estimated number of CWT recoveries in those years has ranged from 0 to 24 per year, and totalled 60 recoveries for UWR Chinook and 15 recoveries for LCR Chinook (Table 2). Based on these more recent observations, the expected number of UWR and LCR Chinook caught per 100,000 Chinook in the fishery is 16.8 and 4.2 fish, respectively.

It is worth noting that these estimated recoveries represent the catch of fish from the ESU that are represented by CWT mark groups, generally from hatchery production. There are often other groups of fish in an ESU that are not represented by marked groups, and thus would not necessarily be observed or represented in the fishery by CWTs. As discussed in the section on Species Status, the amount of natural production for the UWR and spring component of the LCR Chinook ESUs is limited, on the order of 10-12% of the total production (JCRMS 2006).

Not all fish caught in the BSAI fisheries would be expected to survive long enough to return to spawn because of subsequent natural mortality had they not been caught in the fishery. The parameter used to characterize the expected mortality of immature fish is referred to as the adult equivalency rate; this represents the proportion of the fish caught that would be expected to return to spawn absent further fishing. The adult equivalency rate is age specific - about 60% for age 3 fish, and about 85% for age 4 fish (pers. com. Dell Simmons, Pacific Salmon Treaty, Chinook Technical Committee co-chair, December 12, 2006). The CWT information indicates that the fish caught in the BSAI fishery are roughly half age 3 and half age 4. So, for the estimate of 0-24 listed fish caught in the fishery each year, the effect on subsequent spawning would be a reduction of 0 to 14-20 spawning adults, depending on the age composition of the fish caught.

Another way to provide perspective regarding these estimates of adult equivalent mortality in the BSAI fishery is to compare them to recent estimates of run size. From 2001-2005 the average returns of UWR and LCR spring Chinook to the Columbia River are 106,000 and 27,000, respectively (JCRMS 2006). An adult equivalent mortality of 0 to 14-20 adults represents 0 to 0.011-0.015% of the average return to the two ESUs.

The Alaska Region expects that the bycatch rate will be reduced under the EFP and provisions of Amendment 84a (Mecum 2006c). A recent report including preliminary results from the 2006 EFP provides quantitative estimates indicating a 20% reduction in

Chinook bycatch during the 2006 B season as a result of the hotspot management provisions implemented through the EFP (Halfinger et. al. 2006). Additional information in the report describes qualitative considerations indicating that there were likely further reductions resulting from responses to hotspot regulations that can not be quantified. It is reasonable to expect that additional estimates of the magnitude of the bycatch reduction achieved will accrue initially through implementation of the EFP beginning in 2007. Therefore, the effect of the EFP and Amendment 84a is that it would not increase the mortality associated with the existing FMP and may reduce that mortality by a currently unquantifiable amount.

The Alaska Region has proposed implementation of the EFP in 2007 and forthcoming Amendment 84a because they believe it provides for a more effective management system that will result in an overall reduction in the bycatch of Chinook salmon compared to the current management system. Evidence from the recent report supports their belief. The available information continues to indicate that there is some take of listed UWR and LCR Chinook associated with implementation of the BSAI Groundfish FMP. Nonetheless, as indicated in the prior BiOps, the amount of take is quite limited, amounting to a few fish per year.

5. CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area. Future federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA. Past and present impacts of non-federal actions are part of the environmental baseline that is discussed above with associated information incorporated by reference. Additional information on cumulative effects is included in the December 22, 1999 (NMFS 1999) and November 30, 2000 (NMFS 2000) biological opinions.

6. CRITICAL HABITAT DETERMINATION

Critical habitat has been designated for all of the currently listed salmon and steelhead ESUs except recently listed LCR coho (70 FR 52858). In no case are offshore marine areas, including distant areas in the Bering Sea and Aleutian Islands, included in the designations. As a consequence, implementation of the BSAI groundfish FMP will have no effect on designated critical habitat for any of the listed salmon or steelhead ESUs.

7. CONCLUSIONS

The purpose of this supplemental BiOp is to reinitiate consultation on the BSAI Groundfish FMP in response to recent observation of higher Chinook salmon bycatch, and to consider the effect of the additional management provisions that would be implemented in 2007 and beyond initially through an EFP and ultimately through Amendment 84a to the BSAI FMP. The bycatch of coho and sockeye salmon, and steelhead in the BSAI groundfish fishery totals a few tens of fish, or at most a few hundreds of fish per year. Given the very low levels of bycatch that occur, and the

separation in space between the fishery and areas of known ocean distribution, NMFS concludes that the BSAI groundfish fishery will likely have no effect on ESA listed coho and sockeye salmon, and steelhead.

There are two ESA listed ESUs of chum salmon. Based on our understanding of the ocean distribution of chum salmon, and the absence of information indicating that listed chum salmon are present in the BSAI area, NMFS concludes that the effects of the BSAI groundfish fishery are discountable in that the take of listed chum salmon is extremely unlikely to occur, and therefore that the fishery is not likely to adversely affect Columbia River chum or Hood Canal Summer-run chum salmon.

Review of the record of CWT recoveries in the BSAI and GOA fishery indicates the absence of any recoveries of CWTs (with a single exception) for seven of the nine ESA listed Chinook ESUs. Based on this information and other information related to these species distributions, NMFS concludes that the effects of the BSAI groundfish fishery on Sacramento River Winter-run Chinook, Upper Columbia River Spring-run Chinook, Snake River Fall-run Chinook, Snake River Spring/Summer-run Chinook, Puget Sound Chinook, Central Valley Spring-run Chinook, or California Coastal Chinook salmon are discountable in that the take of listed Chinook salmon from these ESUs is extremely unlikely to occur, and therefore that the fishery is not likely to adversely affect any of the above listed ESUs.

From the available record it is apparent that some take of UWR Chinook and the spring component of the LCR Chinook ESU has occurred on occasion. Coded wire tags provide the longest and most consistent record of species composition in the fishery. One or more recoveries were observed in eight out of 23 years for UWR Chinook, and five out of 23 years for LCR Chinook. Because of recent increases in bycatch and the recovery of CWTs, data from recent years are likely a better source for characterizing expected impacts in the future. From 2001-2006, the total catch of Chinook in the fishery was 358,000. The total estimated recoveries in those years were 60 UWR Chinook and 15 LCR Chinook. Based on these more recent observations, the expected number of UWR and LCR Chinook caught per 100,000 Chinook in the fishery is 16.8 and 4.2 fish, respectively. During that time Chinook bycatch in the fishery has ranged from 36,000 to 87,500 per year. On an annual basis, the number of estimated CWT recoveries has ranged from 0 to 24 per year (Table 2). There may be some additional natural production that is not represented by CWT groups, and thus would not be detected which would increase these estimates by 10-12% for all hatchery and natural-origin listed salmon. Another consideration is the natural mortality between the action area and spawning areas, which would reduce the impact on returning spawners by 15-40% depending on the age composition of the fish taken in the fishery. As described above, an adult equivalent mortality of 0 to 14-20 adults represents 0 to 0.011-0.015% of the average return to the two ESUs. After reviewing the current status of the ESUs, the environmental baseline for the action area, the cumulative effects, and the effects of the proposed action including our understanding of the ocean distribution of UWR Chinook and LCR Chinook, the relative frequency and magnitude of observed take, and the relative abundance of hatchery and natural origin fish in the ESUs, NMFS concludes that

the effects of the proposed action are not likely to jeopardize the continued existence of either UWR or LCR Chinook.

8. INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulations pursuant to section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without special exemption. " Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns, including breeding, feeding, or sheltering. "Harass" is defined as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. "Incidental take" is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement (ITS).

The measures described below are non-discretionary; they must be undertaken by the action agency so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, in order for the exemption in section 7(o)(2) to apply. The action agencies have a continuing duty to regulate the activity covered in this incidental take statement. If the action agencies (1) fail to assume and implement the terms and conditions or (2) fail to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the take exemption of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the agencies must report the progress of the action and its impact on the species to NMFS as specified in the incidental take statement. [50 CFR §402.14(i)(3)]

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary or appropriate to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

The following four subsections of the Incidental Take Statement (through Conservation Recommendations) include modifications to provisions in the Incidental Take Statement contained in the November 30, 2000 BiOp. To avoid confusion, those modifications are included along with the unmodified text pertaining to salmon. The following subsections are therefore complete and supersede those contained in the earlier BiOp.

8.1 Amount or Extent of Incidental Take Anticipated

Our ability to characterize the amount of incidental take in the BSAI fishery is complicated by changes in bycatch patterns in recent years. Chinook bycatch has increased in recent years, and exceeded the previously defined take indicator of 55,000 Chinook since 2003 with a high in 2006 of nearly 87,500 (Table 2). Recoveries of CWTs from listed LCR and UWR Chinook ESUs have largely occurred only in recent years. All of the recoveries of LCR spring Chinook have occurred since 2001; eight out of ten recoveries from UWR Chinook have occurred since 1999. Reasons for these recent increases in overall Chinook bycatch and in CWT recoveries of ESA listed ESUs are unknown. Because of the related uncertainty, it is difficult to characterize future bycatch in terms of the total catch of Chinook as done in the past, or CWT recoveries which would be more directly indicative of the effect on the listed ESUs. Given these circumstances, NMFS concludes that take of listed Chinook in the future is best characterized by the range of recent observations. Since 2001 the bycatch of Chinook in the BSAI fishery has ranged from 36,000 to 87,500; the total estimated contribution of Chinook from ESA listed ESUs has ranged from 0 to 24 per year for LCR and UWR Chinook (Table 2). NMFS further concludes that the effect of the BSAI fishery on the listed salmonid ESUs is generally quite limited. The available information indicates that 24 of 26 listed ESUs are not caught in the BSAI fisheries. For LCR and UWR Chinook estimates of take have been 0 in most years and just a few fish in years where some take can be measured. The take that does occur is at the margin of the northern distribution for these ESUs. In judging bycatch in the BSAI fishery in future years, NMFS will use this range of recent observation to assess whether there have been significant increases in take of LCR and UWR Chinook.

NMFS has not reconsidered information related to the GOA fishery in this supplemental BiOp. Chinook bycatch has remained within the limits defined in the November 30, 2000 BiOp and are therefore unchanged. In the GOA fishery, bycatch should be minimized to the degree possible but in any case is not expected to exceed 40,000 Chinook salmon per year in the GOA groundfish fisheries.

8.2 Effect of the Take

In the accompanying biological opinion, NMFS determined that there will be no effect to ESA listed coho and sockeye salmon, and steelhead; that listed chum salmon and Sacramento River Winter-run Chinook, Upper Columbia River Spring-run Chinook, Snake River Fall-run Chinook, Snake River Spring/Summer-run Chinook, Puget Sound Chinook, Central Valley Spring-run Chinook, or California Coastal Chinook salmon are not likely to be adversely affected; and that UWR Chinook and LCR Chinook are not likely to be jeopardized by the proposed action. There will also be no destruction or adverse modification of critical habitat.

8.3 Reasonable and Prudent Measures

The following reasonable and prudent measures are provided to minimize and reduce the anticipated level of incidental take associated with Alaska groundfish fisheries:

1. The NMFS, Alaska Region shall ensure there is sufficient NMFS-certified observer coverage such that the bycatch of Chinook salmon and "other" salmon in the BSAI and GOA groundfish fisheries can be monitored on an inseason basis. Monitoring will include analysis of all CWTs from salmonids collected in the fisheries.

2. The NMFS, Alaska Region shall monitor bycatch reports inseason to evaluate whether the bycatch of Chinook is likely to exceed 87,500 fish per year in the BSAI fisheries or 40,000 fish per year in the GOA fisheries.

3. The NMFS, Alaska Region and Alaska Fishery Science Center, Auke Bay Laboratory shall monitor recoveries of CWTs from ESA listed salmonids to evaluate whether the total estimated contribution of the bycatch of the CWT-tagged component of any ESA listed Chinook ESU in the BSAI groundfish fishery exceeds 24 per year.

8.4 Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the specified agencies must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. NMFS' Division of Sustainable Fisheries (Alaska Region) shall provide an annual report to the NMFS Division of Sustainable Fisheries (Northwest Region) that details the results of its monitoring of salmon bycatch in the BSAI and GOA fisheries. This report shall be submitted in writing within one month of the new fishing year (February 1), and will summarize all statistical information based on a January 1 through December 31 fishing year. This report will also include the latest available information on CWT recoveries of ESA-listed ESUs.

2. NMFS, Alaska Fisheries Science Center, Auke Bay Laboratories shall continue to monitor CWT recoveries for the BSAI and GOA groundfish fisheries, maintain a historical database of CWT recoveries on the high seas, and provide an updated summary of CWT recoveries from ESA-listed ESUs in the BSAI and GOA fisheries on an annual basis within ten months after the end of each fishing year.

The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might result from the proposed action. If, during the course of the groundfish fishery, the level of take specified in the incidental take statement is exceeded, the additional level of take would represent new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided above.

9. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to develop additional information, or to assist the Federal agencies in complying with their obligations under section 7(a)(1) of the ESA. NMFS believes the following conservation recommendations are consistent with these obligations, and therefore should be implemented by the NPFMC and NMFS:

1. The NMFS, Alaska Region should improve estimates of the region-of-origin and stock composition of the Chinook salmon bycatch by increasing CWT sampling rates as part of the mandatory salmon retention program, collecting and analyzing scale samples, or employing additional stock identification techniques applicable to the problem.

2. The NMFS, Alaska Region should use information collected during the observer monitoring program to identify times and areas of high salmon abundance that could be used to reduce salmon bycatch through regulatory action.

3. The NMFS, Alaska Region should encourage development of incentive programs designed to reduce the bycatch of salmon in the NPFMC groundfish fisheries.

In order for NMFS to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, NMFS requests notification of the implementation of any conservation recommendations.

10. REINITIATION OF CONSULTATION

This concludes formal consultation on the proposed actions. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) 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; (3) the identified action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in the biological opinion; (4) a new species is listed or critical habitat designated that may be affected by the identified action. In instances where the amount or extent of incidental take is exceeded, the action agency must immediately reinitiate formal consultation.

11. Data Quality Act Documentation and Pre-Dissemination Review

Section 515 of the Treasury and General Government Appropriations Act of 2001 (Public Law 106-554) ("Data Quality Act") specifies three components contributing to the quality of a document. They are utility, integrity, and objectivity. This section of the Biological Opinion addresses these Data Quality Act components, documents compliance with the Data Quality Act, and certifies that this Biological Opinion has undergone pre-dissemination review.

Utility: This ESA section 7 supplemental biological opinion considers new information related to the effect of the BSAI groundfish fisheries on ESA listed salmonids. In the supplemental opinion NMFS concludes that continued implementation of the BSAI fishery will either have no effect, is not likely to adversely effect, or is not likely to jeopardize any listed salmonid species. The intended users are the members of the NPFMC, the various interested groups and communities they represent. Commercial fishing interests, associated businesses, fish buyers and related food service industries, and the general public benefit from the consultation.

Copies of the Biological Opinion will be provided to the chairs of the NPFMC. This biological opinion will be posted on the NMFS NW Region web site (www.nwr.noaa.gov). The format and naming adheres to conventional standards for style.

Integrity: This biological opinion was completed on a computer system managed by NMFS in accordance with relevant information technology security policies and standards set out in Appendix III, "Security of Automated Information Resources," Office of Management and Budget Circular A-130; the Computer Security Act; and the Government Information Security Reform Act.

Objectivity:

Information Product Category: Natural Resource Plan.

Standards: This opinion and supporting documents are clear, concise, complete, and unbiased, and were developed using commonly accepted scientific research methods. They adhere to published standards including the NMFS ESA Consultation Handbook, ESA Regulations (50 CFR 402.01 et seq.), and the Magnuson-Stevens Fishery Conservation and Management Act (MSA) implementing regulations regarding Essential Fish Habitat (50 CFR 600.920(j)).

Best Available Information: This consultation and supporting documents use the best available information, as referenced in the literature cited section. The analyses in this Biological Opinion contain more background on information sources and quality.

Referencing: All supporting materials, information, data, and analyses are properly referenced, consistent with standard scientific referencing style.

Review Process: This consultation was drafted by NMFS staff with training in ESA and MSA implementation, and reviewed in accordance with Northwest Region ESA quality control and assurance processes.

12. REFERENCES

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

January 24, 2007

MEMORANDUM FOR: Robert Lohn
Administrator, Northwest Region

FROM: Robert D. Mecum
Acting Administrator, Alaska Region

SUBJECT: 2006 Annual Salmon Report for the Alaska Groundfish Fisheries

We are providing you the 2006 annual report of salmon harvested in the Alaska groundfish fisheries. This report fulfills one of the terms and conditions of the January 11, 2007, supplement to the November 30, 2000, Biological Opinion regarding Authorization of Bering Sea/Aleutian Islands Groundfish Fisheries (supplemental BiOp). Attached is the updated information regarding salmon bycatch in the Bering Sea and Aleutian Island management area (BSAI) and Gulf of Alaska groundfish fisheries for the years 2003 through 2006. The 2006 data include harvests that occurred through December 31, 2006. Also attached is the latest information regarding coded-wire tag (CWT) recoveries in the Alaska groundfish fisheries. The amounts of salmon incidental take and CWT recoveries are similar to those reported during the consultation in December 2006.

The NMFS Alaska Region and the North Pacific Fishery Management Council (Council) are making progress in addressing the salmon bycatch management actions that were analyzed in the supplemental BiOp. Amendment 84 to the Fishery Management Plan (FMP) for Groundfish of the BSAI is scheduled to be submitted for Secretarial review in February 2007 with final implementation by August 2007, if approved by the Secretary. The exempted fishing permit implementing the inter-cooperative agreement provisions of Amendment 84 was issued January 23, 2007. In February 2007, the Council will be reviewing progress on the implementation of Amendment 84 and will review a discussion paper on the process to estimate interim caps and determine spatial management for salmon bycatch management. Reducing salmon bycatch continues to be an important issue for the Region, the Council, and the fishing industry. If you have any questions, please contact Melanie Brown at melanie.brown@noaa.gov or 907-586-7006.

cc: Peter Dygert, NMFS NW Region, SF Division

Alaksa Groundfish Fisheries Total Chinook and Non-Chinook Incidental Catch 2003-2006

BSAI Groundfish Fisheries

	Chinook	Chinook CDQ	Chinook Total	Non-chinook	Non Chinook CDQ	NonChinook Total
2003 Hook and Line	10	3	13.15	47	12	58.75
Non-pelagic trawl	8,420	145	8565.48	2,171	34	2204.96
Pelagic trawl	44,450	2565	47015.2	186,600	8356	194955.8
Total	52,881	2713	[redacted]	188,818	8402	[redacted]
2004 Hook and Line	56	9	65.39	190	27	216.51
Non-pelagic trawl	9,003	35	9037.71	9,591	200	9790.82
Pelagic trawl	51,069	2966	54034.62	437,087	10197	447284.4
Total	60,128	3010	[redacted]	446,868	10424	[redacted]
2005 Hook and Line	54	0	54.11	93	27	119.68
Non-pelagic trawl	6,690	123	6812.51	5,231	671	5901.52
Pelagic trawl	65,941	1933	67873.94	697,808	7693	705500.8
Total	72,685	2056	[redacted]	703,131	8391	[redacted]
2006 Hook and Line	26	6	31.69	469	20	489.09
Non-pelagic trawl	4,384	47	4431.32	15,956	158	16113.78
Pelagic trawl	81,365	1737	83102.23	309,887	1202	311088.6
Total	85,775	1790	[redacted]	326,311	1380	[redacted]

GOA Groundfish Fisheries

	Chinook	Non-chinook
2003 Hook and Line		201
Non-pelagic trawl	11,741	4,186
Pelagic trawl	4,256	6,224
Total	15,998	10,610
2004 Hook and Line	35	250
Non-pelagic trawl	5,319	5,057
Pelagic trawl	12,756	658
Total	18,110	5,965

2005	Hook and Line		208
	Non-pelagic trawl	4,176	4,688
	Pelagic trawl	26,780	2,025
	Total	30,956	6,920
2006	Hook and Line		220
	Non-pelagic trawl	3,311	1,740
	Pelagic trawl	14,272	2,790
	Total	17,583	4,750

Table 5. Actual Number and Total Estimated Contribution of ESA-listed CWT salmon by ESU captured in GOA and BSAI trawl fisheries,summed over pre-listing and post-listing periods, 1984-2005
1/18/2007

Listing status	ESU name	GOA Actual Number	GOA Total estimated contribution	BSAI Actual Number	BSAI Total estimated contribution
Pre-listing	Lower Columbia River Chinook	12	315.7	0	0
	Upper Willamette River Chinook	40	773.2	2	5.3
	Hood Canal summer-run chum	0	0	1	9.8
Post-listing	Lower Columbia River Chinook	11	128.2	8	15.3
	Upper Willamette River Chinook	51	634.8	8	64.3
	Upper Columbia River spring Chinook	1	3.8	0	0

Table 6. Actual Number and Total Estimated Contribution of ESA-listed CWT salmon by ESU by year captured in GOA and BSAI trawl fisheries,1984-2006
(2006 data are preliminary)

A. Lower Columbia River Chinook ESU

Listing status	ESU name	run year	GOA Actual Number	GOA Total estimated contribution	BSAI Actual Number	BSAI Total estimated contribution
Pre-listing	Lower Columbia River Chinook	1984	5	33.8	0	0
		1985	1	3.4	0	0
		1986	0	0	0	0
		1987	1	2.6	0	0
		1988	0	0	0	0
		1989	0	0	0	0
		1990	1	3.4	0	0
		1991	0	0	0	0
		1992	1	13.2	0	0
		1993	1	241.9	0	0
		1994	2	17.3	0	0
		1995	0	0	0	0
		1996	0	0	0	0
		1997	0	0	0	0
Post-listing	Lower Columbia River Chinook	1998	2	71.8	0	0
		1999	4	29.3	0	0
		2000	2	8.1	0	0
		2001	2	12.9	1	2.7
		2002	0	0	1	2.0
		2003	0	0	0	0.0
		2004	1	6.0	3	5.6
		2005	0	0.0	3	5.0
		2006	0	0	1	

B. Upper Willamette River Chinook ESU

Listing status	ESU name	run year	GOA Actual Number	GOA Total estimated contribution	BSAI Actual Number	BSAI Total estimated contribution
Pre-listing	Upper Willamette River Chinook	1984	11	40.2	1	2.7
		1985	0	0	0	0
		1986	0	0	0	0
		1987	0	0	0	0
		1988	0	0	0	0
		1989	0	0	0	0
		1990	4	13.8	0	0
		1991	1	157.2	0	0
		1992	4	234.4	0	0
		1993	14	209.1	0	0

		1994	3	54.5	0	0
		1995	2	54.6	0	0
		1996	1	9.4	1	2.6
Post-listing	Upper Willamette River Chinook	1997	1	53.1	0	0
		1998	4	117.6	0	0
		1999	20	244.6	1	2.2
		2000	16	67.1	1	2.5
		2001	8	46.0	1	2.7
		2002	1	12.1	2	24.3
		2003	1	61.7	0	0
		2004	1	32.5	1	14.9
		2005	0	0.0	2	17.7
		2006	1		0	

C. Upper Columbia River spring Chinook ESU

			GOA	GOA	BSAI	BSAI
Listing status	ESU name	run year	Actual Number	Total estimated contribution	Actual Number	Total estimated contribution
Pre-listing	Upper Columbia River spring Chinook	1984	0	0	0	0
		1985	0	0	0	0
		1986	0	0	0	0
		1987	0	0	0	0
		1988	0	0	0	0
		1989	0	0	0	0
		1990	0	0	0	0
		1991	0	0	0	0
		1992	0	0	0	0
		1993	0	0	0	0
		1994	0	0	0	0
		1995	0	0	0	0
		1996	0	0	0	0
Post-listing	Upper Columbia River spring Chinook	1997	0	0	0	0
		1998	1	3.8	0	0
		1999	0	0	0	0
		2000	0	0	0	0
		2001	0	0	0	0
		2002	0	0	0	0
		2003	0	0	0	0
		2004	0	0	0	0
		2005	0	0	0	0

D. Hood Canal summer-run chum ESU

			GOA	GOA	BSAI	BSAI
Listing status	ESU name	run year	Actual Number	Total estimated contribution	Actual Number	Total estimated contribution
Pre-listing	Hood Canal summer-run chum	1984	0	0	1	9.8
		1985	0	0	0	0
		1986	0	0	0	0
		1987	0	0	0	0
		1988	0	0	0	0
		1989	0	0	0	0
		1990	0	0	0	0
		1991	0	0	0	0
		1992	0	0	0	0
		1993	0	0	0	0
		1994	0	0	0	0
		1995	0	0	0	0
		1996	0	0	0	0
		1997	0	0	0	0
Post-listing	Hood Canal summer-run chum	1998	0	0	0	0
		1999	0	0	0	0
		2000	0	0	0	0
		2001	0	0	0	0
		2002	0	0	0	0

	2003	0	0	0	0
	2004	0	0	0	0
	2005	0	0	0	0

Table 7. Recoveries of ESA-listed CWT salmon by ESU (post-listing only) captured in GOA and BSAI trawl fisheries, actual numbers and percent of all recoveries

Listing status	ESU name	GOA Actual Number	GOA % of all recoveries	BSAI Actual Number	BSAI % of all recoveries	Total all recoveries
Post-listing	Lower Columbia River Chinook	11	0.023	8	0.017	48227
	Upper Willamette River Chinook	51	0.137	8	0.021	37357
	Upper Columbia River spring Chinook	1	0.011	0	0.000	8913

Problem Statement and Suite of Alternatives for Amendment Package 84B

Problem Statement:

The Council and NMFS have initiated action to exempt AFA qualified and CDQ vessels participating in the intercooperative voluntary rolling hotspot system (VRHS) from regulatory Bering Sea salmon bycatch savings areas. Analysis and refinement of the current salmon savings areas may be necessary in the event pollock vessels either surrender or lose their exemption and return to fishing under the regulatory salmon bycatch program.

Further, alternatives to the VRHS system and/or the regulatory salmon bycatch program should be developed to assess whether they would be more effective in reducing salmon bycatch. The following amendment packages are not intended to preclude the intercooperative annual review as required under Amendment 84.

Alternatives (amendment packages, B-1 and B-2)

Amendment Package B-1

Establish new regulatory salmon savings systems taking into account the most recent available salmon bycatch data. In developing alternatives include an analysis of the need and implementation strategy for appropriate caps as bycatch control measures. This package should be completed first and implemented when ready so that salmon savings regulations are based on the best available information.

Option: Adjust the Chinook and non-Chinook regulatory closure areas periodically based on the most current bycatch data available, such as the 2-3 year rolling average of bycatch rates by species and area.

Amendment Package B-2

Develop a regulatory individual vessel salmon bycatch accountability program.

Option A: managed at the individual level

Option B: managed at the co-op level

Option C: Either Option A or Option B for each AFA pollock sector.

Suboption 1: Implement the individual vessel salmon bycatch accountability program.

i) Immediately, if it was determined to be more effective in reducing salmon bycatch than the VRHS system.

ii) After 3 years if it is determined the VRHS system has failed to achieve the desired level of bycatch reduction.

Suboption 2: Analyze the need and implementation strategy for appropriate caps as bycatch control measures.

(note Suboptions 1 and 2 apply to Options A,B and C)

Bering Sea Aleutian Islands Salmon Bycatch:

February 2007 Staff Discussion Paper

In October 2005, the Council took final action on amendment 84, electing to exempt vessels participating in a voluntary rolling hot spot (VRHS) system from regulatory salmon savings area closures. In conjunction with this action, in December 2005 the Council revised the existing draft suite of alternatives for the next phase of the salmon bycatch analysis (currently referred to as amendment 84B). This amendment package is intended to follow up on remaining measures that were not analyzed under amendment 84. In April 2006, the SSC convened a workshop to better inform the Council regarding the current status of available information on salmon genetics, bycatch patterns and status of AYK salmon stocks in order to assist in the development of alternatives. At that time, the Council reiterated their intention to move forward with amendment package B-1 as a priority with the timeline for the analysis allowing for the inclusion of new information as it becomes available on the genetics of stock origin for incidentally caught salmon species.

This paper reviews the following: pollock fishery and salmon bycatch patterns by species; patterns of spatial persistence in salmon bycatch from 2001-2006 by species; preliminary analysis of patterns in age/length of salmon bycatch by species; a discussion of alternatives for establishing trigger caps as catch limits by species; and a review of alternatives before the Council under forthcoming bycatch reduction amendment analyses. This information is summarized here to facilitate the process of refining the alternatives under the forthcoming amendment package B-1 prior to an analysis of these alternatives.

Overview of pollock fishery characteristics and salmon bycatch patterns

The pollock fishery is split into "A" and "B" seasons. A-season commences on Jan 20th and extends until late March or early April, until about 40% of the available quota (TAC) is reached. This fishery is focused on the SE portion of the EBS and targets pre-spawning fish. The B-season opens in June and continues generally until mid-October for the remaining 60% of the quota. This fishery is typically spread over the outer shelf edge of the Bering Sea extending to the Russian border.

Chinook salmon are commonly taken incidentally by pollock trawl gear during both A and B-seasons. Chum salmon are primarily taken during the B season. Regulatory salmon savings areas by species are shown in figure 1.

