

## Annual Report 2013

### NMFS IPA No. 2

Chinook Salmon Bycatch Reduction  
Incentive Plan

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## INTRODUCTION

Amendment 91 to the Bering Sea and Aleutian Islands Groundfish Fishery Management Plan (BSAI FMP) limits Chinook salmon bycatch in the eastern Bering Sea (EBS) pollock fishery. The rules and regulations implementing Amendment 91 came into force at the start of the 2011 fishery. Amendment 91 is an innovative approach to managing Chinook salmon bycatch in that it combines a prohibited species catch (PSC) limit on the amount of Chinook salmon that may be caught incidentally by the fishery with an incentive plan agreement (IPA) and performance-standard requirement designed to minimize bycatch to the extent practicable in all years. The approach is designed to motivate fishery participants to avoid Chinook salmon bycatch at the individual vessel level under any condition of pollock and Chinook abundance in all years. The vessel-level incentives are created through contracts among the fishery participants.

50 CFR 679.21(f)(13) stipulates that IPA entities report annually on the following:

- Incentive measures in effect in the previous year;
- How incentive measures affected individual vessels;
- How incentive measures affected salmon savings beyond current levels;
- IPA amendments approved by NMFS since the last annual report and the reasons for amendments;
- Sub-allocation to each participating vessel;
- Number of Chinook PSC and amount of pollock (mt) at the start of each fishing season;
- Number of Chinook PSC and amount of pollock (mt) caught at the end of each season;
- In-season transfers among entities of Chinook salmon PSC or pollock among AFA cooperatives;
- Transfers among IPA vessels; and amount of pollock (mt) transferred.

## CP IPA OVERVIEW

The Chinook Salmon Bycatch Reduction Incentive Plan (CP IPA) reported on here is designed to provide the incentives necessary to accomplish the goals and objectives of Amendment 91. The plan builds on experience gained in the development and refinement of time-and-area-based, rolling “hot-spot” avoidance programs. The plan creates incentives to avoid salmon bycatch by restricting the pollock fishing opportunities of vessels with poor Chinook bycatch performance while allowing vessels with good performance better access to the fishing grounds. Losing access to good pollock fishing increases vessel operating costs and reduces product values. Avoiding grounds restrictions reduces operating costs and allows for the production of more high-value products (especially during the A-season), thus increasing profits.

The incentive plan is designed to work in concert with the annual Chinook salmon PSC limits specified in Amendment 91. The limits depend on whether the fishery participants develop IPAs. If IPAs are developed, then the annual PSC limit is 60,000 Chinook during any two-out-of-seven years, and 47,591 Chinook in other years. During 2013 all pollock vessels participated in an IPA and the catcher-processor (CP) sector IPA participants included vessels harvesting the American Fisheries Act (AFA) CP Sector and Community Development Quota (CDQ) pollock allocations. For the CP sector, the Chinook PSC limit is 17,040 fish (under the 60,000 fish annual limit) and the pollock quota is 36 percent of the non-CDQ directed fishing allocation. For the CDQ sector, the Chinook PSC

limit is 4,896 fish (under the 60,000 fish annual limit) and the pollock quota is 10 percent of the annual directed fishing allocation.

Each year the CP IPA participants begin to manage Chinook bycatch using the lower 47,591 annual limit. For this limit, the CP sector Chinook quota is 13,516 fish and the CDQ sector Chinook quota is 3,883 fish. These pollock and Chinook quotas are further allocated among the seasons and the participating vessels. Table 1 shows the CP IPA 2013 “day-one” allocations of pollock and Chinook salmon PSC quota for 2013.

Primary IPA components include: (1) data gathering, monitoring, reporting, and information sharing; (2) identification of bycatch avoidance areas (BAA); and (3) fishing-area prohibitions for vessels with poor bycatch performance. Additional components include: (4) an A-season closed area of approximately 755 square nautical miles on the northern flank of the Bering Canyon; and (5) a set of conditional, B-season closed areas of approximately 1,295 square miles along the outermost EBS shelf. Vessels are prohibited from fishing in the B-season areas beginning on October 15<sup>th</sup> and continuing through to the end of the season during those years when the aggregate bycatch of all plan vessels during the month of September exceeds a preset threshold.

## INCENTIVE MEASURES

### *The Rolling Hot-Spot (RHS) Program*

One of the most practical and direct methods to create incentives to avoid Chinook salmon bycatch is to limit the pollock fishing opportunities of a vessel when bycatch performance is poor. This simple approach works especially well for catcher-processors because efficient processing requires an uninterrupted flow of fish, and this can be achieved most reliably with unrestricted access to the grounds. Because experience has shown that high, local concentrations of pollock may often be found where concentrations of Chinook are also high (the vessels can “see” the pollock but not the Chinook), limiting access to local areas of relatively high Chinook bycatch is an efficient way to create a financial incentive to avoid Chinook salmon bycatch. This is because losing access to good pollock fishing grounds increases vessel operating costs and reduces the amount of products that can be produced during a day of fishing. A vessel that retains nearly unrestricted access to good pollock fishing opportunities avoids costs associated with moving and finding pollock in other areas, and so the vessel can produce higher volumes of higher valued products each day.

The RHS accomplishes this in two steps. The first step is to employ data gathering, reporting, and information sharing to identify local areas of relatively high Chinook abundance on the pollock grounds. Pollock catch and Chinook bycatch records from all fishery participants are gathered, compiled, evaluated, and distributed to IPA participants each week during which an IPA vessel catches pollock. With this information, areas of relatively high Chinook bycatch are identified (rolling hot-spots, or bycatch avoidance areas; BAA). Should vessels continue to fish in these areas, high Chinook bycatch is likely to occur because local concentrations of Chinook routinely persist in time and space for several weeks. Access to this information in real time allows vessels to decide where or where not to fish based on where Chinook are likely to be concentrated. Data shows that CP vessels are using the information provided through this program to voluntarily avoid fishing in Chinook hot spot areas, even when not required to do so under the provisions of the IPA. This is demonstrated in more detail under ‘effect of incentive measures,’ below.

The second step is to evaluate vessel Chinook bycatch performance relative to a grounds-wide index of Chinook abundance (the base rate), and restrict access to Chinook hot spot areas for vessels that do not meet the performance standard. This base rate fluctuates depending on average vessel performance relative to Chinook PSC, and is measured as the grounds-wide number of Chinook caught per ton of pollock caught. More information about the methods used to identify the base rate is in the IPA agreement (available at:

[www.fakr.noaa.gov/sustainablefisheries/bycatch/salmon/chinook/ipa/chinook\\_salmon\\_ipa\\_2\\_010.pdf](http://www.fakr.noaa.gov/sustainablefisheries/bycatch/salmon/chinook/ipa/chinook_salmon_ipa_2_010.pdf)).

