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Dear Tara,

Please find my detailed review for the thorny skate (*Amblyraja radiata*) below. If you have any questions or need assistance do not hesitate to contact me.

Sincerely,

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My review of the status report for the thorny skate (Amblyraja radiata)is based on the comments, scientific information, and data contained within the status review document. **Based on the detailed and comprehensive information provided in the status review, I agree with the recommendation that NOAA/NMFS should not list this species under the endangered species act (ESA).** In the thorough status review report NOAA/NMFS clearly identified these crucial elements that justify their determination **not to list** the thorny skate as an endangered species:

- The inherent limitations surrounding traditional tag and recapture studies (i.e. the inability to determine if the observed straight line distance between a release and a recapture location reflects the maximum normal or maximum possible migration distance), coupled with the results of three genetic studies stating the genetic structure is "relatively homogenous" among thorny skates throughout the North Atlantic, indicates the Northwest Atlantic populations of thorny skates is not discrete and therefore does not justify a Distinct Population Segment (DPS) classification.
- Similarly, the U.S. thorny skate population did not meet DPS policy's criterion for discreteness, because 1) the genetic structure for thorny skates within the Gulf of Maine, or between the Gulf of Maine and Canada is homologous and the evaluations of the existing regulatory/conservatory mechanisms employed by Canada and the U.S. were both found to be adequate
- The impacts of trawling on the benthic environment is not substantial enough to threaten the thorny skate population
- The occurrence of illegally landed thorny skate is virtually not existent (i.e. 0.7%), suggesting the prohibited status is an effective conservation measure
- Framework Adjustment 2 to the skate FMP, requires all skates landing to be identified by species, further preventing thorny skates from being illegal landed
- The majority of fishing activity for skates (both bait and wing) only slightly overlaps with the distributions of the thorny species, suggesting low discard rates
- Disease and predation was also not considered to be a significant driver contributing to the justification for listing the thorny skate as threatened or endangered
- Although *NOAA* has not announced any formal actions plans to directly address low thorny skate biomass, NOAA has supported research efforts to fill in critical gaps in our understanding of thorny skate ecology. However, new research on this species should be prioritized.
- There is evidence suggesting thorny skates may have expanded their depth range, outside of the range of the Northeast Fisheries Science Center (NEFSC) trawl surveys. If thorny skates are occupying deeper waters (they have been observed at depth up to 1200m) outside the current spatial range of this survey, it would suggest the population is not being adequately sampled for stock assessment purposes and may explain why biomass levels have remained low despite their prohibited status.

A few additional items that NOAA/NMFS could use that would strengthen the argument for not listing the thorny skate include:

- Data standards, criteria used to evaluate species, and the treatment of uncertainty differ between the *International Union for Conservation of Nature* (IUCN) and *Endangered Species Act* (ESA), as such species with threatened classification under the IUCN standards do not support ESA listing.
- The current data within the IUCN is 5 years old, and does not include pertinent information about the thorny skate's life history. Based on this deficiency, it is clear the IUCN listing for thorny skate does not meet the "best available science" requirement for ESA listing

In summary, the scientific information and data contained within the status review is thorough and provides enough detail to justify the NMFS conclusion not to list the thorny skate under the ESA.