

**HIGHLY MIGRATORY SPECIES MANAGEMENT TEAM REPORT ON  
FISHERY MANAGEMENT PLAN 2--ANNUAL CATCH LIMITS AND  
ACCOUNTABILITY MEASURES**

This report supplements the Highly Migratory Species Management Team (HMSMT) Report regarding HMS Fishery Management Plan (FMP) Amendment 2 (Item G.2.b) needed to address requirements under the revised National Standard 1 Guidelines. The HMSMT met April 9, 2010 with the HMS Subcommittee of the SSC to discuss the development of management reference points, annual catch limits and accountability measures. The summary below incorporates guidance from the HMS Subcommittee of the SSC, provides some clarification on the earlier HMSMT Report and presents a series of alternatives for the Council to consider. This Supplemental Report is structured to follow the same outline established in the HMSMT Report:

- 1) Classification of stocks in the FMP as either management unit species (MUS) or ecosystem component (EC) species.
- 2) Application of the MSA international exception to annual catch limits (ACLs) and accountability measures (AMs) for Management Unit Species (MUS).
- 3) Determining the Primary fishery management plan (FMP) for MUS included in the Western Pacific Fishery Management Council's (WPFMC) Pelagics FMP.
- 4) Establishing Reference Points and Accountability Measures.

**1. Classification of stocks in the FMP:**

The HMS Subcommittee of the SSC requested clarification on the decision making processes leading to proposed reclassifications. Below are the alternatives the HMSMT has proposed for Council consideration and the rationale for each alternative. The alternatives regarding reclassification of stocks are not exclusive of one another; for example, the Council may decide to select one or more alternative(s) to achieve a preferred stock reclassification scheme. Regardless of what alternative(s) the Council adopts, the HMSMT cautions that the management framework of Amendment 2 should allow for changes in fishery dynamics over time. If the species composition of the catch changes significantly over time, the framework should allow for reexamination and reclassification of MUS and EC species.

**Alternative 1 (comparable to “status quo”):** Leave all Management Unit Species (MUS) as MUS, and reclassify all monitored species as EC species.

Rationale: The inclusion of monitored species in the plan appears to have captured, for most monitored species, the intent of the new EC species in that they are not major components of the fishery but have been captured, at least once, incidentally in the U.S. West Coast HMS Fisheries.

**Alternative 2:** Reclassify opah as a MUS.

Rationale: Landings are significant (exceeding 50 mt annually in recent years; Table 1 and Figure 1 of the HMSMT Report) and the market for opah has apparently grown since the development of the HMS FMP.

**Alternative 3:** Reclassify bigeye thresher and pelagic thresher as EC species.

Rationale: These two species were included in the HMS FMP because they may be particularly vulnerable to the effects of fishing due to their life history characteristics. Like the other three pelagic shark species covered in the HMS FMP, they are long lived, have low fecundity and are slow to mature. However, unlike the other three pelagic shark species in the plan, they are not taken in high numbers in the U.S. West Coast HMS fisheries (Table 1 and Table 3). Recent landings of each species average less than 5 mt annually, and pelagic threshers are mainly encountered during warm water El Niño years. Observer records for the swordfish drift gillnet fishery (Table 3) demonstrate that estimated blue shark catch is at least ten-fold higher than either pelagic or bigeye thresher shark catch, on average. Neither pelagic thresher nor bigeye thresher is of recreational or commercial importance for U.S. West Coast fisheries; in contrast, shortfin mako and common thresher sharks are recreationally and commercially important species. In addition, both the pelagic and bigeye thresher sharks are taken in greater numbers by fisheries operating outside the U.S. West Coast EEZ, and both are managed under the WPFMC Pelagics Plan.

**Alternative 4:** Drop 22 monitored species from the HMS FMP, as shown in Tables 1 and 3 of the HMSMT Report, and reclassify all other monitored species as EC species, with the exception of opah if it is reclassified as a MUS under Alternative 2 above.

Rationale: The HMSMT examined West Coast landings (Table 1) and bycatch in the drift gillnet fishery (Table 3) and concluded that the Council should consider dropping several monitored species from the HMS FMP. All species proposed to be dropped from the FMP with the exception of bat ray and leopard shark have average annual landings of less than 1 mt over the past 9 years. Upon closer examination, the relatively higher level of reported bat ray landings was taken during CPS targeted trips.

