**Western
Pacific
Regional
Fishery
Management
Council**

April 29, 2024

Dr. Zachary Schakner
Office of Science and Technology
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910-3226

RE: Draft 2023 Stock Assessment Reports (NOAA-NMFS-2024-0019)

Dear Dr. Schakner:

The Western Pacific Regional Fishery Management Council (Council) appreciates the opportunity to provide comments to the National Marine Fisheries Service (NMFS) on the Draft 2023 Stock Assessment Reports (SAR) prepared under the Marine Mammal Protection Act (MMPA)[1]. The Council develops fishery management policy for the Western Pacific Region under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (MSA). The Hawaii deep-set longline fishery, which is subject to the False Killer Whale Take Reduction Plan, is primarily managed under the Council's Pacific Pelagic Fishery Ecosystem Plan (FEP). The Council's comments on the Draft 2023 SAR focuses on the proposed "management area" for the Hawaii pelagic stock of false killer whales.

The Council and its Scientific and Statistical Committee (SSC) received several updates on the proposed management area since the concept was first presented to the False Killer Whale Take Reduction Team in advance of the March 2023 in-person team meeting. At its 195th meeting in June 2023, the Council requested NMFS to conduct an independent review outside of the Pacific Scientific Review Group on the management area approach, including validation of the underlying species distribution model (SDM). NMFS Pacific Islands Fisheries Science Center (PIFSC) Director communicated to the Council that the SDM meets the peer review process outlined in NMFS' Guidelines for Assessing Marine Mammal Stocks (GAMMS), and that they did not believe that additional review for the remaining components of the management area approach was warranted. PIFSC Director encouraged the SSC and Council to review the NOAA Technical Memorandum describing the approach used in developing the management area (Oleson et al. 2023[2]) and provide input during the Draft SAR public comment period.

Based on a comprehensive review of the NOAA Technical Memorandum, the Council finds that the management area approach is not consistent with the GAMMS, and recommends that NMFS not use the management area boundary and associated abundance estimate using the SDM in the SAR or for any management purposes because the available data are not fit for purpose. The Council

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[1] *See* 89 Fed. Reg. 78307 (January 29, 2024)

[2] Oleson, EM, Bradford, AL, Martien, KM. 2023. Developing a management area for Hawaiʻi pelagic false killer whales. U.S. Dept. of Commerce, NOAA Technical Memorandum NMFS-PIFSC-150, 2525 p. doi:10.25923/c9qv-2v95

recommends that NMFS prioritize conducting surveys outside of the U.S. EEZ around Hawaii to gather additional tagging and genetics data to delineate a biologically-based area defining the pelagic false killer whale stock.

The Pelagic False Killer Whale Management Area Delineation Approach is Not Consistent with GAMMS

NMFS is proposing to delineate a "management area" for the Hawaii pelagic false killer whale stock in the Draft 2023 SAR, based on the approach described in the NOAA Technical Memorandum (Oleson et al. 2023). NMFS explains that the management area boundary was chosen to reflect the known range of the pelagic stock based on available satellite telemetry, genetic sample, survey sighting, and fishery interaction data.

The Council finds that NMFS' application of the Guidelines for Assessing Marine Mammal Stocks (GAMMS; NMFS 2023[3]) for the management area approach is inconsistent with its own guidance. In the NOAA Technical Memorandum (Oleson et al. 2023), NMFS makes reference to the GAMMS and describes the approach for defining a "management area" for the pelagic false killer whales as follows:

> In cases of transboundary stocks with incomplete information, GAMMS (NMFS 2023) suggests that management units may be defined, assuming the MMPA definition of a stock can be assured (i.e., individuals share a common spatial arrangement and interbreed when mature). In these cases, GAMMS states that a "stock's geographic range should not be based on anthropogenic boundaries (e.g., political boundaries such as the U.S. Exclusive Economic Zone (EEZ)), as such areas do not represent true biological and ecological ranges and are counter to the MMPA objective of maintaining stocks as functioning elements of their ecosystems." Delineation of the management unit may be influenced by regions with high rates of human-caused MSI. Further, when adequate information to delineate DIPs is unavailable over large geographic areas, information from other parts of the species' range may be considered to draw inferences by analogy. Given the recently updated GAMMS guidance, we have endeavored to derive a management area that reflects what we know of Hawai'i pelagic false killer whale distribution and allows for a more complete assessment of fishery impacts on this stock. (Oleson et al. 2023, p.4)