Because the base rate fluctuates depending on pollock and Chinook salmon abundance, benchmarking vessel performance against this rate establishes and maintains incentives to avoid Chinook bycatch under any condition of pollock and Chinook abundance. The bycatch performance of the IPA vessels must remain below 75% of the base rate in any given week in order to maintain unrestricted access to the fishing grounds (i.e. to not be closed out of an identified BAA).

Vessel performance (number of Chinook per ton of pollock caught) is measured both currently (most recent two weeks) and cumulatively (over the entire fishing season), relative to the base rate. These two performance time periods are used for two different tests. To evaluate current performance, vessel performance is measured during the prior two weeks and compared to the base rate. A two-week period is used because experience has shown that day-to-day vessel bycatch performance is influenced by random factors associated with changes in weather, winds, water temperatures, and currents, and measuring performance over a two-week period dampens the effects of these random influences. This increases the usefulness of the measure in the creation of an incentive for the individual vessel to avoid bycatch.

The IPA rules stipulate that if the current bycatch performance of an IPA vessel is not better than 75% of the base rate, then the vessel is prohibited from fishing in the identified BAA for seven days (i.e. the following week). If during the following week the current bycatch rate of a vessel operating under a fishing prohibition remains higher than 75 percent of the base rate, then the vessel is prohibited again from fishing in the bycatch avoidance areas for an additional seven days. A seven-day fishing prohibition is called a weekly fishing prohibition.

The cumulative Chinook bycatch performance of a vessel is measured as the total amount (number) of Chinook salmon bycatch by the vessel during the fishing year relative to the pollock allocation assigned to that vessel (Table 1 shows the day-one" assignments for 2013). So the measure of cumulative vessel performance accumulates from the first day of fishing through to the last, and is not measured relative to the base rate. Vessel cumulative bycatch performance is evaluated against a standard designed to magnify the incentive to avoid salmon bycatch during years when the baseline abundance of Chinook is medium and high. Based on analysis of more than a decade of CP catch records, an annual bycatch of 8,500 Chinook indicates a year when Chinook abundance on the grounds traditionally fished by CP vessels is at a medium level.

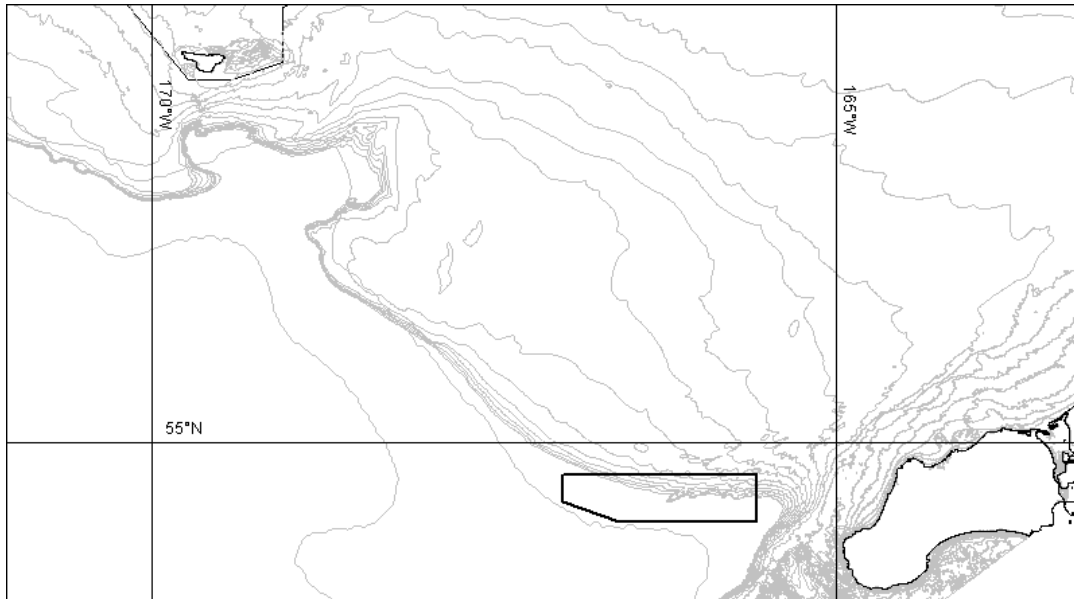
Cumulative bycatch performance is evaluated only for those vessels that receive a weekly fishing prohibition. For these vessels, if the cumulative Chinook bycatch rate is higher than the medium-abundance standard, then the vessel is prohibited from fishing in the BAA for two weeks. This standard is called the vessel cumulative amount, and a fourteen-day fishing prohibition is called an extended fishing prohibition. If vessel Chinook bycatch is greater than its cumulative amount, then it is subject to the extended fishing prohibition. Additional information about how the vessel cumulative amount is determined is in the IPA agreement.

## *Chinook Salmon Conservation Areas*

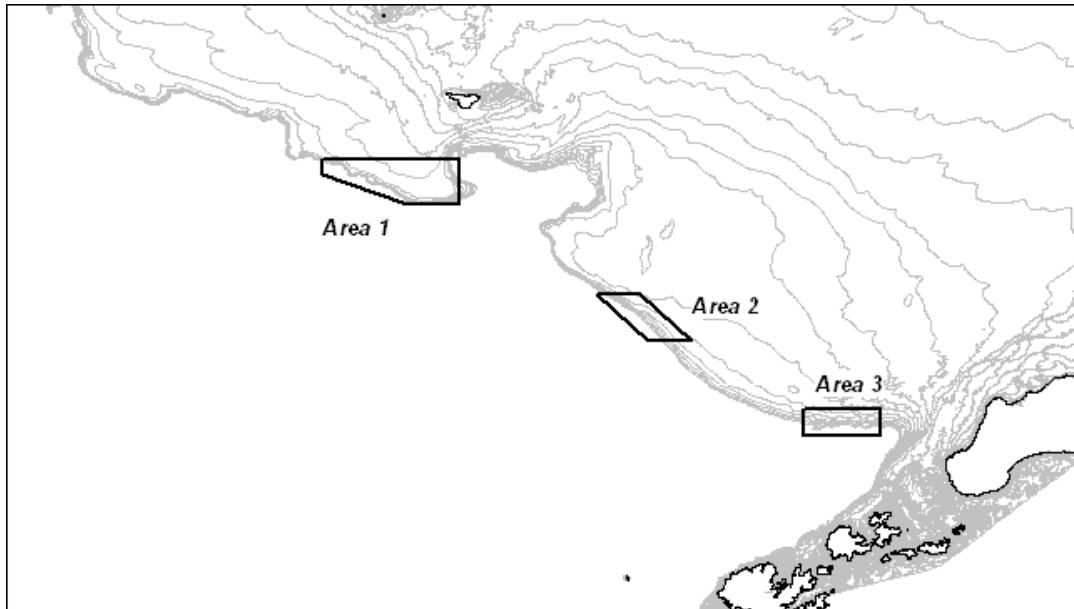
Chinook salmon feeding migrations produce concentrations of Chinook in discrete, local areas along the EBS outer continental shelf, and many of these areas are well known to pollock fishermen. The areas are known to pollock fishermen because more often than not high concentrations of pollock are found in the areas. However, the precise times during which pollock and Chinook may be concentrated in any local area depends on a host of environmental and physical-oceanographic conditions that change with the seasons and the weather, such that it is not generally possible to know precisely where and when pollock and Chinook are concentrated together before going fishing for pollock.

