New England Fishery Management Council
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COUNCIL SOLICITING CONTRACT WORK
White Hake Recruitment Assumptions
May 5, 2023

Project Description

The New England Fishery Management Council (NEFMC, Council) requires the services of an independent contractor to prepare an analysis of recruitment assumptions used in stock projections for white hake. This is a short-term, temporary contractor role, commencing on or about May 20, 2023. The Council's Scientific and Statistical Committee (SSC) will review the analysis in the summer of 2023 (tentative date August 10, 2023). The analysis may be used to modify the white hake rebuilding plan and could be used to update Overfishing Limits (OFL) and Acceptable Biological Catch (ABC) recommendations for future years. All work under this request for proposals (RFP) is expected to be completed by October 1, 2023.

Project Background

The white hake, *Urophycis tenuis*, occurs from Newfoundland to southern New England and is common on muddy bottom throughout the Gulf of Maine. While estimates of commercial landings and discards have decreased over time, this species remains a key component of the Northeast Multispecies fishery, commonly caught in gillnet and trawl gear. Revenues from white hake during the period 2017-2021 averaged $4.8 million per year, about nine percent of total groundfish revenues.

The white hake stock underwent a Level-3 management track assessment in 2022. The Peer Review Panel concluded the stock is not overfished and overfishing is not occurring (Merrick et al. 2022); the same determination was made by NOAA Fisheries. The retrospective adjusted 2021 spawning stock biomass (SSB) was estimated to be 19,497 mt, which is 69% of the biomass target, and the 2021 fully selected fishing mortality (F) was estimated to be 0.104, which is 65% of the overfishing threshold proxy (NEFSC 2022, in prep). The stock shows no truncation of age structure. The stock is in a rebuilding plan with a rebuilding target date of 2031 and defines Frebuild as 70%FMSY.

Stock projections from this assessment were used to develop catch advice for future years. The short-term catch projections use recruitment sampled from a cumulative distribution function of recruitment estimates for the years 1995-2019, while the SSBMSY reference point uses recruitment estimates sampled from the years 1963-2019. This is consistent with the conclusions of the benchmark assessment of SAW-56 in 2013 (NEFSC CRD 13-04 and CRD 13-10). That panel concluded there was no clear reason to use a shorter time period for the calculation of reference points and accepted the working group recommendation to use a shorter period for catch projections. In the 2013 assessment, the working group noted catch advice from the two recruitment periods differed only slightly, because recruitment has a small effect in the short term.

The review panel for the 2022 management track assessment accepted the projection approach, but adopted the following two research recommendations related to the recruitment assumption (Fall 2022 Management Track Review Panel Report):

- *Using a recruitment time series reaching back to 1995 may be inappropriate and NMFS should determine whether there is a more appropriate recruitment stanza for the stock. A change point analysis might be helpful.*
- *Evaluate the sensitivity of recruitment to the CV used (0.5).*

The Council's SSC reviewed the assessment report and recommended ABCs for 2023-2025. While the projections used the recruitment periods identified in the assessment, the SSC commented, in part, as follows (SSC report):

> *The SSC noted that the SSBMSY reference point is based on a cumulative distribution function (CDF) of recruitment estimates from 1963-2019, whereas the projections are based on a CDF of recruitment estimates from 1995-2019. The SSC highlighted that the use of different recruitment time stanzas may not be appropriate for the stock and leads to uncertainty about the outcomes of catch advice. The PDT provided projections of SSB under Frebuild (70% FMSY) using: 1) assumed recruitment in short-term catch advice (1995-2019), and 2) assumed recruitment in the rebuilding plan (1963-2019). While the stock is projected to rebuild by 2031 under the rebuilding plan assumptions, it is not expected to rebuild by the target date under the assumption of recent lower recruitment. The SSC noted conflicting trends with biomass showing a positive trend since the mid-1990s and recruitment showing a negative trend over the same time period. The SSC was concerned about potentially optimistic projections given the continued low recruitment however the stock has been increasing and is no longer considered overfished…The SSC recommended exploration of internal consistency between biological reference points and projections and consideration of change point analysis or recruit-per-spawner analysis to inform recruitment time stanzas…The SSC commented that the importance of this stock and the uncertainty in the assessment may warrant an earlier than scheduled assessment update.*

The Council adopted an ABC for fishing year (FY) 2023, but not 2024-2025. The Council will also consider modifying the white hake rebuilding plan in fall 2023 and will adopt ABCs for FY 2024 and 2025 (with the SSC's advice). In light of the comments by the management track review panel and the SSC, the Council requested that a white hake management track assessment be completed in 2023 to address the issues raised. An assessment will not be scheduled. The response to this RFP may provide information helpful to the rebuilding and ABC discussions in the absence of a new management track assessment.