The actual GAMMS reads as follows:

> In the absence of robust data to inform DIP delineation, the best scientific information available should be used to divide a species' geographic range into areas that represent defensible stocks to serve as management units, keeping in mind the MMPA definition that the group should be in a common spatial arrangement and interbreed when mature. Examples of such areas include, but are not limited, to distinct oceanographic regions and semi-isolated habitats, particularly those that may have high rates of human-caused M/SI. Such areas have often been found to represent the geographic range of DIPs when sufficient information is available. In cases where there are large geographic areas from which data on DIPs of marine mammals are lacking, information from other parts of the species' range may be considered to draw inferences by analogy. (NMFS 2023, p.4)

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[3] NMFS. 2023. Guidelines for Preparing Stock Assessment Reports Pursuant to the Marine Mammal Protection Act. Protected Resources Policy Directive Marine Mammal Protection Act. 02-204.

This portion of the GAMMS that NMFS cites to describe situations in which management units may be defined applies "*in the absence of robust data to inform DIP delineation,*" not "*in cases of transboundary stocks with incomplete information*". The guidance appears in GAMMS Section 3.1 in the context of defining and designating stocks. GAMMS Section 3.1 explains the process for demographically independent population (DIP) delineation and stock designation, noting that "*DIP delineation is the responsibility of NMFS Science Center staff and involves evaluating and interpreting the scientific lines of evidence supporting whether groups of animals are demographically independent, including determining the geographic range of the groups* (NMFS 2023, p.3)," whereas the stock designation is a joint responsibility of the "*NMFS Science Center, Regional Office, Office of Protected Resources, and Office of Science and Technology staff and is the process of officially making a stock a management unit that will then be described and assessed in SARs.*" Importantly, GAMMS follows this description by stating that "*Stock designation considers whether individual DIPs can be effectively managed as stocks, occurs after DIP delineation, and is described in NMFS-PD-02-204-03* (NMFS 2023, p.4)." In this context, the guidance pertaining to situations "*in the absence of robust data to inform DIP delineation*" would only be applicable when NMFS has determined that DIP delineation is not possible.

For the Hawaii pelagic false killer whale, NMFS has designated this population as a "stock" for management purposes since the 2008 SAR. NMFS also describes the Hawaii pelagic population as being a DIP in the NOAA Technical Memorandum (Oleson et al. 2023[4], p.4), as well as in the Draft 2023 SAR. This indicates that NMFS believes that there is sufficient data to inform a DIP delineation for the pelagic false killer whales, and that it can be effectively managed as a stock. NMFS thus appears to be proposing to delineate a "management unit" within an existing "DIP", which is contrary to the stated intent of this portion of the guidance (see Figure 1). **Therefore, the referenced portion in GAMMS Section 3.1 would not apply to the current situation with pelagic false killer whales.**
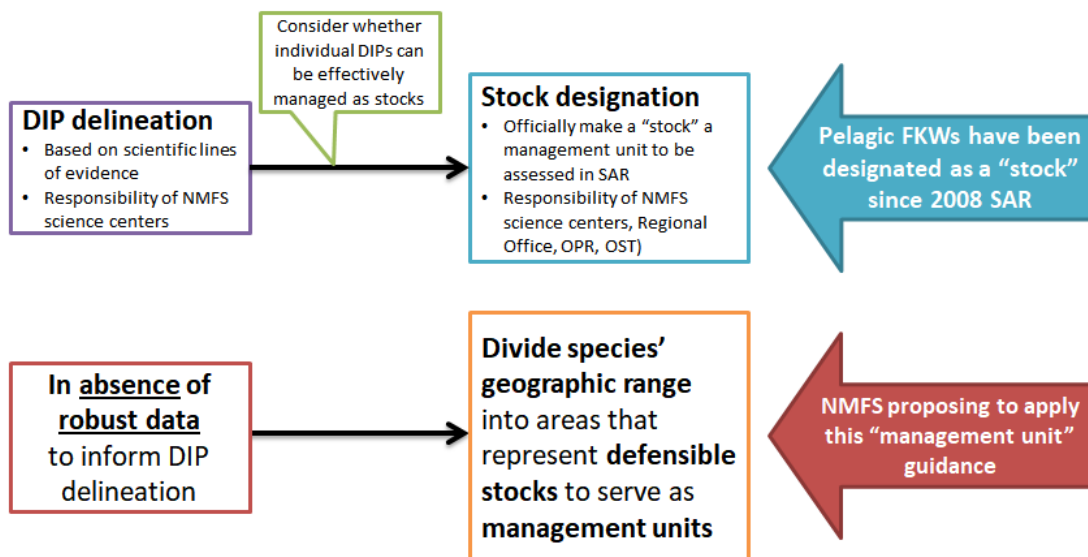

Figure 1. The relationship between DIP and stock designation as described in GAMMS Section 3.1, and its application to the Hawaii pelagic stock of false killer whales.