Analysis of catch records over a decade or more has revealed the existence of one area along the outer continental shelf within which it seems that high concentrations of Chinook salmon exist almost every year during the winter fishery. Based on this analysis, an A-season fishing prohibition within an approximately 735 square mile area is included in the plan as a means to reduce bycatch. The area is called the A-season Chinook Salmon Conservation Area (CSCA; maps and the latitude and longitude coordinates of all CSCA boundaries are provided in the IPA agreement). Figure 1 shows the boundaries of the A season CSCA.

Analysis of B season catch records over two decades shows that when migrating Chinook arrive on the outer continental shelf in sufficient numbers during September, the odds that high concentrations of Chinook will be encountered by the fishery in October appear to increase. To create an incentive to reduce bycatch during the latter portion of the B-season, the CP IPA includes “triggered” fishing prohibition for three areas of approximately 1,295 square miles along the outermost shelf. These areas are called the B-season Chinook Salmon Conservation Areas (Figure 2). To implement the incentive, all vessels are prohibited from fishing in the areas beginning on October 15<sup>th</sup> and continuing through to the end of the season during those years when the aggregate bycatch rate for all vessels during the month of September exceeds 0.015 Chinook per metric ton of pollock harvest (n/t). The CP IPA also specifies the penalties levied on a vessel for violating a BAA prohibition or fishing in a CSCA when fishing there is prohibited. These penalties are \$10,000 for the first annual violation, \$15,000 for a second annual violation, and \$20,000 for a third and each subsequent violation during a year, with every trawl inside a prohibited area considered a separate violation.



**Figure 1. A-season Chinook Conservation Area.**



**Figure 2. B-season Chinook Conservation Areas. These areas are closed October 15-October 31 to CP pollock fishing if the September CP Chinook bycatch rate exceeds 0.015 Chinook per metric ton of pollock.**

### *Management of Vessel Allocations*

As discussed in the overview of the CP IPA, Amendment 91 establishes a total Chinook salmon cap of 60,000, with a performance standard of 47,591 Chinook that must be met or exceeded in 3 of 7 consecutive years. The CP IPA is structured so that its portion of the absolute cap of 60,000 is never allocated among companies and vessels, unless the CP Salmon Corporation calls a vote and that vote is unanimously in favor. Instead, the allocation down to companies and vessels always starts with the CP portion of the 47,591 performance standard. This is 13,516 Chinook. From that 13,516,

buffers are subtracted. The remaining Chinook is allocated by the entity to companies who must then allocate to their respective vessels before the start of fishing for the year.

The CP IPA is designed to work in concert with the bycatch allocation management activities of the entities authorized within Amendment 91 to perform this task. For example, the plan includes a requirement for the constitution of a limit buffer to ensure that the sector bycatch limits established by Amendment 91 are conserved. The buffer is made up of contributions from all plan vessels in amounts equal to at least two-thirds of one percent of the vessel Chinook allocation. Because the limit buffer is planned to address some unexpected, unknown event, it is anticipated that the Chinook salmon allocations in the buffer will not be needed to harvest the pollock allocation.

The plan also includes a requirement that the Technical Representative notify the allocation management entity when the Chinook bycatch of any plan vessel reaches 95 percent of its Chinook allocation. This requirement was included in the plan to ensure that the entities managing the bycatch allocations of plan vessels have sufficient time to assess the need for and-or timing of stop fishing orders.

### CP IPA ALLOCATIONS AND CATCHES FOR 2013

Table 1 shows the CP IPA 2013 “day-one” allocations of pollock and Chinook salmon PSC by vessel for 2013 A- and B-seasons. Table 2 shows transfers of pollock between CP IPA vessels in 2013. Note there were no transfers of Chinook salmon between CP IPA vessels in 2013. Table 3 shows 2013 CP IPA pollock catch and Chinook PSC by season and vessel for 2013.

**Table 1. CP IPA Day-One Allocations of Pollock and Chinook Salmon, 2013, including CDQ pollock and Chinook allocated to the CP fleet from CDQ partners, and pollock rollover from the Aleutian Islands TAC to CP vessels.**

Vessel	A-season		B-season	
	Pollock (mt)	Chinook (n)	Pollock (mt)	Chinook (n)
American Dynasty	18,020	1,077	27,031	269
American Triumph	18,020	1,077	27,031	269
Northern Eagle	18,020	1,077	27,031	269
Northern Jaeger	18,020	1,077	27,031	269
Ocean Rover	18,020	1,077	27,031	269
Arctic Fjord	16,113	964	24,170	241
Arctic Storm	17,010	1,017	25,515	254
Northern Hawk	16,536	991	24,804	248
Alaska Ocean	21,124	1,263	31,686	316
Pacific Glacier	17,283	1,033	25,925	258
Starbound	16,523	989	24,784	247
Island Enterprise	10,441	623	15,661	156
Kodiak Enterprise	10,441	623	15,661	156
Seattle Enterprise	10,441	623	15,661	156
Ocean Peace	881	53	1,322	13
Katie Ann	0	0	0	0
Northern Glacier	0	0	0	0
Total 2014 Allocation			440,640	16,954
Allocation Buffer			0	445



**Table 2. Transfers of pollock between CP IPA vessels in 2013. There were no transfers of Chinook salmon during 2013.**

<b>Date</b>	<b>From vessel</b>	<b>To vessel</b>	<b>Amount (mt)</b>	<b>Species</b>
06/01/13	Arctic Storm	Arctic Fjord	7,050	Coop pollock
08/22/13	Arctic Storm	Seattle Enterprise	4,000	Coop pollock
08/22/13	Arctic Storm	Alaska Ocean	3,600	Coop pollock
08/22/13	Arctic Storm	Northern Hawk	553	Coop pollock
08/13/13	Starbound	Kodiak Enterprise	1,263	Coop pollock
09/03/13	Pacific Glacier	Northern Eagle	600	Coop pollock
09/19/13	Arctic Storm	Northern Eagle	1,066	Coop pollock
10/14/13	Arctic Storm	Alaska Ocean	291	Coop pollock
10/14/13	Arctic Storm	Seattle Enterprise	1,000	Coop pollock
08/13/13	Ocean Rover	Northern Eagle	3,533	Coop pollock
09/01/13	Ocean Rover	Northern Jaeger	156	Coop pollock
09/01/13	Ocean Rover	American Dynasty	352	Coop pollock
09/01/13	Ocean Rover	American Triumph	49	Coop pollock
09/14/13	Pacific Glacier	Alaska Ocean	452	Coop pollock
10/10/13	Island Enterprise	Kodiak Enterprise	1,255	Coop pollock
10/10/13	Kodiak Enterprise	Seattle Enterprise	200	Coop pollock
06/01/13	Arctic Storm	Arctic Fjord	11,374	CDQ pollock

