

Sunflower Sea Star (*Pycnopodia helianthoides*)
Status Review Peer Reviewer Charge
03/29/2023

1. INTRODUCTION AND BACKGROUND

On August 18, 2021, the National Marine Fisheries Service (NMFS) received a petition from the Center for Biological Diversity requesting that we list the sunflower sea star (*Pycnopodia helianthoides*) as threatened or endangered under the Endangered Species Act (ESA) throughout its range. NMFS determined that the petition presented substantial information indicating that the petitioned action may be warranted (a "positive 90-day finding") (86FR 73230), and initiated a status review of the sunflower sea star.

The West Coast Region (WCR) and Alaska Region (AKR) Protected Resources Divisions (PRD) established a Status review Team (SRT) to compile the best available scientific and commercial information on the status of the sunflower sea star as required by the ESA. Federal staff with expertise in sunflower sea star biology and ecology, population dynamics and modeling, nearshore ecology, and/or stock assessment science were asked to serve on the SRT to evaluate the demographic risk to the species, analyze the five factors listed under section 4(a)(1) of the ESA as they pertain to this risk, and estimate extinction risk for the species. They then produced a draft Status Review Report (Lowry et al. 2022). Best available scientific and commercial information reviewed as part of this effort included published and unpublished literature, reports, models, citizen science efforts, and personal communications from researchers actively working with sunflower sea stars, either directly or as part of larger ecosystem studies. The resulting draft Status Review Report was then used to support development of a proposed rule to list the sunflower sea star as a threatened species throughout its range under the ESA, which published in the *Federal Register* March 16, 2023 ([88 FR 16212](#)).

2. FUNCTION AND CHARGE

The White House Office of Management and Budget (OMB) issued the final Peer Review Bulletin (PRB) in December 2004, pursuant to the Information Quality Act (IQA) and OMB's general authorities. The PRB went into effect on June 16, 2005, and established minimum peer review standards, a transparent process for public disclosure, and mechanisms to provide for public input on scientific documents. In June of 2012, NMFS published OMB Peer Review Guidance to set out pathways for defining the scope and applicability of the PRB.

Consistent with the PRB, NMFS creates peer review plans for any "highly influential scientific assessments" (HISA) and "influential scientific information" (ISI) that the agency intends to disseminate in the foreseeable future (i.e., within the next year). Status reviews resulting from the evaluation of ESA listing petitions are considered ISI.

The objective of the SRT was to draft a Status Review Report that provided thorough science-based analyses regarding demographic risks to the sunflower sea star, the five section 4(a)(1) factors under the ESA as they pertain to the species, and extinction risk of the species, with consideration of applicable policies and statutory terms. The charges to the team were to:

- a) follow the [Listing Guidance](#) to evaluate and score or describe the demographic risks to the sunflower sea star range wide using four viable population (VP) descriptors – abundance, spatial distribution, productivity, and diversity.
- b) evaluate and score the ESA section 4(a)(1) factors identified below as they relate to the demographic risks to the species range wide. These factors are:
 - Present or threatened destruction, modification, or curtailment of the species’ habitat or range;
 - Overuse for commercial, recreational, scientific, or educational purposes;
 - Disease or predation;
 - Inadequacy of existing regulatory mechanisms; and
 - Other natural or manmade factors affecting its continued existence.

Describe, to the extent possible, links between demographic risks and these causative factors using analyses appropriate to the quantity and quality of the best available information.

- c) follow the Listing Guidance to estimate the overall risk of extinction of the species range wide, qualitatively using categories (e.g., high, moderate, or low risk of extinction) and, if possible, quantitatively (e.g., x probability of extinction in y years).
- d) follow the Listing Guidance to conduct a “significant portion of its range” analysis if the team concludes the species is at moderate or low risk of extinction range wide.

The Status Review Report could also provide information related to consideration of Critical Habitat for the sunflower sea star, but the determination of Critical habitat was not required as part of the SRT’s charge.

The SRT was **not** charged with making a listing recommendation for the species. Listing status recommendations rely on Status Review Reports, but also consider any other information obtained after report completion, ongoing non-federal conservation efforts, and other information as deemed consistent with ESA regulations and policies.

2.1 Charge

As a peer reviewer, you are charged with assessing the degree to which the SRT met their charge by evaluating the completeness and validity of the best available scientific and commercial information considered, the analyses conducted, and the conclusions drawn in the Status Review Report. Your review should be objective and impartial, seeking to ensure that species status, impacts from threats, and degree of extinction risk are all clearly and accurately portrayed in a logically defensible manner.

Upon completing your review, you are charged to provide comprehensive comments to NMFS, which will be posted [online](#) as a peer review report. Comments will not be attributed to specific reviewers, but will be consolidated into a single report and directly addressed during preparation of the final listing determination for the sunflower sea star. The contents of your review must remain confidential until such time as they are posted online.