The level of observer coverage in the pollock fishery is very high, with most fishing operations being recorded and examined for bycatch. Pollock catches have averaged 1.47 million t during 2001-2006. Seasonal production rates (fleet wide cumulative pollock catches) during this period are similar, but the observed hours fished is more variable[1] (Figure 2). In contrast, the cumulative

[1] Note: these data are preliminary and investigation is being done in conjunction with a draft paper by D. Stram and J. Ianelli for the AYKSSI Symposium in February 2007. Some of this investigation will be summarized in the forthcoming paper in proceedings of that conference.

seasonal salmon catch levels in the pollock fishery have shown a high degree of variability (Figure 3). Here the catch per observed hour of fishing for pollock is higher in the A season, but has been relatively stable over time whereas the catch per observed hour fishing has increased dramatically for both Chinook and chum salmon (Figure 4).

There are three sectors of the pollock fleet: catcher-vessels that deliver catches to shore-side processing plants, catcher-vessels that deliver to at-sea processing motherships, and vessels that catch and processor their fish on board (catcher-processors). By regulation, catcher-processors are restricted from some near-shore areas since shore-based catcher vessels have greater limitations on the locations they can fish. This dynamic impacts the bycatch levels of salmon which generally tend to be higher in shore-based catcher vessels. For example, the incidence rate of salmon encounters for catcher vessels has increased in both sectors but the rate for catcher processors has averaged about 17% compared to 42% for catcher vessels (Figure 5).

Day-night difference in pollock behavior and catchability are apparent from these data. Characterizing the average daily effort, there about 75% are fewer tows during the evening and that the tows that do occur, tend to be longer in duration (Figure 6). Both pollock and salmon have somewhat higher catch rates during mid-day, but salmon rates drop (relatively speaking) more during night (Figure 7).

Spatially, the density of Chinook salmon bycatch during the A season is concentrated to fewer areas than where pollock are caught, which indicates that Chinook salmon are not uniformly distributed relative to pollock (Figure 8). During the B-season, bycatch of Chinook salmon is much more along the fringes of where pollock catches are concentrated (Figure 9).

Chum salmon (for the B-season fishery when the majority of the bycatch occurs) spatial distribution in the pollock fishery is concentrated south of the Pribilof Islands, even in years where the pollock fishery is concentrated more northerly (Figure 10).

2006 Chinook salmon bycatch

Bycatch of Chinook salmon in the BSAI pollock trawl fishery has been elevated since 2003 and continued to show increases in the A season for 2006. Chinook bycatch in the pollock pelagic trawl fishery as reported by NMFS Catch Accounting as of March 18th, was 59,512. For comparison with similar timing in the previous year (March 26, 2005), 25,400 Chinook had been taken in the pollock pelagic trawl fishery. NMFS closed the Chinook Salmon Savings Areas at noon on February 15, 2006 (Attachment 1). These areas remained closed until noon on April 15th. Per regulations, the areas then reopened until noon on September 1st, 2006 and then closed through December 31st, 2006.

This is the first time since its implementation that the Chinook closure has been triggered during the A season. In previous years, the Chinook closure has triggered in the B-season in 2003, 2004 and 2005. The timing of triggering the limit (26,825 for the non-CDQ fleet) determines the timing of the closure:

1. If the limit is triggered before April 15, the areas close immediately through April 15. After April 15, the areas re-open, but are again closed from September 1-December 31.
2. If the limit is reached after April 15, but before September 1, the areas would close on September 1 through the end of the year.
3. If the limit is reached after September 1, the areas close immediately through the end of the year.

Proposed changes to the intercooperative agreement as discussed in the EA/RIR/IRFA for amendment 84 (NPFMC 2005) became effective in 2006 and were not dependant upon implementation of regulations to promulgate amendment 84. Some of these measures included the removal of the stand-down period for A-season Chinook hot spot closures, an in-season Base Rate adjustment, and continuation of hot spot closures following a triggered regulatory closure.

The season began on January 20th, 2006 and the first hot spot closure announcement was sent to the fleet on January 30th (effective January 31st). Chinook bycatch rates appeared elevated from 2005 within the first week of 2006 fishing (Karl Haflinger, pers. comm.) An in-season Base Rate adjustment occurred on February 14th and increased the Base Rate from the value upon which the fleet had been managed against until that point (John Gruver, Karl Haflinger, pers. comm.). As of February 15th, the non-CDQ fleet was prohibited from fishing within the Chinook Salmon Savings Areas. Intercooperative closures continued to be enacted outside of the savings area closure throughout the A-season (Karl Haflinger, pers. comm.).

The Chinook bycatch in the B season continued to escalate. As of September 16, 2006, 66,272 Chinook salmon had been taken. For comparison with 2005, as of September 24, 2005 42,788 Chinook had been taken. The total number of Chinook taken in 2005 was 67,856. The total number in 2006 was 87,524. The Chinook salmon savings area was re-closed on September 1, 2006 for the remainder of the year following the triggering of the closure (prior to April 15, 2006) during the A season. The exemption EFP took effect August 3rd for both the Chum and Chinook salmon savings areas so the fleet was able to fish within the closure in the B season after this time. An EFP will allow the fleet to fish under the exemption in 2007.

Under the revised ICA management agreement for 2006, Chinook closures in the B season are "core closures" meaning that they apply to the fleet as a whole. Several core closures were enacted throughout the B season. The Base Rate for Chinook is 0.05 throughout the season. There is no base rate adjustment for Chinook during the B season.

2006 Chum salmon bycatch

Bycatch of non-Chinook salmon in 2006 was lower than the previous year. The total amount in 2006 was 327,690. The total amount taken in 2005 was 703,131, the highest amount of non-Chinook (which is primarily comprised of chum salmon and so referred to as chum) bycatch in the fishery to date. Of this only 17,581 had been taken within the CVOA since August 14th. The accounting period for the trigger begins August 14th and only includes chum salmon from within the CVOA. The Chum salmon savings area did not trigger in 2006.

The exemption EFP took effect on August 3rd, 2006. Weekly closures were enacted throughout the B-season for chum bycatch management under the ICA. The Base Rate was 0.19 at the beginning of the season and was first modified on July 20th based upon an average of the previous three weeks. Thereafter the base rate was modified weekly, using a three week running average.

Anecdotal reports from the fleet indicate that fishing opportunities both inside and outside of the savings areas were difficult in 2006, with either long tows being required west of the savings areas with high bycatch or short tows with low bycatch to the northwest (J. Gruver, pers. comm.). Pollock fishing rates inside of the savings area in the B season were not as good as in previous years. An EFP for 2007 will be issued and the fleet will operate under the EFP exemption in 2007 until regulations for Amendment 84 are implemented.

Spatial analysis of bycatch

Two preliminary spatial investigations of bycatch are provided here[2]. An overview of relative trends in salmon length-frequency data are presented here in order to evaluate inter-annual and monthly trends in consistency by sex, size and species. Length-frequency information is available from 1998-2006.

An investigation of bycatch and fishing effort by two week intervals from 2001-2006 is provided in order to evaluate the issue of the relative persistence of hot spots in temporal and spatial duration. This may help assist the Council in identifying appropriate areas and time periods for the analysis of new closure systems.

Salmon size distribution

The seasonal size composition of Chinook salmon in the pollock fishery shows two modes, one at about 52 cm and the other at about 66 cm during the winter months with some indication of increasing size within the year (Figure 11). From July – September, the smaller mode is less apparent but does appear again in October at about 49 cm.

For chum salmon, the seasonal size composition in the pollock fishery is unimodal, with apparent growth from a mode at about 60 cm in July to 66 cm by October (Figure 12). Length frequencies from other times of year are based on relatively fewer samples and tend to be less than 40cm. Interestingly, chum salmon from June have a modal value of about 68cm and appear to be different than those from subsequent months.

The sex ratio of Chinook salmon as bycatch in the pollock fishery tends to favor females over males, particularly in the size range greater than 55 cm (Figure 13). Chinook less than that size tend to be males more than females, particularly during the summer and fall (B-season). Chum salmon tend to be more males overall than females with females appearing smaller than males (Figure 14). Over time, the trends in these observed sex ratios have remained fairly consistent (Figure 15).

Annually, the bimodality of the Chinook salmon length frequencies is apparent and is consistent over time (Figure 16, 17). This suggests that the population structure of Chinook salmon is consistent. For chum salmon, the inter-annual variability is greater with larger fish apparent in some years (e.g., 2002 and 2006) but with a consistent mode at about 55cm (Figure 18). This may be due to different salmon stock components appearing as bycatch in the pollock fishery.

Bycatch patterns and persistence of hot spots:

NMFS observer data are utilized to characterize density of salmon bycatch in conjunction with pollock catch (Figures 19-33). Data have been scaled for relative catch across all years. Bycatch data and pollock catch are aggregated spatially for two-week intervals from 2001-2006 to look at the temporal nature of bycatch. The SSC suggested that examination on shorter temporal scales would be beneficial to evaluate the persistence of hot spots.

[2] Note: these data are preliminary and investigation is being done in conjunction with a draft paper by D. Stram and J. Ianelli for the AYKSSI Symposium in February 2007. Some of this investigation will be summarized in the forthcoming paper in proceedings of that conference.

Chinook salmon bycatch has increased since 2003. Extending the time period of spatial analysis back to 2001 allows for some comparison with a time period in which bycatch was lower. Pollock catch is also shown to compare possible changes in fishing patterns over this time period (Figures 19-24). Investigations of fishing pattern changes are complicated by the impact of regulatory closures (both Chinook and chum SSAs) since 2002. However, with the exception of 2006, no regulatory closures were enacted in the A season. In recent years it appears the highest density of catch within the CVOA occurs in the first two weeks of February (Figures 25, 26). In 2006, the Chinook SSA triggered in the A season and was closed on February 15th through April (attachment 1). Thus, examination of fishing patterns for 2006 shows no effort inside the Chinook SSA following this closure.

Comparison of 2004-2006 aggregated A season catch of salmon (Figure 9) with bi-weekly catch over the same time period (Figure 26) gives an indication of the persistence of bycatch hot spots over the A season. Specifically in 2004 and 2005, the area which in aggregate over the season appears high (within the southeastern Chinook SSA, Figure 9) seems to be temporally only in existence for 2 weeks (in 2004) and 4 weeks (in 2005)(Figure 26). A similar area showed a high density of salmon catch in 2002 over the same time period (Figure 25). In 2006, the area of aggregate high density within the Chinook SSA persists for only two weeks in February while the area closer to the Horseshoe and the Pribilofs is maintained for a longer time period (Figure 26).

During the B season for Chinook, the highest density of bycatch appears to be from the first two weeks in October (Figures 29,30). While highest densities during this time period are apparent from 2004 through 2006, this time period is also consistently high in 2001through 2003 (Figure 29). The spatial location of highest bycatch density is not consistent from one year to the next, either on shorter time frames or aggregated by season (Figure 10, Figure 30).

Chum salmon bycatch has been increasing since 2002. The highest chum bycatch occurred in 2005. High bycatch density for chum occurs throughout August and September (Figures 31-34). Spatially, consistent hot spots are observed in August just outside of the CVOA in 2004-2006 (Figure 32) Temporally there does not seem to be any consistency (by two week intervals examined) in time of catch for the same periods in different years (Figure 32). Chum catch may have higher inter-annual variability both spatially and temporally than Chinook catch.

Amendment Package 84B

Alternatives that are currently contained in the "Amendment 84B" measures were bifurcated from the Council's suite of alternatives for Amendment 84 in February 2005, in order to facilitate an expedited analysis of amendment 84. The Council then chose to split the remaining measures into different amendment packages (B-1 and B-2) and identified package B-1 as a higher priority for analysis. The problem statement is intended to be applicable to both amendment packages.

Problem Statement

The Council adopted the following revised problem statement for the analysis:

The Council and NMFS have initiated action to exempt AFA qualified and CDQ vessels participating in the intercooperative voluntary rolling hotspot system (VRHS) from regulatory Bering Sea salmon bycatch savings areas. Analysis and refinement of the current salmon savings areas may be necessary in the event pollock vessels either surrender or lose their exemption and return to fishing under the regulatory salmon bycatch program.

Further, alternatives to the VRHS system and/or the regulatory salmon bycatch program should be developed to assess whether they would be more effective in reducing salmon bycatch. The following amendment packages are not intended to preclude the intercooperative annual review as required under Amendment 84.

The problem statement is two-fold in its purpose. The first aspect to it is the need for refinement of the current salmon savings areas under the exemption (i.e., amendment 84 regulations) system. Under the exemption, there is the possibility that vessels either surrender their exemption and choose to fish outside of the VRHS system[3], or they lose their exemption by violating the terms of the agreement. In either case, these vessels are then subject to salmon savings area closures. At present they would be subject to the existing system of closures which analysis in amendment 84 suggested might be exacerbating salmon bycatch in some years (NPFMC 2005). If new closure areas were adopted while the exemption is underway and the exemption system failed (either for some or all vessels) it would be the new closures to which vessels would need to adhere. The intention is for new closure systems to be more responsive to current bycatch information than the previous regulatory closures are at present. Developing new closures is an alternative under amendment package B-1.

The second aspect of the problem statement addresses the need to evaluate the efficacy of the VRHS system. In order to evaluate the adequacy of this program adopted by the Council, the Council noted that it would evaluate operation of this system against alternative measures for bycatch reduction. These alternative measures would be new closures (with or without the exemption in place), and individual vessel bycatch accountability programs. New closures are part of amendment package B-1 while vessel bycatch accountability programs are under package B-2. Thus two opportunities would exist for the Council to evaluate the efficacy of the exemption program adopted under amendment 84: review of the analysis for package B-1, and review of the analysis for package B-2.

Alternatives

The following alternatives were refined by the Council in December 2005. These alternatives were bifurcated given that it may be more feasible (timing-wise) to analyze them as different amendment packages.

Amendment Package B-1

Establish new regulatory salmon savings systems taking into account the most recent available salmon bycatch data. In developing alternatives include an analysis of the need and implementation strategy for appropriate caps as bycatch control measures. This package should be completed first and implemented when ready so that salmon savings regulations are based on the best available information.

> Option: Adjust the Chinook and non-Chinook regulatory closure areas periodically based on the most current bycatch data available, such as the 2-3 year rolling average of bycatch rates by species and area.

Amendment Package B-2

Develop a regulatory individual vessel salmon bycatch accountability program.

[3] The exemption is not dependant on participation by a specified number of entities in the fleet. Some cooperatives may elect to fish without an exemption and be subject to closures if triggered. Others may choose to operate within the VRHS system and retain an exemption to the regulatory closures.

Option A: managed at the individual level
Option B: managed at the co-op level
Option C: Either Option A or Option B for each AFA pollock sector.

Suboption 1: Implement the individual vessel salmon bycatch accountability program.
- i) Immediately, if it was determined to be more effective in reducing salmon bycatch than the VRHS system.
- ii) After 3 years if it is determined the VRHS system has failed to achieve the desired level of bycatch reduction.

Suboption 2: Analyze the need and implementation strategy for appropriate caps as bycatch control measures.
(note Suboptions 1 and 2 apply to Options A, B and C)

Discussion of amendment package B-1

Amendment package B-1 would establish new regulatory salmon savings area closures based on current salmon bycatch data. Analysis of this alternative would require similar analyses to that which comprised the original amendments (21b, 35 and 58) establishing the regulatory closure areas. The analysis involved in proposing specific closure areas as well as analyzing the environmental and economic effects of moving the fleet away from these new specified closures is extensive.

The language in this alternative was specifically worded as "salmon savings systems" rather than closure areas to allow for innovative ideas in constructing new closures. There would likely be a series of alternative measures put forward to the Council which may include fixed triggered closures, biomass-based (i.e., floating) triggered closures, rotational closures or other means of constructing scientifically-appropriate salmon savings systems using the best information available. Advice from the SSC would be sought in crafting these alternatives and draft measures would be brought forward for Council review throughout the analytical process to determine the appropriate measures for inclusion in the alternatives.

The Council, in December 2005, modified the option under amendment package B-1 such that the regulatory salmon savings areas may be adjusted periodically based upon Council review. What this option provides is the flexibility to adjust the closure boundaries as analyzed and adopted under B-1 based upon information presented to the Council on both the effectiveness of those closures as well as the relative rates of bycatch of salmon species over time. Under the exemption agreement for amendment 84, the Council will receive an annual report from the Inter-Cooperative Agreement participants on the effectiveness of bycatch reduction under the VRHS system. In conjunction with this, the Council may request staff to produce an annual report on salmon bycatch trends. If the Council decides upon review of these reports that it would be prudent to adjust the closure configuration, the Council could then decide to pursue the regulatory amendment to do so.

Amendment package B-1 would also evaluate the need and implementation strategy of an appropriate bycatch cap on chum and Chinook salmon species in BSAI trawl fisheries. Appropriate caps could be included as a trigger mechanism for a closure system, or as an alternative measure to an area closure. In April, 2005, the SSC noted that a great deal of analysis would be required to support implementation of a voluntary rolling hot spot closure system (VRHS) such as is under consideration in amendment 84. The SSC suggested that in the following amendment, analysis of additional protection measures such as a bycatch cap would be

appropriate. In their minutes from the June 2005 meeting, the SSC recommended "*an expanded examination of an appropriate limit on salmon bycatch that considers such factors as region of origin and, at least for salmon of Alaskan origin, total run sizes and the allocated quantities of salmon to subsistence, commercial and sport users as well as escapement goals*" (SSC minutes, June 2005).

The SSC convened a workshop on BSAI salmon bycatch at the April 2006 meeting. Minutes from the workshop are included as attachment 2. The workshop included presentations on bycatch in the pollock fishery, BASIS survey research, genetic identification of bycatch in BSAI trawl fisheries, stock status overview of AYK salmon species and information on incentives for salmon bycatch avoidance. The presentations were followed by moderated discussion to aid in the development of bycatch management alternatives. Some objectives of the workshop discussion were to evaluate the ability to craft biomass-based caps for salmon species; to discuss innovative ideas for salmon savings systems which are responsive to changing conditions; and to delineate appropriate milestones and standards for effective bycatch reduction. Another bycatch workshop, presenting updated information on bycatch patterns, stock of origin and additional information related to salmon bycatch patterns is planned in conjunction with the April 2007 SSC meeting.

Process for determining trigger caps for salmon species

There are different methods for determining prohibited species catch limits that have been utilized by the Council under various FMPs. At this point in time, the Council has not expressed any interest in pursuing hard caps for salmon in the pollock fishery, thus all caps under consideration are understood to be trigger caps associated with some closure configuration.

Three different formulations of caps are considered here: biomass-based caps, fixed caps and stair-step caps. The issues and potential difficulties associated with each are summarized below.

Biomass-based caps:
Alternatives under both forthcoming amendment packages (84B-1 and 84B-2) include the consideration of a biomass-based cap on salmon species bycatch. Biomass-based caps are used by the Council for herring in the BSAI where an overall herring PSC bycatch cap of 1 percent of the EBS biomass of herring has been implemented. This cap is apportioned by fishery categories. An annual stock assessment for herring is used in estimating the total biomass for calculating this cap.

For salmon, however, this becomes more complicated given the necessity of utilizing information both on various salmon stocks and the relative contribution of those stocks to the bycatch. The current status of knowledge to formulate some form of floating biomass-based cap may preclude this for the time being (see attached SSC discussion as noted earlier in this document).

Progress is being made by ADF&G in improved enumeration of salmon and by various scientists in the identification of incidentally caught salmon to stock of origin. Both of these are necessary in order to craft a meaningful abundance index which relates the regional run size of salmon species to their stock of origin when encountered as bycatch in the pollock fishery. A meaningful biomass-based salmon cap would need to incorporate a relationship correlating the stock size of a particular run and the encounter rate as bycatch in the trawl fishery. Once this relationship can be established, the cap can float as a proportion of abundance and more accurately reflect changing

conditions for salmon abundance. Information that should be incorporated into a cap system would be:

- Indication of run size by stock
- Stock of origin information for bycaught salmon including trends in origin by region (shelf, slope), season and age.

On-going projects are very encouraging in ascertaining this information. More precise data on stock size and stock of origin will be available in the future. Many current estimates of stock origin are from trawl bycatch samples from the late 1990s and recent preliminary studies indicate that bycatch patterns and stock of origin results vary by season as well as annually (and by region and age of fish). An estimate could be made based on the best science presently available, if adequate adjustments could be made as the science improves. Additional on-going projects such as surveys from the BASIS program may eventually allow for some projections to be made of future returns to Alaskan rivers.

The Council may choose to include a biomass-based cap in the alternatives for analysis of trigger caps at a later time as information becomes available. This cap would need to be frameworked in its application such that information that is utilized on run size and stock of origin can be updated periodically as information improves.

Fixed caps

Currently the regulatory closure areas are triggered by fixed caps. These caps (29,000[4] Chinook SSA and 42,000[5] for 'other" salmon within the Catcher Vessel Operational Area (CVOA) during the accounting period) were implemented under amendments 21b (ADF&G 1995a), 35(ADF&G 1995b) and 58 (NMFS 1999) to the BSAI FMP.

The original Chinook limit of 48,000 fish under amendment 21b was crafted based upon analysis of a range of bycatch rates per metric ton of groundfish of 0.004 to 0.024 resulting in a range of fixed values under consideration of 8,000 to 48,000 fish (ADF&G 1995a). The high end of this range was chosen at the time as the trigger limit for the associated closures. In selecting this number, the Council recognized that this would only close the salmon savings areas for Chinook in years of very high bycatch given that this amount was higher than bycatch in all years considered with the exception of 1991 (ADF&G 1995a). Amendment 58 then reduced the limit incrementally over three years from 48,000 to 29,000 and changed the accounting period to begin on January 1 (NMFS 1999). Public concerns had been raised to the Council at that time by western Alaskan groups that a more restrictive cap was necessary in order to enact the closure in additional years. The analysis evaluated a cap reduction to 36,000 fish and then reduced this number by the relative contribution to the bycatch by the Pacific cod fishery (~7,000 Chinook per year at that time), which led to the current cap number of 29,000 fish (NMFS 1999).

For 'other' salmon, the original cap of 42,000 fish was implemented by emergency rule in April, 1994. This cap represented 50 percent of the average number of 'other' salmon incidentally caught within the CVOA during the period considered for the analysis (1991-1993). Catch of salmon within the CVOA represented 80% of the total 'other' salmon bycatch in any of the years

[4] This number is inclusive of the allocation to CDQ groups. Non-CDQ Chinook salmon limit is 26,825.

[5] This number is inclusive of the allocation to CDQ groups. Non-CDQ 'other salmon' limit is 38,850.

considered (ADF&G 1995). The cap was retained in the preferred alternative for the Chum SSAs under amendment 35 to the BSAI groundfish FMP.

Fixed caps calculated as some percentage of updated bycatch numbers could be considered by the Council until such a time as a meaningful abundance index for salmon allows for explicit harvest rate limits. Revised caps should evaluate a range of years (e.g., 2001-2006) and allow for some flexibility in the incorporation of extreme values (high or low) in bycatch. Harvest limits might vary by season and by sector. For example, the assumption that 80% of the other salmon catch occurs within the CVOA should be reevaluated to see if changes in fishing practices have altered this assumption. The limits could be defined by specific areas or an entire fishery depending on the alternative. The distribution of bycatch rates stratified by time of year and specific areas could be analyzed to develop a set of rules to avoid excessive bycatch. For example, if a stratum bycatch rate exceeded an extreme-value cutoff (e.g., catch rates above the 90th percentile for that stratum) a closure could be triggered. This would mediate hot-spot effects. For overall catch limits, central tendencies (e.g., means) of the distributions could be computed and integrated over all regions to determine if the absolute bycatch level warranted a fleet-wide closure. The methods for establishing harvest limits require evaluation and could be based on updated patterns in salmon abundance (e.g., a three-year moving average).

Stair-step caps

Stair-step caps have been utilized for other prohibited species in the BSAI groundfish FMP. Example stair-step caps for crab species are triggers for time/area closures. A PSC limit is established for snow crab in a defined area that fluctuates with abundance except at high and low stock sizes. The PSC cap is established at 0.1133% of the total Bering Sea abundance (as indicated by the NMFS trawl survey), with a minimum PSC of 4.5 million snow crabs and a maximum PSC of 13 million snow crabs. Snow crab taken within the "C. opilio Bycatch Limitation Zone" (COBLZ) accrue towards the PSC limits established for individual trawl fisheries. Upon attainment of a snow crab PSC limit apportioned to a particular trawl target fishery, that fishery is prohibited from fishing within the COBLZ.

PSC limits are also stair-stepped for Bristol Bay red king crab and for *bairdi* Tanner crab. Stairstep measures in place for Tanner crab are shown in the table below. These limits are established in Zones 1 and 2 based on total abundance of *bairdi* crab as indicated by the NMFS trawl survey. Attainment of Tanner crab limits closes the respective fishery in the zone in which the limit was attained.

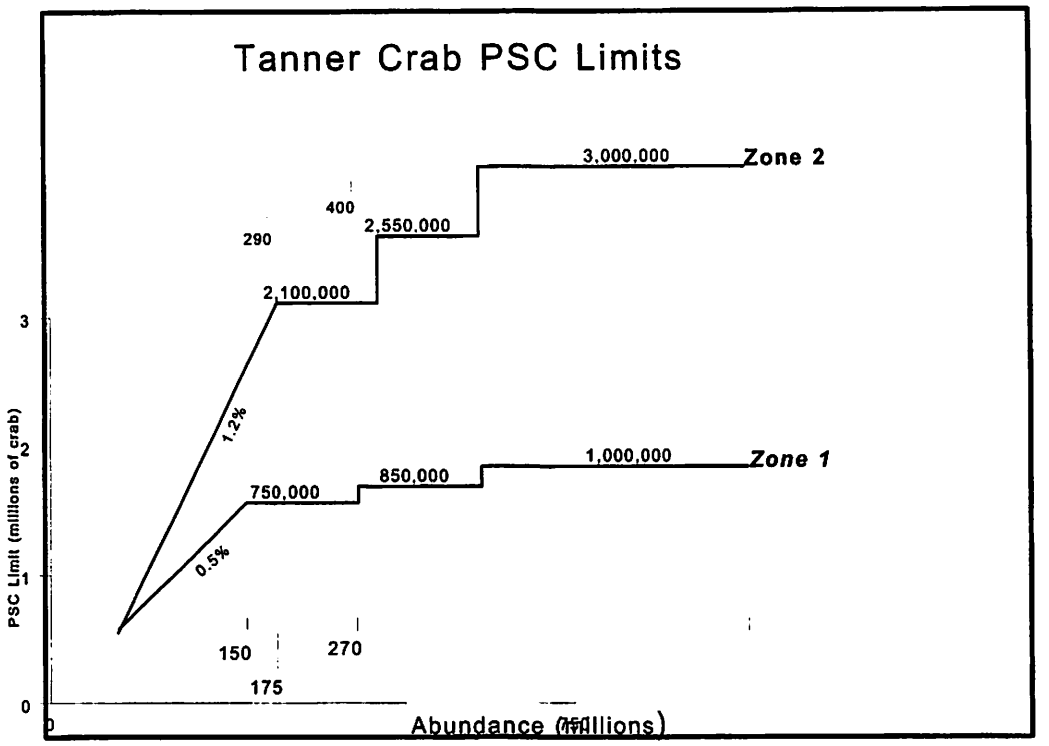
PSC limits for bairdi Tanner crab

Zone	Abundance	PSC Limit
Zone 1	0-150 million crabs	0.5% of abundance
	150-270 million crabs	750,000
	270-400 million crabs	850,000
	over 400 million crabs	1,000,000
Zone 2	0-175 million crabs	1.2% of abundance
	175-290 million crabs	2,100,000
	290-400 million crabs	2,550,000
	over 400 million crabs	3,000,000

The process by which these caps were initially established was a combination of proposals for limits put forward by the State of Alaska, recommendations from the Crab Plan Team and by

committee discussions amongst interested stakeholders. For Tanner crab, proposed lower threshold limits were based upon the average observed bycatch for the stock at that level of abundance (NPFMC 1996). The upper range of the limit was based on negotiated amounts when the stock was at a high abundance in 1988 (NPFMC 1996). The middle "step" level was established at an intermediary level between steps 1 and 3.

These limits were then further modified by amendment 41 whereby the current stairstep levels were approved as negotiated by industry representatives (NPFMC 1997). This negotiation process was the following: In June, 1996, the Council formed an industry workgroup to review proposed PSC limits for Tanner and snow crab as detailed in the analysis for amendment 37 (red king crab PSC amendment). This Council work group consisted of three crab fishery representatives, three trawl fishery representatives, and one shoreside processing representative.



The group met over two days in August 1996 and came to consensus on bycatch limits for *bairdi* Tanner crab. The stairstep PSC limits, as shown (table and figure above) were agreed upon by the workgroup and were primarily developed from historical bycatch data.

A similar negotiated cap could be considered for salmon species. The Council may wish to designate a small (e.g. 6 person) workgroup with the expressed intent that this group must come to consensus on an acceptable interim cap for salmon. The work group should be of a small enough size that negotiation during a meeting is possible and with a defined chairman that is preferably outside of the interest groups represented on the workgroup. A schedule should be established by the Council for the timing of deciding upon a cap proposal for the analysis. The interim cap would be tied to closures of areas as determined by spatial analyses similar to the fixed caps as described previously.

