

Supplementary Information

Indicator J: Eelgrass

State of Casco Bay 6th Edition

References

Barker, S. 2019. Eelgrass Distribution in Casco Bay 2018. Final Project and Data Report for the Maine Department of Environmental Protection.

<https://digitalcommons.usm.maine.edu/cbep-publications/331/>.

Enterline, C. 2020. Assessing Various Methods to Map the Health and Extent of Eelgrass Beds. Maine Coastal Program. Maine Outdoor Heritage Fund Final Report: 181-01-14.

Further Reading

MaineDMR established an interactive *Historical Eelgrass Coverage Viewer* through the DMR Open Data portal. As of January 2021, the Viewer allows users to compare statewide eelgrass coverage from two different data sets at user-defined spatial scales, as well as to perform a change analysis. <https://dmr-maine.opendata.arcgis.com/app/mainedmr-historical-eelgrass-coverage-viewer>

Following a multi-year planning effort led by the Maine Climate Council, the State released its climate plan, *Maine Won't Wait – A Four Year Plan for Climate Action*, in December 2020. Eelgrass beds are recognized as important coastal ecosystems that enhance climate resilience and provide carbon storage, referred to as “Blue Carbon.”

Maine Climate Council. 2020. Maine Won't Wait. A Four-Year Plan for Climate Action.

https://climatecouncil.maine.gov/future/sites/maine.gov.future/files/inline-files/MaineWontWait_December2020.pdf

CBEP co-hosted a two-day eelgrass symposium in Portland in February, 2009. Eelgrass experts from across North America participated and discussed recent scientific findings, current research, and future research needs. The following report summarizes proceedings from the workshop.

Neckles, H. A., A. R. Hanson, P. Colarusso, R. N. Buchsbaum, and F. T. Short (eds.). 2009. Status, Trends, and Conservation of Eelgrass in Atlantic Canada and the Northeastern United States. Report of a Workshop Held February 24-25, 2009, Portland, Maine. Available here:

<https://seagrant.umaine.edu/wp-content/uploads/sites/467/2019/03/2009-eelgrass-workshop-report.pdf>.

Around 2011-2012, the local population of European Green Crab (*Carcinus maenas*) spiked, with widespread ecological impacts to the biota and ecological communities of Casco Bay,

including eelgrass beds. Green crab bioturbation is believed to be a primary cause of the widespread loss of eelgrass in Maquoit and Middle Bays documented in the Bay-wide eelgrass mapping effort by MaineDEP in 2013. This study by Hilary Neckles of the U.S. Geological Survey reports on these impacts in detail.

Neckles, H.N. 2014. Loss of Eelgrass in Casco Bay, Maine, Linked to Green Crab Disturbance. *Northeastern Naturalist* 22(3):478-500. Available here:

https://www.researchgate.net/publication/282794409_Loss_of_Eelgrass_in_Casco_Bay_Maine_Linked_to_Green_Crab_Disturbance.

Methods and Data Sources

Casco Bay Eelgrass Mapping

Source Data

We obtained eelgrass coverage data through the Maine GeoLibrary (<https://www.maine.gov/geolib/>) in February 2020. As of January 2021, the URLs are no longer active. See below for alternate ways of accessing these data. We prepared the eelgrass extent map using ArcMap. We exported tabular geospatial data for use in Microsoft Excel, where we summarized the data and prepared the acreage figure.

1993-94

MaineDMR. Eelgrass 1997. URL: <https://geolibrary-maine.opendata.arcgis.com/datasets/mainedmr-eelgrass-1997>. Date accessed: 2/14/2020.

2001-02

MaineDMR. Eelgrass 2010. URL: <https://geolibrary-maine.opendata.arcgis.com/datasets/mainedmr-eelgrass-2010>. Date accessed: 2/14/2020.

2013

MaineDEP Eelgrass 2013 (Casco Bay Only). URL: <https://geolibrary-maine.opendata.arcgis.com/datasets/mainedep-eelgrass-2013-casco-bay-only>. Date accessed: 2/14/2020.

2018

MaineDEP Eelgrass 2018 (Casco Bay Only). URL: <https://geolibrary-maine.opendata.arcgis.com/datasets/mainedep-eelgrass-2018-casco-bay-only>. Date accessed: 2/14/2020.

Accessing the Data

The data used by CBEP in these analyses are available on the 2020 State of Casco Bay GitHub Archive.

As of January, 2021, related data, including eelgrass maps for other parts of the State of Maine, are available through DEP and DMR webpages at the following URLs. URLs for agency data portals may change in future.

1993-94

MaineDMR. Eelgrass 1997. URL: <https://dmr-maine.opendata.arcgis.com/datasets/mainedmr-eelgrass-1997>. Date accessed: 1/22/2021.

2001-02

MaineDMR. Eelgrass 2010. URL: <https://dmr-maine.opendata.arcgis.com/datasets/mainedmr-eelgrass-2010?geometry=-75.956%2C42.688%2C-61.828%2C45.450>. Date accessed: 1/22/2021.

2013

MaineDEP Eelgrass 2013 (Casco Bay Only). URL: <https://maine.hub.arcgis.com/datasets/f1041ef596b64880bb9c348a28f8a208>. Date accessed: 1/22/2021.

2018

MaineDEP Eelgrass 2018 (Casco Bay Only). URL: <https://maine.hub.arcgis.com/datasets/9ff06215dcb945c2879b52413fc954c1>. Date accessed: 1/22/2021.

Depth of Eelgrass Bed Deep Edge and Light Attenuation

Angela Brewer of MaineDEP emailed us an Excel file with tabular data on light attenuation and deep edge depth of eelgrass on September 10, 2020. The table and figure shown were included within the Excel file.

Brewer, A. MaineDEP. September 10, 2020. Deep edge and light data.