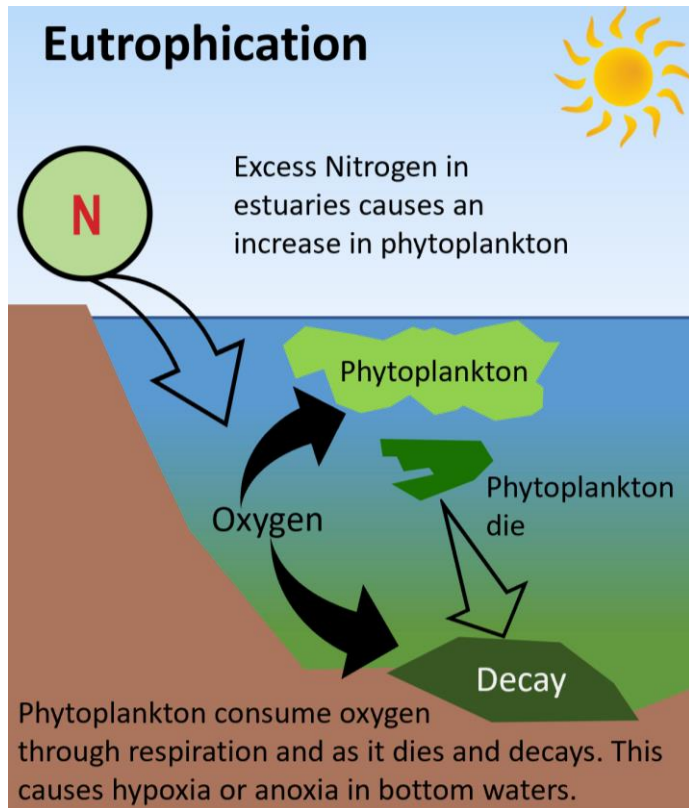


Narragansett Bay Water Quality Improved



Eutrophication



What Leads to Poor Water Quality?

- Just as fertilizer helps a garden grow, nitrogen helps plants, algae (*phytoplankton*), and seaweed grow
- Coastal waters are over-fertilized by human actions on land, leading to nitrogen pollution causing too much phytoplankton to grow (called *eutrophication*)
- Plants and animals need oxygen to breathe. Too much phytoplankton causes oxygen levels to be too low (*hypoxia*), leading to death of fish and shellfish
- Reducing nitrogen pollution should improve water quality by reducing phytoplankton and hypoxia

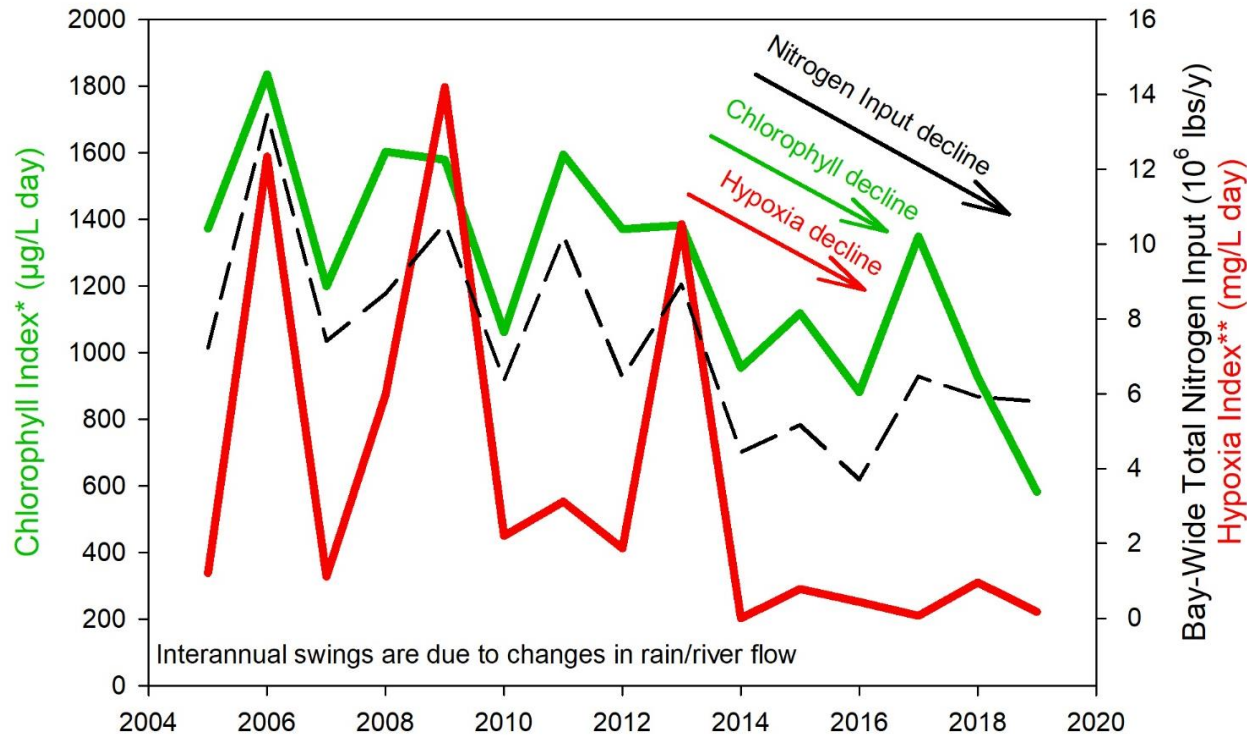
LOWER NITROGEN = BETTER WATER QUALITY

Above: Graphic depiction of eutrophication.
All symbols from [IAN](#) or NBEP.

Combating Poor Water Quality in Narragansett Bay

Nitrogen pollution stems from human/animal waste, fertilizer, and stormwater. Nitrogen has been reduced through significant investment in upgrades to wastewater treatment facilities over the past 15+ years. Concurrently, phytoplankton (as chlorophyll) and hypoxia have been monitored.

Significant nitrogen reductions were measured in 2013. Using the long-term chlorophyll and hypoxia monitoring, we have been assessing the Bay-wide response (outside of small coves such as Greenwich Bay and Seekonk River) to the reduction. **Since 2013, both chlorophyll and hypoxia have declined.**



Notes: Bay-wide nitrogen input is calculated from wastewater treatment facilities and river sources that discharge to Narragansett Bay. The units for the indices describe the extent and duration of the chlorophyll or hypoxia relative to a threshold. *Chlorophyll Index relative to 9.4 µg/L **Hypoxia Index relative to 2.9 mg/L

2021 [Report](#) Detailing the Ecosystem Response to Major Reductions in Excess Nitrogen Pollution from Wastewater Treatment Facilities

Key Findings

- Since 2006, **nitrogen pollution has declined**, with major reductions since 2013
- Since 2013, **chlorophyll and hypoxia have declined**
- Long-term measurements **signal improvement in water quality**

Better Water Quality Leads to... (1) more functional ecosystems; (2) increased animal and plant diversity; and (3) better recreational opportunities

Continued Work Needed...

- Continually track chlorophyll and hypoxia measurements to understand the impacts of a changing climate on the bay
- Focus on local areas and small coves (such as Greenwich Bay and the Seekonk River) to better understand how to manage the impacts of nitrogen pollution and eutrophication there