Decisions for the Council at this meeting

If the Council decides to move forward with a timeline for analysis of amendment package B-1 at this meeting, the Council may wish to refine the alternatives to provide staff direction for this analysis. Specifically the Council should provide direction on the following:

Salmon bycatch caps:

Process for determining caps:

1. Council appointed workgroup develops caps for analysis
2. Analysts develop alternative caps for analysis
3. Combination of 1 and 2

Types of trigger caps under consideration (by species):

1. Biomass-based caps (understanding that information is lacking thus a framework would be designed for incorporation of additional information as it becomes available)
2. Fixed caps: updated fixed values caps
   - option to include a rolling average based on an appropriate timeframe (e.g. 3 years)
3. Stair-step caps using some measure of abundance
4. Combination of 1, 2, 3

5. HARD CAPS

Spatial analysis of candidate closure areas:

Time/area closures:

1. Evaluate discrete areas with individual trigger limits by area
   - Option to close during discrete temporal periods only
2. Evaluate discrete areas with aggregate trigger limits to close all areas
   - Option to close during discrete temporal periods only
3. Combination of 1 and 2

eval fixed area closures w/ NO trigger

Exemption: missed more ?

Should the exemption for participants in the VRHS system (as approved under amendment 84) be included as an option which applies to all alternatives?

temporal based non-trigger closure

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Table 1. Raw observer-data totals of pollock catch (t) and salmon (numbers) by seasons. Note that official totals will differ due to expansions to unobserved operations.

	A Season (Jan-May)			B Season (Jun – Dec)			Total	Total	Total
Year	Pollock	Chinook	Chum	Pollock	Chinook	Chum	Pollock	Chinook	Chum
1990	405,672	3,847	159	583,119	3,039	9,924	988,791	6,886	10,083
1991	328,831	12,078	295	435,318	2,226	12,250	764,149	14,304	12,545
1992	308,989	14,985	645	487,893	7,595	25,762	796,882	22,581	26,407
1993	358,098	12,456	201	474,089	7,898	133,073	832,188	20,354	133,274
1994	392,624	15,179	383	514,568	3,562	67,759	907,192	18,741	68,141
1995	447,995	6,978	377	482,919	2,347	29,912	930,914	9,325	30,289
1996	367,290	24,346	147	421,396	13,328	51,825	788,686	37,673	51,971
1997	343,402	8,100	1,263	398,346	23,192	43,529	741,748	31,292	44,791
1998	384,397	11,527	3,784	413,731	27,492	30,758	798,129	39,019	34,543
1999	331,664	8,441	111	478,312	8,595	30,067	809,976	17,036	30,178
2000	371,911	5,272	238	567,065	4,437	44,617	938,976	9,709	44,855
2001	469,254	17,402	2,291	682,142	13,205	45,621	1,151,396	30,607	47,912
2002	499,437	18,502	1,033	744,601	11,336	64,376	1,244,039	29,838	65,409
2003	519,043	28,721	3,408	755,783	12,940	134,160	1,274,826	41,661	137,568
2004	510,953	21,301	391	732,256	23,994	345,032	1,243,208	45,295	345,423
2005	511,460	27,006	519	747,335	32,423	496,726	1,258,795	59,429	497,245
2006	534,293	54,450	2,308	765,460	23,703	222,115	1,299,753	78,153	224,423

Table 2. Raw observer-data totals of pollock catch (t) by A (Jan-May) and B (June-Dec) seasons and by regions (S=south of 56°, M=56° - 58°, N=north of 58°). Note that official totals will differ due to expansions to unobserved operations.

Pollock	A season			A season	B Season			B season	
Year	S	M	N	Total	S	M	N	Total	Total
1990	184,184	207,371	14,117	405,672	183,125	39,066	360,928	583,119	988,791
1991	319,867	5,170	3,794	328,831	109,778	104,509	221,031	435,318	764,149
1992	182,282	125,318	1,389	308,989	242,314	115,252	130,327	487,893	796,882
1993	213,110	139,474	5,514	358,098	245,733	215,936	12,420	474,089	832,188
1994	370,990	14,480	7,154	392,624	251,738	223,049	39,781	514,568	907,192
1995	424,979	20,937	2,079	447,995	256,390	169,122	57,407	482,919	930,914
1996	232,996	132,538	1,756	367,290	233,448	120,225	67,723	421,396	788,686
1997	256,186	82,961	4,254	343,402	166,871	31,421	200,055	398,346	741,748
1998	334,529	44,810	5,058	384,397	171,018	181,147	61,566	413,731	798,128
1999	178,140	151,221	2,302	331,664	162,896	144,067	171,349	478,312	809,976
2000	152,243	212,481	7,186	371,911	32,720	391,267	143,078	567,065	938,976
2001	160,500	306,641	2,113	469,254	319,255	220,851	142,036	682,142	1,151,396
2002	307,361	191,605	471	499,437	366,526	226,692	151,384	744,601	1,244,039
2003	281,511	216,564	20,968	519,043	326,796	179,089	249,898	755,783	1,274,826
2004	235,685	274,346	922	510,953	298,815	174,995	258,446	732,256	1,243,208
2005	257,133	252,959	1,367	511,460	166,893	169,121	411,321	747,335	1,258,795
2006	307,757	224,709	1,827	534,293	119,284	106,226	539,949	765,460	1,299,753

Table 3. Raw observer-data totals of salmon catch (numbers) by A (Jan-May) and B (June-Dec) seasons and by regions (S=south of 56°, M=56° - 58°, N=north of 58°). Note that official totals will differ due to expansions to unobserved operations.

Chinook	A season			A season	B Season			B season	
Year	S	M	N	Total	S	M	N	Total	Total
1990	2,690	951	206	3,847	1,720	947	372	3,039	6,886
1991	11,526	440	112	12,078	1,194	931	101	2,226	14,304
1992	10,926	3,949	110	14,985	6,882	651	62	7,595	22,581
1993	7,814	3,372	1,271	12,456	3,297	4,395	206	7,898	20,354
1994	13,913	869	397	15,179	1,534	1,445	584	3,562	18,741
1995	6,523	380	74	6,978	1,602	615	130	2,347	9,325
1996	22,021	1,946	379	24,346	11,582	1,025	721	13,328	37,673
1997	6,449	1,498	154	8,100	16,759	1,854	4,579	23,192	31,292
1998	10,555	872	100	11,527	21,879	5,165	448	27,492	39,019
1999	4,130	4,094	217	8,441	2,995	4,331	1,269	8,595	17,036
2000	2,187	1,300	1,785	5,272	163	1,290	2,984	4,437	9,709
2001	7,034	10,130	238	17,402	5,950	6,779	476	13,205	30,607
2002	14,608	3,790	104	18,502	9,749	1,423	164	11,336	29,838
2003	19,467	8,927	327	28,721	4,750	5,743	2,447	12,940	41,661
2004	11,332	9,562	407	21,301	13,663	6,169	4,162	23,994	45,295
2005	16,656	9,471	879	27,006	17,577	9,828	5,018	32,423	59,429
2006	31,276	22,757	417	54,450	15,642	5,567	2,494	23,703	78,153

Chum	A season			A season	B Season			B season	
Year	S	M	N	Total	S	M	N	Total	Total
1990	94	65	0	159	5,365	357	4,202	9,924	10,083
1991	294	1	0	295	7,231	3,824	1,195	12,250	12,545
1992	633	12	0	645	20,388	5,347	27	25,762	26,407
1993	138	23	40	201	98,120	34,587	366	133,073	133,274
1994	373	1	9	383	49,130	16,727	1,902	67,759	68,141
1995	375	2	0	377	14,255	15,303	354	29,912	30,289
1996	139	7	1	147	28,964	1,637	21,224	51,825	51,971
1997	1,246	16	0	1,263	20,668	3,983	18,878	43,529	44,791
1998	3,764	15	5	3,784	25,987	4,291	480	30,758	34,543
1999	49	62	0	111	25,020	4,249	798	30,067	30,178
2000	208	24	6	238	14,656	27,072	2,889	44,617	44,855
2001	1,121	1,170	0	2,291	28,850	14,520	2,251	45,621	47,912
2002	975	56	2	1,033	54,165	7,710	2,501	64,376	65,409
2003	2,438	961	9	3,408	95,393	25,081	13,686	134,160	137,568
2004	180	211	0	391	209,521	109,331	26,180	345,032	345,423
2005	113	406	0	519	313,119	83,490	100,117	496,726	497,245
2006	1,760	401	147	2,308	134,030	74,213	13,872	222,115	224,423

Table 4. *Chinook* ***salmon length frequency samples by A (Jan-May) and B (June-Dec) seasons and by regions (S=south of 56°, M=56° - 58°, N=north of 58°).***

	A season				B season				Grand
Region	S	M	N	Total	S	M	N	Total	Total
1998	2,008	91	39	2,138	3,550	519	171	4,240	6,378
1999	736	368	16	1,120	394	225	615	1,234	2,354
2000	979	501	2	1,482	5	188	141	334	1,816
2001	2,041	1,776	7	3,824	1,123	2,443	226	3,792	7,616
2002	7,326	2,144		9,470	5,873	403	52	6,328	15,798
2003	11,551	4,405	85	16,041	4,078	2,652	1,007	7,737	23,778
2004	6,996	4,257	13	11,266	8,454	2,577	1,748	12,779	24,045
2005	10,678	3,258	41	13,977	8,901	4,960	2,596	16,457	30,434
2006	14,313	10,440	28	24,781	11,804	1,107	922	13,833	38,614

Table 5. *Chum* ***salmon length frequency samples by A (Jan-May) and B (June-Dec) seasons and by regions (S=south of 56°, M=56° - 58°, N=north of 58°).***

	A season				B season				Grand
Region	S	M	N	Total	S	M	N	Total	Total
1998	471	2	1	474	2,062	524	181	2,767	3,241
1999	15	72		87	160	566	420	1,146	1,233
2000	110	11		121	111	1,727	754	2,592	2,713
2001	529	128		657	2,836	5,553	892	9,281	9,938
2002	152	31	1	184	22,836	2,756	971	26,563	26,747
2003	1,157	430	2	1,589	47,491	9,475	4,291	61,257	62,846
2004	99	104		203	32,369	22,256	10,239	64,864	65,067
2005	76	220	1	297	30,919	18,218	24,534	73,671	73,968
2006	477	196	3	676	26,303	14,584	5,800	46,687	47,363

Figures

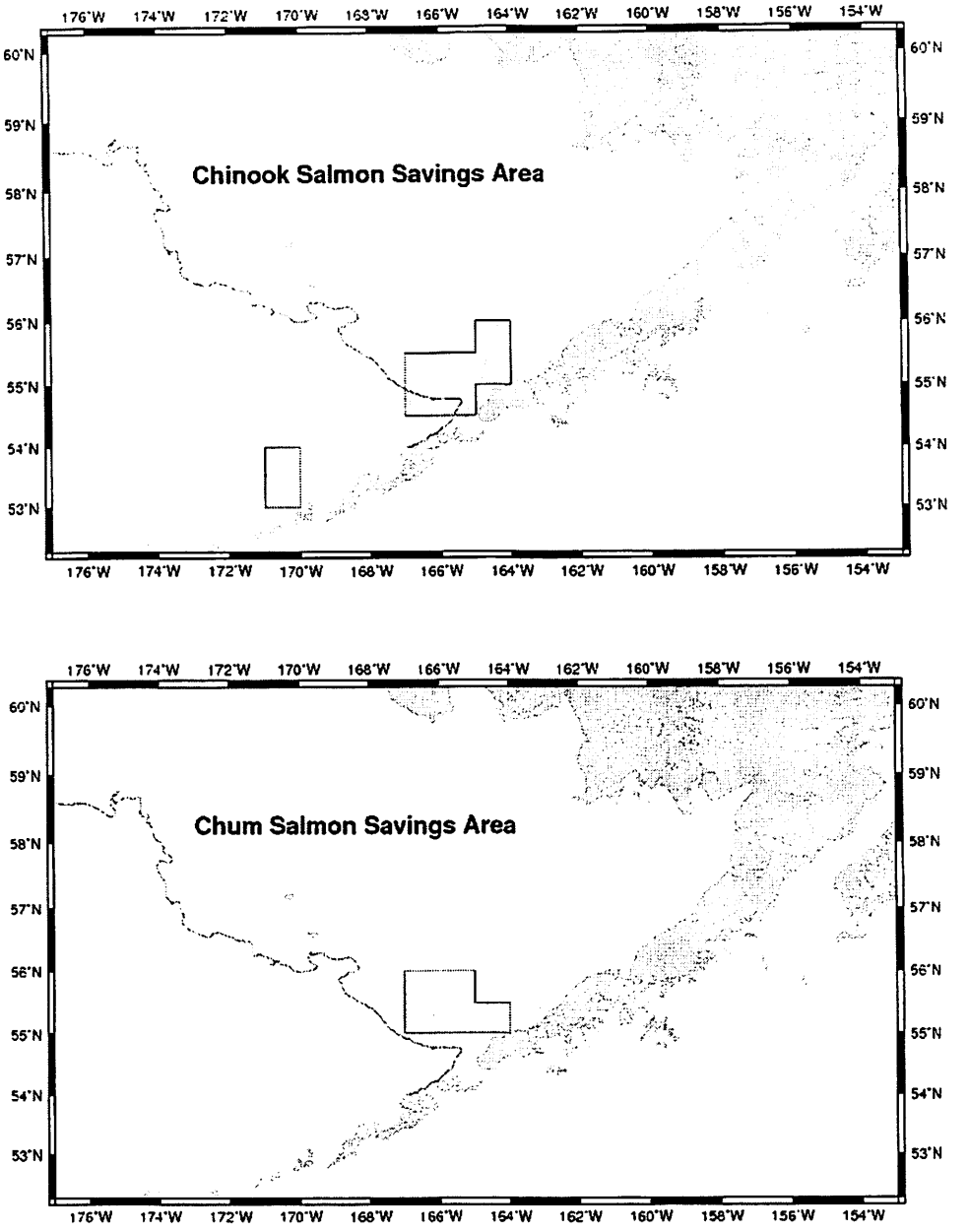


Figure 1 NMFS regulatory areas for Chinook salmon (top) and chum salmon (bottom) established in 1996.

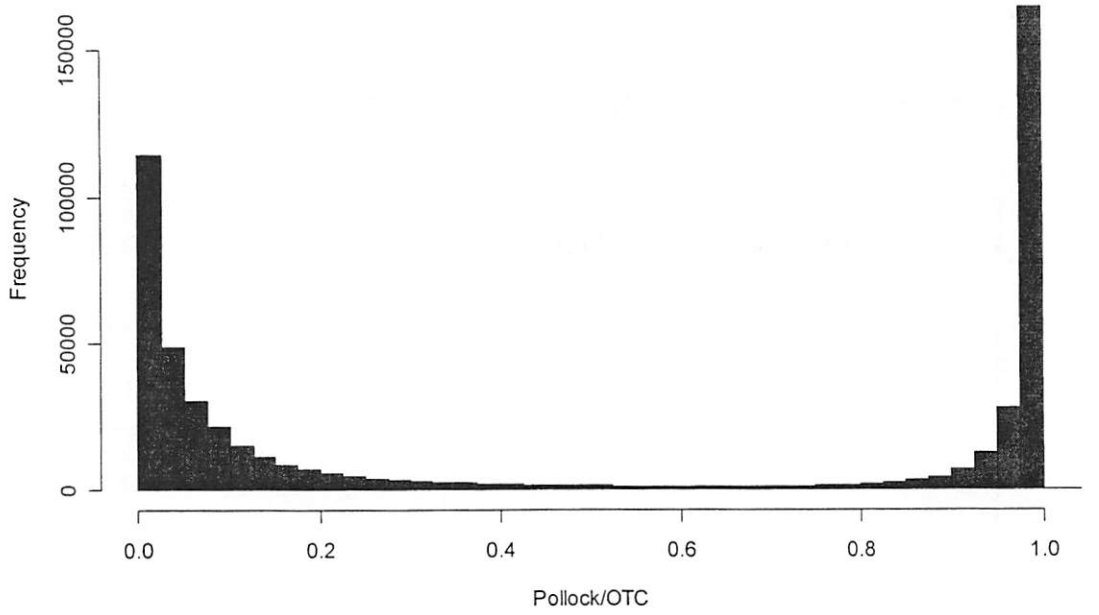


Figure 2 Frequency of NMFS observer data trawl hauls of pollock catch relative to the total weight of the haul (1990-2006). Hauls with pollock as >80% of the catch (by weight) were evaluated in this study.

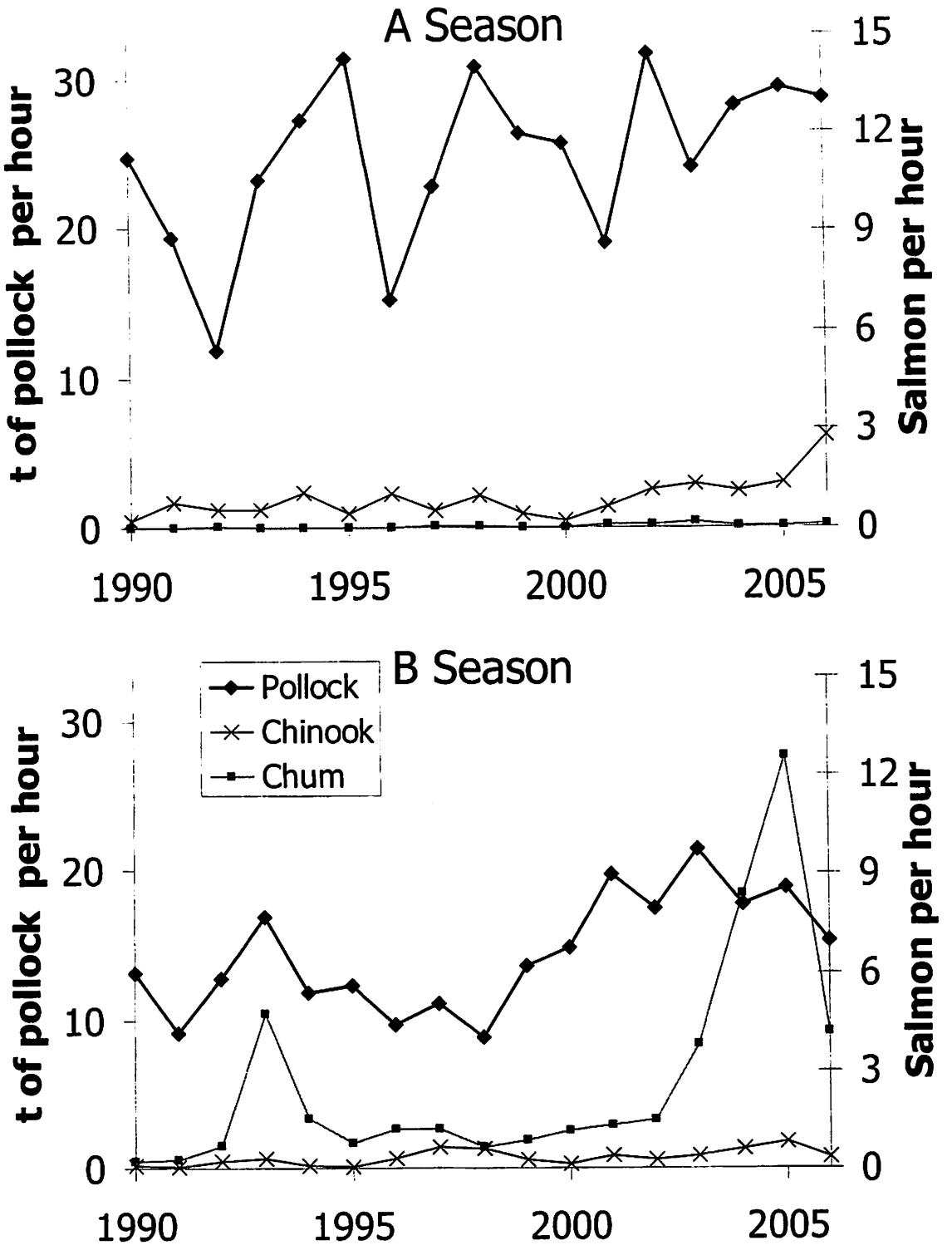
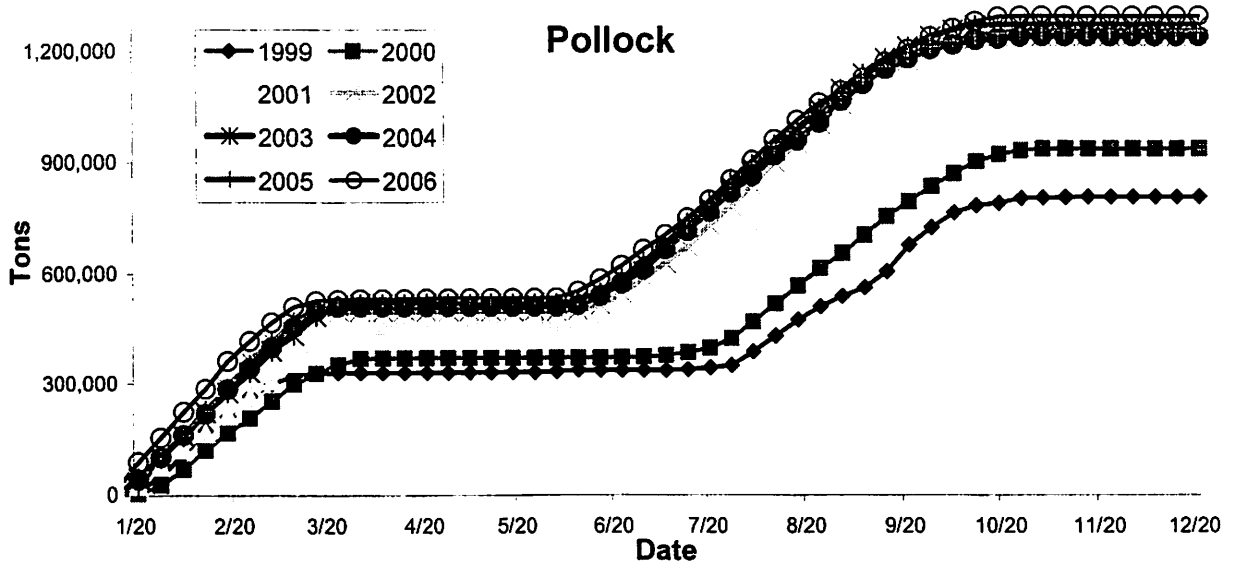


Figure 3 Catch rate (t per hour) of pollock and salmon (number per hour) by A (Jan-May) and B (June-Dec) seasons, 1990-2006 based on NMFS observer data.



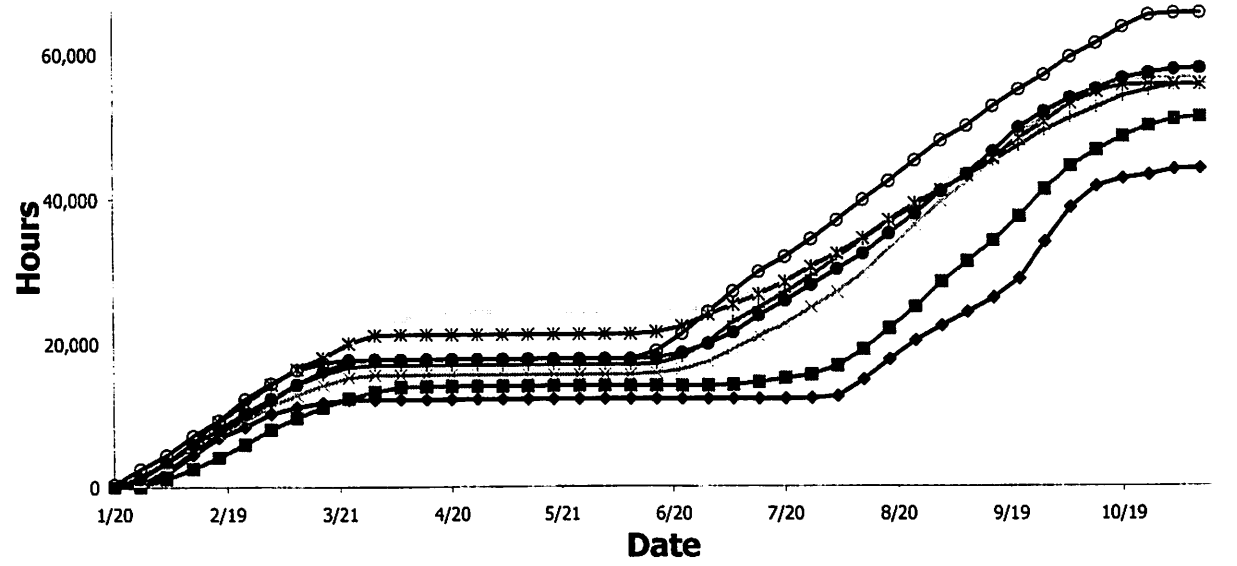
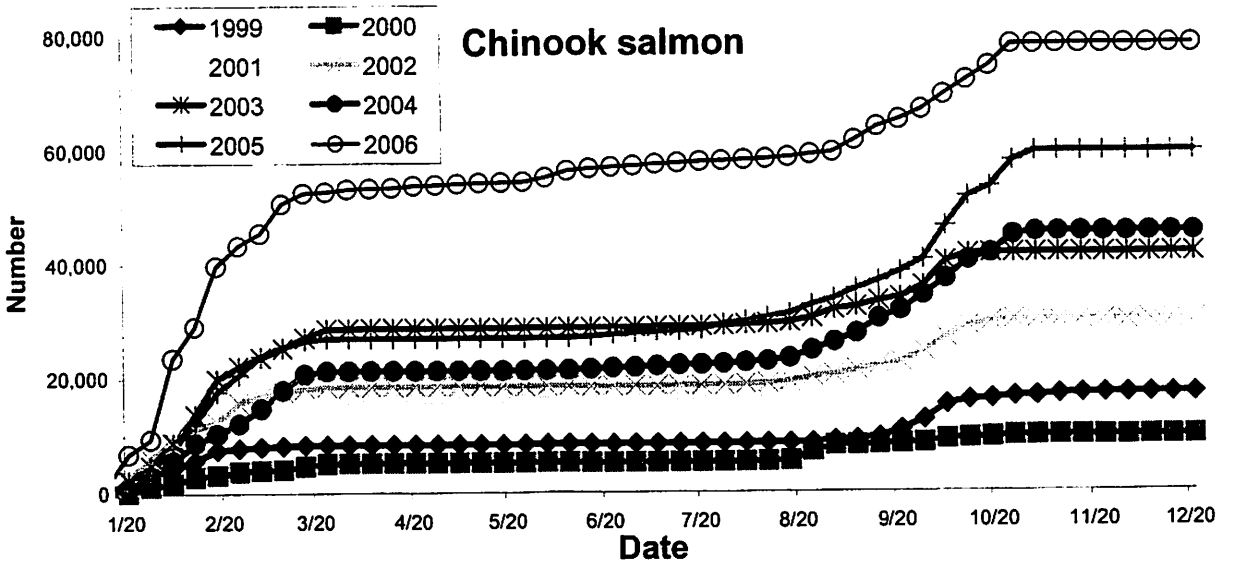


Figure 4 Cumulative annual pollock catches (top) and observed hours fished (bottom) by week, 1999-2006 based on raw NMFS observer data.



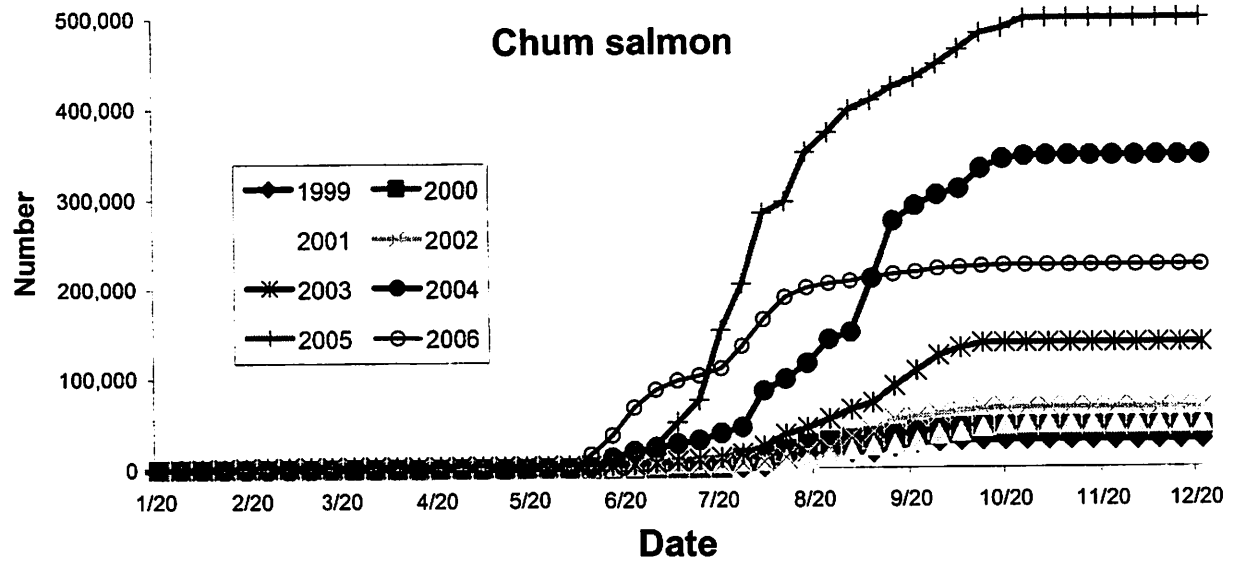


Figure 5 Cumulative catch of Chinook and chum salmon over date, 1999-2006 based on NMFS observer data.

