


MEMORANDUM

TO: Council, SSC and AP Members

FROM: Chris Oliver   
Executive Director

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| ESTIMATED TIME<br>3 HOURS (all D items) |
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DATE: March 28, 2006

SUBJECT: BSAI Salmon Bycatch

**ACTION REQUIRED**

- (c) Progress Report on BSAI Salmon Bycatch Amendment Package B
- (d) Salmon Bycatch Research Workshop (SSC only)

**BACKGROUND**

(c) Progress Report on BSAI Salmon Bycatch Amendment Package B

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 are anticipated to be in place by August 1, 2006. 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. The current problem statement and draft suite of alternatives for this amendment package are attached as Item D(1)(c)(1). In December, the Council indicated its intent to further discuss amendment package B-1 and provide an opportunity for revisions to the alternatives as necessary. A discussion paper reviewing these alternatives and providing an update on the Chinook salmon bycatch from the 2006 A-season is attached as Item D(1)(c)(2). An overview of the SSC's discussion and analytical recommendations as applicable for this analysis will be provided by staff at the Council meeting following the SSC's Salmon Bycatch Workshop scheduled for April 4<sup>th</sup> (agenda item D-1d).

(d) Salmon Bycatch Research Workshop (SSC only)

In response to action taken under amendment 84, the Council scheduled a salmon bycatch workshop for the SSC April 4th (open to the public) in which to review the existing research on stock origins of incidentally-caught salmon species in the BSAI, assessment information for Pacific Salmon stocks and other research relevant to the Council's continued activities with salmon bycatch reduction measures. An agenda for this workshop is attached as Item D(1)(d)(1). Abstracts of the presentations are provided as Item D(1)(d)(2).

A report summarizing the discussion and findings (as applicable) of this workshop as it relates to the Council's activities and progress towards refining alternatives in amendment package 84B will be compiled by staff following the workshop. This report will be made available to the Council at this meeting.

## **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:**

### **April 2006 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. Regulations to promulgate this exemption are anticipated to be in place by August 1, 2006. 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.

This paper reviews the existing problem statement and suite of alternatives for the follow-up bycatch management measures. An update on salmon bycatch in the 2006 A-Season is also provided.

### ***Considerations and Decisions for this Council meeting***

The Council may wish to clarify the following:

1. Review and Clarify alternatives as necessary
2. Determine a timeline and prioritization for the analysis

### ***2006 A Season Chinook salmon bycatch***

Bycatch of Chinook salmon in the BSAI pollock trawl fishery was again elevated in the A season for 2006. Chinook bycatch in the pollock pelagic trawl fishery as reported by NMFS Catch Accounting as of March 18<sup>th</sup>, 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. The total number of Chinook taken in 2005 was 76,269. NMFS closed the Chinook Salmon Savings Areas at noon on February 15, 2006 (Attachment 1). These areas will remain closed until noon on April 15<sup>th</sup>. Per regulations, the areas will then reopen until noon on September 1<sup>st</sup>, 2006 and then close through December 31<sup>st</sup>, 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.

Figures 1 and 2 show the locations of the regulatory savings areas (Chinook and Chum). Preliminary data for 2006 initially show a steeper rate of Chinook catch in the first couple weeks of the season as compared with 2005 (Figure 3). After that time, the rate is similar to observations from 2005, however rather than leveling off around the 3<sup>rd</sup> week in February as with

last year, the rate continued on the same trajectory into mid-March. Pollock catch over this time period appears relatively similar to previous years (Figure 3). Examination of average bycatch rates at weekly intervals shows that the average bycatch for the first week of 2006 fishing was higher than in years past (Figure 4). While the average rate dropped the following week, for the remainder of the A-Season after that, the 2006 average weekly rate was higher than the rate in all other years (with the exception of 1999 in two instances). Chum catch in the pollock fishery remains low in the A season (Figure 5). Chum catch is generally low until the B-season. Total number of chum salmon taken in 2005 was 711,813.

Regulations for amendment 84 to exempt vessels participating in the VRHS system from savings area closures have not yet gone into effect. If these regulations are effective by August 1<sup>st</sup> as anticipated, qualified vessels will be exempt from both the Chum Salmon Savings Area closure and the Chinook Salmon Savings Area closure in the B-season. Thereafter accounting for the trigger limits will still occur, and the areas will be closed for obtaining these limits (e.g. in 2007), however qualified vessels will be exempt from the closures and may continue to fish within the savings areas.

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 20<sup>th</sup>, 2006 and the first hot spot closure announcement was sent to the fleet on January 30<sup>th</sup> (effective January 31<sup>st</sup>). 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 14<sup>th</sup> 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 15<sup>th</sup>, 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.).

As discussed in the analysis for amendment 84, the intercooperative will provide the Council with an annual performance review report. This report will contain the following (NPFMC 2005):

1. Number of salmon taken by species and season
2. Estimate number of salmon avoided as demonstrated by the movement of fishing effort away from salmon hot-spots.
3. A compliance/enforcement report which will include the results of an internal compliance audit and an external compliance audit if one has been done.
4. List of each vessels number of appearances on the weekly dirty 20 lists for both salmon species
5. Acknowledgement that the Agreement term has been extended for another year (maintaining the 3 year lifespan) and report any changes to the Agreement that were made at the time of the renewal.

### **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<sup>1</sup>, 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.

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<sup>1</sup> 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.

## 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)

## Discussion of amendment package B-1

In December 2005, the Council announced its intention to review the alternatives under amendment package B-1 at its April meeting to decide if they merited further revision. Additional information from the SSC workshop on Salmon Bycatch Research will be available at the meeting in order to assist the Council in potentially revising these alternatives.

**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 Council is holding a workshop on salmon bycatch and stock origin which is scheduled on April 4<sup>th</sup> in conjunction with the SSC meeting. Additional information from this workshop will assist in clarifying methodologies for examining appropriate salmon bycatch limits for this analysis.