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[4] Oleson, EM, Bradford, AL, Martien, KM. 2023. Developing a management area for Hawai'i pelagic false killer whales. U.S. Dept. of Commerce, NOAA Technical Memorandum NMFS-PIFSC-150, 2525 p. doi:10.25923/c9qv-2v95

Specific guidance for transboundary stocks that do not have range-wide estimates of minimum abundance (N_{min}) or complete information on human-caused mortality and serious injury (M/SI) are available in GAMMS Section 3.4.4. In the event of incomplete information, GAMMS Section 3.4.4 notes that "*a transboundary stock's status should still be determined following the guidelines presented above (Section 3.4), and the overall PBR and total human-caused M/SI should be reported so that they represent as much of the stock range as possible (NMFS 2023, p.22).*" It is unclear whether NMFS applied the guidance specific to transboundary stocks in delineating a management area and assessing the status of the pelagic false killer whale stock in the Draft 2023 SAR.

Even if the guidance in GAMMS Section 3.1 could be interpreted to apply to the pelagic false killer whale situation, other inconsistencies remain.

As noted above, Section 3.1 states that a species' geographic range may be divided into areas that represent defensible stocks to serve as management units, and that such areas include, but are not limited to "*distinct oceanographic regions and semi-isolated habitats, <u>particularly those that may have</u> high rates of human-caused M/SI* (NMFS 2023, p.4)." In the NOAA Technical Memorandum, NMFS makes reference to this guidance as "*delineation of the management unit <u>may be influenced by regions with high rates of human-caused MSI.</u>* (Oleson et al. 2023, p.4)*" Here, NMFS has interpreted the latter half of the guidance's sentence independently of the first half, even though the guidance clearly intended "those" to refer to "distinct oceanographic regions and semi-isolated habitats that may have high rates of human-caused M/SI." **Therefore, the delineation of a "management unit" should be first predicated on oceanographic or habitat-based features.** This interpretation would also be more consistent with the sentence in the last paragraph in GAMMS Section 3.1, which reads "*When DIPs cannot be delineated and a species' range is divided into defensible units for management purposes (e.g., <u>a semi-isolated area where human-caused M/SI is concentrated, see above</u>) (NMFS 2023, p.5).*" We also note that the GAMMS makes no reference to defining a "management area", and NMFS does not clarify in the NOAA Technical Memorandum (Oleson et al. 2023) or the Draft 2023 SAR whether "management area" is being used interchangeably with "management unit".

Further, the NOAA Technical Memorandum (Oleson et al. 2023) cites the following portion of GAMMS Section 3.1 to explain that the "management area" boundary is determined using available biological information:

> …a stock's geographic range should not be based on anthropogenic boundaries (e.g., political boundaries such as the U.S. Exclusive Economic Zone (EEZ)), as such areas do not represent true biological and ecological ranges and are counter to the MMPA objective of maintaining stocks as functioning elements of their ecosystems. (NMFS 2023, p.5)

However, available biological data (genetic and satellite tagging data) do not represent true biological and ecological ranges because they are limited by anthropogenic factors, such as EEZ-based cetacean surveys, genetic samples collected from federal observers on Hawaii longline vessels, and fishery interaction data limited by the extent of the fishing effort. To date, NMFS has not conducted cetacean surveys on the high seas that would allow a robust delineation of the geographic range of pelagic false killer whales.

Available Data are Not Fit for Purpose

At the 198th Meeting held in March 2024, the Council adopted the SSC Working Group report on the pelagic false killer whale management area (Appendix A). The SSC found that the available data is not fit for purpose in delineating a management area boundary outside of the EEZ and estimating abundance using the SDM.