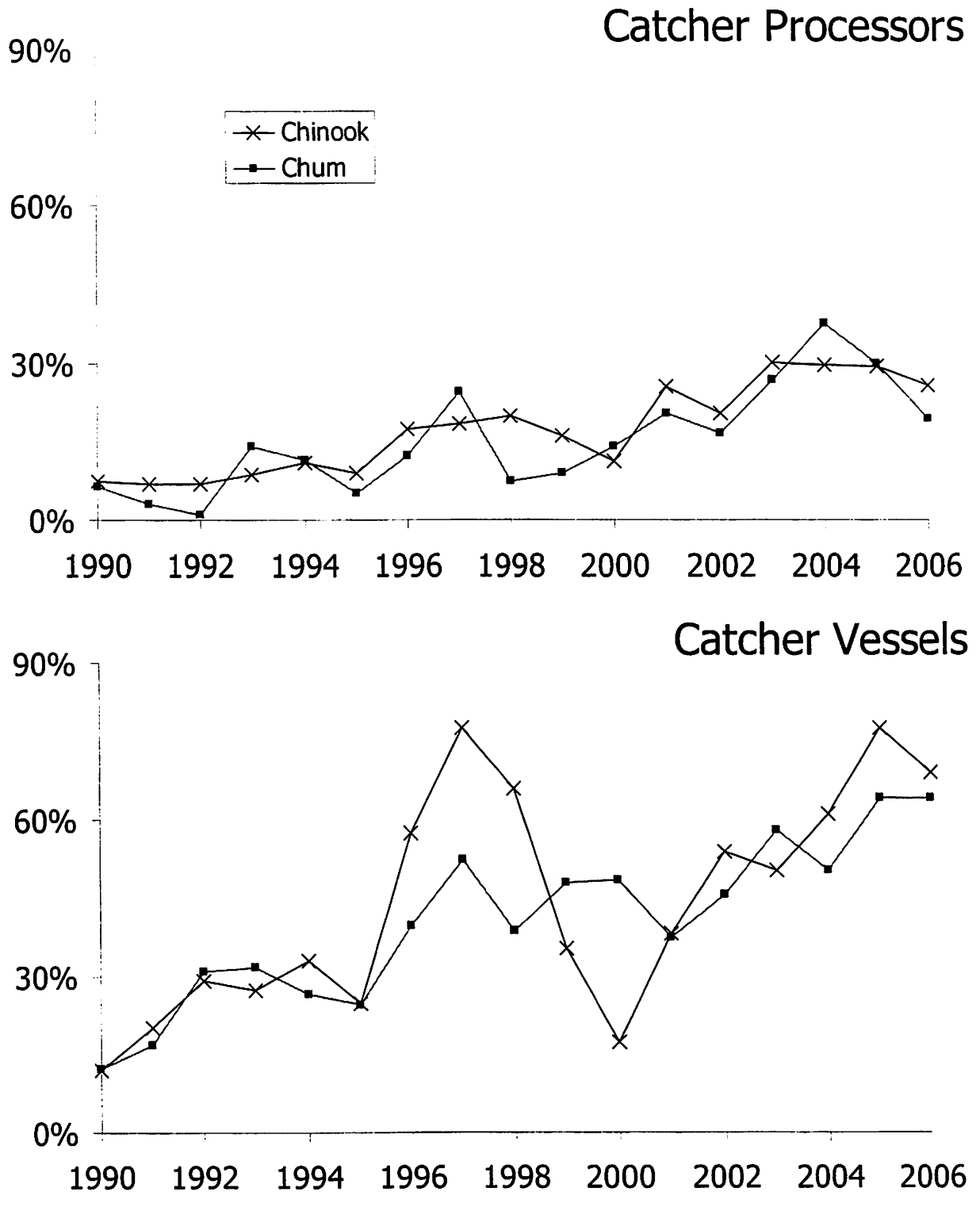


Figure 6 Incidence of salmon in pollock tows for at-sea catcher-processors (top panel) and shore-based catcher vessels (bottom panel) based on NMFS observer data, 1990-2006.

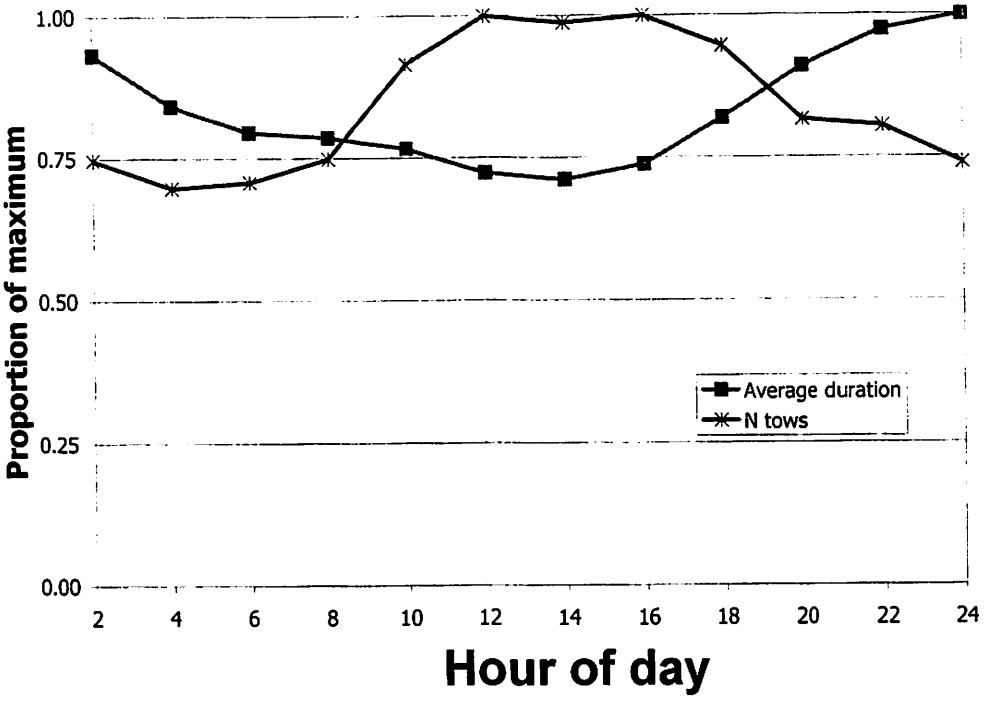


Figure 7 The patterns of pollock tow duration and frequency of tows (relative to their daily maxima) varies by hour of the day. This indicates that on average, there about 75% are fewer tows during the evening and that the tows that do occur, tend to be longer

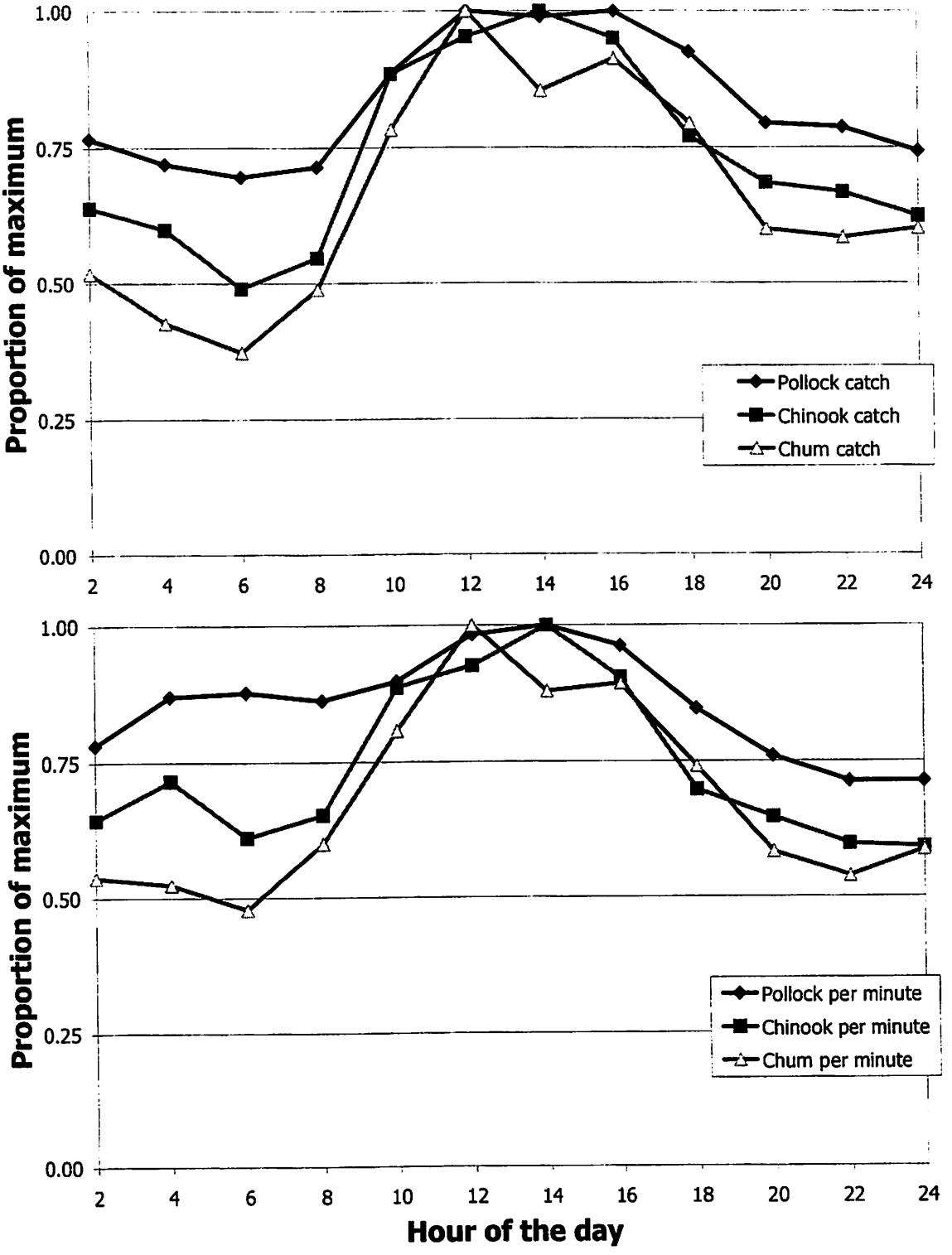


Figure 8 The patterns of pollock and salmon catch (top) and catch per minute (bottom) relative to their daily maxima based on NMFS observer data (1990-2006).

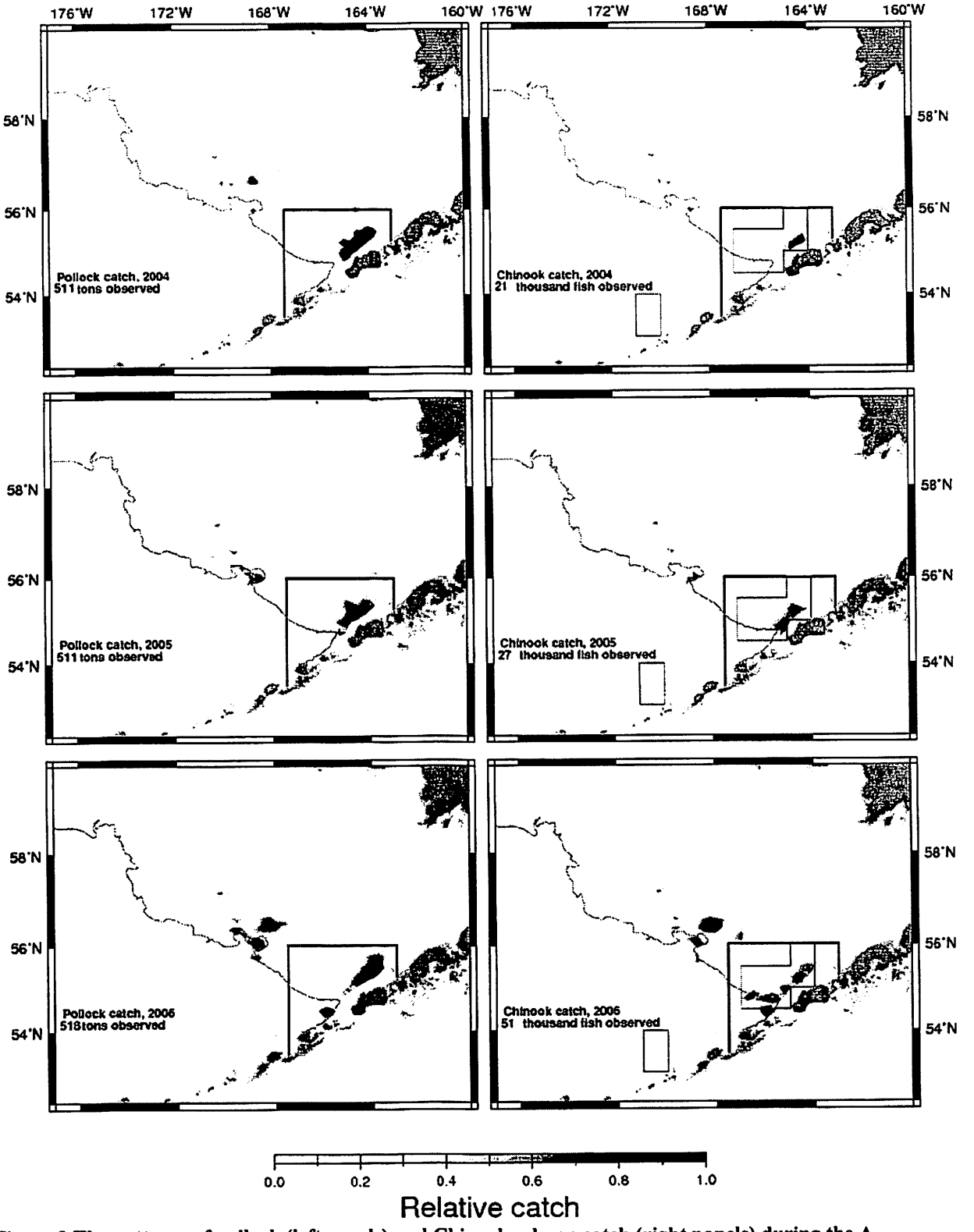


Figure 9 The patterns of pollock (left panels) and Chinook salmon catch (right panels) during the A-season (Jan-May), 2003-2006 based on NMFS observer data.

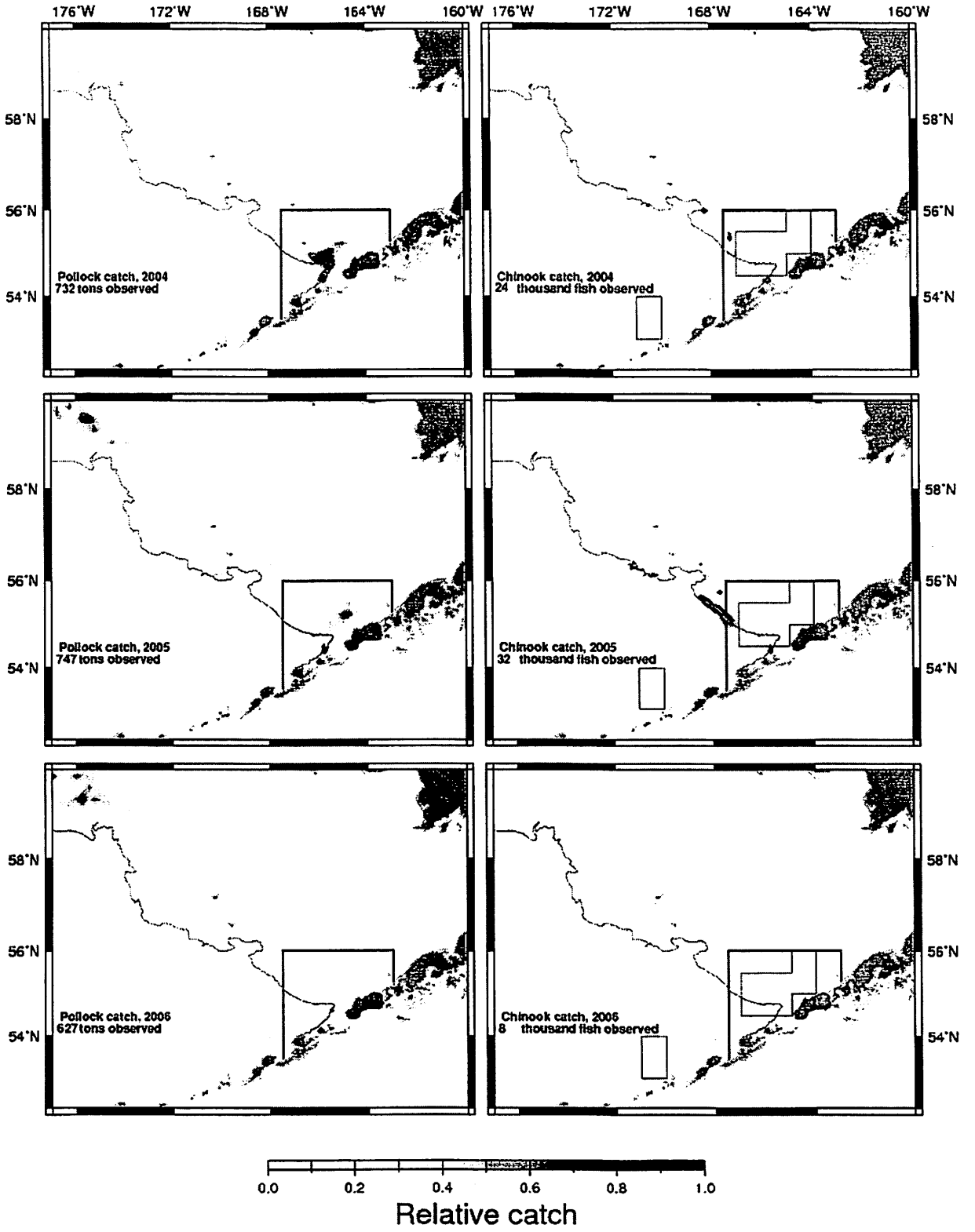


Figure 10 The patterns of pollock (left panels) and Chinook salmon catch (right panels) during the B-season (Jun-Dec), 2003-2006 based on NMFS observer data.

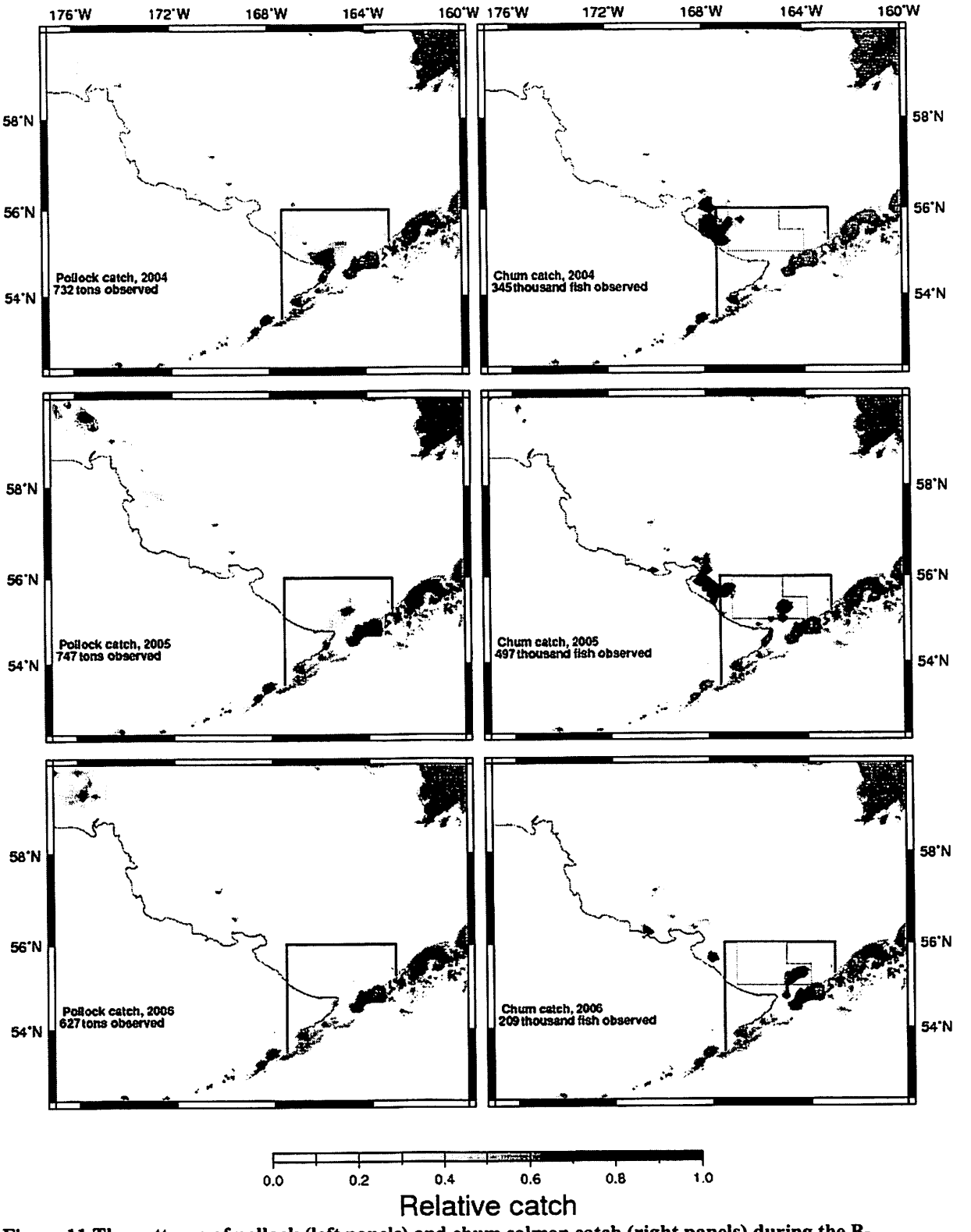


Figure 11 The patterns of pollock (left panels) and chum salmon catch (right panels) during the B-season (Jun-Dec), 2003-2006 based on NMFS observer data.

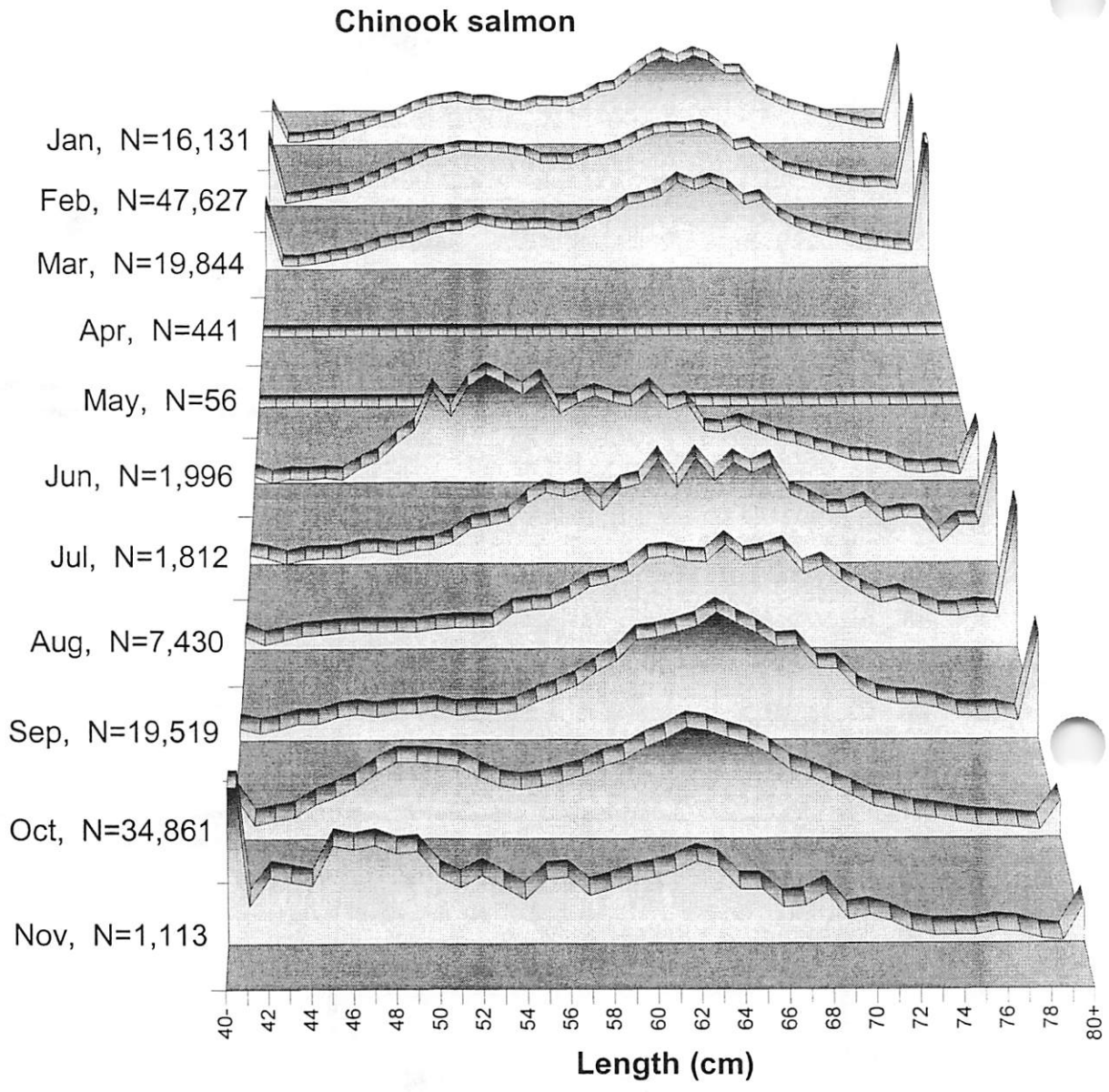


Figure 12 Chinook salmon proportions at length by month as taken in the pollock fishery, 1998-2006 combined. Month and sample sizes are shown in the left axis labels.

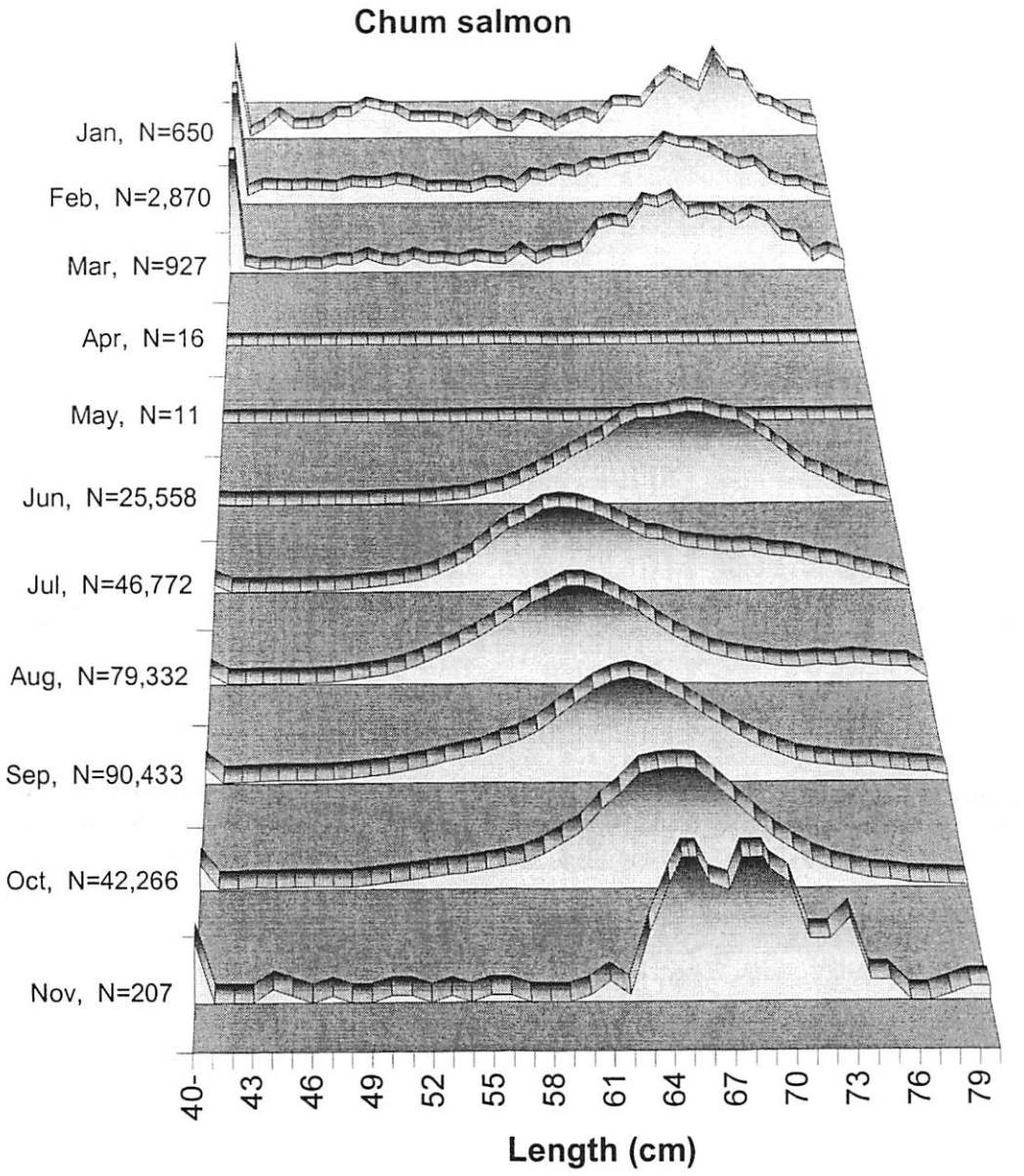


Figure 13 Chum salmon proportions at length by month as taken in the pollock fishery, 1998-2006 combined. Month and sample sizes are shown in the left axis labels.