Leopard sharks are benthic dwelling, coastal sharks; although the reported annual recreational catch is relatively high, it is unlikely that leopard sharks are actually taken while targeting HMS. Furthermore, leopard sharks are included in the PFMC Groundfish Management Plan.

Of several species with landings less than 1 mt annually, the HMSMT suggests that the Council consider classifying some as EC species rather than dropping them from the FMP because they are encountered in relatively high numbers as bycatch in the drift gillnet fishery (Table 3), or in the pelagic longline fishery (data not shown due to confidentiality reasons). These include pelagic stingray, wahoo, hammerhead sharks, oilfish, Pacific pomfret, black skipjack, bullet mackerel, common mola, and Pacific bonito. For all others listed in Table 1 and Table 3, the HMSMT considers the landings or incidental take insignificant; many are also covered under another management plan.

**2. Application of the International Exception to Management Unit Species:**

The HMS Subcommittee of the SSC agreed that none of the current MUS are restricted to the U.S. West Coast EEZ and all are susceptible to international fisheries. However, as the HMSMT Report (Item G.2.b) points out, a few criteria must be met in order to be a candidate for International Exception. The majority of the current HMS MUS (particularly the tunas and

billfishes) are actively managed and regularly assessed under the IATTC and WCPFC. The HMSMT report also references resolutions by the two RFMOs regarding pelagic sharks and finfish bycatch (Table 5). Therefore all MUS may be considered eligible for application of the International Exception. At their November meeting, the Council asked for information on the first two alternatives below, and the HMSMT has since decided to propose the third based on discussion at their interim meeting in February 2010.

**Alternative 1:** Apply the International Exception to all MUS (including opah if selected under Section 1, Alternative 2 above).

Rationale: See HMSMT Report.

**Alternative 2:** Apply the International Exception to all MUS except shortfin mako and common thresher shark.

Rationale: While subject to capture in international fisheries, and covered under IATTC and WCPFC resolutions on sharks and bycatch, these two species were considered of special regional significance at the time the FMP was developed because of their vulnerability and importance to West Coast commercial and recreational fisheries. See HMSMT Report for further discussion.

**Alternative 3:** Apply the International Exception to all MUS except common thresher shark.

Rationale: The best available science indicates that the range of the common thresher shark taken in the U.S. West Coast fisheries is likely limited to the U.S. EEZ and the Mexico EEZ off the northern portion of Baja California, with very limited movement beyond to the north and west. Collaborative research among SWFSC scientists, Scripps University and CICESE, Ensenada Mexico demonstrates a significant artisanal fishery for common thresher sharks off northern Baja, yet the fractional catch by Mexico fisheries of the common thresher shark stock is estimated to have been either stable or in decline since the development of the HMS FMP due to recent regulatory changes affecting shark fisheries. Accurate landings estimates for the Mexico fleet are not available, yet the stock is relatively confined and U.S. West Coast landings likely comprise a greater proportion of the total stockwide catch than for any of the other pelagic shark MUS.

### **3. Determining the Primary Fishery Management Plan (FMP) for MUS:**

A proposed division of responsibility between the WPFMC and the PFMC is described in the HMSMT Report (see Table 6 in Item G.2.b). Current stock assessments are being conducted with an effort to incorporate the best available information on the extent of the stock being studied; however, in many cases the stock assessments are conducted based on stock structure defined by jurisdictional boundaries. The HMSMT would like to note that stock structure of HMS is an active area of research. There is the potential that future modeling efforts may not be limited to the stocks identified in the current FMP or in the HMSMT Report. Greater stock partitioning or lumping may require the WPFMC and PFMC to reconsider designation of the primary FMP. The HMSMT recommends that the management framework in Amendment 2 therefore allow for renegotiation of the primary FMP designations as necessary through consultation with the WPFMC. For this reason the Council may prefer to not to list designation

of a Primary FMP in the Amendment 2 language in light of the potential for future stock restructuring.

#### **4. Establishing Reference Points and Accountability Measures**

The HMSMT and HMS Subcommittee of the SSC spent most of their joint meeting discussing how to establish management reference points (MSY, OY, and Status Determination Criteria including OFL) for all MUS and how to establish ABC, ACL and Accountability Measures for any stocks that do not fall under the International Exception.

A framework is proposed based on a tiered system depending upon whether or not a stock assessment with MSY based estimates is available and whether or not a time series of stockwide catch is available. The Council responsible for the primary FMP would be responsible for establishing the management reference points and SDCs.

