

HIGHLY MIGRATORY SPECIES MANAGEMENT TEAM REPORT ON FINAL FISHERY ECOSYSTEM PLAN

The Highly Migratory Species Management Team (HMSMT) reviewed the draft Fishery Ecosystem Plan (FEP) and would like to compliment the plan development team for putting together an attractive and informative document which addresses issues beyond the scope of the four species-focused Council Fishery Management Plans (FMPs). The HMSMT offers the following input on the draft FEP. Underlining is used to indicate proposed edits.

p. 8: “Although there are many ways of thinking about dividing the CCE into sub-regions, Francis et al. (2008) have suggested three large-scale CCE sub-regions”

HMSMT Comment: Francis et al. 2008 is missing from references.

p. 16: “Since sea turtles likely represent one of the most vulnerable taxa in the CCE, and much of this vulnerability lies beyond the control of the PFMC and other U.S. management entities, issues relating to turtle conservation tend to be a high priority with respect to minimizing turtle fisheries interactions.”

HMSMT comment: Tapilatu et al. (2013) cite numerous significant factors for the decline in leatherback sea turtle nests in Indonesia, such as local harvesting of eggs and turtles, including artisanal boats observed visiting nesting beaches on a weekly basis and returning with 10,000-15,000 leatherback sea turtle eggs per boat, a set gillnet shark fishery resulting in 2-3 female leatherback deaths per week, and low hatching success due to (1) predation of eggs and hatchlings by introduced pigs and dogs, (2) beach erosion, and (3) elevated sand temperatures. Roughly 20 percent of the Western Pacific leatherback population utilizes the California Current Ecosystem as a foraging area, while the remaining 80 percent are exposed to numerous threats that lie outside of U.S. Exclusive Economic Zone (EEZ) waters. Given the enormity of the nesting site threat to the Western Pacific leatherback population outside of U.S. territorial waters and comparatively low leatherback sea turtle bycatch counts in West Coast U.S. fisheries, there is little potential for reversing the long-term population decline without a multinational holistic strategy (Dutton and Squires, 2011) which addresses all anthropogenic sources of mortality across the full geographic range of the population. Measures of marine turtle Potential Biological Removal (PBR) were recently quantified to provide harvest and population production potential in an effort to establish reference points for marine turtle population conservation and management (Curtis and Moore 2013).

p. 19: The PFMC’s HMS FMP is unique in that the impact of fishing activities under the jurisdiction of the PFMC for most HMS are generally modest relative to other regions in the Pacific such as the Western and Central, since many HMS species spend limited time subject to fisheries within the EEZ.

HMSMT Comment: Exceptions where West Coast vessels harvest an appreciable fraction of North Pacific catches include north Pacific albacore, swordfish, common thresher sharks, and blue sharks.

Proposed HMSMT edits of passages on below-referenced pages:

p. 51: That period saw the development of most of the basic foundations of contemporary fisheries science, including functional relationships affecting productivity such as fisheries oceanography, spawner/recruit relationships, as well as population dynamics models such as surplus production models and virtual population analysis that allow hypotheses about the interactions of functional aspects and sustainability of populations to exploitation to be tested.

p. 52: This period is characterized by a gradual and wide recognition that ecosystem factors are important to marine resource science and management, but most management actions tend to be based in an assemblage-based context that integrates single-species assessment model results. While a single-species focus in stock assessment still underpins US fisheries population management, ecosystem based assessment modeling frameworks gaining influence (Lehody et al 2008), providing the ability to quantify changes in ecosystems, particularly as they relate to fishery exploitation.

p. 56: *The HMSMT proposes replacing the following language from the draft FEP with the underlined passage which follows:*

West Coast commercial fisheries landings data is collected within the PSMFC's Pacific Fisheries Information Network (PacFIN) database. Data represent landings recorded on state fish tickets (landings receipts,) but does not include any fisheries' biomass removals that may occur as bycatch to commercial fisheries, nor does it include recreational fisheries' removals.

West coast commercial fisheries landings data are maintained by the PSMFC within the database, Pacific Fisheries Information Network (PacFIN). PacFIN data represent landings recorded on state fish tickets (landing receipts). Recreational fishing activity is maintained by the PSMFC in the database Recreational Fisheries Information Network (RecFIN). This database centralizes data collected from recreational fishing surveys from US Pacific coast states beginning in 1980. Another source of information about recreational fishing catch and effort is the California Department of Fish and Game's Commercial Passenger Fishing Vessel (CPFV) database. This data stream of catch and effort has been collected since 1936. PacFIN does not contain information about bycatch (i.e. animals caught and discarded at sea), but RecFIN and CPFV do contain information about discards.

p. 63: Fish landed or otherwise caught in West Coast tribal fisheries for economic purposes are routed through similar processing chains to those used by the non-tribal fisheries.