Statement of Work

The role of this project is to examine the recruitment time series used to establish white hake reference points and catch advice. The examination should focus on whether there is information in the time series that supports using a different assumption. The analyses should determine whether or not there is information that supports:

- Using a time series other than 1963 – (terminal year – 2) for reference points;

- Using a time series other than 1995 – (terminal year – 2) for catch advice;
- Using different time series for determining reference points and catch advice.

If supported by analyses, approaches that could be considered include:

- Staying the same as recent recruitment (and defining recent);
- Reverting back to the long-term recruitment mean (and defining long-term mean);
- Autocorrelated recruitment;
- Including a different approach.

The response to this RFP should describe in detail the analytic approach that will be used to examine this issue. Analyses should be based on the existing assessment model and data stream for white hake. It should not explore different assessment models. Possible approaches include closed-loop simulation, change-point analysis, and/or recruit per spawner analyses. The report should compare medium-term (ten year) SSB estimates at the FMSY proxy for all recruitment alternatives considered. The analysis should not provide catch advice (ABC), which is the purview of the SSC and the Council.

Necessary office space and equipment will be provided by the contractor; approved travel expenses will be reimbursed by the Council. Only data used in the 2022 assessment will be provided by the Northeast Fisheries Science Center. These data are available at https://apps-nefsc.fisheries.noaa.gov/saw/sasi.php.

Desired Experience and Demonstrated Skills

1. General familiarity with the U.S. federal fisheries management system. Fisheries management in New England is preferred but not required.
2. Experience interacting with fisheries managers, scientists, and stakeholders.
3. Thorough familiarity with fishery stock assessment and projection theory and methodology. This must include familiarity with the assessment and projection models used by the Northeast Fisheries Science Center to provide advice for white hake (currently ASAP and AGEPRO, respectively).
4. Ability to conduct the analyses proposed to address this RFP, including, at a minimum, change-point and recruit per spawner analyses.
5. Ability to conduct scientific analyses with minimal supervision.
6. Strong writing and speaking skills. Demonstrated ability to summarize complex policies and procedures in clear, easily read documents, or through concise verbal discussions.
7. Advance degree in a fisheries scientific field.
8. Demonstrated ability to summarize conflicting information in an objective manner.
9. Candidates employed by advocacy organizations or by organizations that are parties in fishery lawsuits related to this issue will not be considered.
10. The successful candidate will not have a conflict of interest, defined as any financial or non-financial interest which conflicts with the actions or judgments of an individual because it:
    a. Could impair the individual's objectivity;
    b. Could create an unfair competitive advantage for any person or organization;
    c. Could create the appearance of either item listed above.

Expected Responsibilities and Deliverables

The following list illustrates the activities expected from the contractor. This list is not all-inclusive and a detailed list of deliverables will be negotiated.

1. Compile the necessary data to accomplish the proposed analyses. If necessary, Council staff will assist in acquiring the data from the NEFSC.

2. Prepare a detailed technical report that describes the analyses and summarizes the conclusions. The report must identify the benefits and risks of the approaches examined in a way that can be easily compared. Any programs developed in response to this RFP must be provided to the Council and the public on Github or other platform.

3. Present the results of a draft report to the Groundfish Plan Development Team in July 2023, and to a peer review conducted by the SSC or an SSC sub-group (tentatively August 10, 2023).

4. Address peer review recommendations or comments in the final report to be delivered by September 1, 2023. Participate in an SSC meeting to review white hake rebuilding plans scheduled for September 8, 2023.

Application Submission Contact

Interested professionals are encouraged to submit a letter of interest, current resume or CV, examples of similar work completed for other organizations or publications, and budget with expected expenses. In addition, applicants should describe the approach that would be used to meet the requirements of this project, including deliverables. Travel expenses need not be included as approved travel will be reimbursed by the Council. Letters of interest and supporting materials should be received **no later than May 15, 2023** and addressed to Thomas Nies, NEFMC, 50 Water Street, Mill 2, Newburyport, MA 01950, or sent by email to tnies@nefmc.org. Questions concerning this proposal should be directed to the same address.

This work will be funded under New England Fishery Management Council Award #NA10NMF4410007. Compliance with the Magnuson-Stevens Fishery Conservation and Management Act (P.L.401-208 as amended) and the Council's standard contract terms and conditions will be expected.

NEFMC takes affirmative action toward to ensuring equal opportunities; the Council encourages women-owned businesses, protected veterans, and individuals with disabilities to submit letters of interest and other requested materials for consideration under this announcement.

Disclaimer

1. All costs associated with the preparation and presentation of the proposal will be borne by consultants submitting letters of interest.
2. Materials submitted will not be returned.
3. Respondents must disclose any relevant conflicts of interest and will be expected to comply with all federal grant contracting requirements.
4. The Council reserves the right to accept or reject any or all letters of interest received; negotiate with all qualified potential candidates; cancel or modify the RFP in part or in its entirety; and/or change the application guidelines, when it is in its best interests.