Determining MSY for HMS FMP Management Unit Species:

- 1) If a recent stock assessment with MSY based estimates has been conducted, the HMSMT would summarize the results of the stock assessment and estimated reference points and present the summary to the SSC. If the SSC considered the assessment results to be robust, the MSY would be recommended to the Council for management.
- 2) If the stock has not been recently or ever assessed, the HMSMT would compile the best available data on stockwide catch and use some part of the time series to estimate a sustainable catch limit. Catch-based models that incorporate some stock productivity parameters and methods to account for uncertainty, such as DCAC or DB-SRA may prove useful for estimating a sustainable yield. Alternatively, if justified, catch levels from select years when the stock was believed to be fished sustainably could be used to come up with a proxy MSY.
- 3) If a time series of stockwide catch is not available, then it may be necessary to use a time series of only regional (U.S. West Coast) catch and apply a catch-based estimation model (as above) or select levels of sustainable catch to serve as a proxy local MSY.

While the HMSMT may identify a reasonable MSY or MSY proxy, the SSC would ultimately need to endorse the reference point and recommend it to the Council for use in management under Amendment 2. When an MSY proxy is established on a local level, the target yield can be considered equivalent to a regional overfishing limit (OFL), a new reference point established under the revised NS1 Guidelines.

Setting OY (less than or equal to OY):

Currently the FMP establishes a default control rule that includes establishing OY at some level equal to or less than MSY. The HMSMT suggests that the Council include a flexible framework for setting OYs under Amendment 2 in order to address life history concerns, management goals and socioeconomic considerations on a species by species basis.

The SSC questioned the decision to set OY equal to 0.75 MSY for pelagic sharks, bluefin tuna, and striped marlin under the current FMP and asked whether the HMSMT felt it was appropriate to establish a consistent precautionary OY for the same species under Amendment 2. For clarification, the decision to set OY to something lower than MSY under the HMS FMP included

consideration of the vulnerable life history characteristics of the pelagic sharks, as well as socio-economic considerations and management goals at the time of the FMP development. OY under the original NS1 Guidelines could be reduced from MSY by a “catch all” precautionary buffer to set a management reference point at a lower level due to scientific uncertainty, socioeconomic considerations, management objectives and/or vulnerability.

Under the HMS FMP, for example, a fishery to capture live juvenile bluefin tuna in order to rear them in pens off Baja California had just been established and appeared to be growing at a rapid rate; the impact of the nascent fishery on the bluefin population and the fact that bluefin had been subject to overfishing in other oceans demonstrating some stock vulnerability may have been the basis for setting a more precautionary OY for that species. For striped marlin, OY was likely set at 0.75MSY to attain lower levels of fishing mortality on that stock and to sustain the stock at higher levels due to its importance to the local recreational fisheries. While the establishment of an OY lower than MSY may still be advisable for several MUS, a decision to revise the level of the precautionary OY or to change the species to which a precautionary OY would apply can be considered as part of the process in establishing management reference points under Amendment 2.

#### Status Determination Criteria:

The HMSMT Report (Item G.2.b) includes the current default formulas for the maximum fishing mortality threshold (MFMT) and minimum stock size threshold (MSST). The HMSMT suggests the Council consider keeping the current control rules for management under Amendment 2.

#### Establishing OFL, ABC and ACL for HMS FMP Management Unit Species not subject to International Exception:

For all MUS for which the PFMC HMS FMP is the primary FMP, MSY or a MSY proxy will have to be established under a framework as described above. Once the MSY has been established, then the MSY should be adjusted to the local level in order to come up with an OFL to apply to the PFMC HMS fisheries. Under the new NS1 Guidelines, an ABC must also be established at some value below OFL to account for scientific uncertainty associated with estimating OFL. The Groundfish Management Team has come up with a statistically validated method for estimating scientific uncertainty associated with stock assessments on groundfish that can be used in combination with a P\* approach. The Council may choose to use a similar approach for HMS in order to incorporate risk in the process of selecting the ACL. The ACL, ultimately used for management of the local catch, may be equal to or lower than the ABC. A reduction in ACL from ABC is meant to account for socioeconomic considerations and management goals, if applicable.

#### Accountability Measures for Stocks Subject to ACLs:

The HMSMT Report (Item G.2.b) describes the current FMP framework for establishing management measures if needed to respond to situations when the ACL may be exceeded. The HMSMT believes the biennial process established under the FMP satisfies the requirements under the revised NS1 Guidelines.