**Table 3. CP IPA Pollock Catch and Chinook Bycatch Performance by Season and Vessel, 2013**

Vessel	A-season			B-season		
	Pollock (mt)	Chinook (n)	Rate (n/mt)	Pollock (mt)	Chinook (n)	Rate (n/mt)
Alaska Ocean	21,813	346	0.016	35,371	10	0.000
American Dynasty	17,583	313	0.018	27,769	30	0.001
American Triumph	20,153	377	0.019	24,889	1	0.000
Arctic Fjord	19,455	246	0.013	39,222	91	0.002
Arctic Storm	13,582	225	0.017	0	0	
Island Enterprise	11,152	358	0.032	13,682	97	0.007
Kodiak Enterprise	11,066	269	0.024	17,328	61	0.004
Northern Eagle	18,262	141	0.008	32,010	28	0.001
Northern Hawk	16,480	227	0.014	25,410	2	0.000
Northern Jaeger	16,782	195	0.012	28,374	10	0.000
Ocean Rover	17,101	575	0.034	23,977	10	0.000
Pacific Glacier	16,472	191	0.012	25,647	19	0.001
Seattle Enterprise	11,105	296	0.027	20,196	73	0.004
Starbound	14,389	276	0.019	25,658	57	0.002
Northern Glacier	0	0		0	0	
Katie Ann	0	0		0	0	
Ocean Peace	865	3	0.003	1,333	7	0.005
Forum Star	0	0		0	0	
American Challenger	0	0		0	0	
Ocean Harvester	0	0		0	0	
Tracy Anne	0	0		0	0	
Neahkanie	0	0		0	0	
Sea Storm	0	0		0	0	
Muir Milach	0	0		0	0	
Totals	226,260	4,038	0.018	340,866	496	0.001
Grand Totals	Pollock A+B (mt) 567,126		Chinook A+B (n) 4,534		Rate A+B (n/mt) 0.008	

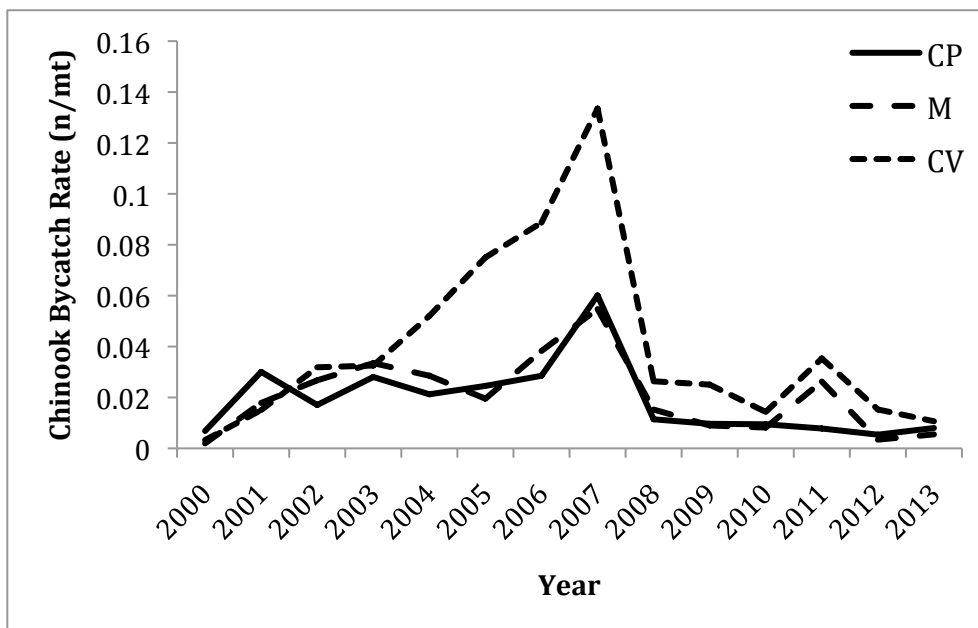
## EFFECTS OF INCENTIVE MEASURES

This annual report provides a qualitative evaluation and some quantitative information on the effectiveness of the CP IPA in influencing vessel behavior to minimize Chinook bycatch. The CP IPA incentive program is largely an area-based program, and this evaluation relies heavily on spatial analysis of pollock trawl locations as well as the bycatch performance of the individual vessels. To begin an assessment of the IPA incentives on the individual vessels, the aggregate performance of the vessels in the 2011-2013 fisheries is tabulated and compared to performance during prior years. Table 4 shows the aggregate bycatch performance (number of Chinook per ton of pollock caught) of CP IPA vessels since 2008, comprising the three years prior to, and three years since the implementation of the CP IPA.

**Table 4. Chinook Bycatch Rates (n/mt) in the CP Fleet for 2008-2013**

Year	A-season (n/mt)	B-season (n/mt)	A+B-season (n/mt)	A+B season (m/t) three year interval
2008	0.027	0.002	0.012	0.010
2009	0.021	0.002	0.010	
2010	0.024	0.000	0.009	
2011	0.010	0.006	0.008	0.007
2012	0.013	0.000	0.005	
2013	0.018	0.001	0.008	

Figure 3 shows Chinook bycatch rates in the Bering Sea since 2000 by pollock fishing sector. Trends in performance over time are largely consistent among the sectors, with a period of low bycatch since 2008.



