

<b>Data Collection</b> Distribution and biomass data for fish species along the U.S. east coast from about Cape Hatteras north to Canadian waters, created by the Northeast Fisheries Science Center for the Northeast Regional Ocean Council, prepared by the Marine-life Data and Analysis Team (MDAT)	
<b>Data Collection Title</b>	MDAT_WS_FISH_BIOMASS_DATA_V3.0_2019_03_01
<b>Data Collection URL</b>	Map services: <a href="https://mgelmaps.env.duke.edu/mdat/rest/services/MDAT">https://mgelmaps.env.duke.edu/mdat/rest/services/MDAT</a>

<b>Data Set</b>	
<b>Data Set Titles</b>	MDAT_WS_MDMF_FISH_BIOMASS_DATA_V2.0_2018_03_01 MDAT_WS_MENH_FISH_BIOMASS_DATA_V2.0_2018_03_01 MDAT_WS_NEAMAP_FISH_BIOMASS_DATA_V2.0_2018_03_01 MDAT_WS_NEFSC_FISH_BIOMASS_DATA_V3.0_2019_03_01
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<b>Collaborators</b>	Chris Bonzek (Virginia Institute of Marine Science, NEAMAP data source) Jeremy King (ret.) and the Massachusetts Division of Marine Fisheries (MDMF data source) Malin Pinsky (Rutgers University) David Richardson (NEFSC) Sally Sherman (Maine Department of Marine Resources, MENH data source)  MDAT members: Earvin Balderama (Co-I, Loyola University Chicago) Jesse Cleary (Duke University) Corrie Curtice (Duke University) Michael Fogarty (NOAA/NEFSC) Patrick N. Halpin (PI, Duke University) Brian Kinlan (Co-I, NOAA/NCCOS) Charles Perretti (NOAA/NEFSC) Marta Ribera (TNC) Jason Roberts (Duke University) Emily Shumchenia (NROC) Arliss Winship (Co-I, NOAA/NCCOS)
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Abstract	<p>In 2014, 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, as part of the Marine-life Data Analysis Team (MDAT), to characterize and map marine life in the Northeast region in support of the Regional Ocean Plan. In 2015, the Mid-Atlantic Regional Council on the Ocean (MARCO) contracted with MDAT to build upon and expand this effort into the Mid-Atlantic planning area, and in support of the Mid-Atlantic Regional Ocean Plan. These research groups collaborated to produce “base layer” predictive model products with associated uncertainty products for marine mammal species or species guilds and avian species, and three 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.</p> <p>MDAT member Northeast Fisheries Science Center (NEFSC) summarized fish biomass and distribution from coastal fishery independent trawl data which spans Cape Hatteras, North Carolina to the Gulf of Maine. NEFSC provided three data products: (1) bubble plot of raw observations, (2) hexagon plot showing the mean, and (3) a 10km x 10km inverse-distance weighted (IDW) interpolation plot which smoothed over multiple observations and interpolated in regions with few observations. All units are natural log kilograms per tow. These products were created for three sources of fisheries independent trawl data, across multiple time spans:</p> <ul style="list-style-type: none"> <li>• North East Areas Monitoring and Assessment Program (NEAMAP) 2007-2014</li> <li>• Massachusetts Division of Marine Fisheries (MDMF) 1978-2014; 2005-2014</li> <li>• Maine &amp; New Hampshire state trawls (ME/NH) 2000-2014; 2005-2014</li> </ul> <p>Survey samples for all data sources were collected primarily in September and October, with some in November and a small number in December.</p>