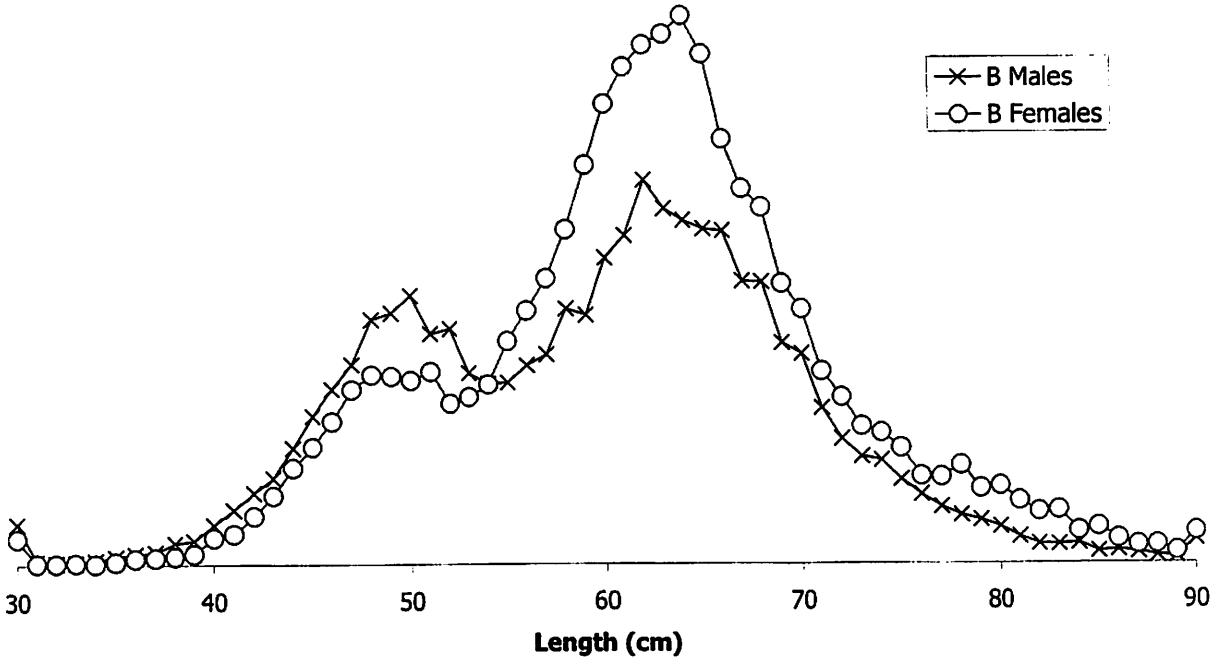


Figure 14 Chinook salmon proportions at length by sex for the A-season (Jan-May, 57% females from 84,099 samples; top panel) and B-season (June-Dec, 55% females from 66,361 samples; bottom panel) as taken in the pollock fishery, 1998-2006 combined.

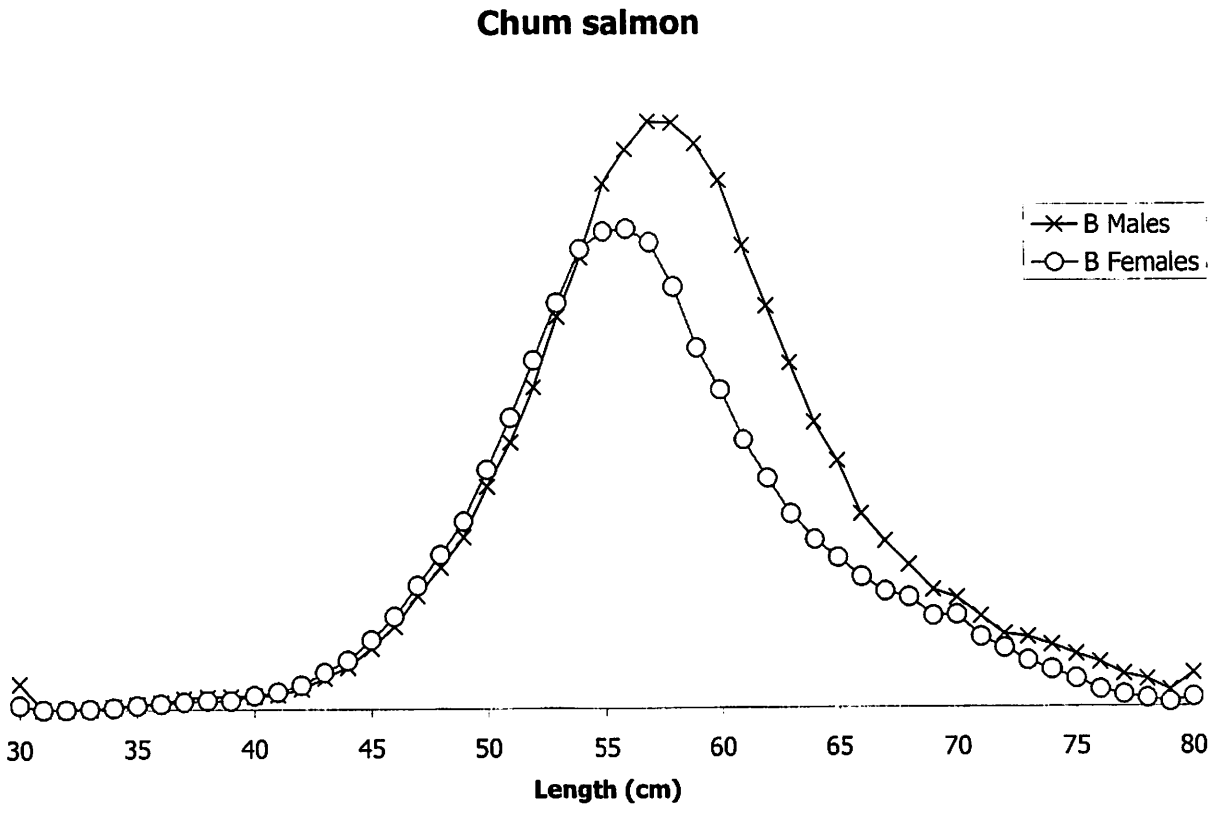


Figure 15 Chum salmon proportions at length by sex for the B-season (June-Dec, 44% females from 287,933 samples) as taken in the pollock fishery, 1998-2006 combined. Chum salmon are much less prevalent (~1% of total chum catch) in A season hence length frequency

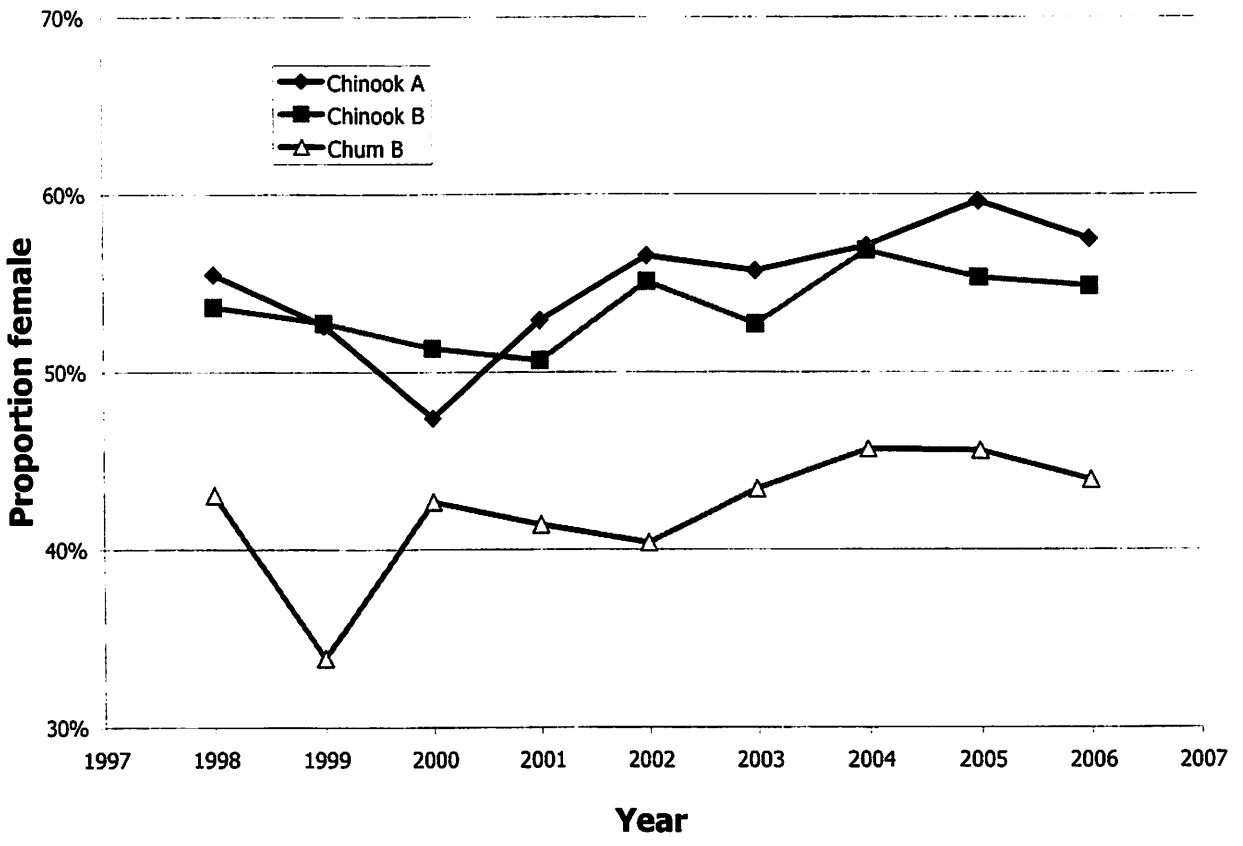


Figure 16 Sex ratios for Chinook and chum salmon over time. A and B-seasons are shown for Chinook since there are significant catches in each of these seasons, chum salmon are primarily taken incidentally during the summer-fall (B) season

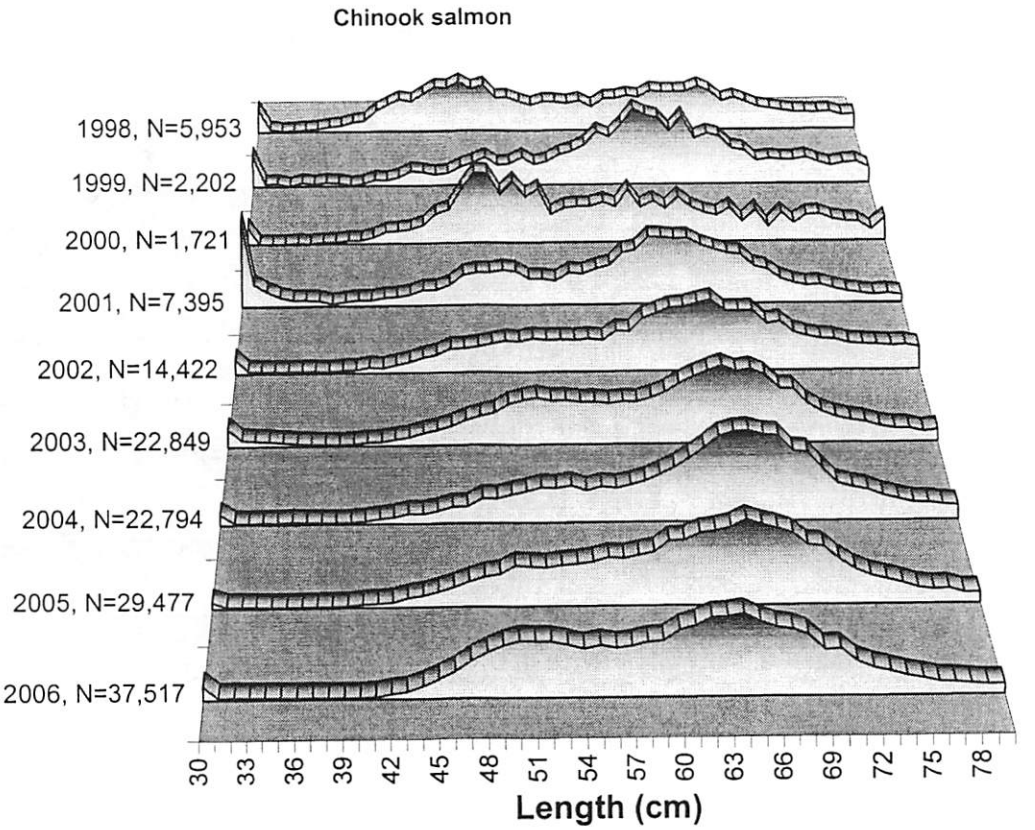


Figure 17 Chinook salmon proportions at length by year as taken in the pollock fishery, 1998-2006. Year and sample sizes are shown in the left axis labels.

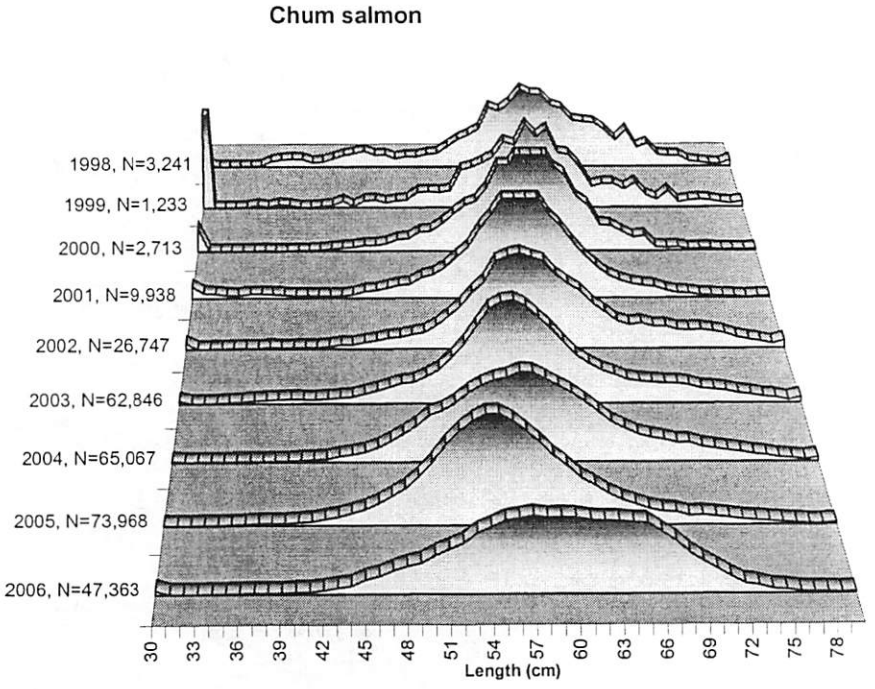


Figure 18 Chum salmon proportions at length by year as taken in the pollock fishery, 1998-2006.

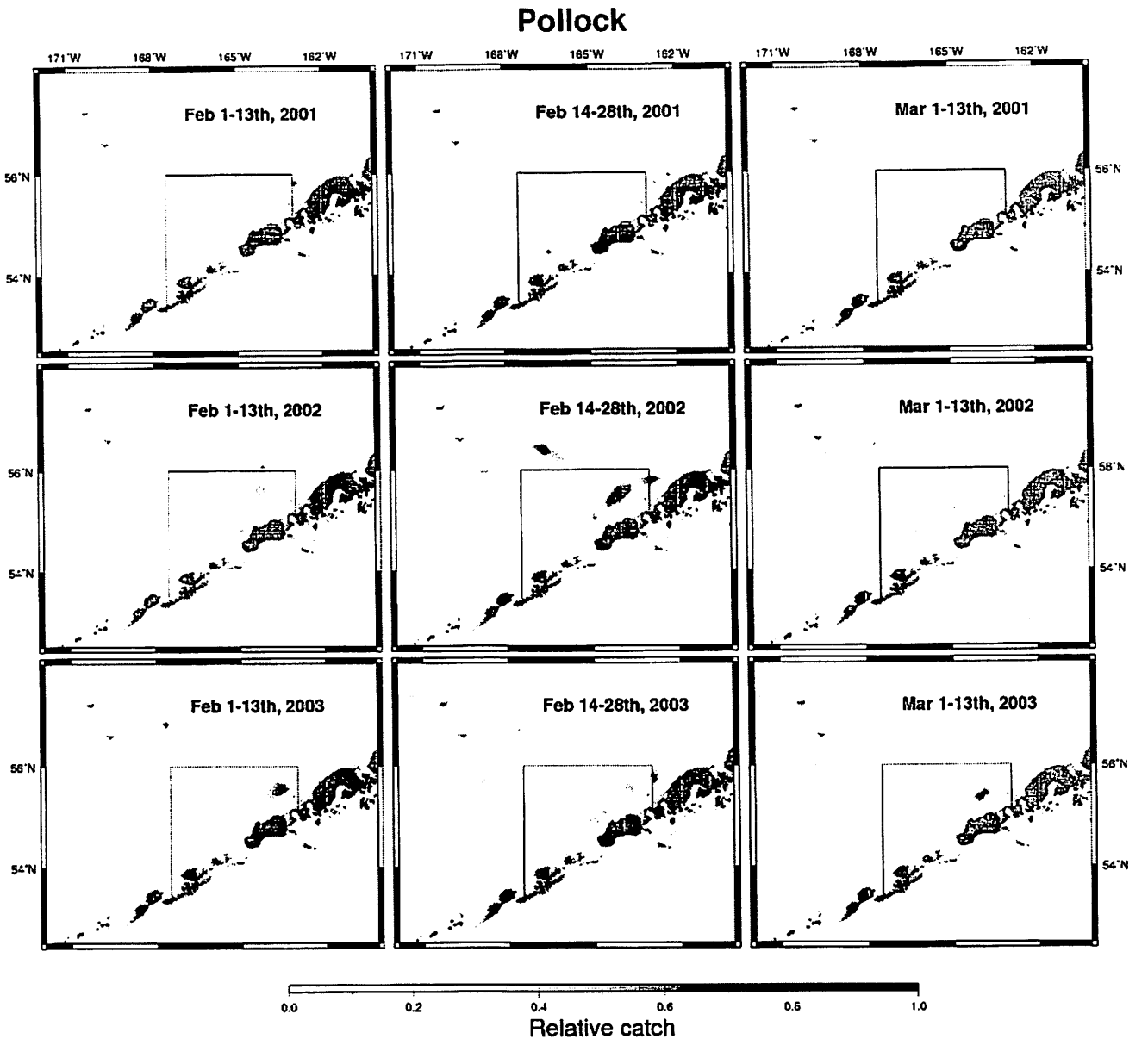


Figure 19 The patterns of pollock catch aggregated bi-weekly during the A-season 2001-2003 based on NMFS observer data.

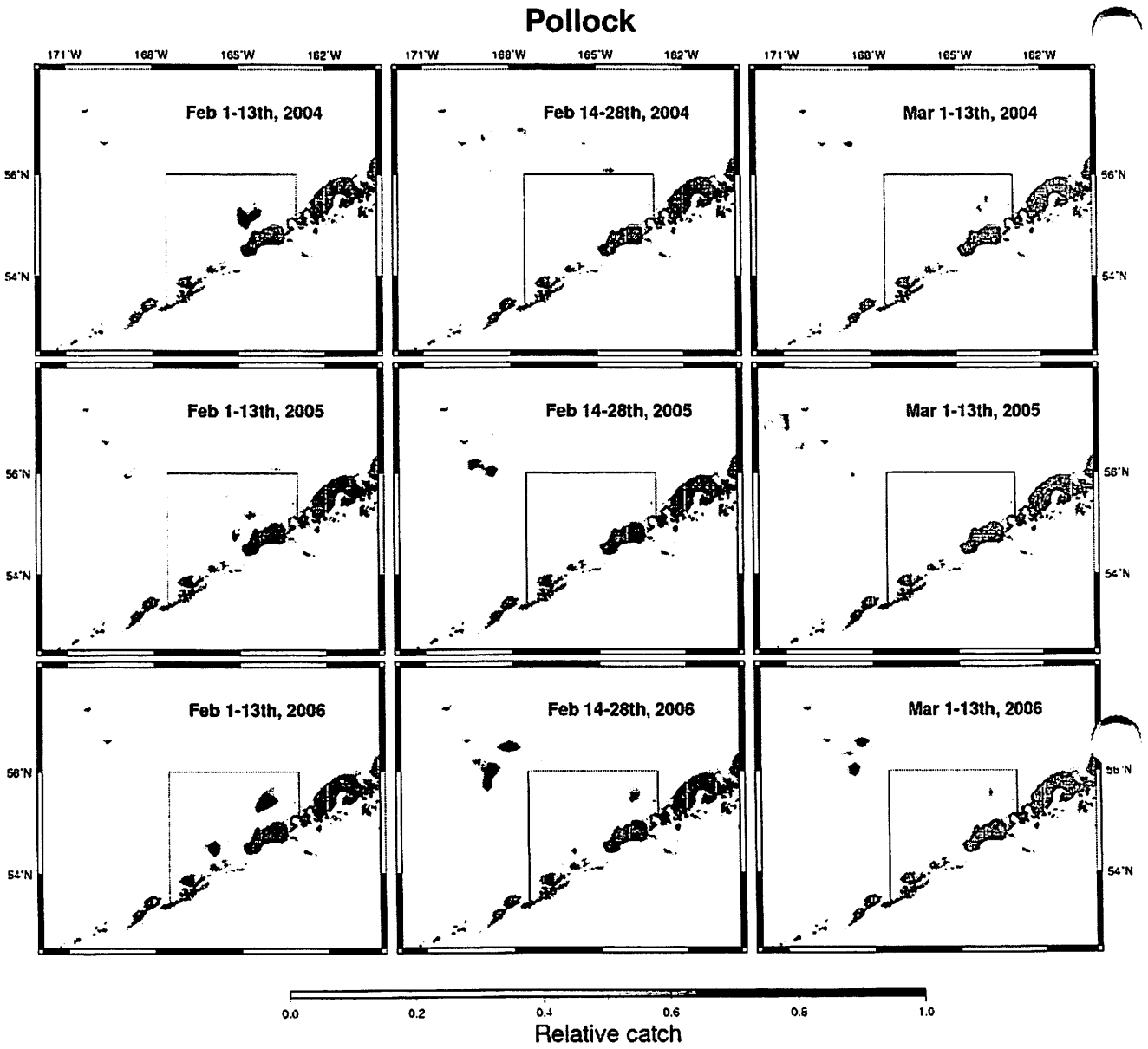


Figure 20 The patterns of pollock catch aggregated bi-weekly during the A-season 2004-2006 based on NMFS observer data

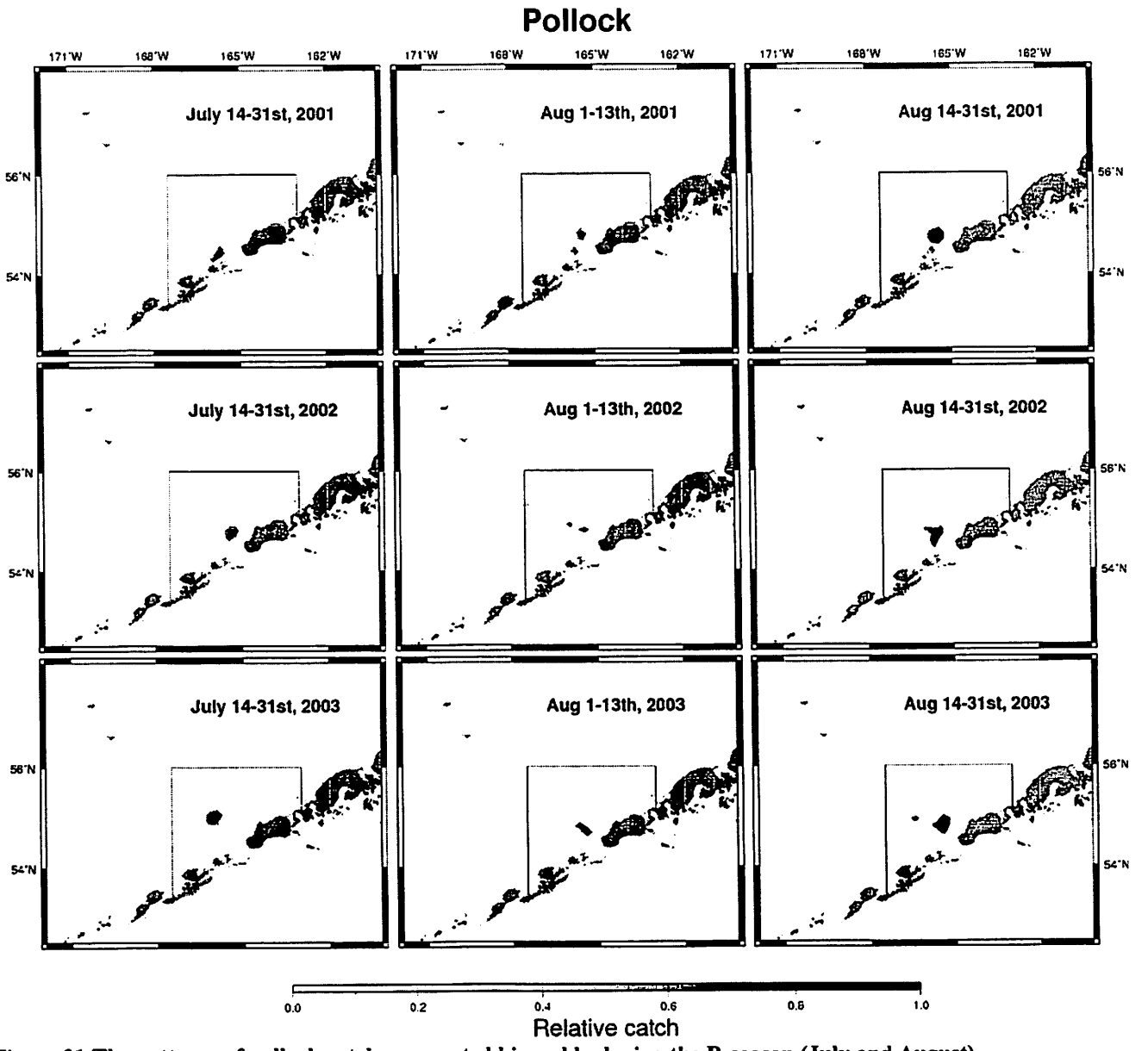


Figure 21 The patterns of pollock catch aggregated bi-weekly during the B-season (July and August) 2001-2003 based on NMFS observer data

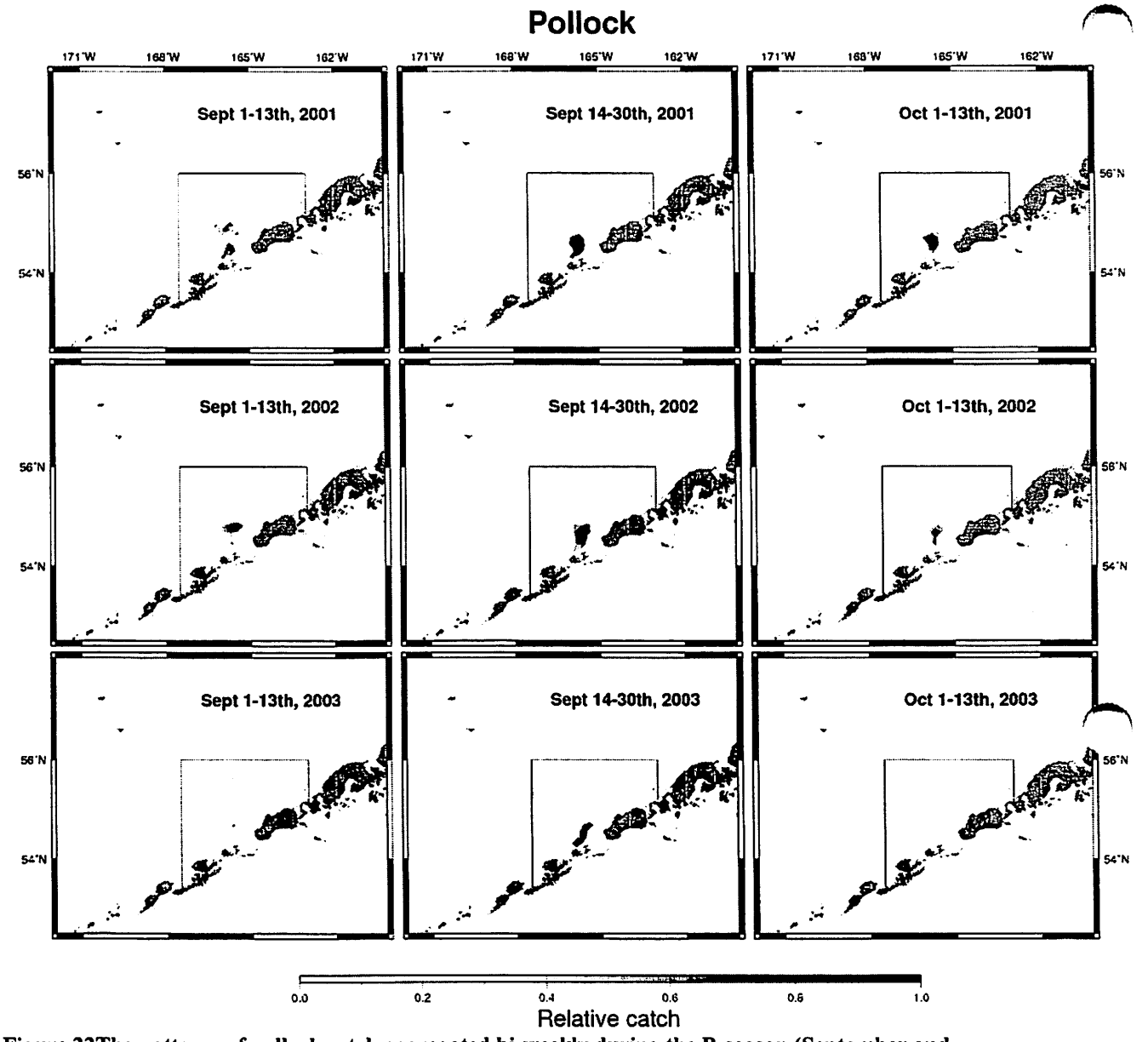


Figure 22The patterns of pollock catch aggregated bi-weekly during the B-season (September and October) 2001-2003 based on NMFS observer data

