State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
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EDMUND G. BROWN JR., Governor
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April 1, 2015

Ms. Dorothy Lowman, Chair
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97720-1384

Dear Chair Lowman:

I would like to start by thanking you and all members of the Council. I also owe a thank you to the long-standing leaders in California's commercial and recreational salmon fishing communities. Everyone – I think – has a deep appreciation for the severity of the drought that is persisting in California, and the drought's impacts on our habitat and fisheries. The California Department of Fish and Wildlife's (CDFW) approach to ocean salmon alternatives is being informed by our comprehensive experience across the state during drought. I am confident that during the April Council meeting a consensus-solution can be developed that works for all regarding ocean salmon alternatives.

In response to the outcomes of the March 2015 meeting and considering the ocean salmon alternatives adopted by the Council for public review, I am writing to offer additional perspective regarding "Alternative 3," which provides a precautionary approach to 2015 season structures and minimum size limits. Over the next few weeks, CDFW intends to work with the Council members and affected salmon stakeholders to find a compromise, using a consensus approach, to determine California's final recommendations to the Council.

NOAA Fisheries Service (NMFS) recently announced its decision not to proceed with reconsideration of the Winter Run harvest control rule (HCR) (Agenda Item F.1.a., Supplemental Attachment 2, March 2015). We hope to continue discussion at a later date after the April meeting regarding how to improve consideration of harvest rules. However, in 2015, as required by the consultation standard, the 3-year geometric mean of escapement produces an allowable impact rate cap of 19.0 percent.

Below, CDFW offers an alternative approach for Winter Run to guide management decisions in 2015 only. The approach would use jack forecasting methodology that is currently utilized by the Council and NMFS in management of other California Chinook stocks, including Sacramento River Fall Chinook. Using this methodology to predict 2015 escapement, the HCR allows for a maximum allowable Winter Run impact rate cap of 17.9 percent.

The primary purpose of CDFW's thinking about an alternative approach is to explore an impact rate cap more precautionary than 19 percent, given broader concerns and information about species' status and drought conditions worsening. In addition to a more precautionary cap, CDFW looks forward to working with the Council and its advisory bodies, management entities, and the public, to structure seasons off

California to avoid times and areas where impacts may be greatest considering all sources of available information.

The Sacramento Winter Run Consultation Standard

The Sacramento Winter Run ESA Consultation Standard has three prongs. The first is the HCR, which generates the impact rate cap to be applied to fisheries from Pt. Arena southward, based on the 3-year geometric mean of total Winter Run escapement. The second prong applies to the commercial fishery, which requires that the season open no earlier than May 1 and close no later than September 30, except for an October fall-area target zone fishery, with a minimum size limit of 26 inches. The third prong applies to the recreational fishery, which requires a minimum size limit of 20 inches for all areas South of Pt. Arena, and for the San Francisco area requires the season open no earlier than the first Saturday in April and close not later than the second Sunday in November. For the Monterey area, the fishery shall open not earlier than the first Saturday in April and close not later than the first Sunday in October.

NMFS guidance requires attainment of all three prongs simultaneously for any ocean fishery alternative that goes out for public review. But as NMFS' leadership noted in Council discussion at the March meeting, these standards only assure the proposed fishery meets the bare minimum required by the ESA.

Impacts increase both with the number of open fishing days, and with a decrease to the minimum size limit for target Chinook stocks. However, nothing says that an ocean fishery alternative must be tied explicitly to numbers – the only requirement is that it not exceed any of the numeric constraints required for either the target stocks or the listed stocks we are trying to protect. Consequently, CDFW put forward Alternative 3 independent of the technical modeling efforts which examine fishery seasons relative to the impact rate cap. Alternative 3 provides more precaution for Winter Run using the conventional management tools of seasons and size limits.

Reconsideration of the Winter Run Harvest Control Rule

NMFS recently announced its decision not to proceed with reconsideration of the Winter Run HCR after preparing a Notice of Availability and Request for Comment in January of 2014 (Agenda Item F.1.a., Supplemental Attachment 2, March 2015). The Council had previously recommended that NMFS consider alternative control rules that allowed for *de minimis* levels of fishing when abundance was low without significantly increasing the risk of extinction to Winter Run Chinook.

In its report, NMFS offered this brief explanation for its decision: "NMFS believes it is appropriate to strike a cautionary note with regard to Sacramento Winter Run Chinook that is associated with the well-known drought conditions in California's Central Valley." CDFW agrees, noting that California is now in its fourth year of the drought.