### **Additional considerations for the analysis**

In their June 2005 motion, the Council identified several items of importance to be considered in conjunction with salmon bycatch initiatives, specifically the importance of a research plan and recommendations (expanded from the SSC suggestions) for additional information to better inform the Council and the public on the status of salmon stocks and the related impact of trawl fisheries in the Bering Sea.

The Council motion noted the following (excerpted from June 2005 Council motion):

Further, the Council has identified the importance of a research plan in cooperation with the pollock fleet, western Alaska entities, NMFS and ADF&G to facilitate salmon bycatch reduction, including:

- Developing methods for reducing salmon bycatch in the pollock fishery through excluder devices, fishing behavior modification, net design and the like;
- Developing methods to gauge salmon abundance pre-season or in-season so that trigger rates can be set appropriately based on the best scientific information; and
- Identifying the rivers of origin of salmon bycatch, and the timing and location of bycatch of the various stocks, paying particular attention to stocks of concern and developing methods to avoid these.

The Council has also discussed that the overall analysis of the effectiveness of the VRHS program will occur when the analysis of these amendment package alternatives are available for comparative purposes. The Council may wish to consider at this time the means by which this effectiveness will be evaluated. The milestones for and standards against which effective bycatch reduction will be measured should be clearly outlined.



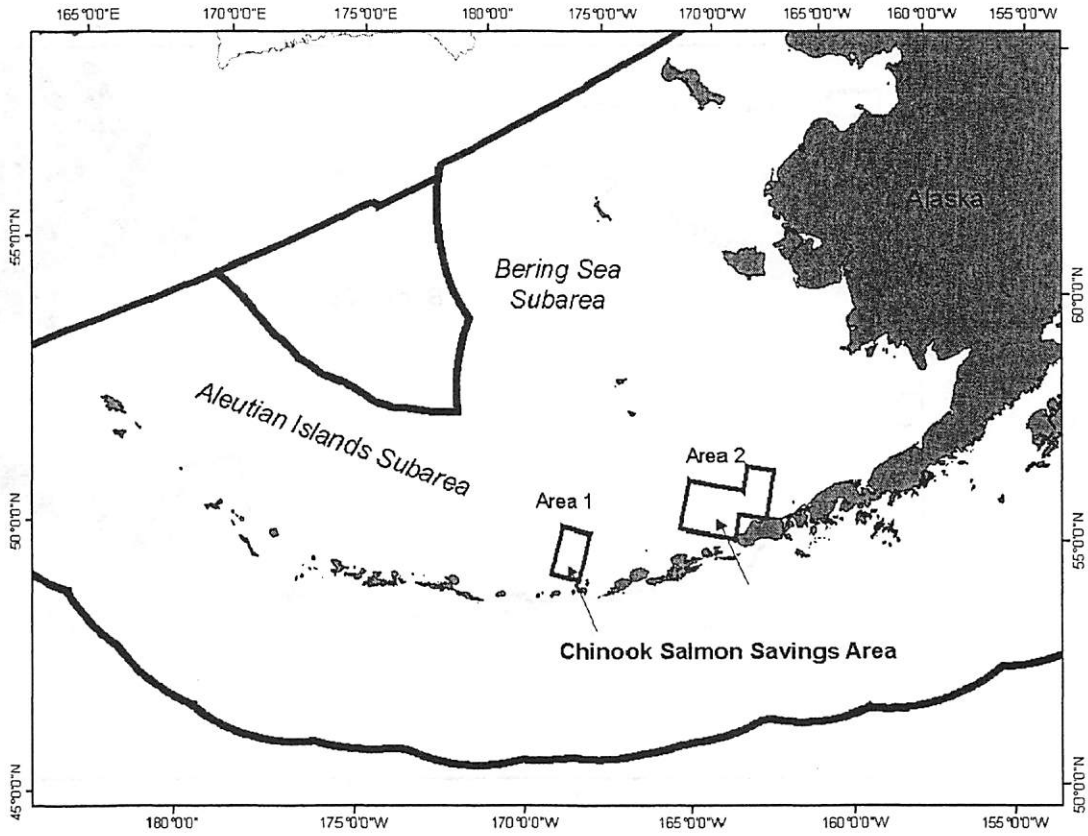


Figure 1 Chinook Salmon Savings Areas

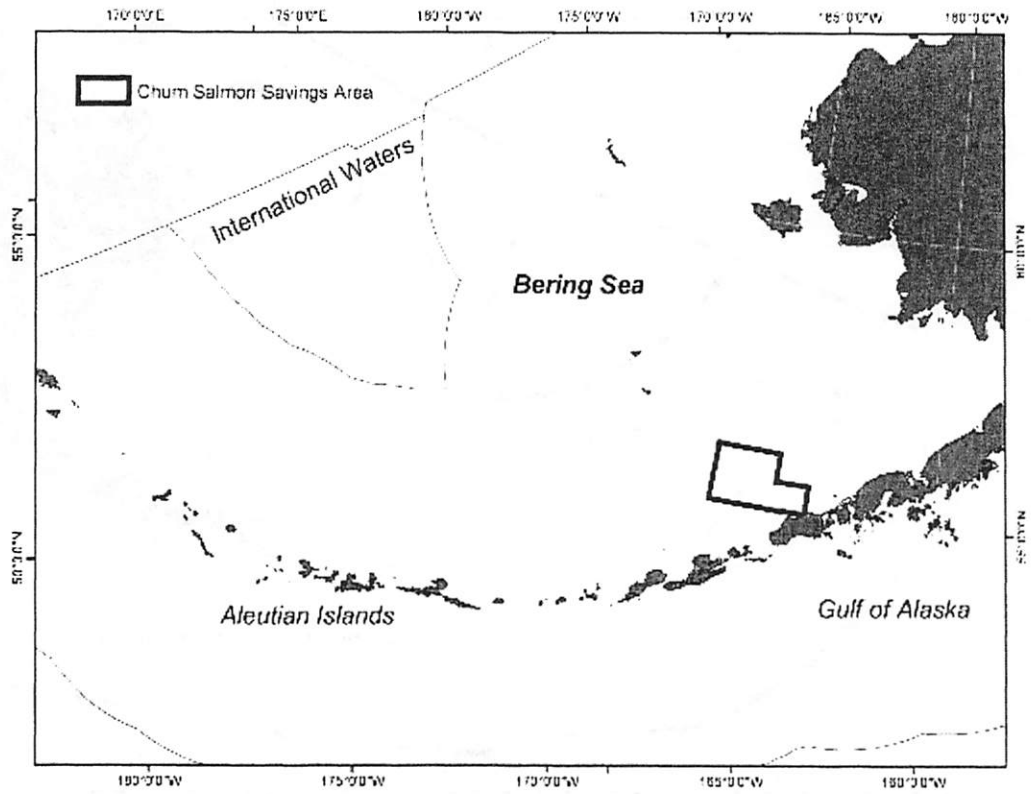


Figure 2 Chum Salmon Savings Area

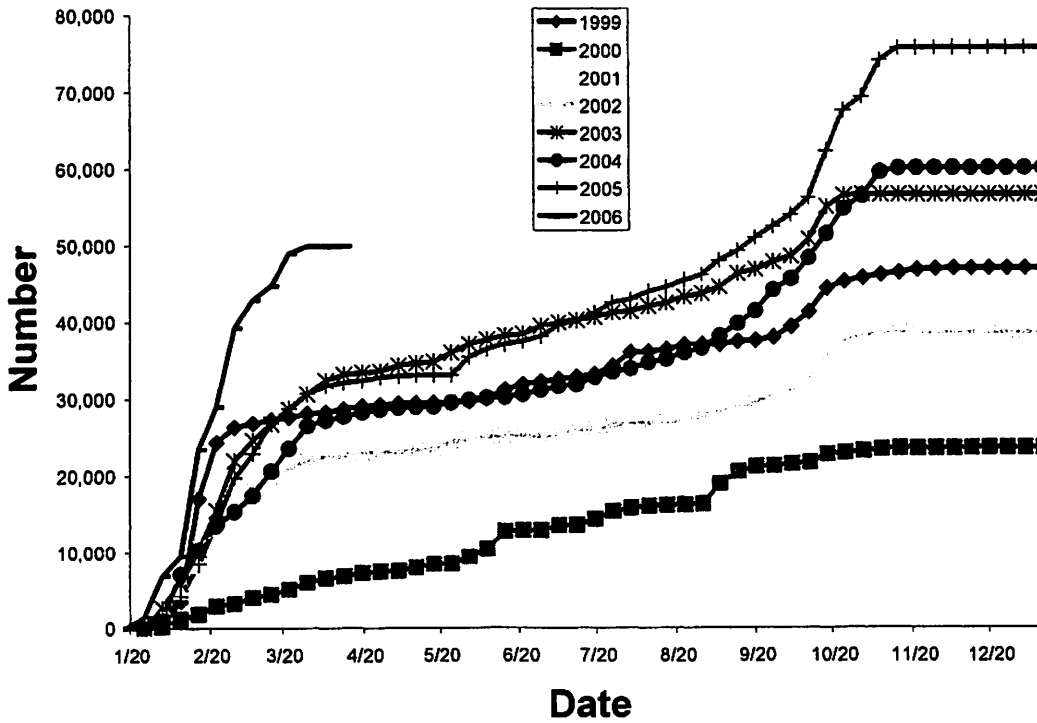
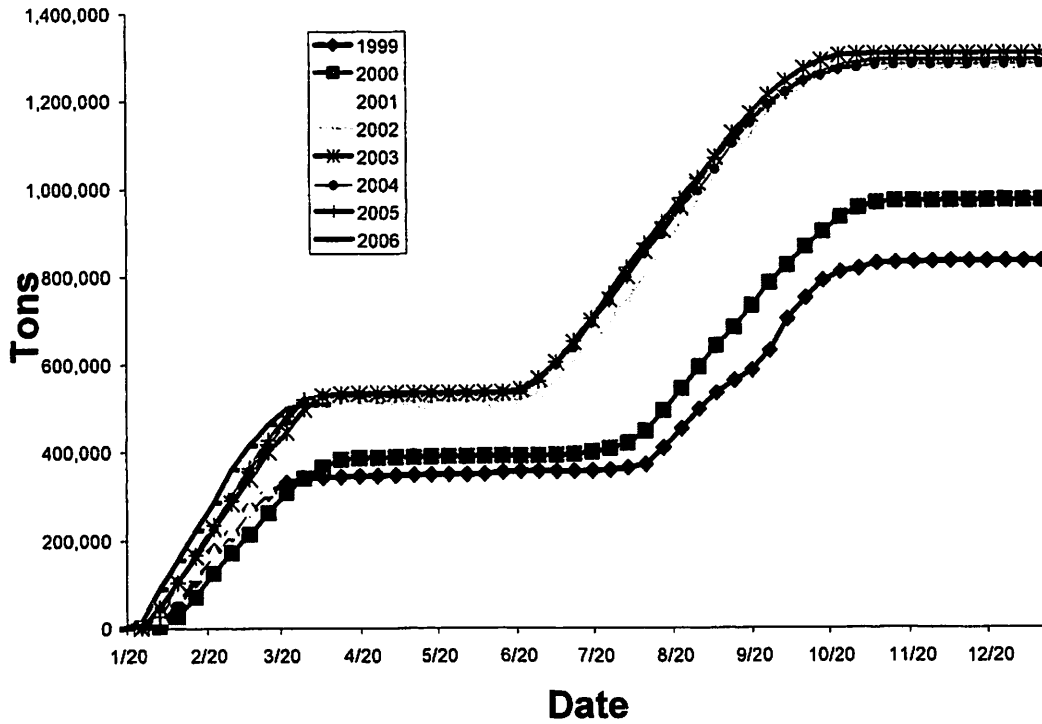


Figure 3. Cumulative pollock catch (tons; top panel) and cumulative chinook salmon catch based on observed vessels only (2000-2006, weekly intervals). Data for 2006 are preliminary and extend to March 25, 2006.