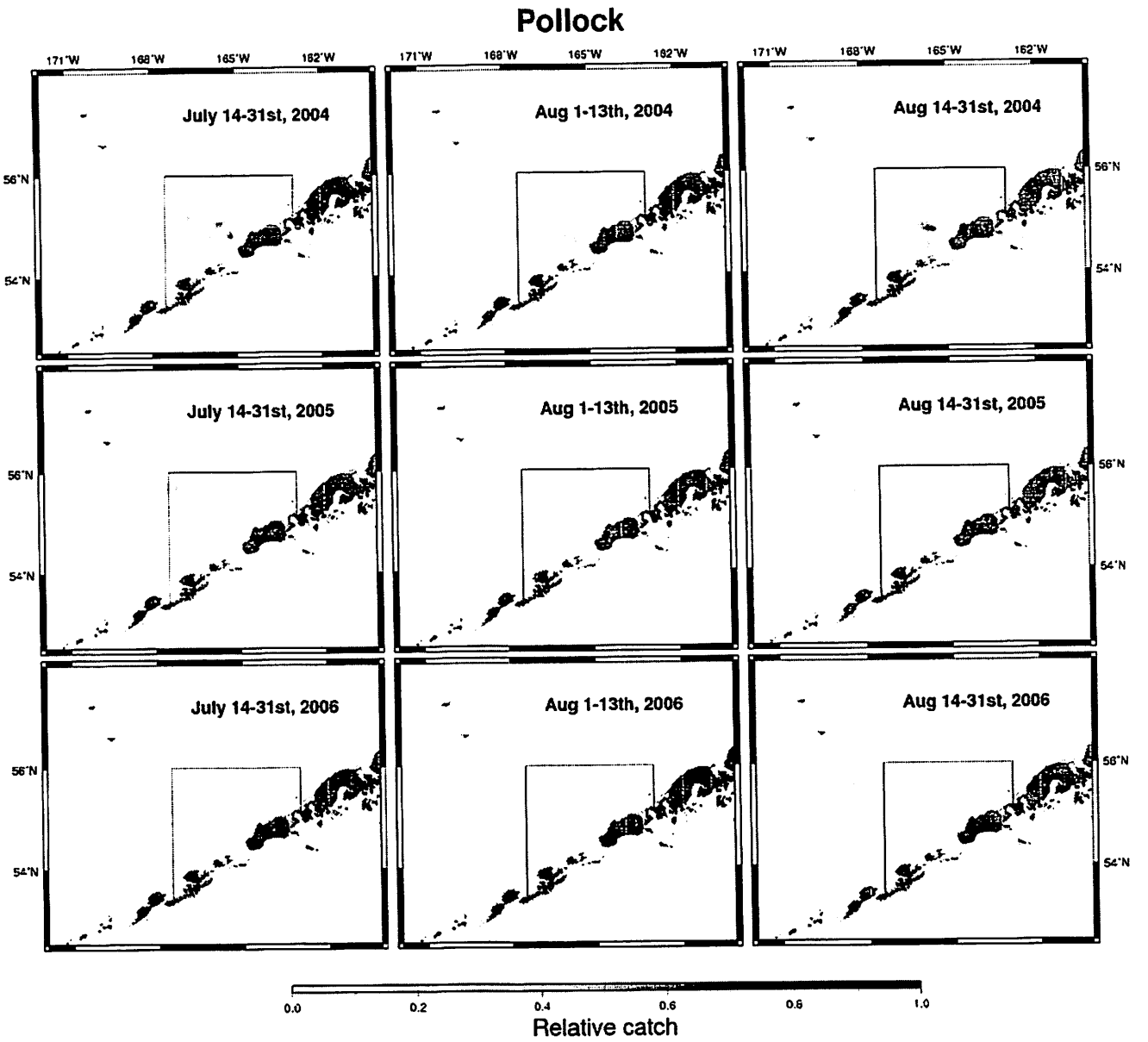


Figure 23 The patterns of pollock catch aggregated bi-weekly during the B-season (July and August) 2004-2006 based on NMFS observer data

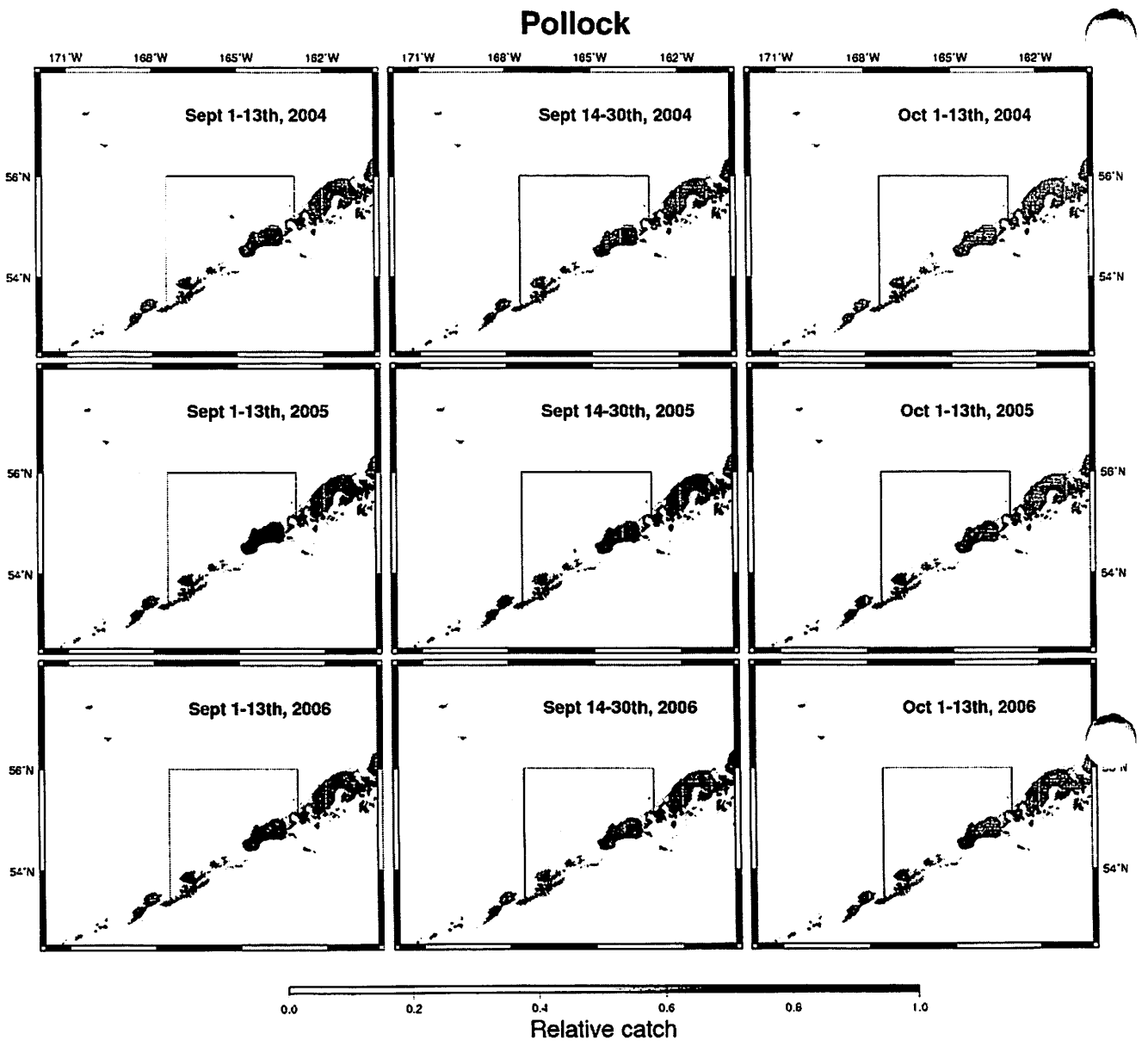


Figure 24 The patterns of pollock catch aggregated bi-weekly during the B-season (September and October) 2004-2006 based on NMFS observer data

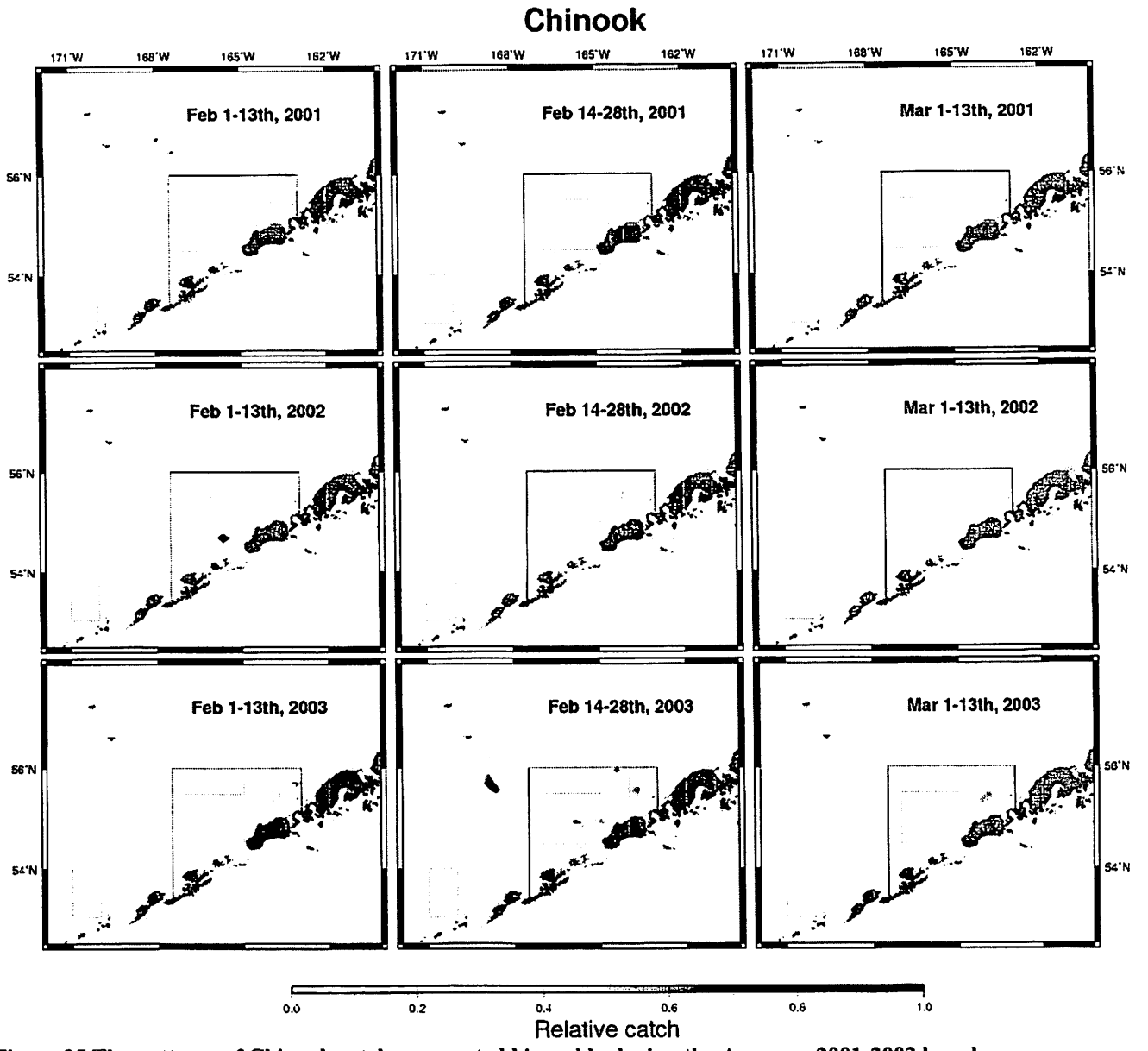


Figure 25 The patterns of Chinook catch aggregated bi-weekly during the A-season 2001-2003 based on NMFS observer data

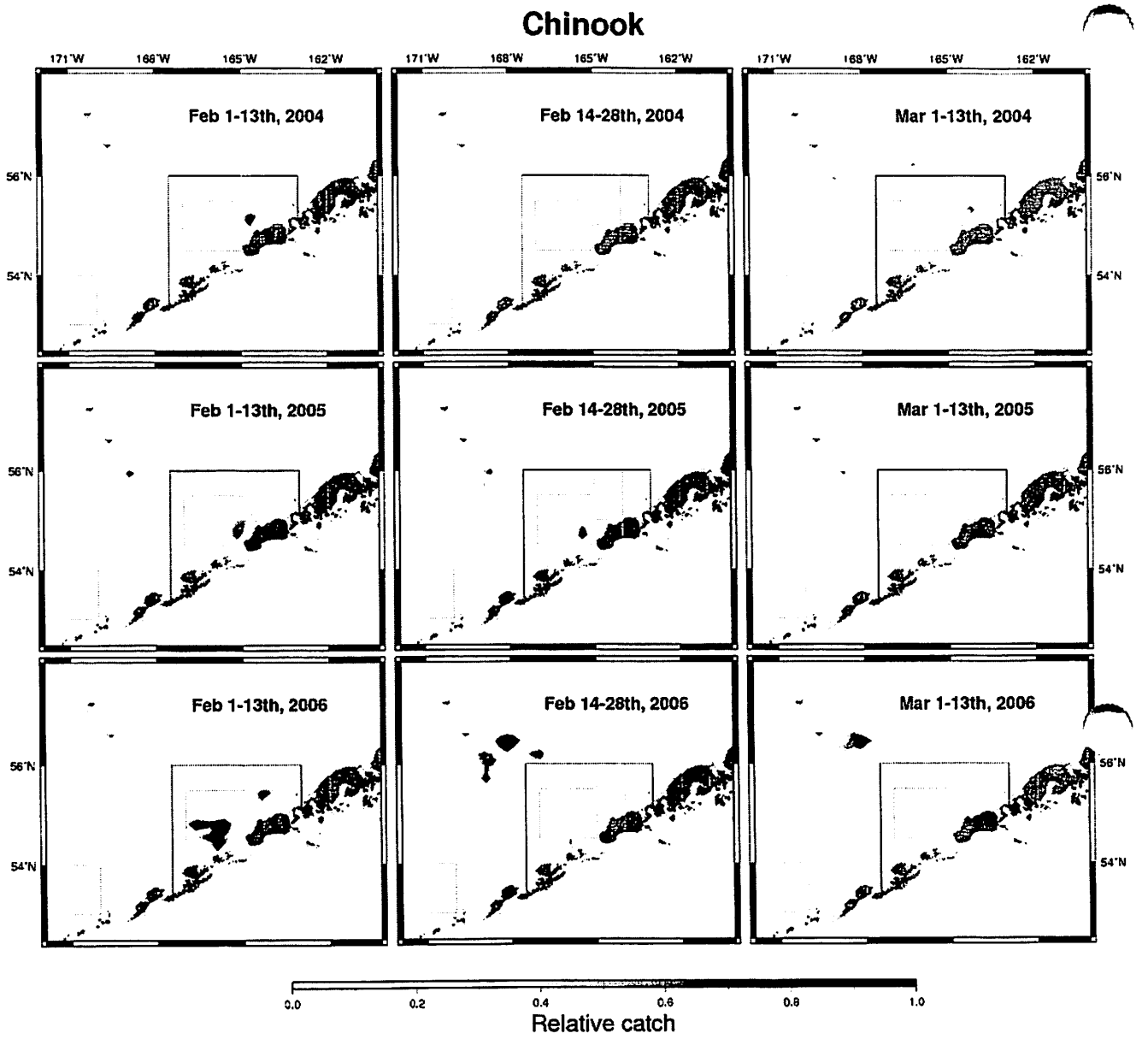


Figure 26 The patterns of Chinook catch aggregated bi-weekly during the A-season 2004-2006 based on NMFS observer data

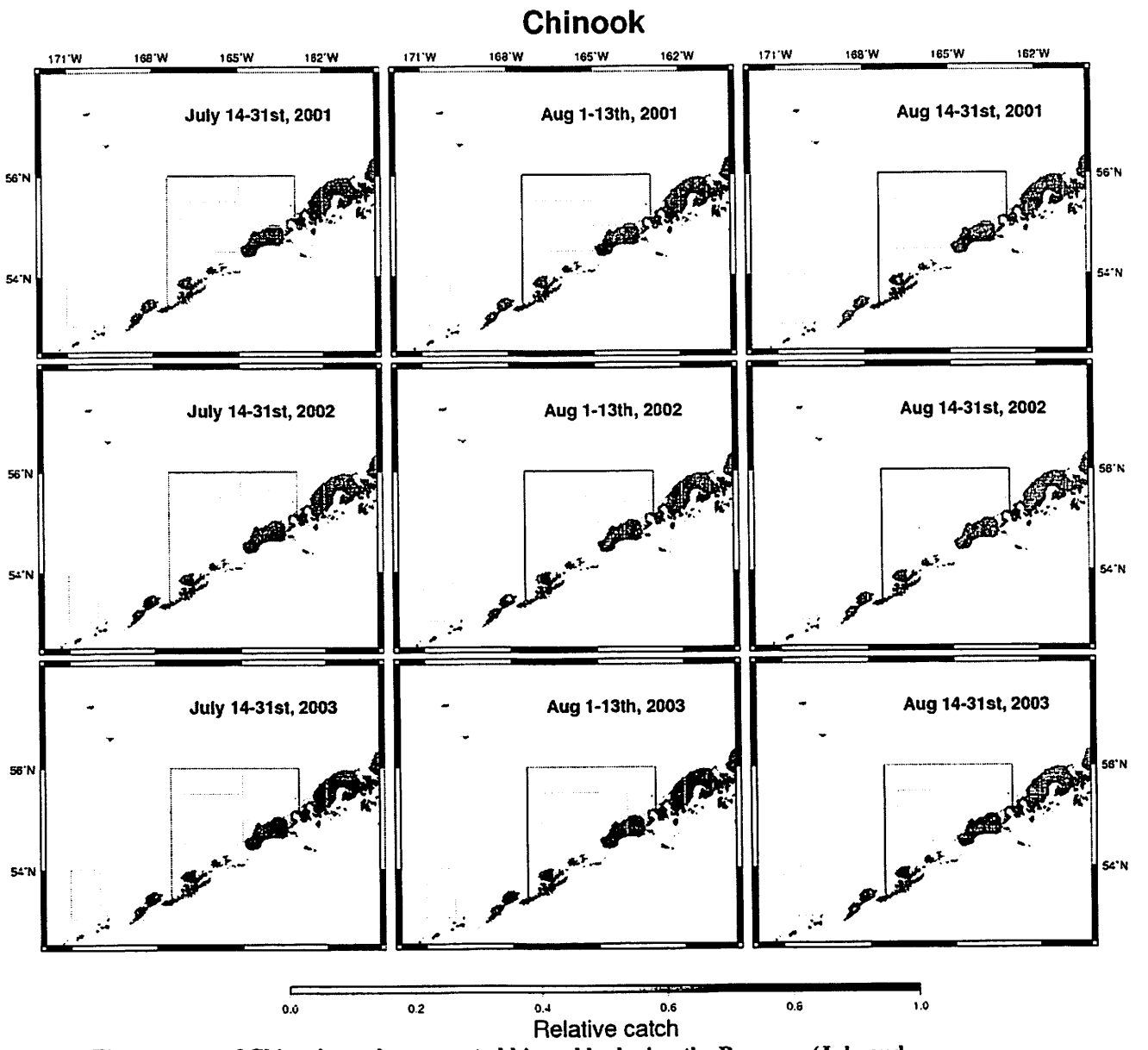


Figure 27 The patterns of Chinook catch aggregated bi-weekly during the B-season (July and August) 2001-2003 based on NMFS observer data

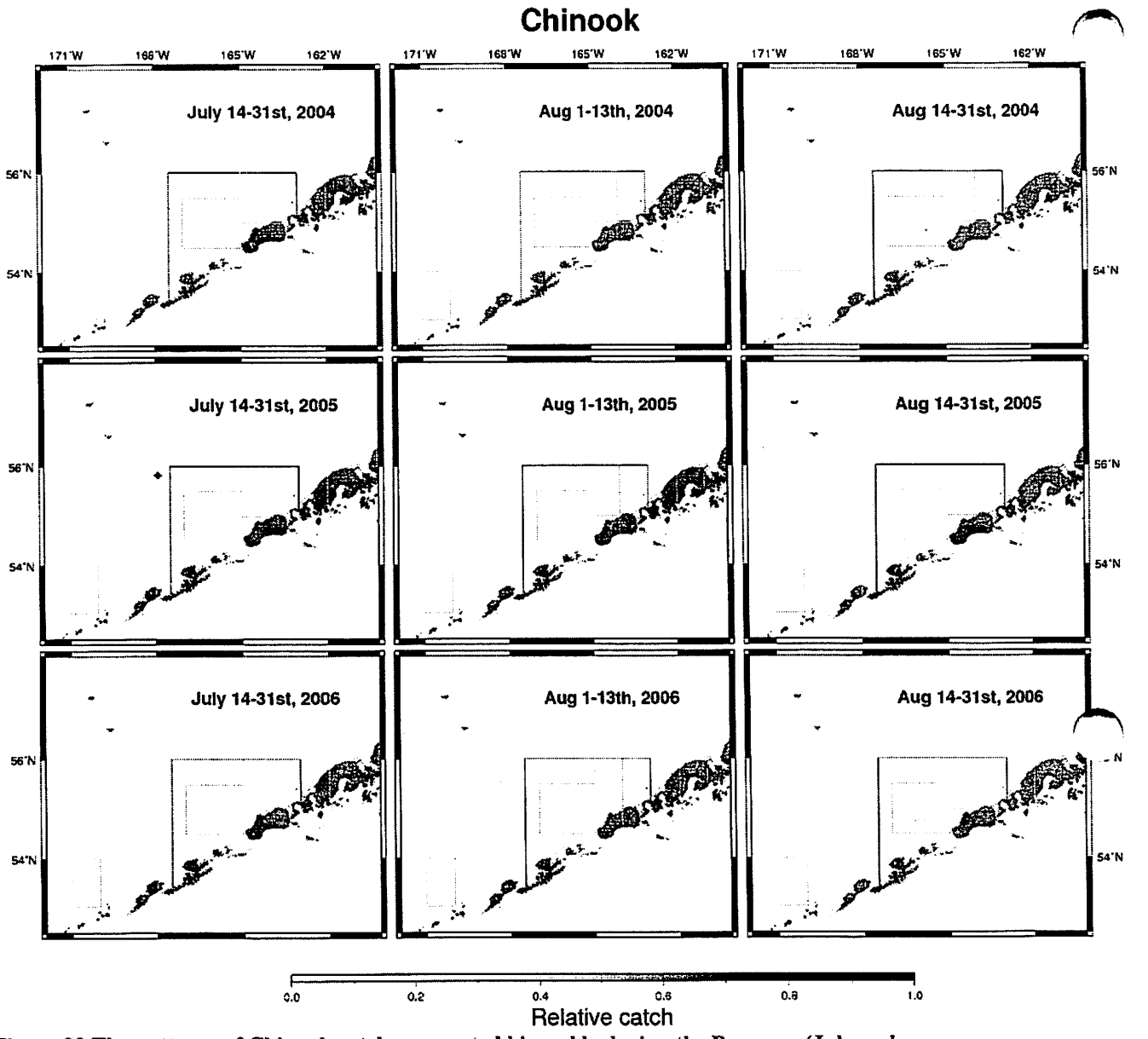


Figure 28 The patterns of Chinook catch aggregated bi-weekly during the B-season (July and August) 2004-2006 based on NMFS observer data

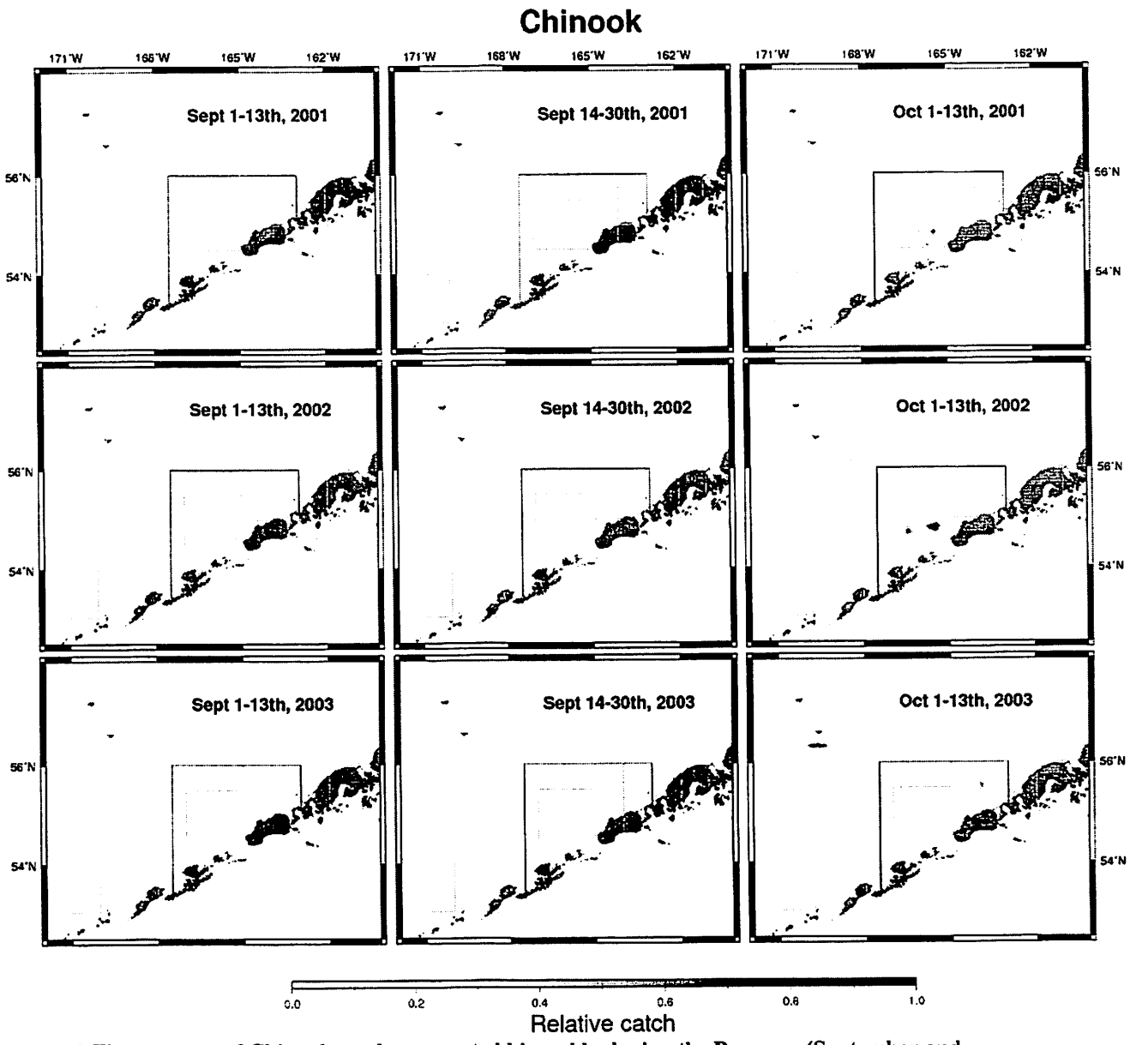


Figure 29 The patterns of Chinook catch aggregated bi-weekly during the B-season (September and October) 2001-2003 based on NMFS observer data