Although NMFS ultimately issued guidance for 2015 fisheries in accordance with the existing Winter Run HCR (Agenda Item F.3.c, Supplemental NMFS Report, March 2015), it is apparent from the discussion (Agenda Item F.1.a., Supplemental Attachment 2, March 2015) that other factors or data sets which might better inform Winter Run stock status are now candidates for incorporation into the consultation standard. "Because the control rule is driven by the 3-year geometric mean of adult escapement, NMFS is concerned that the rule may not be adequately responsive to information on low juvenile survival for a particular year." CDFW agrees with this assessment and commends NMFS on a decision to revisit the consultation standard in light of additional information which may improve knowledge of the Winter Run stock status. In addition, CDFW appreciates that undertaking a revision to the Biological Opinion cannot happen in time to inform decisionmaking for 2015 fisheries. However, CDFW believes that additional protections are necessary in 2015 beyond the minimum thresholds required by the ESA consultation standard.

NMFS concludes in its report (Agenda Item F.1.a., Supplemental Attachment 2, March 2015) that juvenile survival rates for the 2013 brood year are within recent low average values, noting that the 2013 brood year is the one that is most likely to be contacted in 2015 fisheries before returning in the winter/spring of 2016 as age-3 fish. NMFS further explains that conversely, information for the 2014 brood year suggests alarmingly low juvenile survival, and additional steps will be necessary to avoid contact with this brood in 2016 fisheries.

CDFW generally concurs with this assessment, and agrees that juvenile survival information may prove to be another factor that can be used in the future to inform stock status in addition to the escapement information and contact rates in sport and commercial ocean fisheries used today. However, CDFW is less confident that this somewhat neutral juvenile survival information for the 2013 brood year is meaningful enough to warrant the impact rates that Winter Run may incur in 2015 ocean fisheries under the current ESA consultation standard.

In addition to drought-related challenges such as with low flow rates, high temperatures, and other sources of inriver mortality on outmigrating juveniles, CDFW shares NMFS' concern that once these brood years enter the ocean they will face continuing adverse conditions. "NMFS notes that there is information that suggests that ocean conditions off the west coast are very warm and hostile to early ocean survival for juvenile salmon entering the ocean in 2015. These conditions include areas off California." (Agenda Item F.1.a., Supplemental Attachment 2, March 2015). However, CDFW further believes that these unfavorable ocean conditions pose a risk not just to the juvenile salmon entering the ocean in 2015 (i.e., the 2014 brood year) – but also the brood years that already have made their way to the ocean, as concern with low upwelling and insufficient availability of prey species affect not just juveniles in the ocean, but adults as well.

Management Under the Current Winter Run Harvest Control Rule

The Winter Run HCR determines the allowable impact rate cap that is applied to fisheries from Pt. Arena southward, based on the 3-year geometric mean of total Winter Run escapement. In 2015, the 3-year geometric mean of escapement from 2012-2014 is 3,659 – which produces an allowable impact rate cap of 19.0 percent (Table 1). The graphical depiction of the rule is presented below (Figure 2).

The current HCR's approach of using a 3-year geometric mean allows for averaging of what might be a harsh consequence if escapement values for only a single year were used. However, management of target stocks originating in California are not based on 3-year escapement averages. Conversely, stock forecasts for both Klamath and Sacramento Fall-Run Chinook come from projecting escapement data from only the most recent year.

Under the current HCR, the geometric mean is generated by averaging escapement information over three years – yet almost all fish from these brood years have completed their life cycle. Prior-year escapement totals may not be all that useful as an indicator of current brood year abundance levels that are currently returning, have yet to return, or are currently outmigrating.

CDFW's Recommended Approach to Winter Run Management in 2015 Ocean Fisheries

Recognizing that need to revisit these issues comprehensively (and that doing so will necessarily take beyond 2015), CDFW offers an alternative approach for Winter Run to guide management decisions in 2015 only. Management under this alternative would be more restrictive and thus not inconsistent with the ESA consultation standard, yet would utilize more recent scientific information on the status of Winter Run brood years presently in the system. The approach would use jack forecasting methodology that is currently utilized by the Council and NMFS in management of other California Chinook stocks, including Sacramento River Fall Chinook.