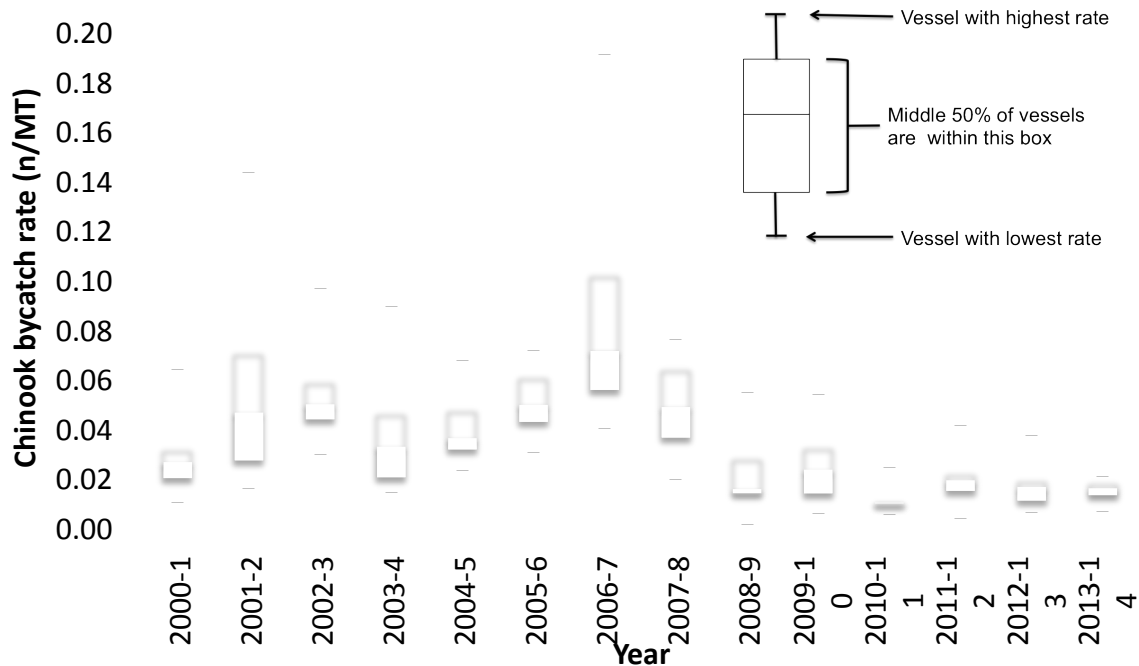
**Figure 3. Chinook bycatch rates by year for the Catcher Processor (CP), Catcher Vessel (CV), and Mothership (M) pollock fishing sectors in the Bering Sea.**

It is clear from Table 4 that CP Chinook bycatch performance has been better since the implementation of the IPA, as compared with the previous three years, while environmental conditions and salmon abundance have been comparable throughout this time period.

Table 3 shows the Chinook salmon bycatch performance of the IPA vessels. Performance is shown by season because the Chinook bycatch environment is different during the A-and B-seasons. The period between September 1<sup>st</sup> and March 1<sup>st</sup> is the time of year when Chinook abundance is highest on the EBS shelf. During the A-season, bycatch rates are often double those of the B-season because when the season starts in January, Chinook salmon are already feeding on the EBS shelf. As the season progresses, Chinook salmon migrate to basin waters, and abundance on the grounds generally reaches a low level by mid March.

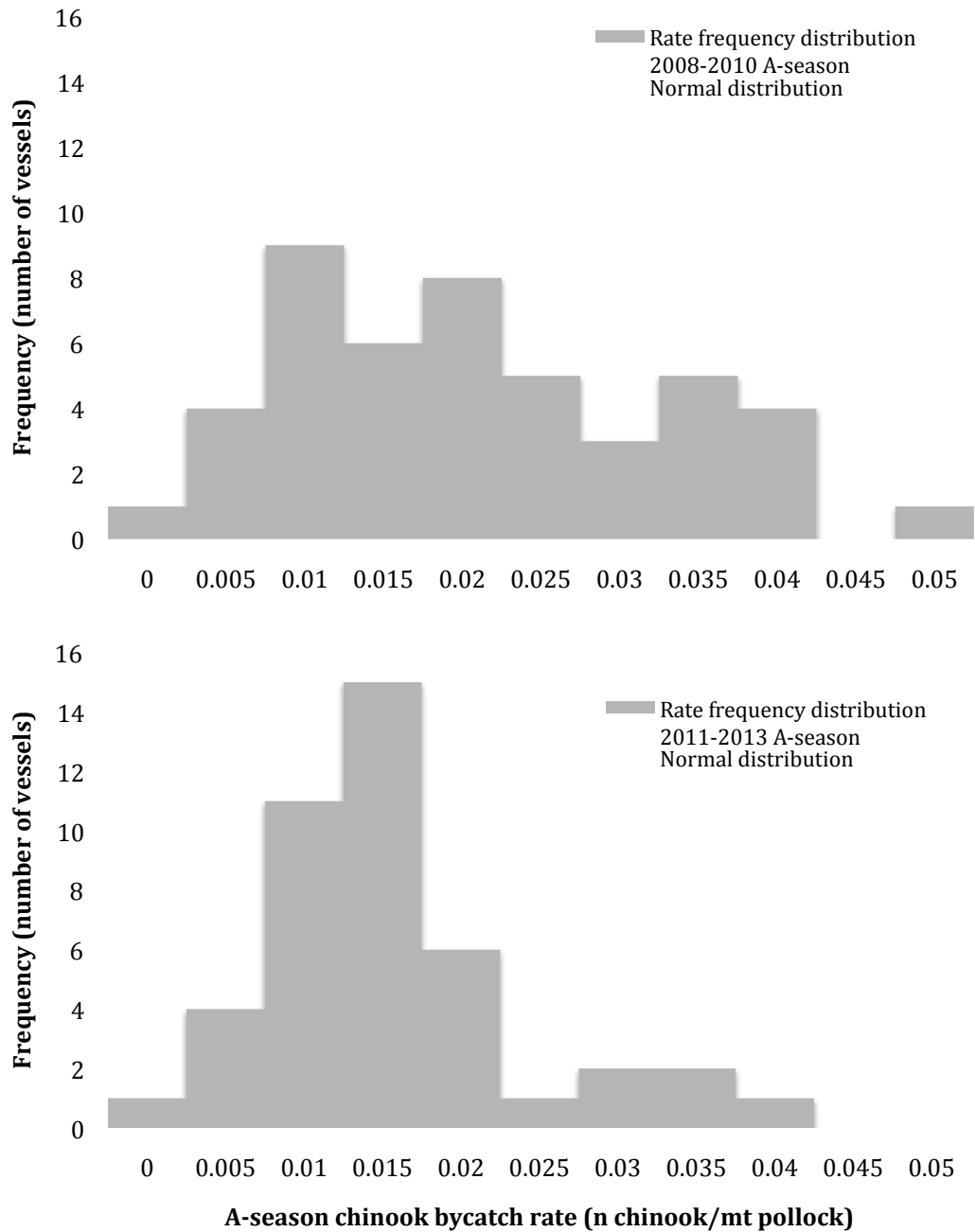
During the B-season, and when fishing starts quickly, it is sometimes possible to almost complete fishing operations before Chinook salmon arrive on the shelf in the fall to feed. In other years they arrive earlier or fishing continues later, and great effort must be concentrated on limiting the bycatch.