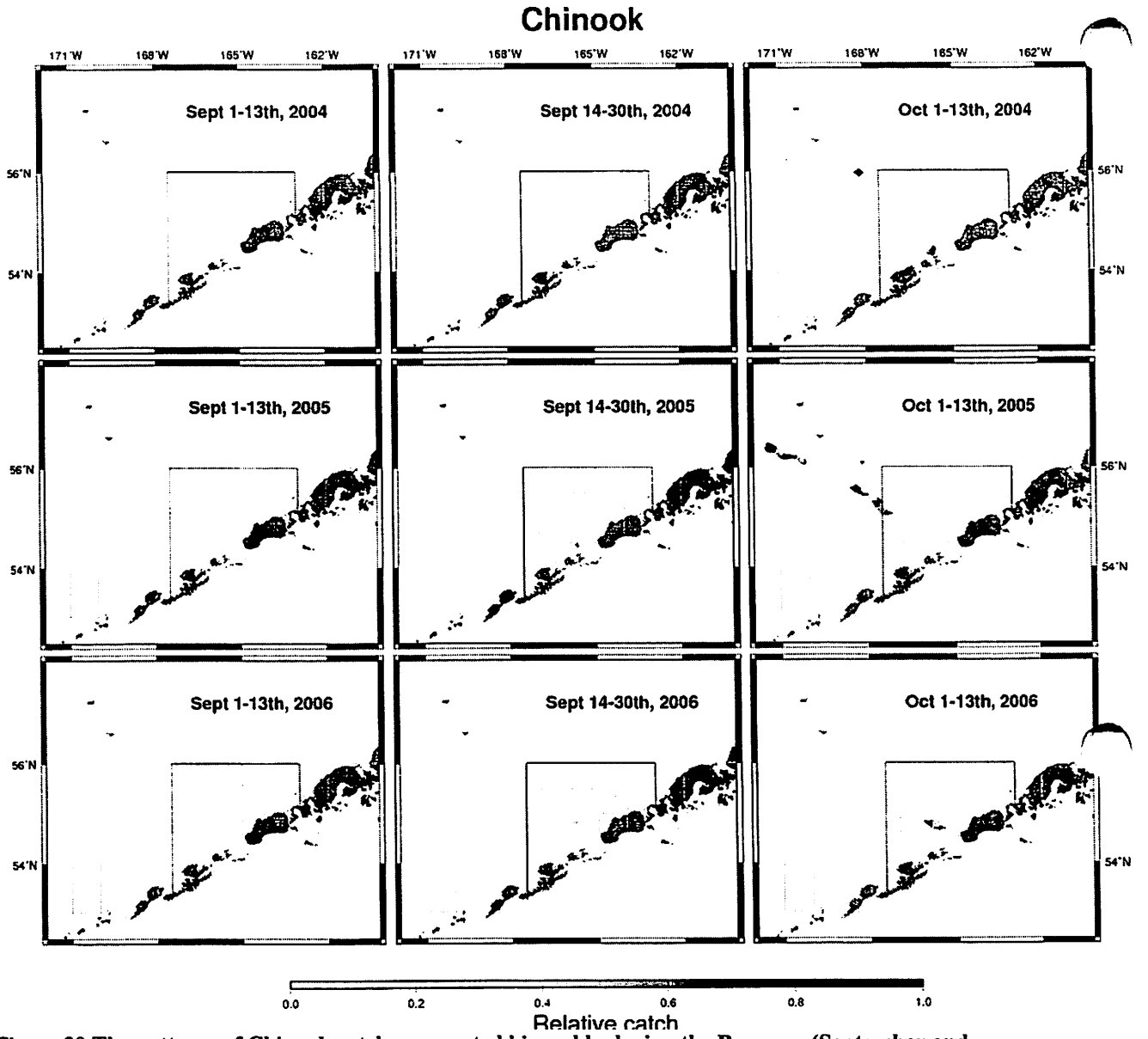


Figure 30 The patterns of Chinook catch aggregated bi-weekly during the B-season (September and October) 2004-2006 based on NMFS observer data

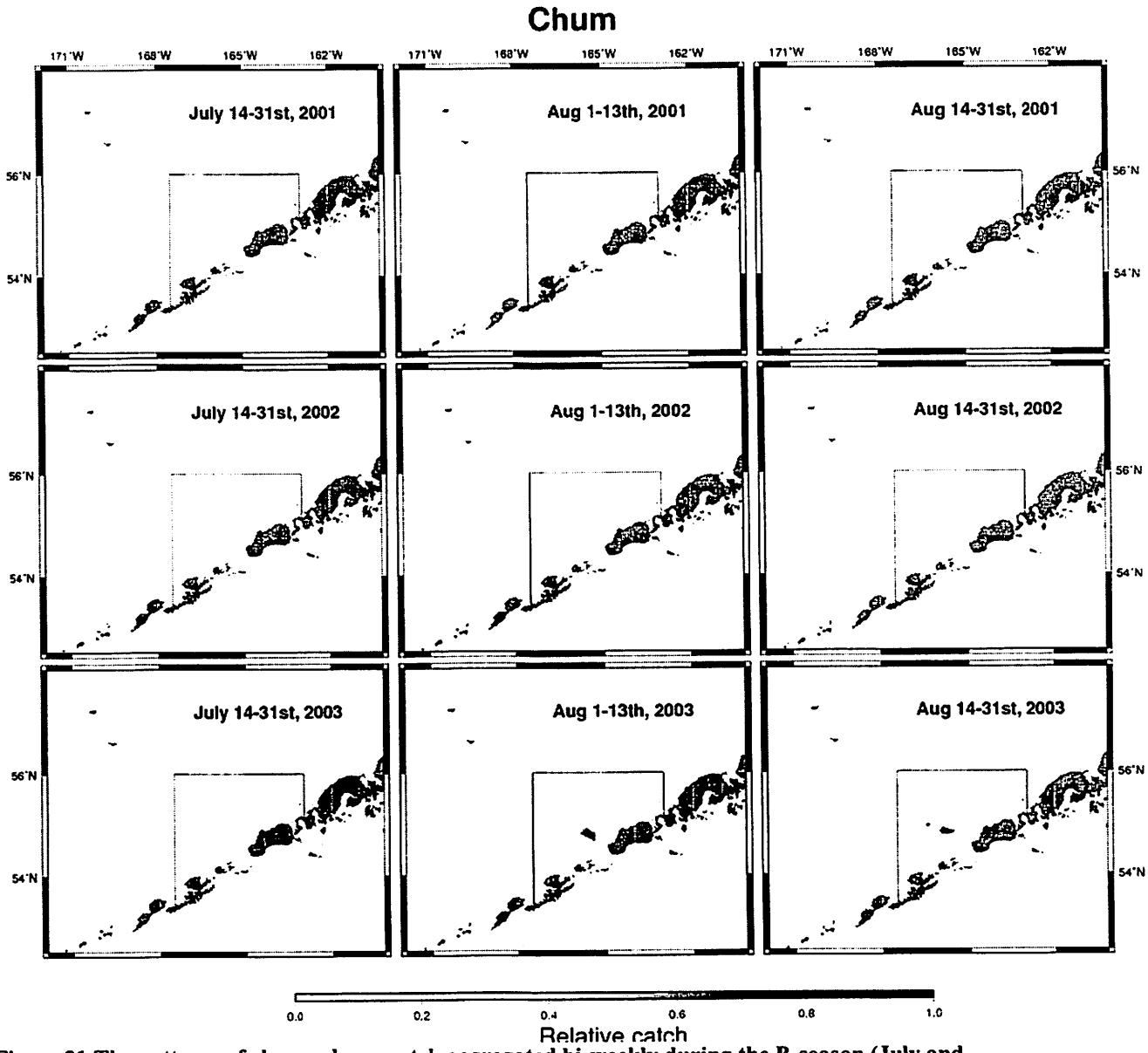


Figure 31 The patterns of chum salmon catch aggregated bi-weekly during the B-season (July and August) 2001-2003 based on NMFS observer data

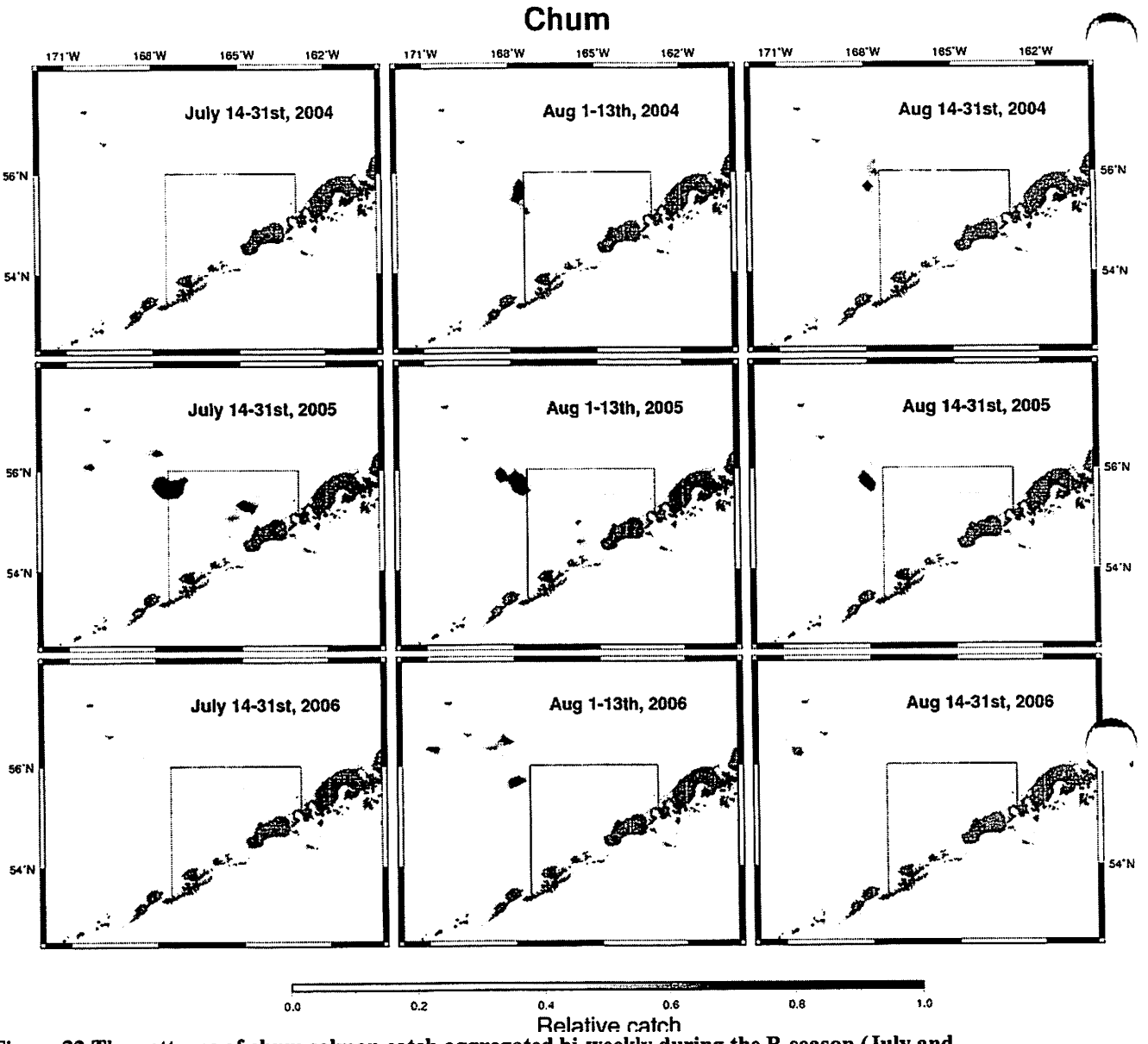


Figure 32 The patterns of chum salmon catch aggregated bi-weekly during the B-season (July and August) 2004-2006 based on NMFS observer data

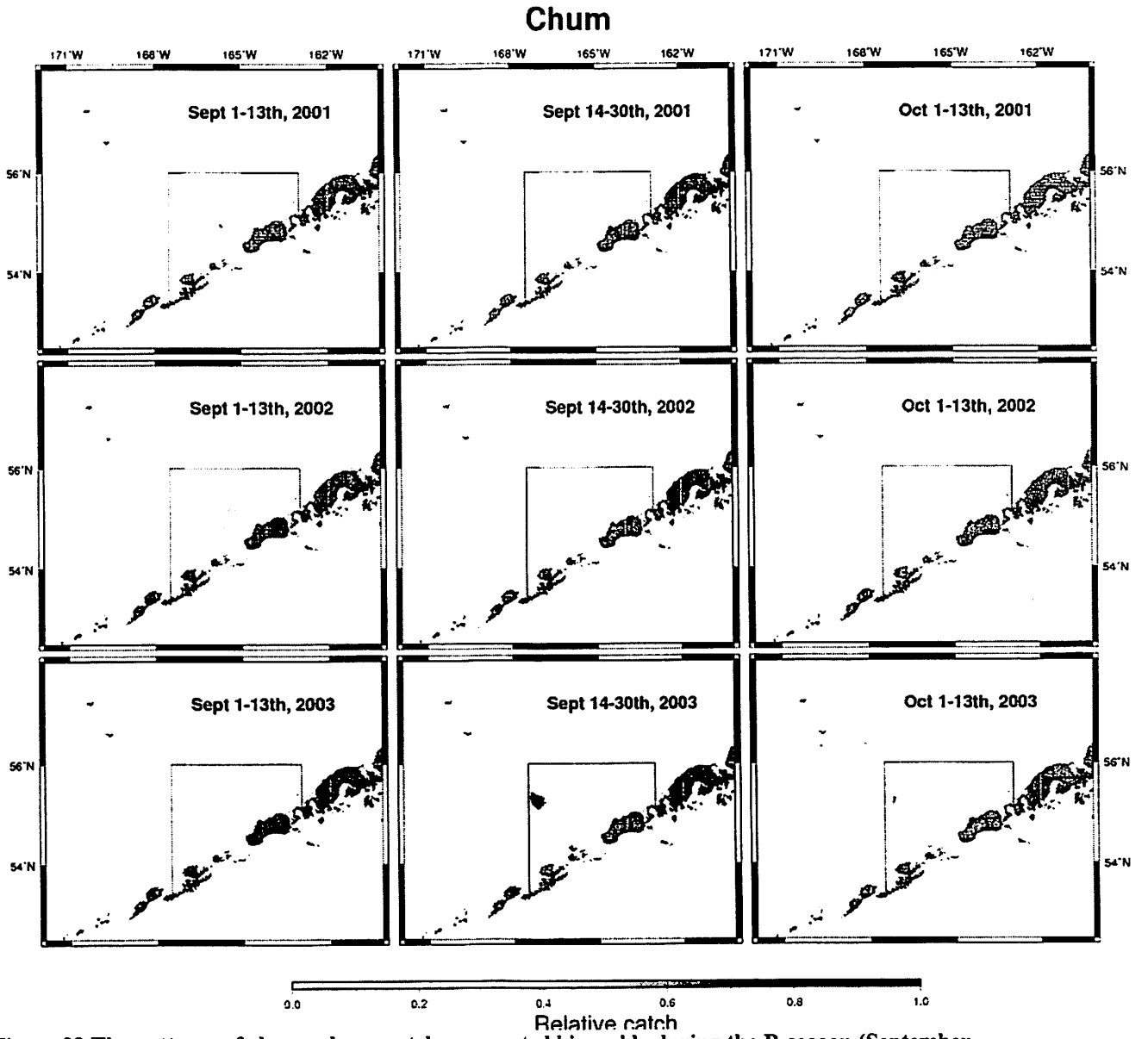


Figure 33 The patterns of chum salmon catch aggregated bi-weekly during the B-season (September and October) 2001-2003 based on NMFS observer data

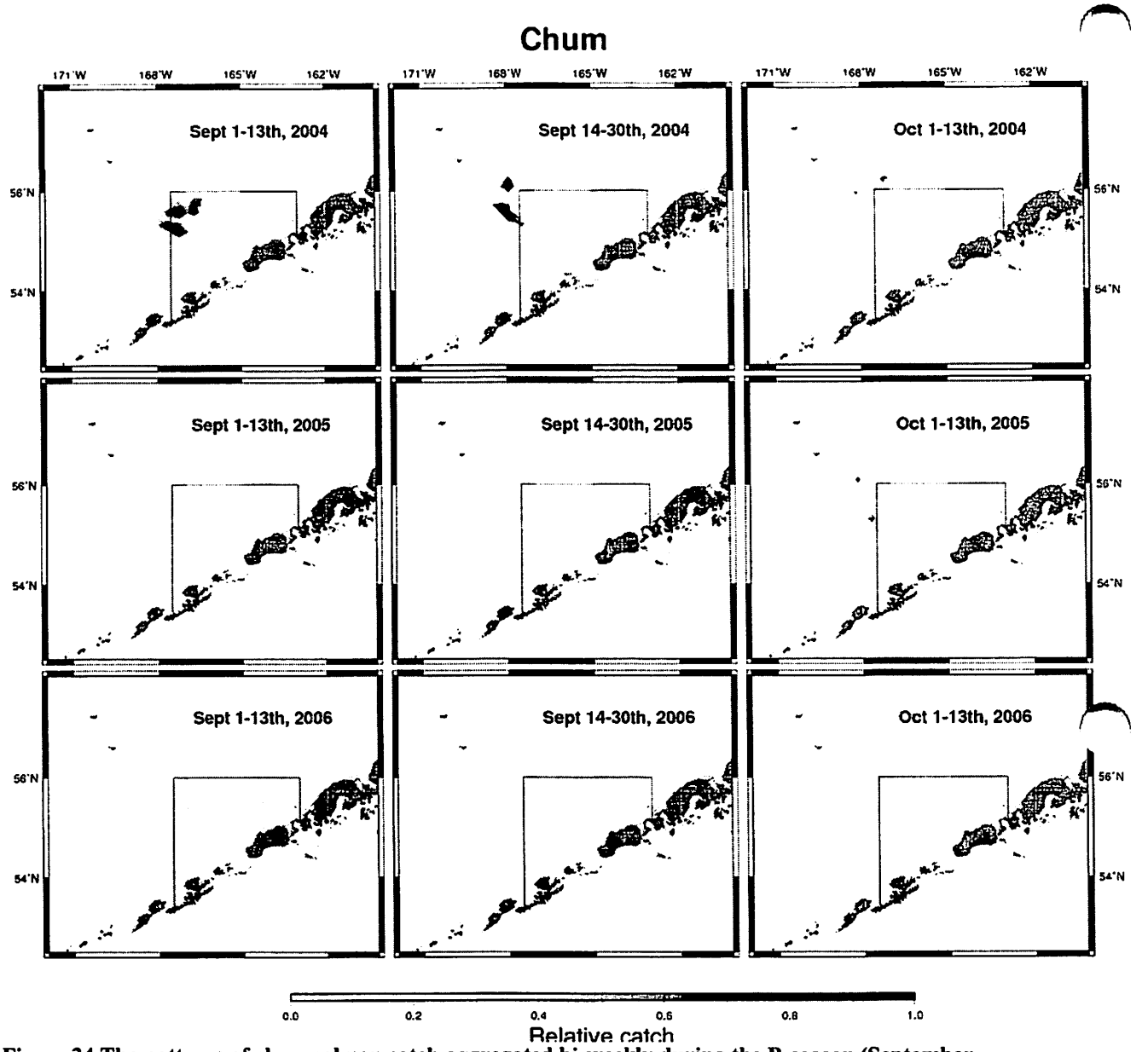


Figure 34 The patterns of chum salmon catch aggregated bi-weekly during the B-season (September and August) 2004-2006 based on NMFS observer data

Attachment 1

Information Bulletin 06-10
Sustainable Fisheries Division
907-586-7228

February 14, 2006
10:00 a.m.

NMFS Prohibits Directed Fishing for Non-CDQ Pollock in the Chinook Salmon Savings Areas of the Bering Sea and Aleutian Islands Management Area

The National Marine Fisheries Service (NMFS) is prohibiting directed fishing for non-Community Development Quota (CDQ) pollock with trawl gear in the Chinook Salmon Savings Areas of the Bering Sea and Aleutian Islands management area (BSAI) effective 12 noon, Alaska local time (Alt.), February 15, 2006, through 12 noon, A.l.t., April 15, 2006, and from 12 noon, A.l.t., September 1, 2006, through 12 midnight, A.l.t., December 31, 2006, according to Robert D. Mecum, Acting Administrator, Alaska Region, NMFS.

This action is necessary to prevent exceeding the 2006 non-CDQ limit of chinook salmon caught by vessels using trawl gear while directed fishing for non-CDQ pollock in the BSAI and is issued pursuant to 50 CFR 679.21(e)(7)(viii).

After the effective date of this closure the maximum retainable amounts at 50 CFR 679.20(e) and (f) apply at any time during a trip.

The Chinook Salmon Savings Areas are areas defined as the following portions of the BSAI:

(1) The area defined by straight lines connecting the following coordinates in the order listed:
54 degrees 00' N. lat., 171 degrees 00' W. long.
54 degrees 00' N. lat., 170 degrees 00' W. long.
53 degrees 00' N. lat., 170 degrees 00' W. long.
53 degrees 00' N. lat., 171 degrees 00' W. long.
54 degrees 00' N. lat., 171 degrees 00' W. long.

(2) The area defined by straight lines connecting the following coordinates in the order listed:
56 degrees 00' N. lat., 165 degrees 00' W. long.
56 degrees 00' N. lat., 164 degrees 00' W. long.
55 degrees 00' N. lat., 164 degrees 00' W. long.
55 degrees 00' N. lat., 165 degrees 00' W. long.
54 degrees 30' N. lat., 165 degrees 00' W. long.
54 degrees 30' N. lat., 167 degrees 00' W. long.
55 degrees 30' N. lat., 167 degrees 00' W. long.
55 degrees 30' N. lat., 165 degrees 00' W. long.
56 degrees 00' N. lat., 165 degrees 00' W. long.

This information bulletin only provides notice of a regulatory change. For the purposes of complying with the regulatory change, you are advised to see the actual text in the Code of Federal Regulations.

Attachment 2

SSC minutes April 2006 on Salmon Bycatch Workshop

D-1 (c,d) Progress Report on BSAI salmon bycatch amendment and Salmon Research Workshop

Diana Stram (NPFMC staff) provided an overview of the problem statement and suite of alternatives for amendment package 84B. Public testimony was received by Karl Haflinger (SeaState), Jennifer Hooper (Association of Village Council Presidents), Mike Smith (Tanana Chiefs Conference), and Becca Robbins (Yukon River Drainage Fisheries Association).

Analysis and refinement of the current salmon savings areas may be necessary in the event pollock vessels either surrender or lose their exemption and return to fishing under the regulatory salmon bycatch program. There is a need for development of more effective alternatives to the voluntary rolling hot spot system (VRHS). Amendment packages B-1 and B-2 are intended to provide those additional alternatives. Amendment package B-1 would be to establish new regulatory salmon savings systems that take into account the most recent available salmon bycatch data. Amendment package B-2 would be to develop a regulatory individual vessel salmon bycatch accountability program.

Salmon Workshop

The SSC conducted a salmon research workshop intended to aid in the discussion and development of bycatch management alternatives, such as biomass-based caps, updated salmon savings areas, and analysis of the current system under VRHS. Jim Ianelli (AFSC) provided a report on salmon bycatch patterns in the Bering Sea pollock fishery. Jim Murphy (AFSC) presented BASIS survey results on distribution and abundance of salmon in the Bering Sea. Richard Wilmot (AFSC) presented information on the stock origins of salmon caught in the Bering Sea groundfish fishery. Jim and Lisa Seeb (ADF&G) presented work on development of standardized DNA baselines for identifying mixtures of salmon stocks. Tony Gharrett (UAF) reported on genetic methods for determining salmon stock origins. Gene Sandone and Dan Bergstrom (ADF&G) presented information on Chinook and chum salmon stock status in the AYK region. Lastly, Alan Haynie (AFSC) presented information on incentives for bycatch avoidance. Summaries of the workshop presentations will be posted on the NPFMC website by Council staff.

SSC Discussion

The ensuing SSC discussion focused on attempting to address the following questions:
1) How to craft biomass-based caps?
2) What are innovative ideas for salmon savings systems and how to craft them to be more responsive to changing conditions?
3) What are appropriate milestones and standards for effective bycatch reduction?

Given the recent bycatch rates and presentations at the workshop, it is clear that the current state of knowledge is in flux so the Council should anticipate that additional changes may be required as research projects are completed.

How should we craft biomass based caps?
The SSC notes that developing a basis to establish biomass-based caps will be difficult and perhaps years away. Improved escapement enumeration and identification of salmon to stock of origin are required. Progress is being made in these areas.

To establish an abundance index, time trends of average run size from regions that correspond to the origins of salmon in the bycatch would be needed. This would allow analysts to assess whether increases in the encounter rate of salmon in the pollock fishery are a function of population trends. If an index of this

type could be developed, then bycatch caps could include adjustments for the status of salmon runs likely to be contributing to bycatch.

In addition to run size indicators by stock, it may be possible to utilize the BASIS survey to infer future returns of Alaskan origin salmon in the EBS. If the survey is used in this manner, NMFS should attempt to standardize the start date and station grid used for the BASIS survey to reduce the potential for missing out-migrations of salmon in some years. Such projections would need to adjust for natural mortality rate and migration. NMFS should also review the station spacing to assess whether the station allocation is appropriate for a comparative analysis of distribution and abundance of chum and Chinook salmon.

The information on the stock origin by age was informative, and the SSC recommends that the data collected from the EBS shelf be re-evaluated to assess the potential impact of age on the composition of home stream origin. The analysis of the home stream origin of salmon appeared to reveal that the regional contribution to the sample changed with age. This suggested that older salmon might have a different regional breakdown than younger salmon. This makes sense on two grounds: (1) younger salmon may not be fully mixed with the adult population, and (2) adult salmon from different regions may occupy different parts of the Bering Sea and sub-arctic Pacific thus, at older age groups we would see different regional contributions to the sample. Perhaps there are other explanations for the result. The bottom line is that there appears to be an age effect on regional partitions of home stream of origin. If this is the case, then the samples from the Bering Sea need to be re-examined to evaluate whether this effect could be impacting our samples.

Genetic analyses indicate that salmon from a broad geographic range of stocks contribute to salmon bycatch in pollock fisheries. Future cap calculations should reflect the likelihood that the origin of salmon captured as bycatch varies with season and location over the EBS shelf and slope. The SSC commends the collaboration of state, federal and academic geneticists and encourages these scientists to continue to work together to develop SNPs and microsatellite markers to assess home stream origin of salmon captured as bycatch. It is also recommended that geneticists work together with the industry on a sampling plan that will provide a reasonable representation of the annual bycatch. Given the apparent dependence of home stream origin on age, and the potential for shifts in the spatial distribution of pollock fishing, this study should include multiple years of sampling. The investigators should also determine the desired sample size necessary to assess home stream origin of schools encountered by commercial groundfish fisheries.

The SSC recommends devoting research to oceanographic factors influencing the spatial and temporal distribution and concentration of salmon. This includes an investigation of prey distributions relative to spatial distribution of salmon over the EBS shelf.

Other research should be devoted to examining vessels with a history of low bycatch rates. Factors such as gear configuration, deployment procedures or other fishing methods might be important determinants of salmon bycatch rates. If such factors can be associated with "clean" fishing then those might be more broadly applied to the fleet.

Dr. Ianelli recommended that a robust cap linked to an index of the catch rate in the pollock fishery could be considered. The SSC also considered the possibility of using in-season bycatch rates to establish in-season caps. Several problems with this approach were noted including: the lack of evidence that bycatch rates are an indicator of abundance and the possibility that the bycatch rate could be intentionally influenced to inflate the cap. The SSC noted that bycatch rates may vary with changes in abundance or density or both.

Given the current state of knowledge and potential difficulties in achieving research results in the near-term, the SSC discussed the possibility of setting an interim precautionary – arbitrary cap. The SSC concluded that setting an arbitrary cap was not a scientific issue but something that the Council would need to negotiate among the interested parties.

Innovative ideas for a salmon savings area

The SSC noted that the existing rolling hotspot approach is a logical way to attempt to control bycatch at the current time. A problem with the current situation is that the base rate continues to change. **Incentives should be considered to get fishers to move back into closed areas after they are reopened to collect post-closure bycatch rates in those areas.** It was noted that both bycatch rate of salmon and catch rate of pollock decrease at night but the drop in salmon bycatch is greater than the drop in pollock catch. However, it is not clear that a shift to night-time fishing is practical.

Historical salmon spatial bycatch patterns should be analyzed to determine if there are coherent shifts that might allow for periodic adjustment of closure areas. The Council may wish to consider techniques, including whether shifts in the A and B fishing season apportionments can yield additional salmon savings.

Individual vessel accountability programs

The SSC briefly discussed individual bycatch quotas. One idea put forward, given the lack of data, would be to put the fleet in competition to reduce salmon bycatch by posting a bond that would be distributed back to a portion of the fleet with the lowest bycatch rates of the end of the season (and perhaps affected Alaska communities). Any individual vessel accountability strategy would put a focus on getting good counts of salmon in the catch, which might put additional pressure on observers. Any vessel accountability program would also require a mechanism to limit catch and the identification of a target cap.

SSC Comments on Workshop

The SSC appreciates the efforts of the Council staff to organize the workshop, and extends thanks to all the presenters for providing us with the most up to date information on their research efforts. It is clear that the combined efforts of the several research programs are leading us towards a much better understanding of the origins of salmon taken as bycatch and their distribution in the Bering Sea.