In 2014, a total of 3,015 Winter-Run adults and jacks returned to spawn (Table 1); similar to returns since 2007 which have ranged between 824 and 6,085 fish each year. Of these, 327 were determined to be jacks (members of the 2012 brood year) while 2,688 adults returned, primarily of the 2011 brood year (Table 1).

Examining the relationship between jack returns in the terminal year compared with estimated number of adults prior to ocean fisheries is the method used by the Council and NMFS to project the stock abundance for Sacramento River Fall Chinook. There has been much discussion over the years about imperfections of this somewhat rudimentary approach to forecasting, especially for a stock so critical to west coast

fisheries; however, the method continues to meet management needs and performance expectations.

While a stock projection from jack returns has not been a part of Winter Run management to date, the method may help inform us about what we might expect in terms of Winter Run returns for 2015 (Figure 1), which may produce a better escapement forecast upon which to apply the current HCR compared with a mean of past escapement values. The jack forecast relationship would project a 2015 escapement of 3,010 adults (Figure 2), which would correspond with a total projected escapement of 3,265 fish when applying an average jack proportion of 7.8 percent (estimated using the ratio of total jacks to the total run for years 2001-2014). Using this value for escapement in the HCR results in a Winter Run impact rate cap of 17.9 percent (Figure 2).

While CDFW appreciates that this method has not undergone scientific review by Council management entities and advisory bodies, it is derived from information on the 2012 brood year which outmigrated, survived in the ocean, and returned all during drought conditions, and may be a better indicator of present Winter Run stock status. Based on this analysis, CDFW recommends the Council and its advisory bodies design ocean fisheries not to exceed a Winter Run impact rate cap of 17.9 percent, rather than the 19 percent established by the ESA consultation standard.

2015 Fall Fisheries

CDFW scientific staff indicate there is variability in the dates that Winter Run stage their return, possibly similar to information shared by Dr. Steve Lindley with the Council at the March meeting showing that Winter Run smolts follow environmental cues and move rapidly out to the ocean in response to flow events (Agenda Item F.1.c, Supplemental Science Center PowerPoint 2). Although the existing consultation standard for Winter Run was developed requiring fishing seasons end in the late fall to avoid contact with fish staging their return up river, it is quite possible that staging – and thus the prospect of higher contact rates – could begin earlier than what is required under the current consultation standard.

Alternative 3 includes closure of virtually all fall fisheries for this reason, to bookend the most conservative approach to season structures. While overall impacts to Winter Run in most fall fisheries are relatively low based on coded-wire tag (CWT) information from past fall fisheries, that may be due to the fact that overall catch and effort levels in these fisheries are lower than in summer months, and Winter Run tag recoveries are rare events.

Also, while there is no hard data to support it, logic would suggest there is some prospect of contacting at least some portion of the largest of the 2014 Winter Run brood year as fisheries persist into in the fall, noting NMFS' particular concern with this brood

year. Although CDFW scientific staff indicate there have been only two age-2 Winter Run taken in ocean fisheries in the coded wire tag database out of a total of 661 total Winter Run tags recovered in California ocean fisheries, and each of these fish were only 12 inches in length, we know from the Winter Run escapement information that some portion of Winter Run jacks are of a size that contact in fisheries is possible. While returning jacks are likely the most precocious and probably the very largest of that brood, they often exceed 20 inches in size when they return in the winter/spring. Consequently, it is possible that the 2014 brood year could be contacted in ocean fisheries as sub-legal fish that are immediately released, and any such contact that might occur would be expected later, rather than earlier, in the season.

CDFW is not recommending closure of all fall fisheries, but rather, encourages the Council and its advisory bodies to carefully consider impacts of fall fisheries using any available information on contact rates by time and area and expected run timing, recognizing that Winter Run CWT recoveries are rare events. The consultation standard uses closed seasons and size limits as tools to minimize contacts in addition to the impact rate cap. Given the consultation standard establishes only minimum protections required under the ESA, CDFW encourages the Council to design fall fisheries with an eye toward avoiding contacts which can reasonably be expected, but may not be supported by robust data sets.

CDFW also reiterates general concern with fall fisheries, noting that the persisting drought heightens that concern for 2015. Given what we might infer about next year's stock forecasts for Sacramento and Klamath Fall Chinook given the persistent drought conditions, developing a spending plan this year that minimizes the risk of carrying a deficit into 2016 is something CDFW recommends the Council consider deliberately.

