



MEMORANDUM FOR: Chris Oliver
Assistant Administrator for Fisheries

CLEARED THROUGH: Michael Tosatto
Regional Administrator, Pacific Islands Regional Office
on June 1, 2020

FROM: Jennifer M. Wallace
Acting Director, Office of Sustainable Fisheries

SUBJECT: Recommended Stock Status Determination for Striped Marlin -
Western and Central North Pacific Ocean (*Kajikia audax*)

For Western and Central North Pacific Ocean (WCNPO) striped marlin, I recommend:

- Maintaining the overfishing status as subject to overfishing; and
- Maintaining the overfished status as overfished.

Please indicate below if you concur with this recommendation.

BACKGROUND

Striped marlin (*Kajikia audax*) is a management unit species in both the Fishery Ecosystem Plan for Pelagic Fisheries of the Western Pacific Region (Pelagic FEP) developed by the Western Pacific Fishery Management Council and the Fishery Management Plan for U.S. West Coast Fisheries for Highly Migratory Species (HMS FMP) developed by the Pacific Fishery Management Council. The Pelagic FEP and the HMS FMP specify one Pacific-wide stock of striped marlin and do not identify separate stocks. Genetic studies suggest there are at least three distinct striped marlin populations in the Pacific Ocean: one population in the North Pacific Ocean (NPO) that includes Japan, Hawaii, and California; a second population in the Eastern Pacific Ocean (EPO) that includes the Equator and Peru; and a third population in the Southwest Pacific Ocean (SWPO) around Australia and New Zealand. Other studies suggest a fourth genetically distinct group, which separates adults around Hawaii into a different group than juveniles. Tagging studies also indicate there is mixing between the NPO, EPO, and SWPO.

While noting that there is uncertainty in the stock structure for Pacific striped marlin, the 2019 stock assessment for WCNPO striped marlin is based on boundaries of the convention area of the Western and Central Pacific Fisheries Commission (WCPFC), and includes waters of the NPO bounded on the south by the equator and on the east by 150°W. Vessels in the Hawaii-based longline fishery account for nearly all of the U.S. domestic landings of WCNPO striped marlin, and approximately 18 percent of the total WCNPO landings in 2017.

In addition to domestic management measures under the Pelagic FEP and HMS FMP, U.S. fisheries for striped marlin are subject to international management by the WCPFC and Inter-



American Tropical Tuna Commission (IATTC). Conservation and Management Measure 2010-01 adopted by the WCPFC in 2010, requires participating member countries to reduce total catch of striped marlin in the Western and Central Pacific Ocean (WCPO) to 80 percent of the maximum levels taken between 2000 and 2003. Since 2010, total U.S. catch of striped marlin in the WCPO has remained below the recommended level. At its 16th Regular Session, the WCPFC adopted a rebuilding plan for WCNPO striped marlin, with an interim target of rebuilding spawning biomass to 20 percent of the unfished level by 2034, with at least a 60 percent probability of rebuilding. This objective will be subject to further consideration and decision of the 17th WCPFC, to be held in December 2020. To date, the IATTC has not adopted any management measures applicable to striped marlin.

CURRENT STATUS

- In July 2015, the Billfish Working Group of the International Scientific Committee (ISC) for Tuna and Tuna-like Species in the North Pacific Ocean completed a stock assessment for the WCNPO striped marlin stock, using the Stock Synthesis 3 model with data through 2013. It supported a determination that the stock was subject to overfishing and was overfished.
- At present, the WCPFC and the IATTC have not formally adopted overfishing and overfished status determination criteria (SDC) for striped marlin. The Pelagic FEP and the HMS FMP both include SDC for overfishing and overfished status determinations. In accordance with Section 304(e) of the Magnuson-Stevens Fishery Conservation and Management Act, NMFS will rely on these SDCs for recommending stock status. Under both plans, overfishing occurs when fishing mortality (F) exceeds the fishing mortality rate that produces the maximum sustainable yield (F_{MSY}) for a period of one year or more.
- Under both plans, a stock is considered overfished when its biomass (B) or spawning biomass (SB) has declined below the level necessary to produce MSY on a continuing basis. This level is referred to as the minimum stock size threshold (MSST). Under both plans, $MSST = cB_{MSY}$ where c is the difference of 1 minus the natural mortality rate (M) or 0.5, whichever is greater. Expressed as a ratio, a stock is overfished when $SB_{year}/SB_{MSY} < 1-M$ or 0.5, whichever is greater.
- Based on the overfishing and overfished SDC described in the Pelagic FEP and HMS FMP, the 2015 assessment supported a determination that the stock was subject to overfishing because $F_{2010-2012}$ (0.94) was greater than F_{MSY} (0.63) and was overfished because the ratio of SB_{2013} (1,094 t) compared to SB_{MSY} (2,819 t) = 0.39, which is less than all possible estimates of MSST (based on M for all age groups).

INFORMATION THAT SUPPORTS RECOMMENDED STATUS

- In July 2019, the Billfish Working Group of the ISC completed a stock assessment for the WCNPO striped marlin stock, using the Stock Synthesis 3.30.08 model with data through 2017. This assessment supports a determination that the stock continues to be subject to overfishing and continues to be overfished.
- The SDCs of the Pelagic FEP and HMS FMP remain unchanged since the previous assessment.

- The 2019 assessment supports a determination that the stock is subject to overfishing because $F_{2015-2017}$ (0.64) is greater than F_{MSY} (0.6) and is overfished because the ratio of SB_{2017} (981 t) compared to SB_{MSY} (2,604 t) = 0.38, which is less than all possible estimates of MSST (based on M for all age groups).
- On April 9, 2020, the Pacific Islands Fisheries Science Center and the Southwest Fisheries Science Center determined that for WCNPO striped marlin, the best scientific information comes from the 2019 stock assessment conducted by the ISC.

RECOMMENDATION

For the Western and Central North Pacific Ocean stock of striped marlin I recommend:

- Determining that the stock remains subject to overfishing and remains overfished.

1. I concur. _____
Date

2. I do not concur. _____
Date