	<p>Much more detail about the NEFSC Ecosystem Assessment Program, along with additional data sets, can be found here: <a href="http://www.nefsc.noaa.gov/ecosys/">http://www.nefsc.noaa.gov/ecosys/</a></p> <p>In 2019, MDAT member The Nature Conservancy (TNC) produced fish biomass and distribution products in partnership with OceanAdapt (a collaboration between the Pinsky Lab at Rutgers University and the National Marine Fisheries Service). These products are also bubble plots of raw observations and IDW surfaces at a 2km x 2km resolution for bottom trawl data from NEFSC during 2010-2017 (fall) and 2010-2016 (spring). All units are kilograms per tow. Survey samples for fall trawls were collected primarily in September and October, with some in November and a small number in December. Spring survey samples were collected from February to April.</p>
<b>Purpose</b>	The objective of this project is to provide a broad overview of individual fish species distribution and biomass across the Northeast U.S. Continental Shelf ecosystem by leveraging existing survey data and analyses by the NOAA Northeast Fisheries Science Center, OceanAdapt, the North East Area Monitoring and Assessment Program, and the states of Maine, New Hampshire, and Massachusetts.
<b>Methods</b>	See Curtice et al. (2019) Section 2.3.
<b>Citations</b>	<p>NEFSC products:  Ribera, M., Pinsky, M., Richardson, D. 2019. Distribution and biomass data for fish species along the U.S. east coast from about Cape Hatteras north to Canadian waters, created by The Nature Conservancy for the Marine-life and Data Analysis Team. Online access: <a href="http://www.northeastoceandata.org/data-explorer/?fish">http://www.northeastoceandata.org/data-explorer/?fish</a></p> <p>MDMF, MENH, NEAMAP products:  Fogarty, M., Perretti, C. 2016. Distribution and biomass data for fish species along the U.S. east coast from about Cape Hatteras north to waters in the state of Maine, created by the Northeast Fisheries Science Center for the Northeast Regional Ocean Council. Online access: <a href="http://www.northeastoceandata.org/data-explorer/?fish">http://www.northeastoceandata.org/data-explorer/?fish</a></p> <p>MDAT:  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: <a href="https://seamap.env.duke.edu/models/mdat/MDAT-Technical-Report.pdf">https://seamap.env.duke.edu/models/mdat/MDAT-Technical-Report.pdf</a>.</p>
<b>Data Start Date</b>	1978
<b>Data End Date</b>	2017
<b>Data Northern Boundary</b>	44.4 degrees N
<b>Data Southern Boundary</b>	34.4 degrees N
<b>Data Western Boundary</b>	76.1 degrees W
<b>Data Eastern Boundary</b>	65.6 degrees W
<b>Place Keywords</b>	North Atlantic Ocean

<b>Spatial Reference Information</b>	Type: Geographic Geographic Coordinate Reference: GCS_WGS_1984 Well-Known Text: GEOGCS["GCS_WGS_1984", DATUM["D_WGS_1984", SPHEROID["WGS_1984",6378137.0,298.257223563]], PRIMEM["Greenwich",0.0], UNIT["Degree",0.0174532925199433], AUTHORITY["EPSG",4326]]
<b>Spatial Representation Type</b>	Grid
<b>Datasets</b>	Data sourced from fall (2010-2017) and spring (2010-2016) bottom trawl surveys performed by NEFSC, fall bottom trawl surveys performed by Northeast Area Monitoring and Assessment Program (2007-2014), fall bottom trawl surveys performed by Massachusetts Division of Marine Fisheries (1978-2014), and the fall bottom trawl surveys performed by Maine Department of Marine Resources and New Hampshire Fish and Game Department (2000-2014)
<b>Update Frequency</b>	Irregular
<b>Resource Provider</b>	Marine Geospatial Ecology Lab (MGEL) at Duke University ( <a href="mailto:marinelife_data@duke.edu">marinelife_data@duke.edu</a> ), on behalf of MDAT and NEFSC.
<b>Comment</b>	<i>This data documentation describes numerous geospatial datasets archived together as a data collection, and is intended to provide dataset-level metadata for the purposes of discovery, use, and understanding.</i>
<b>Use Limitation</b>	<i>None. If you use this dataset or portions of this dataset in a scientific publication or other formal publication, we request that you cite the Curtice et al. (2019) publication, and the relevant dataset: Ribera et al. dataset (2019), and/or Fogarty &amp; Perretti dataset (2016).</i>