The proposed boundary relies heavily on data from 10 satellite tags deployed on false killer whales identified as pelagic stock animals, which is insufficient to delineate a biologically sound range. New tagging data presented at the Pacific Scientific Review Group (PSRG) meeting held March 12-14, 2024, showed that one of the 8 pelagic false killer whales tagged inside the EEZ in 2023 has ventured outside of the proposed management area boundary. This suggests that even a small amount of new tags can have significant impact on the pelagic stock boundary. Furthermore, available data used to delineate the management area boundary are limited in its spatial extent by anthropogenic boundaries, including the lack of satellite tag deployment on false killer whales outside of the EEZ. Therefore, critical gaps exist for tagging and genetic data needed to inform a biologically-based range delineation of the pelagic false killer whale stock.

The SSC also noted that the underlying SDM needs a more rigorous and independent evaluation of the SDM approach before it is utilized for management purposes. The SSC first reviewed the design-based and model-based (using SDM) abundance estimates resulting from the 2017 Hawaiian Islands Cetacean Ecosystem Assessment Survey (HICEAS) at its 135th meeting in March 2020.[5] At the time, the SSC noted a number of concerns regarding the use of SDM in both inside and outside of the EEZ, and recommended a simulation-based evaluation of the two estimators to be undertaken to better determine the relative value of each approach for management decision making purposes. Similarly, the Pacific Scientific Review Group (PSRG) in its recommendations resulting from the March 2023 meeting noted concerns regarding the "broad application of the SDM as the primary basis for assessing abundance and trends" and suggested investigating these concerns "through a rigorous simulation approach, similar to the simulation approach used to develop PBR calculation guidelines."

Therefore, the Council recommends that NMFS not use the management area boundary and associated abundance estimate using the SDM in the SAR or for any management purposes. For the area inside the EEZ, the Council recommends that NMFS use the design-based abundance estimation approach as the basis for assessing the stock until such time that a more rigorous and independent evaluation of the SDM approach can be completed. The SSC found that the design-based approach is the most appropriate for estimating abundance inside the EEZ around Hawaii, as it utilizes data from the EEZ-wide cetacean survey intended for deriving abundance estimates, and provides the most robust estimate of the abundance for the corresponding area at the time of the 2017 survey.

The Council further recommends that NMFS prioritize conducting surveys outside the EEZ to gather additional tagging and genetics data suitable for assessing that portion of the population. The Council is encouraged that PIFSC is conducting a 30-day survey targeting areas outside of the EEZ, but notes that a more comprehensive survey effort is needed to manage the Hawaii pelagic false killer whale stock consistent with the MMPA objective of maintain stocks as functioning elements of their ecosystems and basing a stock's status on information from the entire stock range. As noted above, new tagging data from 2023 have already shown that the Hawaii

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[5] See report at www.wpcouncil.org/wp-content/uploads/2019/11/135-SSC-FINAL-REPORT.pdf

pelagic false killer whale stock range extends further south of the proposed management area boundary, in areas where there is significantly higher foreign fishing effort. Considering that the proposed management area encompasses all recent Hawaii deep-set longline fishery interactions, the proposed boundary likely overestimates the relative impact of the U.S. fleet on the pelagic stock, while underestimating the impact of foreign fleets.
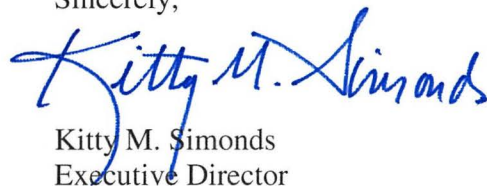
Other Comments

If NMFS decides to proceed with the proposed management area approach as described in the Draft 2023 SAR, the Council requests the following additional comments be considered:

- The abundance estimate for the pelagic stock inside the EEZ using the SDM was previously 2,086, as published in Bradford et al. 2020. In the Draft 2023 SAR, the estimate inside the EEZ has been reduced to 2,038, with no corresponding explanation or citation for the reduction. The Council requests NMFS provide an explanation for the reduction.

- In estimating the potential biological removal (PBR) within the management area, NMFS is applying a recovery factor reduction of 0.1 in the full extent of the management area boundary to account for uncertainties in the foreign fishery impacts. This is not justified, as any foreign fishery impacts would only occur outside of the EEZ. Therefore, any reduction in recovery factor should only be applied to the portion of the population outside the EEZ.

Thank you for considering the Council's comments regarding the Draft 2023 SAR. Please do not hesitate to contact Asuka Ishizaki (asuka.ishizaki@wpcouncil.org) if you would like to discuss these comments in further detail.

