Historical Eelgrass Extent
Northeast United States
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By:
Emily Shumchenia
Northeast Ocean Data Portal Working Group

1. INTRODUCTION

Maps of the historical extent of eelgrass meadows provide resource managers with information about habitat loss and potential for restoration. In addition, because eelgrass meadows expand and contract throughout the year and year-to-year, maps of historical extent can also provide a guide to locations where eelgrass may naturally appear on its own (i.e., outside of restoration efforts).

The historical eelgrass extent layer was created from several separate datasets for the states of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, and New York. Datasets that were included in the historical layer were derived from quantitative surveys such as aerial photography and/or field verification. The range of historical data available varied greatly by state. The data user is encouraged to read this and the metadata of each individual dataset carefully, as geometry, attribute details, and timeliness are not necessarily consistent among datasets used to develop this layer. Details of each state's data source are described in the data processing section.

Eelgrass (*Zostera marina*) meadows are critical wetlands components of shallow coastal ecosystems throughout the region. Eelgrass meadows provide food and cover for a great variety of commercially and recreationally important fauna and their prey. Eelgrass and other seagrasses are often referred to as "Submerged Aquatic Vegetation" or SAV. This distinguishes them from algae, which are not classified as "plants" by biologists (rather they are often placed in the kingdom protista) and distinguishes them from the "emergent" saltwater plants found in salt marshes. In addition to the term SAV, some coastal managers use the term SRV or submerged rooted vegetation.

2. PURPOSE

The purpose of mapping the historical distribution of eelgrass (Submerged Aquatic Vegetation - SAV) is to create a reference layer depicting areas where eelgrass was present in the past and/or could be present again in the future throughout coastal New England waters in order to support coastal and ocean planning.

3. SOURCES AND AUTHORITIES

- Maine Department of Marine Resources, Bureau of Resource Management
- Maine Department of Environmental Protection
- University of New Hampshire
- New Hampshire Department of Environmental Services
- NH GRANIT (New Hampshire Geographically Referenced Analysis and Information Transfer System)
- Piscataqua Region Estuary Partnership
- Massachusetts Department of Environmental Protection
- Massachusetts Division of Marine Fisheries
- MassGIS
- Rhode Island Eelgrass Task Force
- Connecticut Department of Energy and Environmental Protection
- Peconic Estuary Partnership
- New York Natural Heritage Program

4. DATABASE DESIGN AND CONTENT

Native storage format:

Feature types:

Eelgrass polygons

Data Dictionary:

Line	Name	Definition	Type	Size
1	Shape	Geometric representation of the feature	geometry	*
2	OBJECTID	Automatically generated	ObjectID	*
3	state	State in which the eelgrass bed is located	text	5
4	Shape Length	Length of polygon circumference	double	*
5	Shape Area	Area of polygon	double	*

Feature Class Name: ne_regional_eelgrass_historical

Total Number of Unique Features: 6

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: -72.48 to -66.97, 41.15 to 45.10

IS0 19115 Topic Category: environment, oceans, biota

Place Names:

Atlantic Ocean, Beverly Harbor, Block Island, Blue Hill Bay, Boston Harbor, Broad Cove, Broad Sound, Buzzards Bay, Cape Cod Bay, Cape Neddick Harbor, Casco Bay, Chatham Harbor, Cobscook Bay, Cohasset Harbor, Connecticut, Dennys Bay, Duxbury Bay, Dyer Bay, Englishman Bay, Falmouth Harbor, Fishers Island Sound, Frenchman Bay, Gloucester Harbor, Goosefare Bay, Gouldsboro Bay, Great Bay, Gulf of Maine, Hingham Bay, Hull Bay, Ipswich Bay, Johns Bay, Little Narragansett Bay, Little Bay, Little Kennebec Bay, Little Machias Bay, Long Island Sound, Machias Bay, Maine, Manchester Bay, Massachusetts, Muscongus Bay, Nantucket Harbor, Nantucket Sound, Nauset Harbor, Narragansett Bay, Narraguagus Bay, Narrow River, New Hampshire, Ninigret Pond, Oarweed Cove, Passamaquoddy Bay, Penobscot Bay, Pigeon Hill Bay, Piscataqua River, Pleasant Bay, Plymouth Bay, Plymouth Harbor, Portsmouth Harbor, , Point Judith Pond, Portsmouth Harbor, Potter Pond, Prospect Harbor, Quonochontaug Pond, Rhode Island, Saco Bay, Sakonnet River, Salem Sound, Sandy Bay, Scituate Harbor, Seal Cove, Sheepscot Bay, Spinney Creek, Vineyard Sound, Westport River, York Harbor

Recommended Cartographic Properties:
(Using ArcGIS ArcMap nomenclature)

Simple Fill Symbol: .4 point, outline color: same as fill, color model: HSV 167-100-66 Scale range for optimal visualization: 5,000 to 3,000,000

6. DATA PROCESSING

The following datasets were included in the historical composite layer. For each state, all available historical data were merged and dissolved so that each state contains a single unique polygon representing the entire extent of recorded historical eelgrass. Detail regarding SAV species observed, density, acreage, and other field observations were removed from each dataset for consistency when merging and combining datasets into a single regional

layer. The data user is encouraged to obtain the original source data and refer to the metadata to examine these source details.

State	Years available	Source
Maine	1993-1997, 2001-2010, 2013, 2018	Maine Department of Environmental Protection/Maine GeoLibrary
New Hampshire	1981, 1986-2017, 2019	University of New Hampshire/GRANIT
Massachusetts	1995, 2001, 2006-2007, 2010-2013, 2015-2017, 2019	Massachusetts Department of Environmental Protection
Rhode Island	1988, 1996, 2000, 2006, 2009, 2012, 2016	RIGIS/University of Rhode Island
Connecticut	1974-1996, 2002, 2006, 2009, 2012, 2017	Connecticut Department of Energy and Environmental Protection
New York	1930, 2000, 2003-2014	Peconic Estuary Partnership (Sarah Schaefer); New York State Department of Environmental Conservation; New York Natural Heritage Program

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

	Process Steps Description
1	Available shapefiles were obtained from each state/entity and loaded into ArcGIS, and if necessary converted to the GCS North American 1983 coordinate system using the PROJECT tool
2	All available historical datasets within each state were combined using the DISSOLVE tool to create a single polygon representing each state's historical eelgrass extent
3	Polygons for each state were combined into a single regional shapefile using the MERGE tool
4	Domains were added to better characterize the State, Shape Length, and Shape Area fields

7. QUALITY PROCESS

Attribute Accuracy: Original content was acquired from authoritative sources. Any attribute editing was informed by specific information in the metadata.

Logical Consistency: This dataset integrates eelgrass habitat polygon features from five separate sources. Common themes were identified across attribute fields that unify the datasets, and these were incorporated to provide consistency and efficient communication of

information. Once merged, data were unified by field calculations and feature values were expanded upon via attribute domains in order to consistently identify density of bed and year sampled.

Completeness: Data are based upon the most recent available eelgrass habitat GIS datasets available for coastal New England states. Not all records have complete information for each field due to the differences in sampling and recording programs for each state.

Positional Accuracy: May vary by state. The user should consult the metadata of each individual state for positional accuracy information.

Timeliness: This dataset is based on best available information as of March 17, 2021; however, the timeliness of the dataset varies by state. Due to the biological characteristics of eelgrass, the user should not assume that all sites are up to date and should consult each state's metadata for more detailed information as to the timeliness of the data.

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.