

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.)

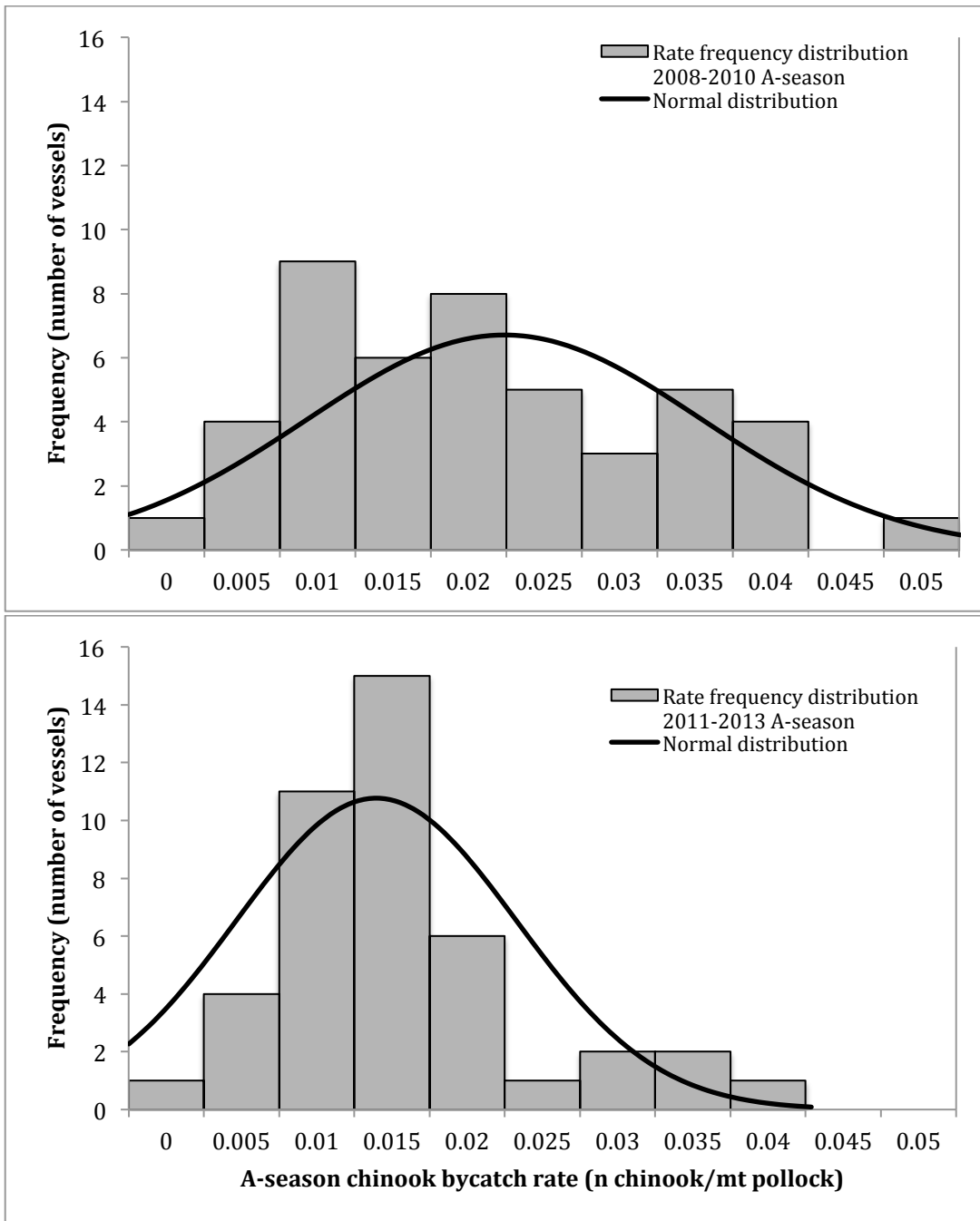


Figure 5. A-Season CP Vessel Chinook Bycatch Rate Frequency Distribution for 2008-2010 and 2011-2013. The normal distribution is shown on each panel to illustrate more easily the narrower distribution in the later years relative to the earlier years, and to show that there are no statistical “outliers”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

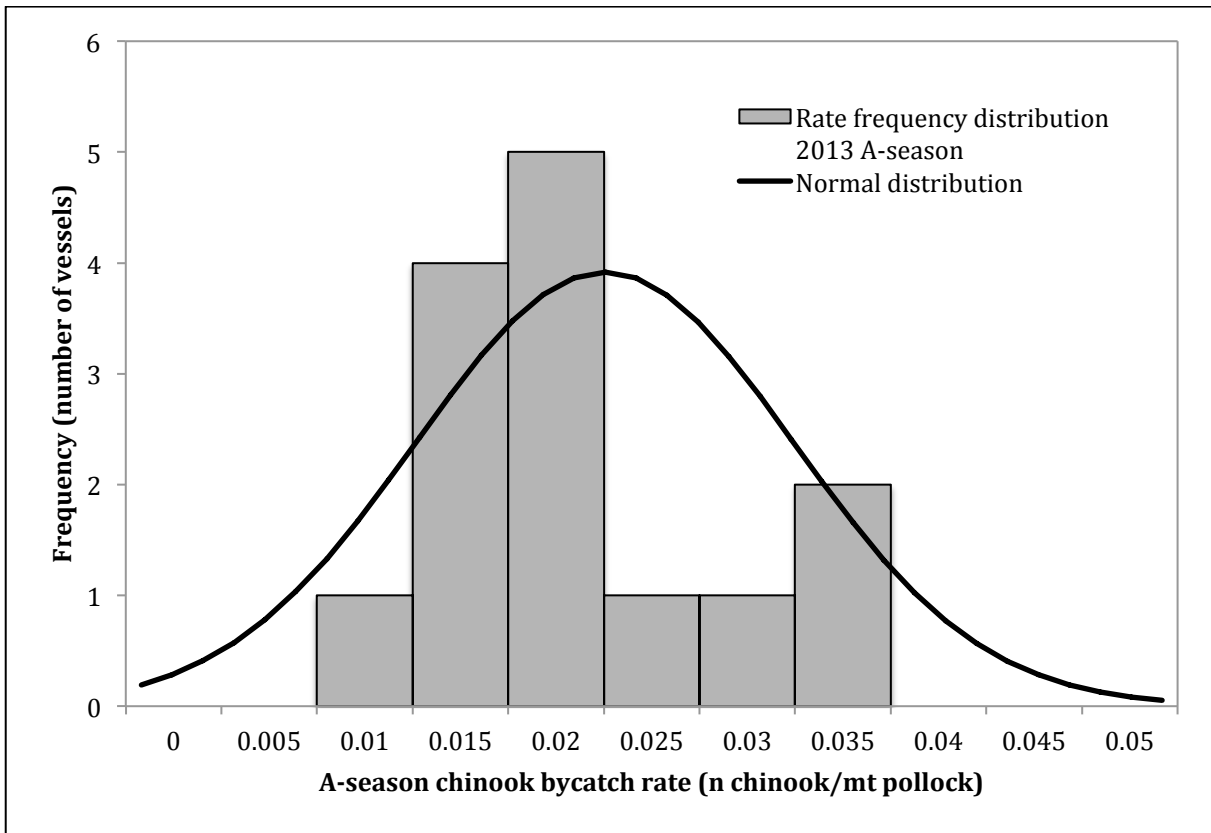


Figure 6. A-Season CP Vessel Chinook Bycatch Rate Frequency Distribution for 2013.

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.