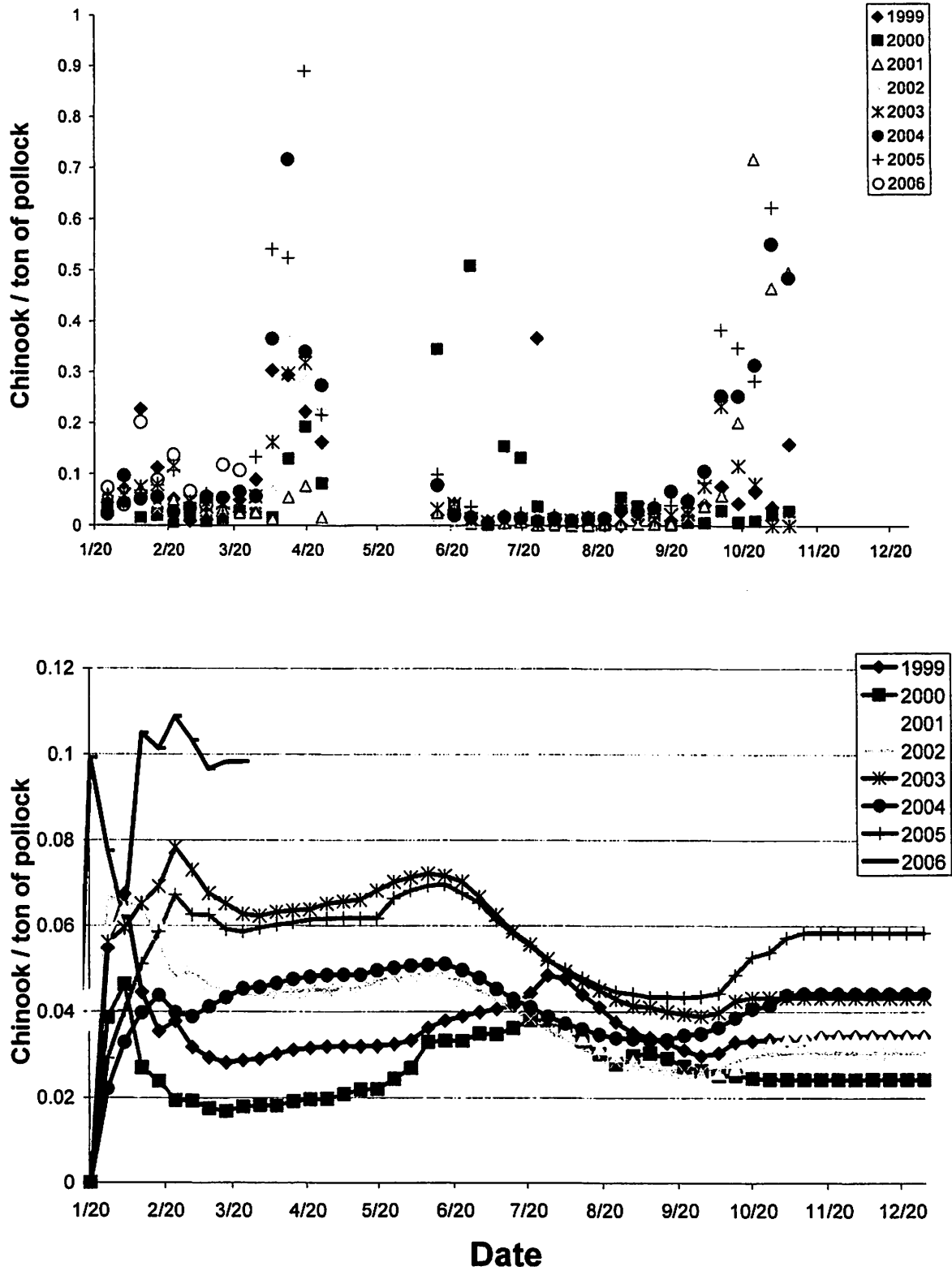


Figure 4. Chinook salmon catch rate (number per ton of pollock) based on observed vessels only (2000-2006). Top panel represents the average bycatch at weekly intervals while the bottom panel represents the cumulative number per ton of pollock. Data for 2006 are preliminary and extend to March 25, 2006.