Figure 4 shows the range of vessel bycatch performance each year since 2000, during the time period when Chinook are most abundant on the pollock fishing grounds (September-February). In the prior program, the bycatch performance of a cooperative vessel group was evaluated against a performance benchmark, and under some circumstances, incentives to avoid bycatch weakened for an individual vessel. However, if incentive measures are working at the vessel level, one would expect the distribution Chinook bycatch rates among vessels to shrink. This is because vessels are accountable for their own Chinook bycatch, and better performers cannot shelter less well performing vessels. Evident from this graph is that, since the IPA began, vessel bycatch rates have been among the lowest on record, and also that the distribution of rates among vessels has been very small in IPA years, even relative to previous years with similar average rates. **In other words, Chinook bycatch rates among vessels are more similar to each other since 2011 than in previous years, providing evidence of the effectiveness of the vessel-level measure.**

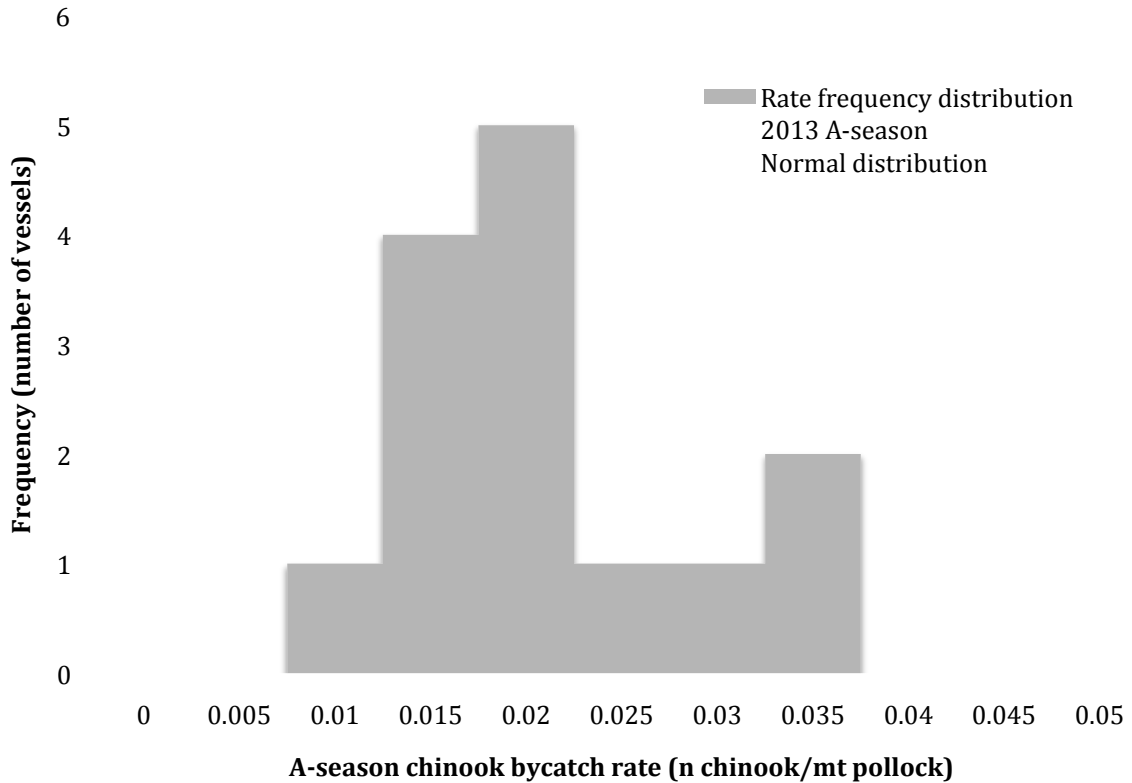


**Figure 4. September-February CP Vessel Chinook Bycatch Rate Distribution by year 2000-2014. The box represents the middle 50% of vessel rates in each year, while the upper whisker extends to the vessel with the highest rate, and lower whisker extends to the vessel with the lowest rate. The median vessel is represented by the line inside the each box.**

Another way to look at how incentives have been working at the individual vessel level is to compare the frequency of different levels of Chinook bycatch rates by individual vessels in the period before and after the implementation of Amendment 91. A narrowing distribution of vessel performance in the period since Amendment 91 indicates that vessels are behaving more similarly to each other, thus are exhibiting vessel-level accountability for their Chinook bycatch. Figure 5 shows the distribution of vessel bycatch rates in the A-seasons of 2008-2010 (pre-Amendment 91; top panel) and the same distribution in the A-seasons of 2011-2013 (post-Amendment 91; bottom panel). **This figure shows a lower overall average Chinook bycatch rate in the more recent period, as well as a narrower distribution of vessel performance around this mean, thus demonstrating more vessel-level accountability in the period since Amendment 91 implementation.** Figure 6 shows the same information for the 2013 A-season only. (Note the different scale on the y-axis.)



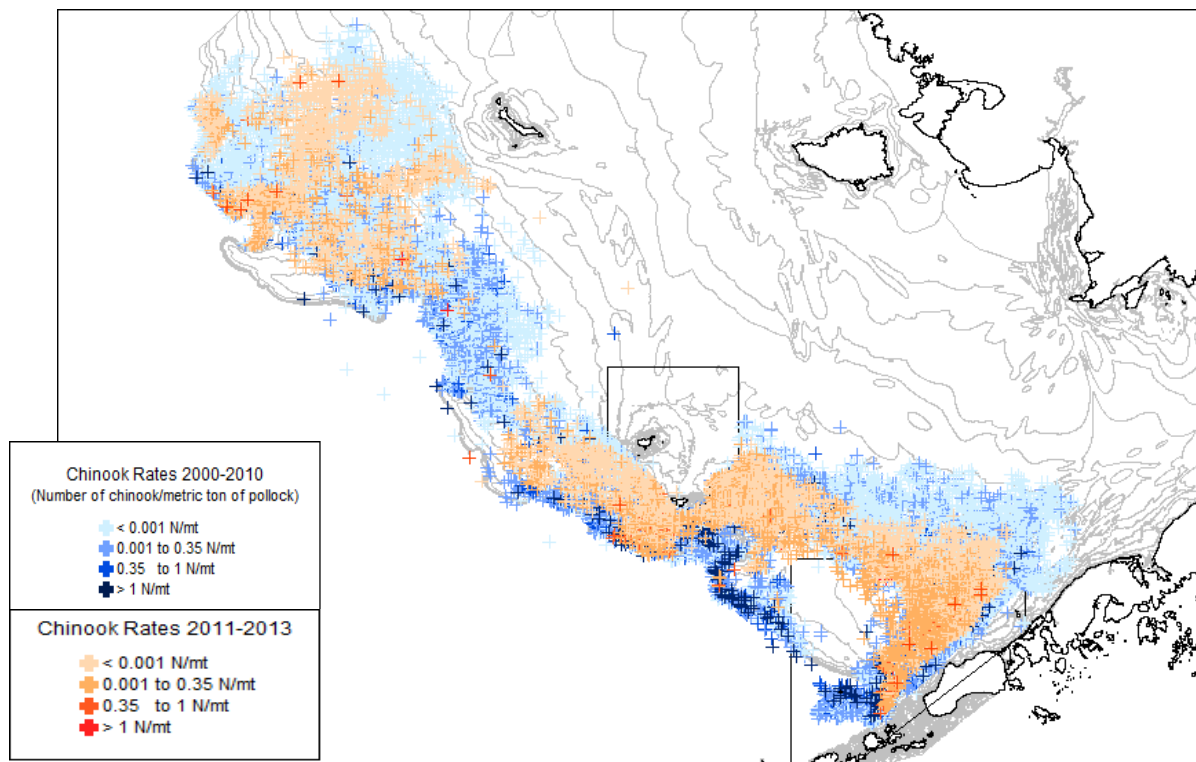
**Figure 5. A-Season CP Vessel Chinook Bycatch Rate Frequency Distribution for 2008-2010 and 2011-2013. The normal distribution is shown on each panel to illustrate more easily the narrower distribution in the later years relative to the earlier years, and to show that there are no statistical “outliers” in either time period.**



