

Data Collection Summary Products for At-Sea Abundance of Marine Birds developed by the NOAA National Centers for Coastal Ocean Science (NCCOS), prepared by the Marine-life Data and Analysis Team (MDAT)	
Data Collection Title	MDAT_WS_AVIAN_SUMMARY_PRODUCTS_V3.0
Data Collection URL	Map services: http://mgelmaps.env.duke.edu/mdat/rest/services/MDAT

Data Set	
Data Set Title	MDAT_WS_AVIAN_SUMMARY_PRODUCTS v3.0
Principal Investigators	<p>MDAT Project: Patrick N. Halpin (PI) - Marine Geospatial Ecology Lab at Duke University</p> <p>NCCOS Project: Arliss J. Winship¹, Jeffery B. Leirness¹, Michael Coyne¹, Jacob Howell¹, Vincent S. Saba², John Christensen³</p> <p>¹ CSS, Inc, Fairfax, VA, U.S.A under contract to NOAA National Centers for Coastal Ocean Science, Silver Spring, MD, U.S.A. ² NOAA Northeast Fisheries Science Center, Princeton, NJ, U.S.A. ³ NOAA National Centers for Coastal Ocean Science, Silver Spring, MD, U.S.A.</p>
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<p>Abstract</p>	<p>The Marine Geospatial Ecology Lab (MGEL) of Duke University began work with the Northeast Regional Ocean Council (NROC), the NOAA National Centers for Coastal Ocean Science (NCCOS), the NOAA Northeast Fisheries Science Center (NEFSC) and Loyola University Chicago in 2014 as part of the Marine-life Data and Analysis Team (MDAT), to characterize and map marine life in the Northeast region. In 2015, the Mid-Atlantic Regional Council on the Ocean (MARCO) began working with the same team to build upon and expand this effort into the Mid-Atlantic region. These research groups collaborated to produce “base layer” predictive model products with associated uncertainty products for cetacean species or species guilds and avian species, and additional geospatial products for fish species. Periodic updates to these base layer models and data are produced by the individual institutions in the MDAT team based on schedules set by the funders of each modeling effort. Additionally, MDAT receives and hosts data from other sources, including in 2023 sea turtle density models.</p> <p>Because base layers total in the thousands, efforts to develop a general understanding of the overall richness or diversity in a particular area are not well served by the individual base products. To address this gap and other potential management applications, MDAT has created several types of summary map products from these base layers. Summary products are comprised of data layers from multiple species, and were created to allow quick access to map summaries about potential biological, management, or sensitivity groups of interest. Species were grouped according to these three categories, resulting in approximately 22 avian groups, 13 fish groups, and 8 cetacean groups. Summary products provide a means to distill hundreds of data layer and time period combinations into more simplified maps that supplement the base layer reference library. These summary products include total abundance, density, or biomass, species richness, and diversity for all modeled/sampled groups of species and are useful tools for seeing broad patterns in the underlying data or model results.</p> <p>An additional map product was created to highlight the core areas of highest abundance, density, or biomass by species groups. Core areas for individual species were created using a 50% population threshold. Each core area represents the smallest area containing 50% of the species’ predicted abundance (cetaceans), 50% of the species’ relative density per strip transect (avian) or 50% of the species’ biomass (fish). These core area layers were then aggregated within each of the above-mentioned groups to obtain a group core area abundance, density, or biomass species richness product. Group core area richness maps aid users in identifying the “hotspots” of where certain groups of species have the highest abundance or biomass. Core area richness maps were created for three spatial extents: 1) the full US east coast; 2) the Northeast planning area and 3) the Mid-Atlantic area of interest. Because these products are dependent on the total extent of the input data, core area abundance/density/biomass products will differ at each extent.</p>

Purpose	MDAT produced group summary products and delivered them to the Northeast and Mid-Atlantic (US) regional ocean portals and the national Marine Cadastre to inform ocean planning. All summary products are also available to the public via map services.
Methods	See Curtice et al. (2018) Section 3.
Citations	MDAT Technical Report: Curtice, C., Cleary J., Shumchenia E., Halpin P.N. 2018. 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 Analysis Team (MDAT). Accessed at: http://seamap.env.duke.edu/models/MDAT/MDAT-Technical-Report.pdf . NCCOS/BOEM study: Winship AJ, Leirness JB, Coyne M, Howell J, Saba VS, and Christensen J. 2023. Modeling the distributions of marine birds at sea to inform planning of energy development on the US Atlantic Outer Continental Shelf. Sterling (VA): U.S. Department of the Interior, Bureau of Ocean Energy Management. 413 p. Report No.: OCS Study BOEM 2023-060. Accessed at: https://espis.boem.gov/Final%20Reports/BOEM_2023-060.pdf
Data Start Date	1998-01-01
Data End Date	2019-12-31
Data Northern Boundary	44.8 degrees N
Data Southern Boundary	23.8 degrees N
Data Western Boundary	83.0 degrees W
Data Eastern Boundary	63.1 degrees W
Place Keywords	North Atlantic Ocean
Spatial Reference Information	Type: Projected Geographic Coordinate Reference: GCS_North_American_1983 Projection: All_Atlantic_Projection Well-Known Text: PROJCS["All_Atlantic_projection", GEOGCS["GCS_North_American_1983", DATUM["D_North_American_1983", SPHEROID["GRS_1980",6378137.0,298.257222101]], PRIMEM["Greenwich",0.0], UNIT["Degree",0.0174532925199433]], PROJECTION["Hotine_Oblique_Mercator_Azimuth_Center"], PARAMETER["false_easting",0.0], PARAMETER["false_northing",0.0], PARAMETER["scale_factor",0.9996], PARAMETER["azimuth",40.0], PARAMETER["longitude_of_center",-75.0], PARAMETER["latitude_of_center",35.0], UNIT["Meter",1.0]]
Spatial Representation Type	Grid
Datasets	Listed in Table 1 of Curtice et al. (2018)
Update Frequency	Irregular
Resource Provider	Marine Geospatial Ecology Lab (MGEL) at Duke University (marinelife_data@duke.edu), on behalf of MDAT and NCCOS.
Comment	This data documentation describes numerous geospatial datasets archived together as a data collection, and is intended to provide

	<i>dataset-level metadata for the purposes of discovery, use, and understanding.</i>
<i>Use Limitation</i>	<i>Please note: BOEM and NOAA make no warranty, expressed or implied, regarding these data, nor does the fact of distribution constitute such a warranty. BOEM and NOAA cannot assume liability for any damages caused by any errors or omissions in these data. If you use this dataset in a scientific publication or other formal publication, we request that you cite the Winship et al. (2023) and Curtice et al. (2018) publications.</i>