



**UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
Northeast Fisheries Science Center  
Narragansett Laboratory**

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Greater Atlantic Regional Fisheries Office  
NOAA Fisheries Service  
55 Great Republic Drive  
Gloucester, MA 01930

Subject: Peer review of the draft Status Review and Extinction Risk Workshop Report on Thorny Skates (*Amblyraja radiata*)

Attention: Tara Trinko Lake

I have reviewed the draft “Status Review Report: Thorny Skates (*Amblyraja radiata*)” and “Assessment of Extinction Risk for the Thorny Skate (*Amblyraja radiata*)” completed by the Extinction Risk Analysis (ERA) team members. This ERA team has knowledge appropriate for assessing the different aspects of the thorny skate North Atlantic population. Overall, this status review was very thorough and the methodology was appropriate given the available data. All known sources of data were used to review the status of the species and care was taken to account for any potential biases in the data. The use of the risk matrix method to organize and summarize the professional judgment of the ERA team made it easy to follow the steps taken to assess the population and adequate supporting information was given for each of the decisions made. The ERA team’s findings that the thorny skate population is at a low risk of extinction is appropriate, given the available data and the reasonable assumptions made during this process. I have made some comments/edits throughout the text in Track Changes. Some of these comments are detailed here:

Executive Summary – This section needs to be updated to include the ERA and SPR results and the summary needs to be tailored to support these results

Reproduction, Growth, and Demography – The incubation time reported in this section (1.5 – 6 yrs) is for a variety of Barents Sea skates. Only one skate had an incubation time estimated to be up to 6 years – *Raja hyperborean*. The paper referenced (Berestovskii 1994) conducted experiments on thorny skates and extrapolated the experimental results (2-2.5 years) to natural conditions and estimated 2.5-3 years for the thorny skate.

Description of Population Abundance and Trends - Given all of the caveats discussed in reference to trawl data for this species, would it not benefit to model the trawl survey trends using a generalized linear or additive model approach using catch per tow and try to account for variation due to measured environmental factors and sampling design? Maybe even a model to account for zero-inflated data if necessary.

Description of Population Abundance and Trends, Additional State Surveys – the data and trends for these surveys are described in the text, but it would be beneficial to have a visual representation of the data/trends given that this information is referenced from a source (Sosebee et al, in prep) not yet available

Present or Threatened Destruction, Modification, or Curtailment of Habitat or Range, Recent climate impacts observed on thorny skate – In this section it is reported that “a study on the sympatric little skate, *Leucoraja erinacea*, demonstrates that increases in temperature and acidic concentration can result in increased developmental time in embryonic skates” Is this the combination of temperature and acidic conditions or separate effects? Berestovskii (1994) reported that low temperature slowed development in colder water species. One would think warmer temps would increase the rate of embryonic development.

Evaluation of Demographic Risks, Spatial structure/connectivity – This statement: “Despite population declines, there are no indications that the thorny skate’s range has contracted over time, or would be expected to contract in the future” is contradicted in the section of abundance trends referring to area occupied in the NWA – this should be addressed here and discussed why not currently a risk

General – The report should more **clearly** support the ERA findings. The appropriate information is included and the majority of readers would likely draw similar conclusions, but the text within each section could better summarize the points leading to these findings. I made a few suggestions within the text to demonstrate this point.

Even given my comments above, I still believe the outcome would show a low risk of extinction potential for the North Atlantic population of thorny skates.

Please don’t hesitate to contact me with any questions you may have.

Sincerely,

/s/Camilla T. McCandless

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