The Groundfish Management Team (GMT) reviewed the 2011 Pacific Hake/Whiting Stock Assessment (Agenda Item H.3.a, Supplemental Attachment 1) and the Stock Assessment Review (STAR) Panel (Agenda Item H.3.a, Supplemental Attachment 2) report and offers the following considerations to the Council in setting harvest specifications for the 2011 season. The GMT also thanks representatives from the joint Stock Assessment Team (STAT) for providing us an opportunity to discuss their results at this meeting.

Harvest Specifications

The draft 2011 assessment (Agenda Item H.3.a, Supplemental Attachment 1) shows that the stock biomass is trending upward and is nearly at or above $B_0$, depending on the model. The main axes of uncertainty as reflected in the decision tables in the assessment are: 1) the size of the 2008 cohort and, 2) the different estimates of stock size produced by the two different models forwarded for management advice. The U.S. (SS) and the Canadian (TINSS) models have different parameterization and assumptions driving abundance estimation from available data sources, but, due largely to collaboration prior to the STAR Panel by the joint STAT, their results are in very close agreement. The GMT understands that the SSC will recommend a combination model (i.e. blending the two) for purposes of determining an overfishing level (OFL), which was traditionally defined as acceptable biological catch (ABC) for whiting.

Application of Amendment 23, which reflects the new National Standard 1 (NS1) guidelines, for setting harvest specifications is not necessary since this species falls under the international exemption. The U.S.-Canada treaty does provide instruction on the setting of the annual harvest. Article III of the treaty says that, “the default harvest rate shall be F-40 percent with a 40/10 adjustment.” The treaty does give the parties discretion to depart from the F$_{40\%}$ harvest rate “if the scientific evidence demonstrates that a different rate is necessary to sustain the offshore hake/whiting resource.” Article II also instructs the scientific bodies created by the treaty to “provide scientific advice on the annual potential yield of the offshore hake/whiting resource that may be caught for that fishing year, taking into account uncertainties in stock assessment and stock productivity parameters and evaluating the risk of errors in parameter estimates produced in the assessment.”

For the sake of consistency in terminology, the GMT recommends the maximum sustainable yield harvest level be designated as OFL while the total catch harvest level is designated as annual catch limit (ACL). The GMT notes that if the ACL were set equal to the OFL with no accounting for scientific uncertainty, the blended model recommended by the SSC gives a median F$_{40\%}$ value of 973,727 mt. (Agenda Item H.3.a, Supplemental Attachment 3.) Again, the Council applied the international exception to this stock with Amendment 23 and did not

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1 The treaty defines “Potential yield” to mean “the range of results obtained from applying the harvest rate established pursuant to paragraph 1 + of Article III [i.e., the $F_{40\%}$ with 40/10 adjustment] to a range of forecasted biomass estimates.”
contemplate using the P* ABC control rule. Just for comparison purposes, the GMT notes that the percentiles are analogous to the P* approach the Council is using for other groundfish stocks. In other words, the 12.5th percentile quantity of 530,115 mt would be roughly equivalent to a P* choice of 0.125.

The Council may still want to set harvest for this species at a more risk-averse level given its importance to west coast groundfish fisheries and historical harvest context. The GMT notes that, in the last 10 years, the coastwide annual harvest level (OY) for whiting has only been over 300,000 mt five times (see Table G in the Executive Summary of the assessment, Agenda Item H.3.a, Supplemental Attachment 1). Also, the highest U.S. harvest level analyzed during the 2011-2012 biennial specifications and management measures process was 290,903 mt (150 percent of the 2010 OY). This translates to 393,751 mt coastwide (i.e. the U.S. OY is 73.88 percent of the coastwide OY). In recent years one aspect considered when documenting the environmental effects of setting the whiting harvest level has been looking at the magnitude of incidental catch of overfished groundfish species that could be associated with a certain harvest level of whiting. The GMT notes that a wide range of impacts to overfished species from groundfish target opportunities were considered in the 2011-2012 specifications and management measures Environmental Impact Statement (EIS), and that the impacts to overfished species by vessels targeting whiting under the rationalized fishery are limited by the available set-asides and other allocations, and that these allocations of overfished species are not directly affected by the setting of the whiting harvest level. If we were asked to analyze the impact of a higher ACL, it is unclear to the GMT what further analysis would be required in addition to what was analyzed in the 2011-2012 Final EIS.