HMSMT Comment: We suggest "commercial sale" could be a more accurate description than "economic purposes."

p. 96: Highly Migratory Species (HMS) FMP [sea turtles, marine mammals]

p. 122: The ISC and IATTC also develop proposals for conduct of and coordinate international and national programs of research addressing such species. Member nations of the ISC include

Canada, Chinese Taipei, Japan, Republic of Korea, Mexico, People’s Republic of China and the USA, and observing members include the IATTC, FAO, PICES, SPC, and the WCPFC.

p. 135: When adequate data exist, the consequences of fishing are easier to monitor and estimate; however, the subsequent realized or potential effects on predators, prey, or competitors within the ecosystem (and their predators, prey, competitors, etc) are much less identifiable and quantifiable.

P. 135-36: A clear and comprehensive understanding of the possible long term consequences of fishing activity to ecosystems has yet to be developed. Maintaining entire assemblages and communities of fish and invertebrates at certain abundance levels without regard to important population dynamics such as movement, age and sex structure is unlikely to achieve the goals of long-term sustainability.

p. 136: “There is general scientific consensus that overfishing is associated with large scale ecosystem impacts. However, there is less consensus over how to develop a more holistic perspective on the trade-offs between harvest levels that can be modeled as sustainable for single-species and the cumulative effects of harvesting multiple species on ecosystem “health and integrity” (Francis 2001, Longhurst 2006, Gaichas 2008).”

HMSMT Comment: Francis 2001 is missing from references.

P. 146: “Based on the amount of gear still on the animal, this incident was considered a serious injury. As noted above, a single humpback whale serious injury or mortality from fishing gear can be notable as a percent of that species potential biological removal level. Outside of this humpback whale interaction, this sector of the HMS fisheries has a history of increasingly restrictive management measures intended to monitor and reduce bycatch levels for marine mammals and sea turtles.”

p. 146: HMS fisheries are subject to monitoring by NMFS-trained observers. NMFS’s Southwest Region manages the observer program for HMS fisheries and tracks observed target and incidental catch in both the drift gillnet and deep-set longline fisheries. Though both of these fisheries have been observed to cause entanglement on a rare-event basis and still rarer mortality of ESA-listed species, recent levels of participation and effort in these fisheries have been far below those of the 1990s, reducing the incidence of entanglement and mortality.

p. 150: On average, smaller non-fish organisms grow faster, have shorter generation times, and their population production potential is coupled more directly to environmental variables than higher tropic leveled fish.

p. 153: As a result, the Council, its advisory bodies, and associated agencies have to devote considerable energy to identifying groundfish EFH, even under data poor conditions,

Comments on Appendix Initiatives:

A.2.1 Initiative on the Potential Long-Term Effects of Council Harvest Policies on Age- and Size-Distribution in Managed Stocks

HMSMT Comment: We suggest broadening the scope of this inquiry to include economic considerations. For instance, is it more economically advantageous to harvest an age-0 bluefin tuna or to let it grow to mature size where it contributes to spawning stock biomass and is far more valuable if caught? Generally, how does the age-and-size distribution relate to the economically optimal harvest policy and does this align with optimal harvest policy based on biological considerations?

A.2.3 Cross-FMP Bycatch and Catch Monitoring Policy Initiative

HMSMT Comment: Consider broadening the inquiry regarding bycatch species to all anthropogenic sources of bycatch mortality, including those which lie outside of PFMC control (e.g. leatherback mortality due to egg harvest and coastal gillnet fisheries bycatch of adult females in Indonesia mentioned in Tapilatu et al.).

A.2.6 Human Recruitment to the Fisheries Initiative

HMSMT Comment: Commercial fishermen in HMS fisheries frequently raise a concern about a lack of recruitment of new participants. Research into the demography of U.S. West Coast fisheries, including the age structure of the population of fishermen and the pattern of entry to and exit from participation, could provide useful insights into the impacts of regulations on participation and the sustainability of commercial fishing operations off the West Coast.

A.2.7 Cross-FMP Socio-Economic Effects of Fisheries Management Initiative

HMSMT Comment: The FEP seems advantageously positioned to address cross-FMP socioeconomic effects. One example of interest is the relationship between the open-access albacore fishery and other fisheries subject to occasional closure (e.g. salmon). The albacore fishery may provide an “insurance” benefit by offering an alternative fishery to prosecute when others are unavailable.

References

Curtis KA, Moore JE (2013) Calculating reference points for anthropogenic mortality of marine turtles. *Aquatic Conservation: Marine and Freshwater Ecosystems*.

Dutton, Peter H. and Dale Squires. 2011. A Holistic Strategy for Pacific Sea Turtle Conservation. In collection: *Conservation of Pacific Sea Turtles*. Eds. Peter Dutton, Dale Squires and Mahfuzuddin Ahmed. University of Hawaii Press, Honolulu.

Lehodey P, Senina I, Murtugudde R (2008) A spatial ecosystem and populations dynamics model (SEAPODYM) – Modeling of tuna and tuna-like populations. *Progress In Oceanography* 78:304–318.

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