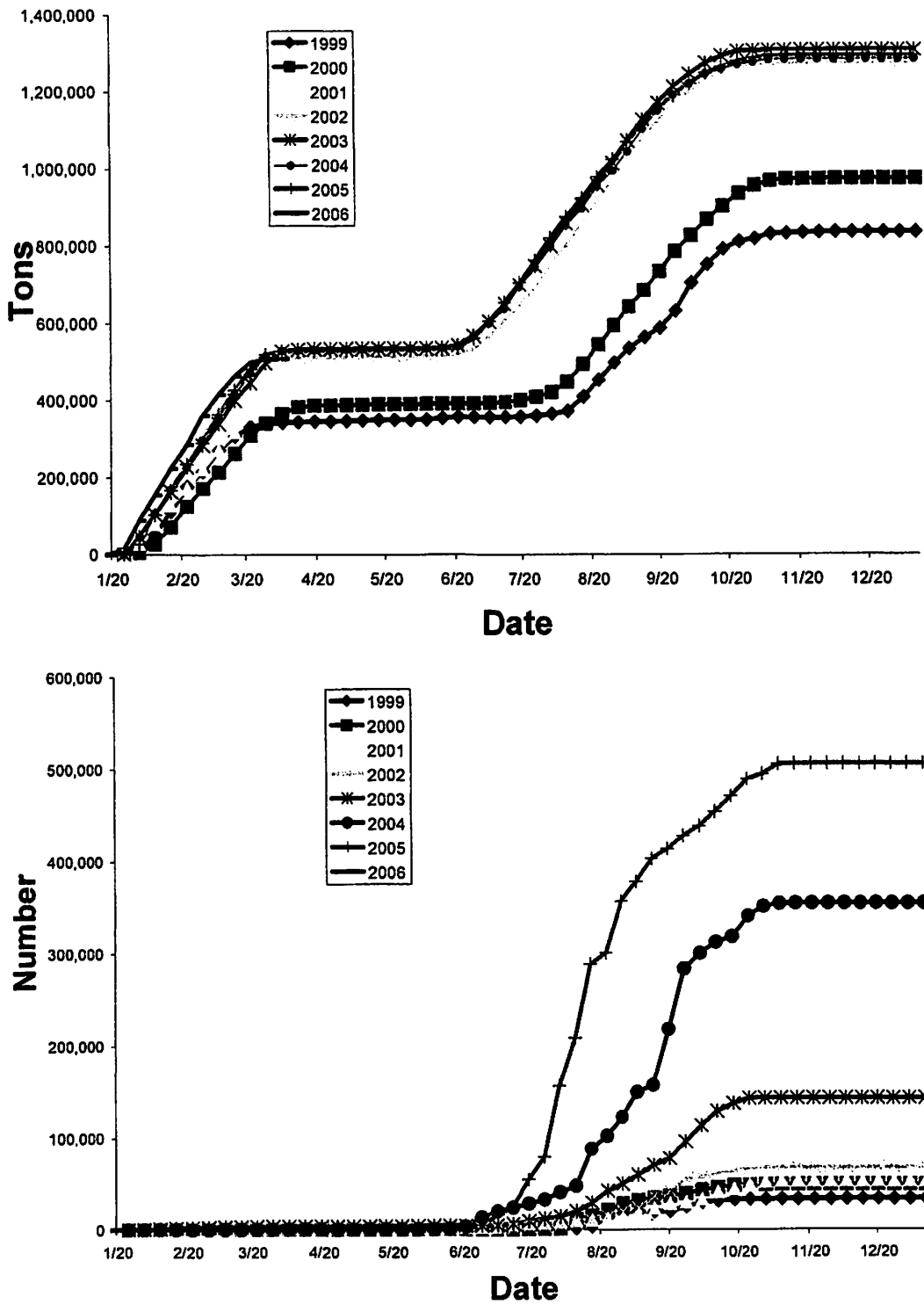


Figure 5. Cumulative pollock catch (tons; top panel) and cumulative non-chinook (chum) salmon catch based on observed vessels only (2000-2006, weekly intervals). Data for 2006 are preliminary and extend to March 25, 2006.

## 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 (A.l.t.), 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.

## **NPFMC Science and Statistical Committee Workshop on Salmon Bycatch Research**

April 4th, 2006, 11am-5pm  
Hilton Hotel, Anchorage

### **Objectives**

To review existing research on stock-origins of incidentally caught salmon species in the BSAI trawl fisheries, assessment information for Pacific Rim stocks and other research relevant to the Council's continued activities with salmon bycatch reduction measures.

### **Agenda**

- 11:00-11:30 **D. Stram.** Overview of Council actions on salmon bycatch measures and objectives for salmon workshop discussion
- 11:30-12:00 **J. Ianelli.** Salmon Bycatch Patterns in the Bering Sea Pollock Fishery
- 12:00-1:00 Lunch Break
- 1:00-1:30 **J. Murphy.** Salmon abundance and bycatch: a review of distribution and abundance from the Bering-Aleutian Salmon International Survey (BASIS)
- 1:30-2:00 **R. Wilmot.** Efforts to determine the stock origins of salmon bycatch in the Bering Sea groundfish fishery.
- 2:00-2:30 **L. Seeb and J. Seeb.** Development of standardized DNA baselines for high-seas and bycatch applications.
- 2:30-3:00 **A. Gharrett.** Genetic methods for determining origins of salmon in trawl bycatches.
- 3:00-3:30 **D. Bergstrom or G. Sandone.** Chinook and Chum Salmon Stock Status in the AYK Region.
- 3:30-5:00 **Discussion/other presentations as requested**

*Note: talks are approximately 20-25 minutes in length with additional time allotted for questions. Further discussion time will be available following the conclusion of the presentations. An afternoon break will be scheduled within the agenda at the discretion of the SSC chair.*

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## **Salmon bycatch patterns in the Bering Sea pollock fishery**

James Ianelli  
Alaska Fisheries Science Center/NOAA Fisheries  
Seattle, WA

Data from the North Pacific Observer Program (Fisheries Monitoring and Assessment) were analyzed for seasonal, temporal, and spatial patterns of bycatch. The bycatch rates within and outside of current salmon savings areas were compared and an index of spatial concentration of salmon was developed. Analyses by fleets were limited by the methods used to assign bycatch levels to areas. Salmon bycatch rates are highly variable. Recent higher bycatch levels are likely due to increased salmon abundance rather than shifting patterns of effort by the pollock fleet.

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## **Salmon abundance and bycatch: a review of salmon distribution and abundance from the Bering-Aleutian Salmon International Survey (BASIS).**

Jim Murphy  
Alaska Fisheries Science Center/NOAA Fisheries  
Auke Bay Lab  
Juneau, AK

Historic time series of salmon abundance in the Bering Sea and recent patterns of salmon distribution and abundance from the Bering-Aleutian Salmon International Survey (BASIS) are reviewed to provide insight into recent changes in salmon abundance and bycatch potential in the Bering Sea.