**Figure 6. A-Season CP Vessel Chinook Bycatch Rate Frequency Distribution for 2013.**

### *Chinook Bycatch Avoidance Behavior*

As mentioned previously, an important element of the CP IPA incentive program is the provision of real-time information to the fleet on areas within the pollock fishing grounds of relatively high Chinook salmon abundance, and designated time-area closures for vessels with Chinook bycatch rates higher than 75% of the base rate in a given week. Over time, data on Chinook bycatch rates on the fishing grounds has revealed certain patterns, with the highest bycatch rates occurring in predictable areas at certain times of the year. Figure 7 shows all CP fishing locations between 2000 and 2013 taken during the time period where Chinook are present feeding on the EBS shelf (September-February), color coded according to Chinook bycatch rate. The blue crosses indicate tows taken between 2000 and 2010—the years prior to Amendment 91. The orange crosses indicate tows taken between 2011 and 2013—the years since Amendment 91. It is clear from this figure that CP pollock vessels are now avoiding the historically fished areas with the highest Chinook bycatch rates (darkest blue). The presence of blue crosses in these areas means these are productive pollock fishing grounds, and the absence of orange crosses indicates these areas are now being avoided in order to avoid Chinook.



**Figure 7. Pollock CP haul locations caught between September 1st and February 28th for the years 2000-2010 (blue) and 2011-2013 (orange). Darker color indicates higher Chinook bycatch rates.**

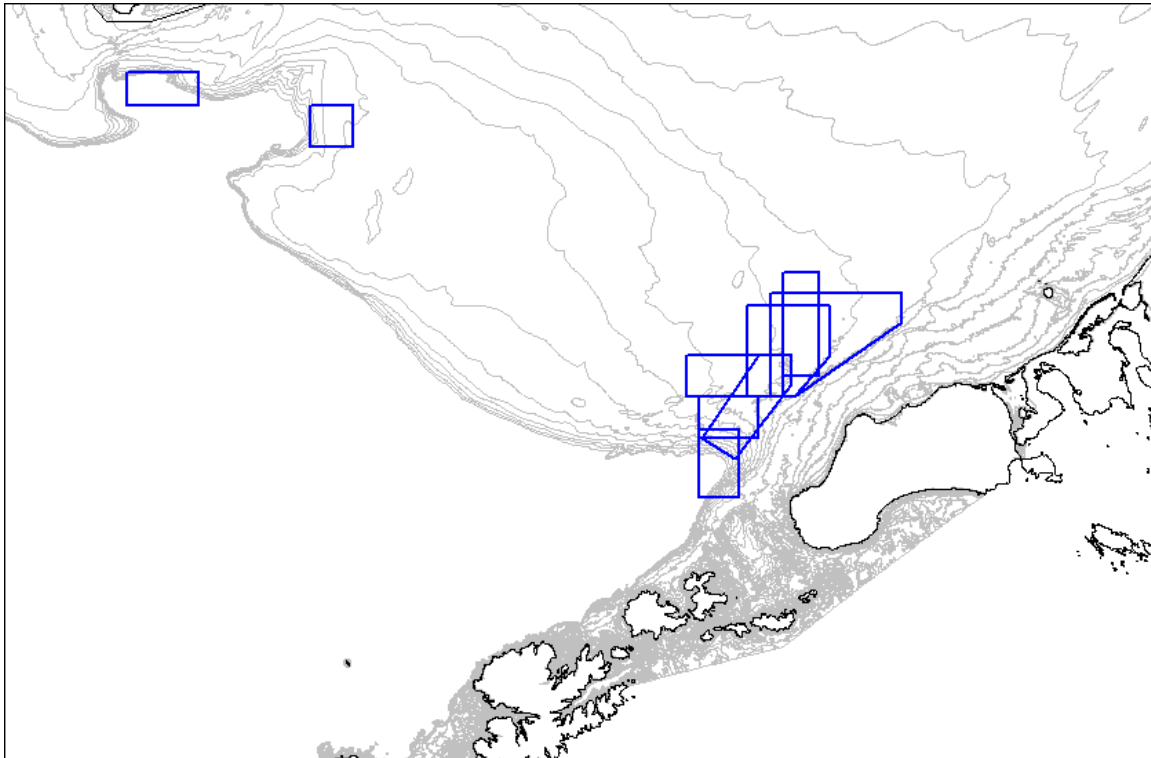
A close examination of the trawl locations in space and time, their bycatch rates, and the bycatch performance of all of the CP IPA vessels shows clearly that the vessels have changed their fishing strategy to avoid Chinook bycatch. The most salient feature of this changed approach was for vessels to locate initial fishing operations away from the outer margins of the shelf. Depending on the locations of pollock concentrations, any profitable movement of fishing to deeper water was accomplished via a deliberate, slow, and cautious progression while maintaining awareness of information about Chinook concentrations within the area. Evidence of local Chinook concentrations generally caused vessels fishing in deep water to move fishing to more shallow grounds. This behavior was most pronounced during the A-season and occurred in multiple areas when trawl bycatch rates showed high concentrations of salmon, as e.g., when a wave of Chinook salmon moved into a local area to feed.

As mentioned in the above paragraph, an important component of changing CP fishing behavior subsequent to Amendment 91 is fishing depth, because Chinook salmon are known to occur in deeper areas along the EBS shelf. Comparing effort, pollock and Chinook catches in the three years prior to and three years since Amendment 91, there has been a clear shift in the amount of fishing effort at depths greater than 130 fathoms, where a large portion of Chinook bycatch has typically been encountered.