Sincerely,

Kitty M. Simonds
Executive Director

Appendix A: Report of the SSC Working Group on Pelagic False Killer Whale Management Area Approach Response

Cc: Janet Coit, Assistant Administrator for Fisheries
    Sam Rauch, Deputy Assistant Administrator for Regulatory Programs
    Cisco Werner, Director of Scientific Programs and Chief Science Advisor
    Evan Howell, Director of Office of Science and Technology
    Charles Littnan, Director of Pacific Islands Fisheries Science Center
    Sarah Malloy, Acting Regional Administrator, Pacific Islands Regional Office
    Douglas DeMaster, Pacific Scientific Review Group Chair

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SSC Working Group on Pelagic False Killer Whale
Management Area Approach Response
FINAL REPORT

Adopted by the SSC at its 151st SSC Meeting
March 12-14, 2024

In response to the Scientific and Statistical Committee's (SSC) recommendation from the 149th meeting (September 2023) regarding the Pelagic False Killer Whale (FKW) Management Area Approach, the Council directed staff to work with the SSC Working Group to respond to PIFSC's response to the June 2023 recommendations, as well as to provide comments on the draft 2023 Stock Assessment Report (SAR) when it becomes available. The Council further directed staff to send a copy of the Council's responses to the Pacific Scientific Review Group (PSRG). The Working Group consisted of SSC members Shelton Harley, Milani Chaloupka, Ray Hilborn, and David Itano.

Based on further review of the Pelagic FKW Management Area approach and the draft 2023 SAR, the Working Group provides the following report for the full SSC's consideration at its 151st meeting.

Working Group Report for SSC Consideration

The Working Group finds that the design-based approach is the most appropriate for estimating abundance inside the EEZ around Hawaii. The design-based approach utilizes data from the EEZ-wide cetacean survey intended for deriving abundance estimates, and provides the most robust estimate of the abundance for the corresponding area at the time of the 2017 survey. At the 135th meeting in March 2020 when the SSC reviewed the design-based and model-based (using species distribution model, or SDM) abundance estimates resulting from the 2017 Hawaiian Islands Cetacean Ecosystem Assessment Survey (HICEAS), the SSC noted a number of concerns regarding the use of SDM in both inside and outside of the EEZ. The SSC at the time had recommended a simulation-based evaluation of the two estimators to be undertaken to better determine the relative value of each approach for management decision making purposes.

Similarly, the Pacific Scientific Review Group (PSRG) in its recommendations resulting from the March 2023 meeting noted concerns regarding the "broad application of the SDM as the primary basis for assessing abundance and trends" and suggested investigating these concerns "through a rigorous simulation approach, similar to the simulation approach used to develop PBR calculation guidelines." The Working Group generally agrees with the PSRG's concerns and recommendations regarding the SDM,[1] and notes that they align with the SSC's

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[1] The Working Group notes that the PSRG's comments regarding the lack of validity in extrapolating to unsurveyed

recommendations from 2020. **The Working Group therefore recommends that the design-based approach be used to estimate abundance inside the EEZ until such time that a more rigorous and independent evaluation of the SDM approach can be completed**.

For areas outside of the EEZ, the Working Group recommends that NMFS not use the management area boundary and associated abundance estimate using the SDM in the Stock Assessment Report or for any management purposes because the available data are not fit for purpose. Specifically:

- The management area boundary relies heavily on a small number of tagging data (n=10), all of which have been tagged inside the EEZ, which is insufficient to delineate a biologically sound outer range of the pelagic stock;
- Available data used to delineate the management area boundary are limited in its spatial extent by anthropogenic boundaries, such as surveys conducted within the EEZ and interaction locations limited by fishing effort, which do not represent true biological and ecological ranges of the pelagic stock; and
- As described above, the underlying SDM needs further review and simulations before it is utilized for management purpose.

The Working Group additionally recommends that NMFS prioritize conducting surveys outside of the EEZ to gather additional tagging and genetics data to delineate a biologically-based area that defines the pelagic stock.

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or poorly surveyed areas is an important point that is also discussed in a recent publication by Meyer and Pebesma (2002) regarding machine learning but has application to any SDM-type of modeling. The Working Group also agrees with the PSRG's comments that the inclusion of temporal effects in the model should be assessed as for any other habitat variable, but contends that such an assessment should be done using a Bayesian approach rather than AIC as suggested by the PSRG. *See* Meyer H, Pebesma E (2022) Machine learning-based global maps of ecological variables and the challenge of assessing them. Nature Communications 13: 2208. https://doi.org/10.1038/s41467-022-29838-9