Furthermore, given the uncertainty of the 2008 cohort, we anticipated that the Council may wish to take a more measured approach to increasing the harvest level until the size of that year class can be verified by the acoustic survey. There are many rationales for taking such an approach. If the expectation of higher biomass is verified in 2012, more of the 2008 cohort will be of marketable size (i.e. more desirable to industry) at that time as well. Even under low 2008 cohort scenarios the SS model predicts that overfishing will not occur under the low 2008 cohort scenario at harvest levels less than around 400,000 mt. The TINSS model predicts that overfishing will not occur below about 704,600 mt under this scenario.

Tribal Allocation
Prior to calculating the whiting sector allocations, the tribal allocation and set-asides for whiting removals in other fisheries and research must be accounted. Last year the National Marine Fisheries Service (NMFS) based the tribal allocation on a formula reflecting the estimates of need from the two tribes planning to participate in the fishery. That formula was 17.5 percent of the U.S. OY requested by Makah plus 16,000 mt based on Quileute’s estimate of an amount of fish that would be economically feasible for two boats. While that allocation was not intended to be the basis for future allocations, the Council may want to comment on whether that is an appropriate formula for 2011 (i.e. based on estimated tribal participation for the coming year).

Set Asides
Catch or anticipated catches from 2005 through 2011 are presented in Table 1 below. The Northwest Region anticipates at least 1,200 mt will be needed for research in 2011 because of
new bycatch reduction research for midwater gears that target whiting that the Northwest Fisheries Science Center (NWFSC) will be conducting. Because of the variability in catches of whiting in the pink shrimp fishery and the time lag in receiving the final impacts from these fisheries, the GMT recommends that 4,008 mt, which is the maximum level of removals or anticipated catch from 2005 to 2011 (2,808 from the pink shrimp fishery in 2007 plus 1,200 from research in 2011), be deducted in 2011 prior to determining the non-tribal sector allocations. However the GMT notes that the estimate of whiting needed for new bycatch research is a point estimate based on expected average performance, so the Council may want to increase the set aside to account for potentially higher impacts.

Table 1. Allocations, Catches or Estimates of Potential Catch of Pacific whiting that come off-the-top, e.g. deducted from the ACL (mt).

<table>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tribal (deducted first from ACL) 1/</td>
<td>TBD</td>
<td>49,939</td>
<td>50,000</td>
<td>32,500</td>
<td>32,500</td>
<td>35,000</td>
<td>--</td>
</tr>
<tr>
<td>Research 2/</td>
<td>1,200</td>
<td>28</td>
<td>35</td>
<td>12</td>
<td>49</td>
<td>16</td>
<td>42</td>
</tr>
<tr>
<td>Incidental Catch in the Pink Shrimp Fishery 3/</td>
<td>--</td>
<td>--</td>
<td>1,937</td>
<td>684</td>
<td>2,808</td>
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</tbody>
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1/ Tribal values in this row represent the allocation or set-aside for tribal fisheries that were initially done during setting of the annual whiting harvest specifications. Year-end values may differ due to re-apportionments that occurred during the year.
2/ Research estimates for 2011 and 2010 are based on correspondence with the Science Centers and on limited catch reporting from 2010 research projects. Research estimates from 2009-2005 are those reported in the total mortality reports from those years.
3/ Reported catch from non-whiting fisheries (i.e. pink shrimp) are from the total mortality reports (2009-2007). Prior to 2007, the total mortality reports did not report catches of groundfish specifically for the pink shrimp trawl fishery, so no values are reported in this table for 2006 and 2005.

GMT Recommendations:

- Adopt a coastwide OFL based on the combined model recommended by the SSC.
- Adopt a coastwide ACL that is less than or equal to the OFL based on risk and any other considerations.
- Make a recommendation to NMFS on any considerations for the 2011 tribal allocation.
- Adopt a set aside of 4,008 mt for research and other incidental mortality to determine the sector allocations under the fishery harvest guideline.

PFMC
03/07/11