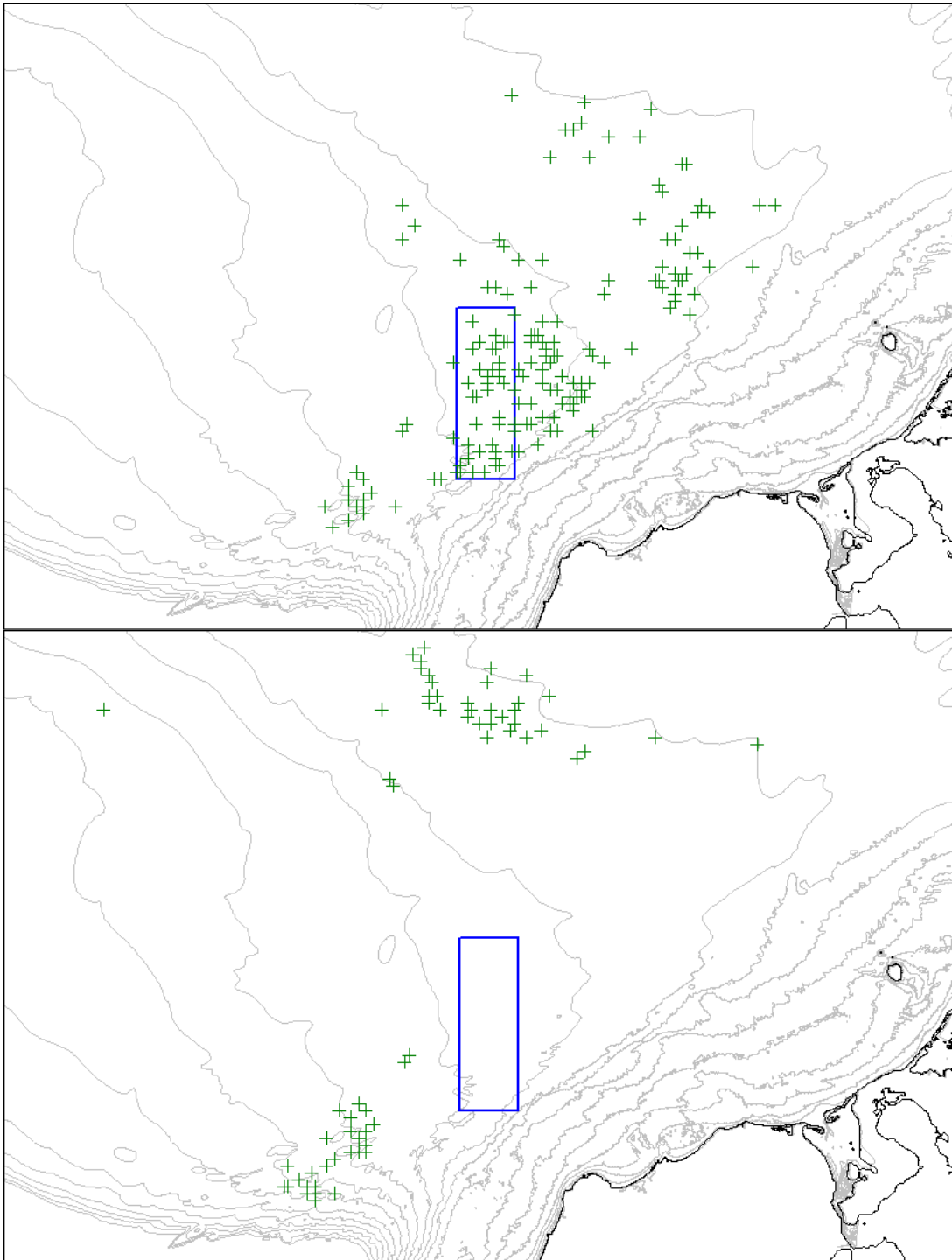
Under the Rolling Hot-Spot (RHS) program, several closure areas were designated for the CP fleet during the 2013 A-season (Figure 8; there were no B-season CP closures). These closures are made known to all vessels on a weekly basis; only those vessels with a Chinook bycatch rate of greater than 75% of the base rate are required to avoid these closure areas. However, because the closure designations indicate where Chinook bycatch has been highest over a given week, even vessels who are not required to fish outside the closures often voluntarily do so, in order to increase the chances of keeping their Chinook bycatch lower (Figure 9). It is important to remember that, due to the way the base rate is calculated, there must be pollock fishing in an area in order for it to potentially



become a bycatch avoidance area (BAA), so those areas where CPs avoided fishing entirely (as shown in Figure 7) cannot be designated as closures.



**Figure 8. 2013 Chinook bycatch avoidance areas for the CP sector (all A-season; there were no B-season CP closures).**



**Figure 9. CP fishing locations 2/15/13 through 2/28/13. Top panel: fishing the week of 2/14/13, when there was no CP Chinook closure in this area. Bottom panel: CP fishing locations the week of 2/22/13 during the closure. Although only 4 vessels were subject to the closure, all vessels fished elsewhere.**

Table 5 shows the A-season weeks of 2013 and the number of vessels excluded from designated bycatch avoidance areas during each week. There were a total of nine CP closures during the 2013 A-season and no CP closures for the B-season. There were also no vessels subjected to extended (2-week) closures during 2013.

**Table 5. Number of CP vessels excluded from designated bycatch avoidance areas during the 2013 A-season.**

Week	1/31	2/7	2/14	2/21	2/28	3/7	3/14	3/21	3/28	4/4
Number of CPs excluded from BAAs	4	4	1	4	9	1	3	3	1	5

## IPA AMENDMENTS

There were no amendments to the CP IPA during 2013.

## USE OF NEW GEAR TECHNOLOGIES

During 2013 IPA-company vessel crew and Pollock Conservation Cooperative staff began an at-sea monitoring program to evaluate the design and rigging of the salmon-excluder trawls currently used by IPA vessels. Monitoring is accomplished using deploy-and-retrieve video cameras placed in the trawl net. One objective of the program is to evaluate the nature of pollock escapement when the trawl is short-wired and during trawl haul-back. A second objective is to develop a video-based guide to salmon-excluder trawl-net component rigging such that the “as-designed-functioning” of the excluders can be evaluated and optimized routinely at the beginning of each fishing season. Program rationale is based on the fact that the functioning of salmon-excluder trawl components depends on their design, the location of the salmon-excluder in the trawl net, the size of the cod end, average vessel towing speed, and whether the trawl would include a “stuffing tube” or similar device to improve water flow through the trawl, as well as the placement of component floats and weights. Creating additional awareness of the benefits of monitoring and adjusting these factors to achieve the designed function of the salmon-excluder becomes more important as salmon-excluder trawl-net component use increases and the salmon-excluder trawl becomes standard pollock fishing gear. The program is also anticipated to catalyze additional salmon-excluder-trawl design improvements by IPA-vessel crew. A suite of trawl-net video examples intended to promote the “as-designed-functioning” of salmon-excluder trawl components is anticipated to be available prior to the start of the 2014 B-season.