Marine-life Data and Analysis Team (MDAT) Mammal Product Updates
Summary of Changes for v2.2_2022_02 Update

Overview

Marine mammal individual species or species guild models were originally produced by the Marine Geospatial Ecology Lab at Duke University (MGEL) in 2016 (Roberts et al., 2016) with funding by the U.S. Navy and NASA. Selected species and species guild models were updated with additional data and minor method changes in fall 2017 (Roberts et al., 2017). Additional species and species guilds models were updated as of fall 2018, along with minor method changes. A new North Atlantic right whale model was created in fall 2021, v11.1. These products were reviewed by species experts and are documented in detail in Roberts et al. (2018, 2020, 2021). This document contains a brief summary of the changes to the base-layer models and the MDAT group summary products that occurred in the 2022_02 update. Additional details on the base-layer models and summary products can be found in the MDAT Technical Report (Curtice et al., 2019), and additional details on the updates to the individual species model for North Atlantic right whale can be found on the model history page here: https://seamap.env.duke.edu/models/Duke/EC/EC_North_Atlantic_right_whale_history.html

North Atlantic right whale layers

1. The new density surface release summarizes the era 2010-2018, reflecting the apparent major shift in right whale distributions around 2010. For comparison, results were also summarized for two additional eras, 2003-2009 and 2003-2018. The 2010-2018 era is the recommended density surface for management decisions, and is presented in the regional ocean data portals, while the other results are available for download from the SEAMAP model page linked above.
2. Resolution was increased to 5km X 5km grid cells, while the prediction units remain the number of animals/100km^2. Summary products for groups that include North Atlantic right whales remain at standard 10km X 10km grid cell resolution.
3. Updated density predictions for Cape Cod Bay for January-May with estimates from Ganley et al. (2019), and for the month of December using all surveys conducted by the Center for Coastal Studies during the month of December from 2003-2020.
4. Additional survey data were added, and the aggregate database of surveys was to extend up through spring of 2019.
5. The start date of the model was shifted forward to 2003 (from 1998).
6. The study area was extended farther inshore in certain bays and estuaries, per NOAAs request.
7. Modeling methodologies were updated.
8. The uncertainty surface estimates were updated, with new methodology used to generate them, and now account for interannual variability. (Previous versions only accounted for the estimated statistical error in model parameter estimates.)

Mammal Sensitivity layer

1. The name of the Medium Frequency Sound Sensitivity Abundance layer has been changed to High Frequency Sound Sensitivity following guidance from Southall et al., 2019. In accordance with the data in the paper the composition of species in these groups remained unchanged, and the Low Frequency Sound Sensitivity Abundance layer was unaffected.

References

Curtice, C., Cleary J., Shumchenia E., Halpin P.N. 2019. Marine-life Data and Analysis Team (MDAT) technical report on the methods and development of marine-life data to support regional ocean planning and management. Prepared on behalf of the Marine-life Data and Analysis Team (MDAT). Accessed at: http://seamap.env.duke.edu/models/MDAT/MDAT-Technical-Report.pdf.

Ganley L.C., Brault S., Mayo C.A. 2019. What we see is not what there is: estimating North Atlantic right whale Eubalaena glacialis local abundance. Endang Species Res 38:101-113. https://doi.org/10.3354/esr00938

Roberts J.J., Schick R.S., Halpin P.N. 2020. Final Project Report: Marine Species Density Data Gap Assessments and Update for the AFTT Study Area, 2018-2020 (Option Year 3). Document version 1.4. Report prepared for Naval Facilities Engineering Command, Atlantic by the Duke University Marine Geospatial Ecology Lab, Durham, NC

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