REEF Dive Sites and Reports
Northeast United States
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Prepared for:
Northeast Regional Ocean Council (NROC)
www.northeastoceandata.org

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1. INTRODUCTION

Shore- and boat-based recreational SCUBA diving is a popular activity occurring at various sites throughout the Northeast, primarily focusing around historical shipwrecks, interesting benthic habitat communities, and popular wildlife viewing areas. Despite the relatively cool water temperatures, diving activity in the Northeast occurs year-round but is concentrated in the months of May through October, and is clustered around regions with attractive underwater topography. Much diving activity occurs from private boats or from the shore, while groups may also charter diving excursions through professional dive boats. SCUBA divers are impacted by economic and environmental forces and there is potential for interaction between SCUBA diving and other ocean uses.

The Reef Environmental Education Foundation (REEF) was founded in 1990 in Key Largo, Florida, out of growing concern about the health of the marine environment, and the desire to provide the diving community a way to contribute to the understanding and protection of marine populations. REEF engages divers, snorkelers, and marine enthusiasts to actively participate in marine conservation. With knowledge, training, and the opportunity to get involved, these marine citizen scientists make significant and ongoing contributions through REEF's strategic partnerships with government agencies, science and academic institutions, the non-profit sector, and local communities. Divers and snorkelers play an important role in bringing information to the surface that adds to the knowledge base of ocean ecosystems and facilitates informed decision-making. Through REEF's efforts, marine citizen scientists impart an ethic of stewardship to current and future generations.

Over its 27-year history, REEF's Volunteer Fish Survey Project has risen to become one of the most effective marine citizen science programs. REEF surveyors record presence and relative abundance of all fish species encountered during their dives using a non-point roving method. In April 2020, the database surpassed 250,000 surveys from over 16,000 locations world-wide in ten regions. The REEF program has been active in the Northeast US & Canada (NE) since 2001 and as of April 2020, 4,600 REEF surveys have been conducted at 254 sites in the NE region. In 2014, REEF launched a companion monitoring program in the NE region for a select list of

invertebrates and algae (see https://www.REEF.org/northeast-us-eastern-canada-invertebrates-and-algae).

Over 60 peer-reviewed scientific publications have included REEF survey data (a full listing at www.REEF.org/db/publications). A few recent notable publications include "Population Assessment Using Multivariate Time-series Analysis: a case study of rockfishes in Puget Sound" in the journal Ecology and Evolution, "Species-specific Environmental Preferences Associated With a Hump Shaped Diversity/Temperature Relationship Across Tropical Marine Fish Assemblages" in Journal of Biogeography, and "Demographic Modeling of Citizen Science Data Informs Habitat Preferences and Population Dynamics of Recovering Fishes" in the journal Ecology.

2. PURPOSE

The purpose of this dataset is to depict the full list of sites in the REEF Geographic Zone Code listing for REEF's NE region (Virginia - Newfoundland) from the Voluntary Fish Survey Project.

3. SOURCES AND AUTHORITIES

Data were provided to Emily Shumchenia from the Northeast Ocean Data Portal to support ocean planning in the New England region. The dataset includes geographic location information for all survey site locations in REEF's Volunteer Survey Project database in the NE Region (Virginia - Newfoundland). REEF requests that these data not be provide to anyone else or use for another purpose without prior notification to REEF's Director of Science.

The data should be cited as:
REEF. 2020. Reef Environmental Education Foundation. World Wide Web electronic publication. www.REEF.org, date of download (21 April 2020).

4. DATABASE DESIGN AND CONTENT

Native storage format:

Feature types:
Point locations of dive sites

Data Dictionary:

Line	Name	Definition	Type	Size
1	FID	Automatically generated	ObjectID	*
2	Shape	Geometric representation of the feature	geometry	*
3	Latitude	Y coordinate, in decimal degrees	numeric	*
4	Longitude	X coordinate, in decimal degrees	numeric	*

5	Place name	REEF Geography ID/name	Text	254
6	REEF Report URL	URL to dive site report	Text	254

Feature Class Name: reefdotorg_NEgeog

Total Number of Unique Features: 260

Dataset Status: Complete

5. SPATIAL REPRESENTATION

Geometry Type: vector polygon
Reference System: GCS_North_American_1983
Horizontal Datum: North American Datum 1983
Ellipsoid: Geodetic Reference System 1980

XY Resolution: XY Scale is .000000001
Tolerance: 0.0000000089831583

Geographic extent: -76.29 to -63.93, 35.88 to 48.52

IS0 19115 Topic Category: environment, oceans, biota, economy, society

Place Names:

Bailey Island; Block Island Sound; Buzzards Bay; Cape Ann; Cape Cod Bay; Fishers Island Sound; Folly Cove; Great South Channel; Gulf of Maine; Hudson Canyon; Isle of Shoals; Jeffreys Ledge; Long Island Sound; Massachusetts Bay; Milford Harbor; Nantucket Shoals; Nantucket Sound; Narragansett Bay; Race Point; Rhode Island Sound; Stellwagen Bank

Recommended Cartographic Properties:
(Using ArcGIS ArcMap nomenclature)

Simple Fill Symbol: 6 point, circle 1, color model: HSV 0-100-100
Scale range for optimal visualization: 5,000 to 4,000,000

6. DATA PROCESSING

The file provided is NEgeog.txt, which contains a listing of the REEF geographic code, location name, latitude, and longitude for all sites in the REEF Volunteer Fish Survey Project NE Database. The zone codes are a hierarchal system that REEF volunteer surveyors use when conducting REEF fish and invertebrate/algae visual surveys. **This sensitive

information is not to be transmitted to anyone or used for any other purpose**. Lat/Long are given in Deg Min.min/100, if available.

Each zone code was used to generate the corresponding REEF Geographic Zone Report URL, by appending the core URL (https://www.reef.org/db/reports/geo?region_code=NE&zones=) with the zone code.

A .csv file with fields for Geographic Zone ID, Latitude, Longitude, Site name, and REEF Report URL was added to ArcGIS and converted to a shapefile.

Processing environment: ArcGIS 10.8, Windows 10 Professional, Intel Core i7 CPU

	Process Steps Description
1	Degrees-decimal-minutes were converted to decimal degrees and file was saved as .csv
2	.csv file added to ArcGIS environment
3	.csv spatial data mapped using "Display XY Data" tool
4	Spatial dataset saved as shapefile using "Export Data" tool using the NAD83 Geographic Coordinate System

7. QUALITY PROCESS

Attribute Accuracy: Original content was acquired from an authoritative source. No attribute editing was conducted.

Logical Consistency: N/A

Completeness: Data are complete based on REEF databases as of April 2020.

Positional Accuracy: May vary by report. Observations are reported for general sites/areas and depicted by a single set of coordinates on a map.

Timeliness: This dataset is based on best available information as of April 2020.

Use restrictions: Data are presented as is. Users are responsible for understanding the metadata prior to use.

Distribution Liability: All parties receiving these data must be informed of caveats and limitations. Please cite REEF's Database as: REEF. year. Reef Environmental Education Foundation Volunteer Fish Survey Project Database. World Wide Web electronic publication. www.REEF.org, date of download (day month year). Contact REEF Co-

Executive Director: Science & Engagement, Dr. Christy Pattengill-Semmens (christy@reef.org), to request raw data files.