Conclusions

Magnuson-Stevens Act National Standard 2 states that scientific information used to inform decision making should include an evaluation of its uncertainty and identify gaps in the information. Management decisions should recognize the biological, ecological, sociological, and economic (e.g., loss of fishery benefits) risks associated with the sources of uncertainty and gaps in the scientific information.

Although the science that NMFS offered to the Council at its March meeting from its Integrated Ecosystem Assessment (IEA) Team is qualitative, it is still scientifically informative. CDFW's goal with Alternative 3 was to bookend a range of alternatives for purposes of public review and comment, recognizing that nothing prohibits this 'range' from being more precautionary than the Federal ESA guidance. Environmental indicators of salmon abundance have yet to integrate into the world of salmon fishery modeling, and as acknowledged by the NMFS IEA Team, the salmon science may have yet to catch up.

While Winter Run juvenile recruitment information for the 2013 brood year may be in line with recent averages – which are very low to begin with – CDFW expects that this brood now faces extremely unfavorable ocean conditions. Considering the totality of circumstances, CDFW has as great a concern for survival of this brood year. Other than juvenile production for the 2013 brood year that is in line with other recent years (though still low), which the Salmon Technical Team acknowledges is an index with "somewhat limited explanatory power" for predicting future escapement, (Agenda Item F.1.d, Supplemental STT Report, March 2015) there is little in the way of existing information to suggest that either the 2013 or the 2014 brood is going to fare very well. Consequently, fishery management using traditional tools of season dates and size limits to minimize contact with Winter Run is particularly critical for directed 2015 salmon fisheries even if the current ESA consultation standard does not require any extra precaution to account for such unfavorable survival conditions.

CDFW shares the challenge that NMFS does in trying to balance the wealth of information provided by its ecosystem and salmon scientists, which provide somewhat differing perspectives that policymakers will need to reconcile. CDFW recommends the Council utilize a compromise approach to managing 2015 fisheries that balances favorable stock forecast information with cautions suggested by other environmental indicators. CDFW s upports using the most current information available on the status of Winter Run broods in the system today, rather than reliance on a 3-year mean of escapement from brood years that have already completed their life cycle.

CDFW recommends the Council approve 2015 ocean salmon seasons off California that do not exceed a 17.9 percent Winter Run impact rate cap rather than the 19 percent required under the ESA consultation standard, and that the Council also strive to best manage fall fisheries for protection of listed stocks and conservation of target stocks in concert with socio-economic considerations and community needs that rely on recreational and commercial fishery harvest opportunities. . CDFW looks forward to working with industry leaders and scientific and technical advisors over the next few weeks in designing final 2015 season recommendations for California that are consensus-based and broadly supported.

Sincerely,

Charlton H. Bonham
Director

ec: Bob Turner, Assistant Regional Administrator, NOAA Fisheries
California Fish and Game Commission

Table 1. Sacramento River Winter Run Chinook total escapement and allowable ocean fishery impact rate south of Pt Arena, 2001-2014.*

Return Year	Winter Run escapement			Mgmt Year	3-year Geo-mean	Impact Rate Cap
	Adults	Jacks	Total			
2001	7,443	781	8,224			
2002	7,047	417	7,464			
2003	7,675	543	8,218	2004	7,960	>.20
2004	5,786	2,083	7,869	2005	7,844	>.20
2005	14,683	1,156	15,839	2006	10,080	>.20
2006	16,764	385	17,149	2007	12,881	>.20
2007	2,402	131	2,533	2008	8,828	>.20
2008	2,521	204	2,725	2009	4,910	0.200
2009	4,363	53	4,416	2010	3,124	0.175
2010	1,555	41	1,596	2011	2,678	0.162
2011	637	187	824	2012	1,797	0.137
2012	2,527	144	2,671	2013	1,520	0.129
2013	5,623	462	6,085	2014	2,375	0.154
2014	2,688	327	3,015	2015	3,659	0.190
2015**	**3,010**	**255**	**3,265**	**2015**	**3,265**	**0.179**

* Data from PFMC's Review of 2014 Ocean Salmon Fisheries (Table B-3) and Preseason Report I Stock Abundance Analyses and Environmental Assessment Part I for 2015 Ocean Salmon Fishery Regulations (Table II-2).