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## **Efforts to determine the stock origins of the salmon bycatch in the Bering Sea groundfish fishery**

Richard L. Wilmot  
Alaska Fishery Science Center  
Auke Bay Laboratory  
Juneau, AK 99801

The salmon bycatch in both the Gulf of Alaska (GOA) and Bering Sea/Aleutian Islands (BSAI) groundfish fisheries has been a major concern of the National Marine Fisheries Service (NMFS) management. The large bycatch of salmon coincided with a period of reduced returns of chum and Chinook salmon to western Alaska Rivers and prompted calls for determining whether or not this large bycatch was contributing to this decline. The Chinook salmon bycatch in the BSAI in 2004 of nearly 63,000 and 75,000 in 2005 exceeded previous highs set in the mid 1990's, substantially exceeded the caps that trigger moving the fleet out of designated Chinook salmon savings areas, and initiated endangered species act (ESA) reviews. The chum salmon bycatch in the BSAI in 2004 of 447,000 fish and over 700,000 in 2005 far exceeded previous catches and likewise triggered moving the fleet out of chum salmon savings areas.

From 1994 to 1996, the Auke Bay Laboratory (ABL) conducted a genetic stock identification study of the BSAI chum salmon bycatch using allozymes. A Pacific Rim chum salmon baseline had been developed over a number of years by cooperation of a number of groups on both sides of the Pacific Rim. Simulations on this baseline showed that eight regions could be identified with a reasonable degree of accuracy: Japan, Russia, Western Alaska summer run, fall Yukon River, Alaska Peninsula/Kodiak/Chignik, Southeast Alaska/Prince William Sound, British Columbia and Washington. Regional estimates of origin averaged over three years showed Asia (41%), Western Alaska (24%), Alaska Peninsula (2%), PWS/SEAK (9%), BC (9%) and Washington (5%). While this effort provided important information about the origins of the chum salmon bycatch, the baseline could not discriminate among stocks from the broad category of western Alaska summer run that includes stocks from Bristol Bay north to Kotzebue and Norton Sound. Chum salmon stocks south of the Kuskokwim River are relatively healthy and are probably not adversely affected by the BSAI chum salmon bycatch. However, stocks from the Kuskokwim north to Kotzebue have experienced serious declines and could possibly be adversely affected by the BSAI chum salmon bycatch. ABL supports efforts by UAF and ADF&G to develop new DNA based markers that hopefully will allow greater discrimination of stocks from the western Alaska group.

In 2005, ABL working in cooperation with the NMFS Observer Program began collecting samples from the Chinook and chum salmon bycatch from the "B" season BSAI groundfish fishery. This effort is ongoing into the 2006 "A" season, and hopefully into the 2006 "B" season.

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## **Development of standardized DNA baselines for high-seas and bycatch applications**

Alaska Department of Fish and Game

The Alaska Department of Fish and Game is deeply committed to studies using standardized DNA baselines to identify the composition of mixtures of stocks of salmon such as those found in the BSAI fisheries.

Data from University of Washington studies using scale pattern analyses show that Chinook salmon stocks ranging at least from British Columbia to Russia are present in the bycatch. Data from Auke Bay Laboratory studies using genetics (allozyme markers) show that chum salmon stocks from throughout the species range are present in the bycatch. Both studies found that the Western Alaska stocks dominate.

Accurate stock identification information has been extremely valuable for high-seas, coastal migration, and bycatch studies from throughout the Pacific Rim. This type of information can address concerns of fluctuating and sometimes substantial declined of stocks of western Alaska salmon. Here we review the progress on development of DNA markers for use in bycatch and other high seas applications. DNA techniques provide significant advantages over allozymes, and the State of Alaska has made a commitment to develop and collaborate on comprehensive baselines for chum, sockeye, and Chinook salmon. Of the various DNA markers, single nucleotide polymorphisms (SNPs) assayed through high-throughput technologies are particularly appropriate for bycatch applications where Pacific Rim-wide databases are required. Unlike marker types based on fragment size, SNPs are based on the actual DNA sequence, require no inter-laboratory standardization, are cost-effective, and can be easily automated.

We are currently conducting various projects to develop Pacific Rim-wide databases in cooperation with NPAFC laboratories (Japan, Russia, and Korea) and ten laboratories funded by the Pacific Salmon Commission. Projects funded by the North Pacific Board, USFWS Office of Subsistence Management, Pacific Salmon Commission, and State of Alaska general funds have started to track the migration and distribution of stocks of sockeye, chum, and Chinook salmon. In addition, common concerns voiced by ten stakeholders produced an umbrella plan for the Western Alaska Salmon Stock Identification Program (WASSIP) to seek federal funds to track the interceptions of sockeye and chum salmon in interception fisheries in the NW Gulf of Alaska and Bering Sea. Finally, a three-year project just approved by the AYK SSI funds the analysis of Chinook salmon bycatch in an attempt to develop a forecast model for AYK stocks.

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## Genetic methods for determining origins of salmon in trawl bycatches

A.J. Gharrett, S.A. Fuller, and M. Garvin  
Juneau Center, School of Fisheries and Ocean Sciences  
University of Alaska Fairbanks  
Juneau, AK 99801

Chum salmon (*Oncorhynchus keta*) bycatch in the Gulf of Alaska and Bering Sea continues to create problems for the groundfish fisheries, particularly the Bering Sea trawl fisheries. Chum salmon are critical to the livelihood and culture of rural Alaskans and the focus of a number of other issues including allocation among Alaskan users and between the U.S. and Canada. Between 1997 and 2002 unexpected and dramatic declines in returns to watersheds of western Alaskan salmon runs prompted 15 disaster declarations by the Governor of Alaska and federal agencies (AYK Scientific Technical committee 2005). Although those runs appear to be rebounding, incidental catches in the pelagic trawl fisheries have been increasing dramatically.

