Icon

Description automatically generated

**2021**

**Lower Nitrogen = Better Water Quality[[1]](#footnote-1)**

**Changes to Chlorophyll and Hypoxia as a Result of Reduced Nitrogen Pollution**

Narragansett Bay Region

A picture containing sky, outdoor, nature, several

Description automatically generated

A picture containing text

Description automatically generated

Science Update:

Changes to Chlorophyll and Hypoxia as a Result

of Reduced Nutrient Pollution

in Narragansett Bay

Narragansett Bay Estuary Program

Dan Codiga

NBEP-21-247

September 2021

CITATION

Narragansett Bay Estuary Program (NBEP). 2021. Science Update: Changes to Chlorophyll and Hypoxia as a Result of Reduced Nutrient Pollution in Narragansett Bay. NBEP-21-247. DOI: 10.6084/m9.figshare.15124992.

For more information, please contact Dan Codiga ([dcodiga@uri.edu](mailto:dcodiga@uri.edu)) or Courtney Schmidt ([courtney.schmidt@nbep.org](mailto:courtney.schmidt@nbep.org))

**Acknowledgements**

This update and the report on which it’s based are the second in a series of updates from the NBEP’s 2017 *State of Narragansett Bay and Its Watershed* chapters on chlorophyll concentrations and dissolved oxygen concentrations. The authors wish to thank the many partners who have shared their insights with us and provided data and information. The photo on the cover is the wastewater treatment tanks at Field’s Point Wastewater Treatment Facility taken by Ayla Fox for NBEP.

**Funding**

Development of this document was funded by agreement CE00A00407 awarded by the EPA to NEIWPCC for the NBEP. Dan Codiga’s time was supported via this agreement as well. Although the information in this document has been funded by the EPA, it has not undergone the EPA’s publications review process and therefore, may not reflect the views of EPA and no official endorsement is inferred. The viewpoints expressed do not necessarily represent those of NEIWPCC or EPA. Mention of trade names, commercial products, or causes do not constitute endorsement or recommendation for use.

**Authors**

Dan Codiga, Independent Contractor

Courtney Schmidt, NBEP

**Reviewers**

*Narragansett Bay Estuary Program Staff*

Julia Bancroft

Mike Gerel

*US Environmental Protection Agency*

Caitlyn Whittle

*NBEP Science Advisory Committee Members*

Jamie Vaudrey, UConn

Sue Kiernan, RIDEM

Richard Carey, MassDEP

Candace Oviatt, URI

*Narragansett Bay Commission*

Eliza Moore

**Narragansett Bay estuary program and its study areas**

The Narragansett Bay Estuary Program is part of the National Estuary Program, established in 1987 as an amendment to the federal Clean Water Act administered by the U.S. Environmental Protection Agency (EPA). The NBEP uses a voluntary, community-driven approach to enhance the water quality, wildlife, and quality of life in the Narragansett Bay, Little Narragansett Bay, Coastal Ponds, and their watersheds in Rhode Island, Massachusetts, and Connecticut. The landscape unites 2 million people across 113 communities in 3 states. It hosts diverse habitats that sustain wildlife and vital economies.

Map

Description automatically generated

Map of Narragansett Bay Estuary Program Study Areas

**Purpose**

This two-page science update summarizes a report by Dan Codiga ([here](https://figshare.com/articles/book/Analysis_and_Synthesis_of_Eutrophication-Related_Conditions_in_Narragansett_Bay_RI_MA_USA_Updated_Through_2019/14830890)) shared in September 2021, and contains further work towards understanding how nitrogen pollution reductions impact Narragansett Bay. This update (and the longer report) stems from previous work (presented [here](https://figshare.com/articles/book/Further_Analysis_and_Synthesis_of_Narragansett_Bay_RI_MA_USA_Oxygen_Chlorophyll_and_Temperature/12547676) and [here](https://figshare.com/articles/book/Daily-Resolution_2001-2017_Time_Series_of_Total_Nitrogen_Load_to_Narragansett_Bay_from_Bay-Wide_Treatment_Facility_and_Watershed_Sources/12573851)) to update the chlorophyll and dissolved oxygen chapters of the 2017 [State of Narragansett Bay and Its Watershed](https://static1.squarespace.com/static/5eea260cea828333324dba1c/t/5faeff4003633f0646bd008a/1605304154786/Chapter-5-Land-Use.pdf).

The purpose of these documents is to inform our audience on nitrogen pollution in Narragansett Bay, and to identify areas for continued work. NBEP hopes that this update stimulates discussion among our partners and nutrient experts.

The audience for this piece is anyone who is interested in nitrogen pollution, and the response to nitrogen pollution reduction, particularly environmental managers, members of land-trust committees, and the interested public.

**Methods**

This update is a companion piece to a [larger report](https://figshare.com/articles/book/Analysis_and_Synthesis_of_Eutrophication-Related_Conditions_in_Narragansett_Bay_RI_MA_USA_Updated_Through_2019/14830890) on the topic. Included in that report are the data sources and methods used.

1. Sometimes, what they teach us in school turns out to be right… the Narragansett Bay region reduced Nitrogen pollution, and after some years, the Bay showed signs of improved water quality. [↑](#footnote-ref-1)