****Recommended CDFW approach in bold utilizing the 2015 escapement forecast.**

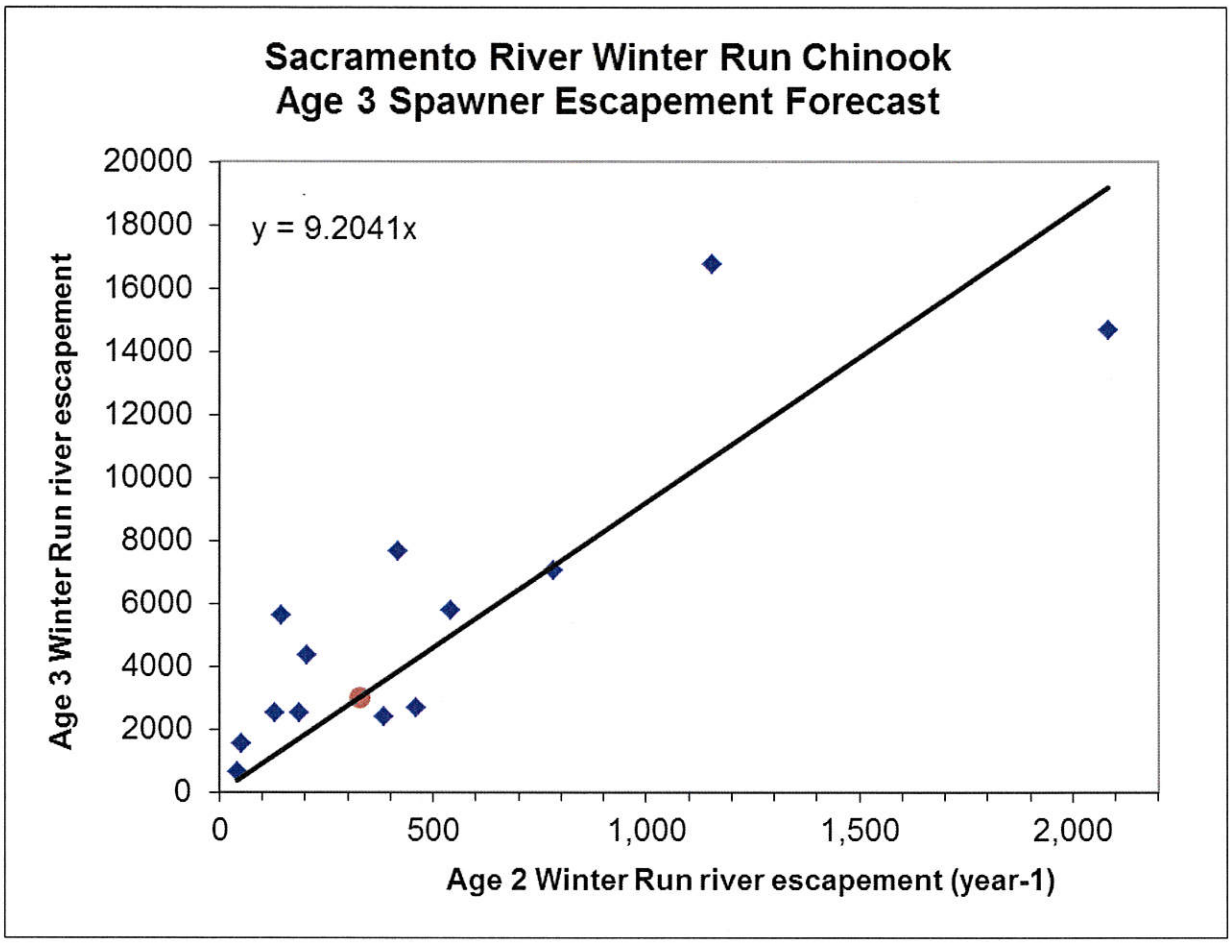
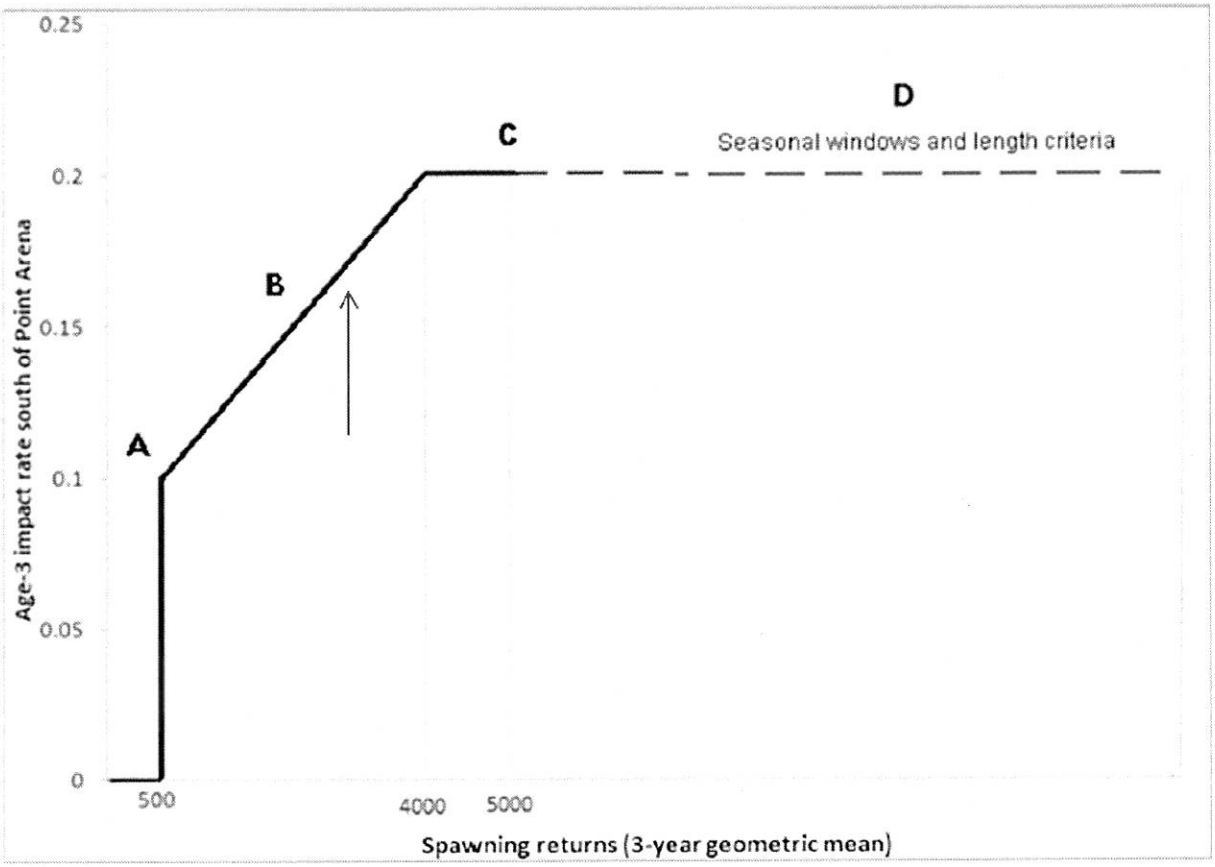