AGENDA D-3
Supplemental
FEBRUARY 2007

World Wildlife Fund
Kamchatka/Bering Sea Ecoregion
406 G. Street, Suite 303
Anchorage, AK 99501 USA

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Fax: (907) 279-5509

www.worldwildlife.org

January 19, 2007

Ms. Stephanie Madsen, Chair
North Pacific Fishery Management Council
605 West 4th Street, Suite 306
Anchorage, AK 99501-2252

Mr. Doug Mecum, Regional Administrator
NOAA Fisheries, Alaska Region
709 W. 9th Street
Juneau, AK 99802-1668

Dear Ms. Madsen and Mr. Mecum,

The World Wildlife Fund (WWF) appreciates the opportunity to comment on the salmon bycatch measures being considered for analysis by the Council. WWF is a global conservation organization with over 1.2 million members in the US. WWF seeks science-based, non-partisan, collaborative, and creative solutions to conservation issues. In the North Pacific, we collaborate with colleagues in our Russian field offices in Vladivostok and Petropavlovsk to seek conservation solutions for the Kamchatka/Bering Sea Ecoregion. We submit this letter in support of salmon bycatch reduction efforts in the Bering Sea and Aleutian Islands (BSAI) pollock fisheries.

WWF commends the efforts of the Council to address salmon bycatch consistent with the goals of National Standard 9. The existing Salmon Savings Areas and the Voluntary Rolling Hot Spot (VRHS) program adopted under Amendment 84 represent admirable efforts by the Council to address salmon bycatch in the BSAI pollock fleet. Unfortunately, bycatch numbers for Chinook and non-Chinook salmon have continued to increase in the BSAI pollock fleet over the last several years, while in-river subsistence and commercial catches have remained flat. Many of these salmon originate in Western Alaska, but many also originate in the Russian Far East. WWF's Kamchatka/Bering Sea Ecoregion is concerned about how increasing bycatch of salmon from these areas may affect the health of those salmon stocks on both sides of the Bering Sea. Thus, consistent with the recommendations of the Yukon River Drainage Fisheries Association, WWF recommends that the Council consider soft or hard caps as a mechanism to reduce salmon bycatch in the BSAI pollock fishery.

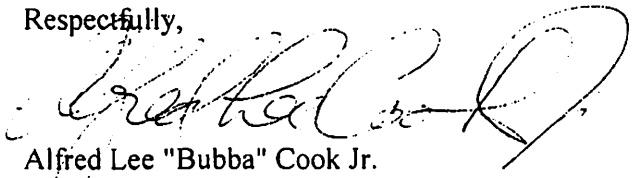
Soft or hard caps would provide an additional tool to managers in the process of addressing increasing salmon bycatch. Moreover, caps could be designed in various ways to prevent unnecessary extreme measures such as complete seasonal fishery closures. Caps could be designed with time and area closure provisions specific to different scenarios that allow for continued operation of the pollock trawl fleet while simultaneously protecting salmon migratory routes. Caps could be used in place of or in addition to the VRHS system. Furthermore, the analysis should include consideration of fixed and indexed caps linked to salmon abundance. The analysis of both fixed and indexed caps would help identify advantages and disadvantages of each, informing the public and assisting the Council in making the best decision.

Due to the large number of Alaska Native communities affected by this decision, WWF also encourages the Council to meaningfully consult with the Alaska Native tribes as required by

the Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (1994), and Executive Order 13175, Consultation and Coordination With Indian Tribal Governments (2000). Several Alaska Native tribes depend heavily on the king and chum salmon runs in Western Alaska. These Alaska Native tribes should be provided an adequate opportunity to provide input consistent with the authority granted under the Executive Orders.

Thank you for your time and consideration of these comments.

Respectfully,



Alfred Lee "Bubba" Cook Jr.
Kamchatka/Bering Sea Ecoregion Senior Fisheries Program Officer
World Wildlife Fund

Western Interior Alaska Subsistence Regional Advisory Council

c/o Office of Subsistence Management
101 12th Avenue, Room 110
Fairbanks, Alaska 99701
Phone: 1-(907)-456-0277 or 1-800-267-3997
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E-mail: Vince_Mathews@FWS.GOV

January 17, 2007

Stephanie Madsen, Chair
North Pacific Fishery Management Council
605 W 4th Avenue, Suite 306
Anchorage, Alaska 99501

Dear Chair Madsen:

The Western Interior Alaska Subsistence Regional Advisory Council (Council) met in Ruby, Alaska, on October 11-12, 2006. The Council represents all Western Interior subsistence communities and rural residents. The Council is authorized by the Alaska National Interest Lands Conservation Act (ANILCA), and chartered under the Federal Advisory Committee Act (FACA). ANILCA in Section 805 and the Council's charter recognize the Council's authority to "initiate, review and evaluate proposals for regulations, policies, management plans, and other matters related to subsistence uses of fish and wildlife on public lands within the region" and to "provide a forum for the expression of opinions and recommendations ... (on) any matter related to the subsistence uses of fish and wildlife on public lands within the region."

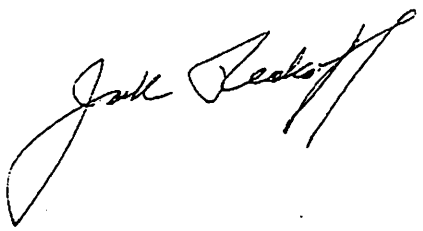
The Council has concern about the current efforts to reduce the salmon bycatch of the Bering Sea/Aleutian Islands (BSAI) pollock fishery. The Salmon Savings Areas and the Voluntary Rolling Hot Spot (VRHS) systems were developed and implemented to reduce the bycatch of salmon bound for the Western and Interior Alaska. The salmon bycatch has increased dramatically over the past six years from less than 10,000 Chinook salmon in 2000 to 75,000 in 2005. Studies in the 1990's shown that over 56% of the bycatch Chinook salmon in the BSAI fishery are of Western Alaskan origin and over 40% of those Western Alaskan Chinook are Yukon River stocks (*Salmon Bycatch in the Alaska Pollock Fishery Update,* Yukon River Drainage Fisheries Association 2006 flier). Based on this data, in 2005 over 13,000 Yukon River-bound Chinook salmon were bycatch in the BSAI fishery. This represents 27% of the 2005 subsistence catch and 47% of the Canadian border escapement goal. Invaluable salmon bound for our area to meet our subsistence and cultural needs are wasted as an undesirable by-product at an alarmingly increasing rate. This has to stop.

The Voluntary Rolling Hot Spot system, a self-policing of the pollock fleet effort, when developed was seen by in-river fishers as an effective option to reduce salmon bycatch but in practice it has failed and the bycatch numbers for Chinook and chum dramatically show that. The Council, representing subsistence fishers along the Yukon and Kuskokwim Rivers in the Western Interior Alaska Region, requests the North Pacific Fishery Management Council (NPFMC) take whatever steps are necessary reduce the salmon bycatch and take back control of the BSAI fishery to provide strong protection for returning salmon bound for Western and Interior Alaska. The continuation of these high bycatch rates will decimate Western and Interior Alaska salmon runs that have been central to the subsistence lifestyle for thousands of years.

The Council appreciates the NPFMC staff's past efforts to meet with Council leadership across the Yukon River drainage. The Council wants to continue that cooperative effort and believes that, through understanding, we can find common ground and by working together, we can protect the valuable wild resources of Alaska. We look forward to hearing from you regarding your ideas and plans to reverse the upward trend of salmon bycatch by the BSAI fishery.

If you have any questions, please contact our Vice-chair, Jack Reakoff or our Subsistence Council Coordinator, Vince Mathews. Mr. Reakoff can be reached at 1-907-678-2007; Mr. Mathews' contact information is in the letterhead.

Sincerely,



For Ron Sam, Chair

cc: Mike Feagle, Federal Subsistence Board Chair
Pete Probasco, Assistant Regional Director, Office of Subsistence Management
Rod Campbell, Fisheries Liaison, Office of Subsistence Management
Don Rivard, Chief, Interior Regions Division, Office of Subsistence Management
Western Interior Regional Council members
Jill Klein, Yukon River Drainage Fisheries Association

Tanana Chiefs Conference

Chief Peter John Tribal Building
122 First Avenue, Suite 600
Fairbanks, Alaska 99701-4897
(907) 452-8251 Fax: (907) 459-3850

January 24, 2007

North Pacific Fishery Management Council
605 West 4th Avenue, Suite 306
Anchorage, AK 99501-2252

Re: Salmon Bycatch, Agenda Item D-3(e)

Dear Chairwoman Madsen and Council Members:

I am writing on behalf of Tanana Chiefs Conference (TCC). TCC is a native non-profit representing over 42 tribes and communities in the Yukon River watershed. These tribes and communities depend on salmon as a vital economic, cultural and nutritional resource. In the TCC region due to poor abundance, commercial salmon harvests have been reduce to near insignifanct numbers. However limited it still provides an important source of income for those rural residents who still commercially fish.

TCC is appalled at the continued dramatically high salmon bycatch numbers being produced in the Bering Sea/Aleutian Islands by the Pollock fleet. This year's record high Chinook salmon bycatch of over 84,000 fish and the chum bycatch of over 325,000 fish continue the trend of increasingly high bycatch numbers over the last few years.

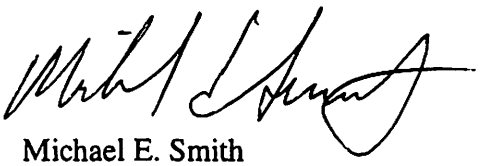
The extent of these high numbers are of particular concern to TCC and the people they represent as studies have now shown that many of these Chinook salmon are bound for the Yukon River and it's tributaries. It is deeply troubling for in-river subsistence users who have been forced into restrictions on their fishing time, with more being considered by the Alaska Board of Fish during their next meeting, a in an attempt to conserve declining salmon populations as well as protecting "big" fish going up the river, to see such high numbers of salmon caught as a bycatch in the pollock fishery, especially those bound for the Yukon the next year.

Mrs. Chairman, while we appreciate the need for commercial openings in the Pollock Fishery, it should not be at the expense of the subsistence users along the Yukon River. The 2006 bycatch is almost twice the subsistence harvest for the entire US portion of the Yukon River and is needed to sustain the salmon runs on the Yukon.

TCC believes it is imperative that the North Pacific Fishery Management Council, given the increasingly high numbers of salmon bycatch just to achieve a high base rate for the fleet, adopt regulations that will effectively reduce the large number of salmon caught in the bycatch.

While we appreciate the innovative approach of the pollock fleet in designing and implementing the Voluntary Rolling Hot Spot system, it does not work. It is important that this or any other measure have a way by which the number of salmon caught as bycatch is limited. TCC understands that the Council will be receiving a discussion paper on setting a negotiated cap for salmon bycatch. We fully support the concept of a cap and have advocated for such cap in the past. We encourage the Council to take actions immediately at setting numerical limits on the amount of salmon allowed in the bycatch. We believe it will help fulfill your responsibilities as outlined in National Standard 9.

Sincerely,



Michael E. Smith
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Elizabeth Andrews PhD
Alaska Department of Fish and Game
Subsistence Division
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YUKON RIVER PANEL
ALASKA • YUKON
Co-Chairs

Frank Quinn
Fisheries and Oceans Canada
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January 26, 2007

Ms. Stephanie Madsen, Chair
North Pacific Fishery Management Council
605 West 4th, Suite 306
Anchorage, Alaska 99501-2252

Dear Chairwoman Madsen:

Re: Panel Concern Pertaining to Bycatch of Yukon River Salmon Stocks by the Pollock Trawl Fishery in the Bering Sea and Request for Effective and Timely Remedial Measures

We are writing on behalf of the Yukon River Panel, an international advisory body mandated by the Yukon River Salmon Agreement (2002), linked to the USA-Canada Pacific Salmon Treaty. The Yukon River Panel is composed of U.S. and Canadian fishers, federal representatives, and managers from Alaska and the Yukon Territory.

The Panel is extremely concerned with the record high numbers of Chinook salmon and near-record numbers of chum salmon incidentally harvested in the Bering Sea pollock trawl fishery in 2006. These numbers have steadily increased in recent years, a trend which is inconsistent with the section 12 of U.S./Canada Yukon River Agreement (Attachment B, Annex IV, Chapter 8 of the Pacific Salmon Treaty). The Agreement states:

The Parties shall maintain efforts to increase the in-river run of Yukon River origin salmon by reducing marine catches and by-catches of Yukon River salmon. They shall further identify, quantify and undertake efforts to reduce these catches and bycatches.

A recent study (Myers et al., 2004) estimated that 56% of the Bering Sea Chinook salmon bycatch originates in Western Alaska, with 40% of that specifically from the Yukon River. Based on 2006 catch estimates, Bering Sea Aleutian Islands (BSAI) bycatch may comprise over 20,000 Yukon River Chinook. Our research indicates a substantial portion of the chum salmon bycatch also originates within the Yukon River. Increasing salmon bycatch in the Bering Sea leads to decreased in-river runs of Yukon River salmon, which directly impacts the both Alaskans and Canadians who live along the Yukon River. We understand the Council has been

reduce salmon bycatch in the Bering Sea through Amendment 84 and the Voluntary Rolling Hot Spot system. However, it appears current strategies have been ineffective in reducing the overall number of salmon bycatch. We also understand that the Council will be assessing new approaches to limit salmon bycatch under an Exempted Fishing Permit application and various proposals known as Amendment 84 "B" package.

We respectfully request the Council to consider timely and effective approaches that substantially lower salmon bycatch numbers. We understand these approaches may include catch-level triggers for closing groundfish fisheries and utilizing a numerical limit on the total number of salmon which can be caught. It is our position that any new approach to limit salmon bycatch in the Bering Sea be consistent with the Treaty requirement to "*increase the in-river run of Yukon River origin salmon by reducing marine catches and by-catches of Yukon River salmon*" that has existed pursuant to the aforementioned U.S.-Canada Yukon River Agreement (2002).

Further, because of the importance of salmon resources to the people who live along the Yukon River, we seek expanded understanding of the Bering Sea salmon bycatch, including measures needed to effectively reduce this bycatch in a timely manner. The Yukon Panel will send one or two representative(s) to your late March-April 2007 meeting in Anchorage for the purposes of observing and reporting back to the Yukon River Panel on this issue. Additionally, if possible, we would like to participate in your Salmon Bycatch Workshop. We respectfully request your permission to send several representatives to participate in this workshop.

Sincerely,

Elizabeth Andrews

Frank Quinn

Co-Chairs

Reference cited:

Katherine W. Myers, Robert V. Walker, Janet L. Armstrong, and Nancy D. Davis. 2004. Estimates of the bycatch of Yukon River Chinook salmon in U.S. groundfish fisheries in the eastern Bering Sea, 1997-1999. Final Report to the Yukon River Drainage Fisheries Association (YRDFA) Contract Number: 04-001. 59 pp.

YUKON RIVER DRAINAGE FISHERIES ASSOCIATION

January 25, 2007

North Pacific Fishery Management Council
605 West 4th Avenue, Suite 306
Anchorage, AK 99501-2252

Re: Salmon Bycatch, Agenda Item D-3(e)

Dear Chairwoman Madsen and Council Members:

The Yukon River Drainage Fisheries Association (YRDFA) appreciates the opportunity to comment on salmon bycatch. YRDFA is an association of commercial and subsistence fishers on the Yukon River, Alaska's longest river. The salmon of the Yukon River provide a primary source of food for local residents and for many the commercial salmon harvest also provides the only means of income for those who live in the 49 remote villages of the Yukon River.

You have heard from YRDFA members and staff many times over the years on this topic, and while the issues we present remain similar, our concern grows with the steadily increasing numbers of salmon caught as bycatch in the Bering Sea/Aleutian Islands. As you are aware, in 2006 over 84,000 Chinook salmon and 325,000 chum salmon were caught as bycatch. These numbers continue the trend of high bycatch numbers which has been developing over the last several years and represents record high Chinook bycatch and nearly record high chum bycatch. **We urge the Council to adopt a salmon bycatch cap which will effectively reduce the increasingly *number* of salmon caught as bycatch.**

YRDFA appreciates the efforts of the pollock fleet and the Council to reduce salmon bycatch using the Voluntary Rolling Hot Spot (VRHS) system. While the adaptive management regime certainly holds promise, it cannot meet the requirements of National Standard 9 without additional safeguards limiting the *number* of salmon which can be caught as bycatch. The rate-based VRHS system ensures only that bycatch is managed within the rate at which it is being taken at the beginning of the season or agreed upon through the ICA. Under this system there is no numerical limit on the number of salmon which can be caught and salmon bycatch numbers could continue to climb within the legal confines of the system.

Voluntary agreements, such as the VRHS system, work best when an appropriate "stick" is in place to encourage the regulated industry to achieve high standards. In exempting the pollock fleet from the Salmon Savings Areas the Council and NMFS have in fact removed the regulatory stick. For the VRHS to work effectively and to meet the Council and NMFS's legal obligations under National Standard 9, the Council must adopt a measure which effectively reduces the number of salmon caught as bycatch. We are pleased that the Council will be receiving a discussion paper on setting a negotiated cap at this meeting. We urge the Council to act quickly in setting a fixed cap which when triggered will either shut the fishery down for a set period of time, close the fishery for the remainder of the season or close specific areas as the Salmon Savings Areas did, noting that these areas would need to be redesigned. This type of fixed cap would offer the kind of limitations on the number of salmon which can be caught as bycatch to appropriately protect Western Alaska salmon stocks. While a cap indexed to salmon abundance or the

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WWW.YUKONSALMON.ORG

presence of particular stocks of salmon may be a laudable goal for future bycatch reduction measures, the lack of sufficient science to design these limits at present is no excuse for delaying action on setting a cap.

As we have noted before, the increasingly high bycatch numbers are of particular concern to Western Alaskans in general and Yukon River fishers in particular because we know that a large portion of Chinook salmon bycatch is of Western Alaskan origin. Applying the results of scale pattern analysis of the 1997-1999 salmon bycatch samples[1] to the final bycatch numbers from 2006, that means over 18,000 Yukon River Chinook were caught as bycatch, of which more than 16,000 would have returned to the Yukon River. In 2006, that number represented 35% of the Yukon River commercial catch; 32% of the subsistence catch and 57% of the border passage goal under the U.S.-Canada Yukon River Salmon Agreement.

While many cite high salmon bycatch numbers as indicators of salmon abundance, in-river fishers have yet to see these increases. Subsistence and commercial fisheries are still being managed conservatively, with subsistence fishers operating under fishing time restrictions and commercial harvests below the 10-year average despite increasing markets. Additional restrictions may yet be imposed on the fishery in response to concerns over the diminishing size of Yukon River Chinook salmon. The high bycatch numbers of recent years are particularly disheartening as in-river fishers continue to face restrictions.

Given the numerous federal and international laws requiring salmon bycatch reduction, and the supreme importance of salmon to the residents of Western Alaska, we urge the Council to adopt a salmon bycatch cap which will effectively reduce the *number* of salmon caught as bycatch.

Sincerely,

Rebecca Robbins Gisclair

[1] From Kate Myers, et. al, *Estimates of the Bycatch of Yukon River Chinook Salmon in U.S. Groundfish Fisheries in the Eastern Bering Sea, 1997-1999* (March 2004).

D-3

Raymond J. Watson, Chairman
Myron P. Naneng, Sr., President

Association of Village Council Presidents

Office of Administration
P.O. Box 219 • Bethel, AK 99559
Phone: (907) 543-7300 • Fax: (907) 543-3369

January 31, 2007

North Pacific Fisheries Management Council
605 West 4th Avenue, Suite 306
Anchorage, AK 99501-2252
FAX: (907) 271-2817
Phone: (907) 271-2809

Re: Salmon Bycatch, Agenda Item D-3(e)

Dear Chairwoman Madsen and Council Members:

I am writing on behalf of the Association of Village Council Presidents (AVCP). AVCP is a native non-profit representing 56 Tribes in the Yukon-Kuskokwim Delta Region. These tribes and communities depend on salmon as a vital source of subsistence food and the small commercial salmon harvest in the Lower Yukon and Lower Kuskokwim Rivers provide an important source of income for rural residents.

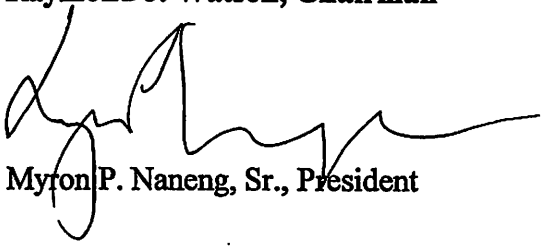
AVCP is concerned with the dramatically high salmon bycatch numbers in the Bering Sea/Aleutian Islands pollock fleet. This year's record high Chinook salmon bycatch of over 84,000 fish and chum salmon bycatch of over 325,000 fish continues the trend of increasingly high bycatch numbers over the last few years. AVCP is also aware that the pollock industry outside of the CDQ groups catches the majority of that Chinook salmon bycatch, at a rate of roughly 98%.

These high numbers are particularly troubling to AVCP's members as studies show that many of these Chinook salmon are Yukon and Kuskokwim River fish. It is deeply troubling for in-river subsistence users who face restrictions in their fishing time to conserve salmon populations to see such high numbers of salmon caught as bycatch in the pollock fishery. The villages on both river systems have complied with the very undesirable restrictions to the subsistence fisheries for conservation purposes and for helping to rebuild the salmon stocks. For example, the communities in the Lower Yukon River districts are limited to two 36-hour openings a week for subsistence fishing. During those openings the fishermen and their families have to hope that the weather and river conditions cooperate for fishing and processing and, more importantly, the fish are there for them to catch. Our efforts are not to be used as an excuse by other fisheries that have obvious effects on what returns to our rivers.

It is vital given these increasingly high numbers of salmon bycatch that the Council adopt a management measure which effectively reduces the *number* of salmon

caught as bycatch. While we appreciate the innovative efforts of the pollock fleet in designing and implementing the Voluntary Rolling Hot Spot system, it is imperative that this or any other management measure have a mechanism for limiting the number of salmon caught as bycatch in place. AVCP understands that the Council will be receiving a discussion paper on setting a negotiated cap for salmon bycatch. We fully support the idea of a cap in addition to the current VRHS system and encourage the Council to look seriously at setting this kind of numerical limit on salmon bycatch to meet its obligations under National Standard 9. We look forward to your decisions and hope that you will take into consideration the information we've provided here. Thank you for your time.

Sincerely,
ASSOCIATION OF VILLAGE COUNCIL PRESIDENTS
Raymond J. Watson, Chairman



Myron P. Naneng, Sr., President

Raymond J. Watson, Chairman
Myron P. Naneng, Sr., President

Association of Village Council Presidents
Office of Administration
P.O. Box 219 • Bethel, AK 99559
Phone: (907) 543-7300 • Fax: (907) 543-3369

January 31, 2007

North Pacific Fisheries Management Council
605 West 4th Avenue, Suite 306
Anchorage, AK 99501-2252
FAX: (907) 271-2817
Phone: (907) 271-2809

LATE COMMENT

Re: Salmon Bycatch, Agenda Item D-3(e)

Dear Chairwoman Madsen and Council Members:

I am writing on behalf of the Association of Village Council Presidents (AVCP). AVCP is a Native non-profit organization representing 56 villages in the Yukon-Kuskokwim Delta Region. These communities depend on salmon as a vital source of subsistence food and the small commercial salmon harvest in the Lower Yukon and Lower Kuskokwim Rivers provide an important source of income for rural residents.

AVCP is concerned with the extremely high salmon bycatch numbers in the Bering Sea/Aleutian Islands pollock fleet. The 2006 record high Chinook salmon bycatch of over 84,000 fish and chum salmon bycatch of over 325,000 fish continues the trend of increasingly high bycatch numbers over the last few years. AVCP is also aware that the pollock industry outside of the CDQ groups catches the majority of that Chinook salmon bycatch, at a rate of roughly 98%.

These high numbers are particularly troubling to AVCP's members as studies show that many of these Chinook salmon are Yukon and Kuskokwim River fish. It is deeply troubling for in-river subsistence users who face restrictions in their fishing time to conserve salmon populations to see such high numbers of salmon caught as bycatch in the pollock fishery. The villages on both river systems have complied with the very undesirable restrictions to the subsistence fisheries for conservation purposes and for helping to rebuild the salmon stocks. For example, the communities in the Lower Yukon River districts are limited to two 36-hour openings a week for subsistence fishing. During those openings the fishermen and their families have to hope that the weather and river conditions cooperate for fishing and processing and, more importantly, the fish are there for them to catch. Our efforts are not to be used as an excuse by other fisheries that have obvious effects on what returns to our rivers.

It is vital given these increasingly high numbers of salmon bycatch that the Council adopt a management measure which effectively reduces the *number* of salmon caught as bycatch. While we appreciate the innovative efforts of the pollock fleet in designing and implementing the Voluntary Rolling Hot Spot system, it is imperative that this or any

other management measure have a mechanism for limiting the number of salmon caught as bycatch in place. AVCP understands that the Council will be receiving a discussion paper on setting a negotiated cap for salmon bycatch. We fully support the idea of a cap in addition to the current VRHS system and encourage the Council to look seriously at setting this kind of numerical limit on salmon bycatch to meet its obligations under National Standard 9. We look forward to your decisions and hope that you will take into consideration the information we've provided here. Thank you for your time.

Sincerely,

ASSOCIATION OF VILLAGE COUNCIL PRESIDENTS
Raymond J. Watson, Chairman

Myron P. Naneng, Sr., President

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Elizabeth Andrews PhD
Alaska Department of Fish and Game
Subsistence Division
P.O. Box 115526
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YUKON RIVER PANEL
ALASKA • YUKON
Co-Chairs

Frank Quinn
Fisheries and Oceans Canada
100 - 419 Range Road
Whitehorse, Yukon Y1A 3V1
Phone: (867)393 6719
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LATE COMMENT

January 26, 2007

Ms. Stephanie Madsen, Chair
North Pacific Fishery Management Council
605 West 4th, Suite 306
Anchorage, Alaska 99501-2252

Dear Chairwoman Madsen:

Re: Panel Concern Pertaining to Bycatch of Yukon River Salmon Stocks by the Pollock Trawl Fishery in the Bering Sea and Request for Effective and Timely Remedial Measures

We are writing on behalf of the Yukon River Panel, an international advisory body mandated by the Yukon River Salmon Agreement (2002), linked to the USA-Canada Pacific Salmon Treaty. The Yukon River Panel is composed of U.S. and Canadian fishers, federal representatives, and managers from Alaska and the Yukon Territory.

The Panel is extremely concerned with the record high numbers of Chinook salmon and near-record numbers of chum salmon incidentally harvested in the Bering Sea pollock trawl fishery in 2006. These numbers have steadily increased in recent years, a trend which is inconsistent with the section 12 of U.S./Canada Yukon River Agreement (Attachment B, Annex IV, Chapter 8 of the Pacific Salmon Treaty). The Agreement states:

The Parties shall maintain efforts to increase the in-river run of Yukon River origin salmon by reducing marine catches and by-catches of Yukon River salmon. They shall further identify, quantify and undertake efforts to reduce these catches and bycatches.

A recent study (Myers et al., 2004) estimated that 56% of the Bering Sea Chinook salmon bycatch originates in Western Alaska, with 40% of that specifically from the Yukon River. Based on 2006 catch estimates, Bering Sea Aleutian Islands (BSAI) bycatch may comprise over 20,000 Yukon River Chinook. Our research indicates a substantial portion of the chum salmon bycatch also originates within the Yukon River. Increasing salmon bycatch in the Bering Sea leads to decreased in-river runs of Yukon River salmon, which directly impacts the both Alaskans and Canadians who live along the Yukon River. We understand the Council has been

reduce salmon bycatch in the Bering Sea through Amendment 84 and the Voluntary Rolling Hot Spot system. However, it appears current strategies have been ineffective in reducing the overall number of salmon bycatch. We also understand that the Council will be assessing new approaches to limit salmon bycatch under an Exempted Fishing Permit application and various proposals known as Amendment 84 "B" package.

We respectfully request the Council to consider timely and effective approaches that substantially lower salmon bycatch numbers. We understand these approaches may include catch-level triggers for closing groundfish fisheries and utilizing a numerical limit on the total number of salmon which can be caught. It is our position that any new approach to limit salmon bycatch in the Bering Sea be consistent with the Treaty requirement to "*increase the in-river run of Yukon River origin salmon by reducing marine catches and by-catches of Yukon River salmon*" that has existed pursuant to the aforementioned U.S.-Canada Yukon River Agreement (2002).

Further, because of the importance of salmon resources to the people who live along the Yukon River, we seek expanded understanding of the Bering Sea salmon bycatch, including measures needed to effectively reduce this bycatch in a timely manner. The Yukon Panel will send one or two representative(s) to your late March-April 2007 meeting in Anchorage for the purposes of observing and reporting back to the Yukon River Panel on this issue. Additionally, if possible, we would like to participate in your Salmon Bycatch Workshop. We respectfully request your permission to send several representatives to participate in this workshop.

Sincerely,

Elizabeth Andrews

Frank Quinn

Co-Chairs

Reference cited:

Katherine W. Myers, Robert V. Walker, Janet L. Armstrong, and Nancy D. Davis. 2004. Estimates of the bycatch of Yukon River Chinook salmon in U.S. groundfish fisheries in the eastern Bering Sea, 1997-1999. Final Report to the Yukon River Drainage Fisheries Association (YRDFA) Contract Number: 04-001. 59 pp.