

*Ocean Health in the Northeast United States from 2005–2017*

Jamie Montgomery, Courtney Scarborough, Emily Shumchenia, Juliette Verstaen, Nick Napoli, Benjamin Halpern

Humans have a long history of dependence on the ocean for a suite of benefits and services, from livelihoods, to food, recreation and well-being. As coastal human populations grow, these ocean-derived benefits become an increasingly important support-system, while direct (e.g. fishing) and indirect (e.g. climate change) human impacts on these systems increase as well. In recent decades there has been growing awareness around the need for sustainable use of our oceans, and a desire for tracking and understanding the health of these systems. The Ocean Health Index (OHI) is a framework for quantitatively assessing ocean health on a scale of 0 to 100 by measuring discrete benefits (termed “goals”) provided by the marine ecosystem. It has been applied in many places around the world to assess regional ocean health, including British Columbia, the Baltic Sea, Hawaii, and more.

Here we tailor the OHI to the US Northeast, assessing recent trends in ocean health annually for the time period of 2005-2017. We synthesized over 50 datasets to calculate scores for eight goals including Food Provision, Biodiversity, Clean Waters, Sense of Place, Tourism & Recreation, Resource Access Opportunities, Livelihoods & Economies and Habitat Services. The region as a whole scores an 83 out of 100 with minor variations over time. The lowest scoring goals were Food Provision (64) and Resource Access Opportunities (71), while the highest goal scores came from Livelihoods & Economies (99) and Biodiversity (90).

Our study includes a data quality analysis that managers can use to help guide future regional data collection and management efforts that could ultimately improve our understanding of the region’s ocean health. Moving forward, researchers can use the US Northeast Ocean Health Index assessment to not only examine changes over time, but also to evaluate

how ocean health might change in the future under different scenarios by simulating changes before actions are taken. All of the underlying data and scores are available in an [interactive dashboard](#).

Plain language summary from article: Montgomery J, Scarborough C, Shumchenia E, Verstaen J, Napoli N, Halpern B. Ocean health in the Northeast United States from 2005 to 2017. *People Nat.* 2021;00: 000–000. <https://doi.org/10.1002/pan3.10223>