Central to bycatch questions is the origin/destination of intercepted fish. Use of natural genetic markers is the best method for stock identification of wild fish in the marine environment; and substantial effort has been (and continues to be) devoted to genetic studies of North Pacific salmon stocks. An extensive allozyme baseline was developed in the last two decades to address those questions, but the logistics of sampling and increasing costs of storing and processing the samples have obviated their use. Most labs have terminated allozyme operations. Moreover, allozymes do not appear to provide the fine-scale resolution needed to address some important questions involving origins of western Alaskan chum salmon stocks.

Two promising approaches include analysis of microsatellite variation and the recent development of tools to resolve single nucleotide polymorphisms (SNPs) from both nuclear and mitochondrial DNA. Both approaches have challenges and all genetic methods require that substantial baseline data, which includes most of the geographic range of a species, have been assembled before these tools can be confidently applied.

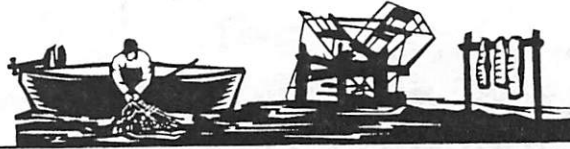
Our University of Alaska Fairbanks genetics laboratory has been examining both the microsatellite and SNP approaches, by using a common set of DNA samples from populations that represent most of the geographic range of chum salmon. We are surveying microsatellite variation and using loci that are being applied by other labs acquiring microsatellite data from Alaskan chum salmon. Preliminary comparisons for data from samples analyzed by two labs indicate that the data are highly concordant. We are developing SNP markers. One of our goals in developing and evaluating SNPs markers is to find or create inexpensive methods to resolve SNP variation and to be able to resolve multiple variants that occur in a short region of DNA. The advantage of the SNP markers is that by their nature, the data should be concordant from lab to lab. We are still in the process of developing and evaluating these microsatellite and SNP tools.

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## **Chinook and Chum Salmon Stock Status in the AYK Region**

Dan Bergstrom, Gene Sandone  
ADF&G  
Anchorage, AK

A short description of subsistence and commercial fisheries in the AYK Region is provided. Present harvest and escapement trends of Chinook and chum salmon in AYK Region focusing on 1980 to present in the Kotzebue Sound, Norton Sound, Yukon River, Kuskokwim River Areas are covered. The overall trend in abundance for the region since 1980 will be summarized and the status of stocks of concern under the Alaska Board of Fisheries Sustainable Salmon Fisheries Policy will be presented.



**YUKON RIVER DRAINAGE FISHERIES ASSOCIATION**

725 CHRISTENSEN DRIVE, SUITE 3-B • ANCHORAGE, ALASKA 99501  
TELEPHONE: (907) 272-3141 • 1-877-99-YUKON (9-8566)  
FAX: (907) 272-3142 • E-MAIL: YRDFA@ALASKA.COM

March 2, 2006

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

RECEIVED  
MAR - 2006  
N.P.F.M.C.

To Whom It May Concern:

Yukon River Drainage Fisheries Association (YRDFA) held its 16<sup>th</sup> Annual Meeting in Ruby, Alaska February 13-16, 2006. The YRDFA Board of Directors passed several resolutions regarding issues affecting the Yukon River, and specifically directed you receive the resolution(s) regarding Bycatch. You will find the resolution(s), as well as a summary of the meeting, enclosed. If you have any questions about the resolutions, meeting outcomes, or YRDFA in general please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Becca Robbins', written in a cursive style.

Becca Robbins  
Policy Coordinator



## YUKON RIVER DRAINAGE FISHERIES ASSOCIATION

725 Christensen Drive, Suite 3-B, Anchorage, Alaska 99501  
Tel: 907-272-3141 Fax: 907-272-3142

**Resolution: 2006-06**

### **Salmon Bycatch**

**WHEREAS** YRDFA represents subsistence, commercial and sport fishers from over 40 communities within the U.S. portion of the Yukon River drainage who depend on wild salmon for subsistence and income; and

**WHEREAS** YRDFA has been working on reducing salmon bycatch in the Bering Sea/Aleutian Islands Pollock fishery since 1994; and

**WHEREAS** the Pollock fishery has instituted a voluntary program at its own expense to reduce salmon bycatch; and

**WHEREAS** the Bering Sea Aleutian Islands Pollock fishery continues to catch Chinook and chum salmon as bycatch; and

**WHEREAS** approximately 13,000 Yukon River Chinook were caught as bycatch in 2005; and

**WHEREAS** these fish represent 42% of the commercial catch, 27% of the 2005 subsistence catch, and 47% of the border passage goal;

**BE IT RESOLVED** that YRDFA will continue to monitor salmon bycatch; increase understanding of stock composition, salmon distribution and the relationship between salmon abundance and salmon bycatch; and will achieve meaningful reductions in salmon bycatch.

**COPIES** of this resolution will be sent to the the North Pacific Management Council, Voluntary Rolling Hot Spots Inter-coop Working group, BSFA, AVCP, TCC and other Western Alaska salmon groups.

**APPROVED** unanimously this 16<sup>th</sup> day of February 2006 by the Board members and Delegates of YRDFA assembled at their Sixteenth Annual Meeting held in Ruby, Alaska.

Attest:

  
Richard Burnham, YRDFA Co-Chair

  
William Alstrom, YRDFA Co-Chair



## YUKON RIVER DRAINAGE FISHERIES ASSOCIATION

### **16<sup>th</sup> Annual Meeting**

February 13-16, 2006

Ruby, Alaska

### **Meeting Summary**

#### **Fisheries Report & Outlooks**

*Alaska Department of Fish & Game presented outlooks for the upcoming season*

- \* Chinook and summer chum (Steve Hayes) - ADF&G predicts that 2006 runs will be average to below average. Expecting normal subsistence harvests and below average commercial harvests.
- \* Fall chum outlook (Fred Bue) – ADF&G predicts a substantial run of about 1.2 million fish. Expecting to meet all of our escapement goals, meet subsistence needs throughout the drainage and have a commercial harvest of 100,000-400,000 fish.
- \* Icthyophonus - ADF&G has seen decreases in *Icthyophonus* in the past year and don't think the disease reduces fish's chance of returning to spawning grounds.