Figure 1. CDFW sibling regression estimator (2001-2013) to forecast age 3 Sacramento River Winter Chinook escapement based on age 2 returns observed the previous year. Based on the 327 age 2 Winter Run that returned in 2014, CDFW estimates that 3,010 age 3 Winter Run will return in 2015 (red dot). An additional 255 age 2 Winter Run are forecasted to return based on the long term ratio of age 2 returns to age 3 returns (2001-2013). Thus CDFW estimates the total Winter Run return in 2015 will be 3,265 fish.



Condition A: Geometric mean of the most recent 3 years of spawning return estimates of less than 500 - 0% impact rate cap.
Condition B: Geometric mean of the most recent 3 years of spawning return estimates between 4000 and 500 – a straight line, proportional decline between 20% and 10% impact rate cap.
Condition C: Geometric mean of the most recent 3 years of spawning return estimates between 5000 and 4000 – 20% impact rate cap.
Condition D: Geometric mean of the most recent 3 years of spawning return estimates greater than 5000 - No preseason impact rate cap (Minimum size limit and seasonal window restrictions still in effect).

Figure 2. Sacramento River Winter Run Chinook Harvest Control Rule (HCR), which utilizes the geometric mean of escapement from the most recent three years to determine the maximum Age 3 impact rate for ocean fisheries south of Pt. Arena (PFMC Preseason Report I Stock Abundance Analysis and Environmental Assessment Part 1 for 2014 Ocean Salmon Fishery Regulations - Appendix C). CDFW estimate of 3,295 Sacramento Winter total run in 2015 is represented by the red arrow.