#### *YRDFA's In-season Management teleconferences*

- \* Jill Klein and Co-Chairs encouraged river-wide participation in the calls.
- \* ADF&G finds the conferences valuable.
- \* The teleconferences are a great way to incorporate Traditional Ecological Knowledge.

#### **Riverwide Fish Issues**

##### *Changing Size of Salmon*

- \* People along the river, mainly in the upper river, are seeing changes in size of salmon - no one knows what the causes are.
- \* YRDFA discussed the need to do something about this issue.
- \* Cliff Schleusner (OSM), Kristin Mull (YRDFA) and Dani Evenson (ADF&G) gave presentations on research and data on the changing size of Chinook salmon and the impacts of gear and marine productivity on fish size.

##### *Windows*

- \* Subsistence windows will be up for discussion at the next Board of Fish (Jan. 2007).
- \* Upper river fishers have seen more fish up there and think windows are working.
- \* While windows do pose a hardship on the lower river, they may be the best conservation measure to address getting big, female fish to the spawning grounds.

## **Commercial Fisheries Revitalization**

### *DEC Seafood Processing Regulations*

- \* DEC has proposed processing regulations which classify fishers who remove roe at their fish camps as direct market land-based facilities and forces them to comply with complex DEC regulations.
- \* Upper river fishers said these regulations have the potential to shut down the upriver fishery due to their complexity and expense.
- \* **Motion** – YRDFA will send letters to the Governor, state and federal legislators asking that roe harvesters on the Yukon River be exempt from classification as processors and thus not subject to permitting requirements and regulations.
- \* YRDFA will continue to work with DEC and fishers to find ways to process roe in a safe and cost effective manner.
- \* Customary trade of traditionally smoked salmon strips was also brought up and is currently illegal under DEC regulations.
- \* YRDFA discussed the importance of being able to trade salmon strips to Yukon River communities and maintaining the subsistence way of life.

### *Kaltag Fish Plant*

- \* Work on completion of the Kaltag fish plant is underway to enable limited operations this year.
- \* YRDFA will assist fishermen in getting ready to comply with DEC and to rebuild their fishwheels.
- \* Next year YRDFA will continue to work on seeking additional state and federal dollars for final completion of the plant.

### *Marketing & Quality*

- \* YRDFA dedicated funds to salmon marketing and training for quality handling improvements.
- \* Marine Advisory Program created a presentation on marketing and quality handling techniques that will be shown in Yukon River communities this spring before the fishing season.
- \* New laws allow fishers to form Regional Seafood Development Associations (RSDA) funded through self-assessed fees. One could be set up on the Yukon if there is interest.
- \* Randy Crawford from Boreal discussed his marketing efforts and the need to have a set day for the commercial opening at the beginning of the season to secure markets.

## **Other Fisheries Issues**

### *Impacts of Climate Change on the Yukon River*

- \* Orville Huntington of Huslia, Co-Chair of the Alaska Native Science Commission, presented experiences from his community on the impacts climate change is having and how communities will have to adapt as climate change advances.
- \* Impacts from climate change include increased fires, eroding riverbanks, and flooding.
- \* Others shared similar experiences.



### *Hatcheries*

- \* Virgil Umphenour presented on hatchery salmon production in the state of Alaska – hatcheries promised to cut back on production and they have not fulfilled that promise.
- \* **Motion** – Staff will send letter to governor addressing hatchery production and exemption from the wanton waste law. Letter will also state that ocean-ranched and hatchery fish are not wild and YRDFA opposes labeling these fish as wild.

### **Planning for Summer Season 2006**

#### *Quarter Point Opening proposal*

- \* The Board approved a proposal to allow a commercial opening at the quarter point of the run, which is historically June 15<sup>th</sup>. This will allow a limited amount of fish to be caught early in the season for marketing purposes, and will be used by management to assess run strength.
- \* The rationale was that if run strength will provide for upriver subsistence and escapement needs, then fish can be harvested along the entire Chinook run, spreading out the harvest and having less impact on specific parts of the run.
- \* **Proposal:** A run assessment opening shall be made at the first quarter in Y1 or Y2 with the intent to set a date at the beginning of the season. There was intent to start this in Y2 first. Management shall use this opening to assess run strength for data verification prior to opening commercial fisheries and to evaluate in-season indicators of run strength.

#### *Directed coho fishery*

- \* Fred Bue of ADF&G presented the possibility of a directed coho fishery on the Yukon River.
- \* The YRDFA Board decided they need more information on the fishery and will discuss it again at the Fall YRDFA Board meeting.
- \* A placeholder for this proposal will be put in to the Board of Fisheries in the meantime.

#### *Marking subsistence harvested fish*

- \* ADF&G discussed how lower Yukon fishers are not marking their subsistence caught fish due to the difficulty of cutting the dorsal fin.
- \* ADF&G proposed cutting the tail instead of the dorsal fin to mark subsistence taken fish.
- \* **Motion** to support proposal to mark subsistence taken fish by cutting the tail instead of the dorsal fin.

### **Resolutions Passed by the YRDFA Board of Directors**

- 2006-01 Opposing Mixing Zones in Fish Spawning Areas
- 2006-02 Opposing Overproduction from Hatcheries and Roe Stripping
- 2006-03 Encouraging the collection of Age Length Sex & Girth/Weight Data
- 2006-04 Thanking the community of Ruby
- 2006-05 Regarding the Area M fishery and Stock Identification (WASSIP)
- 2006-06 Regarding Salmon Bycatch in the Bering Sea/Aleutian Islands Pollock Fishery