

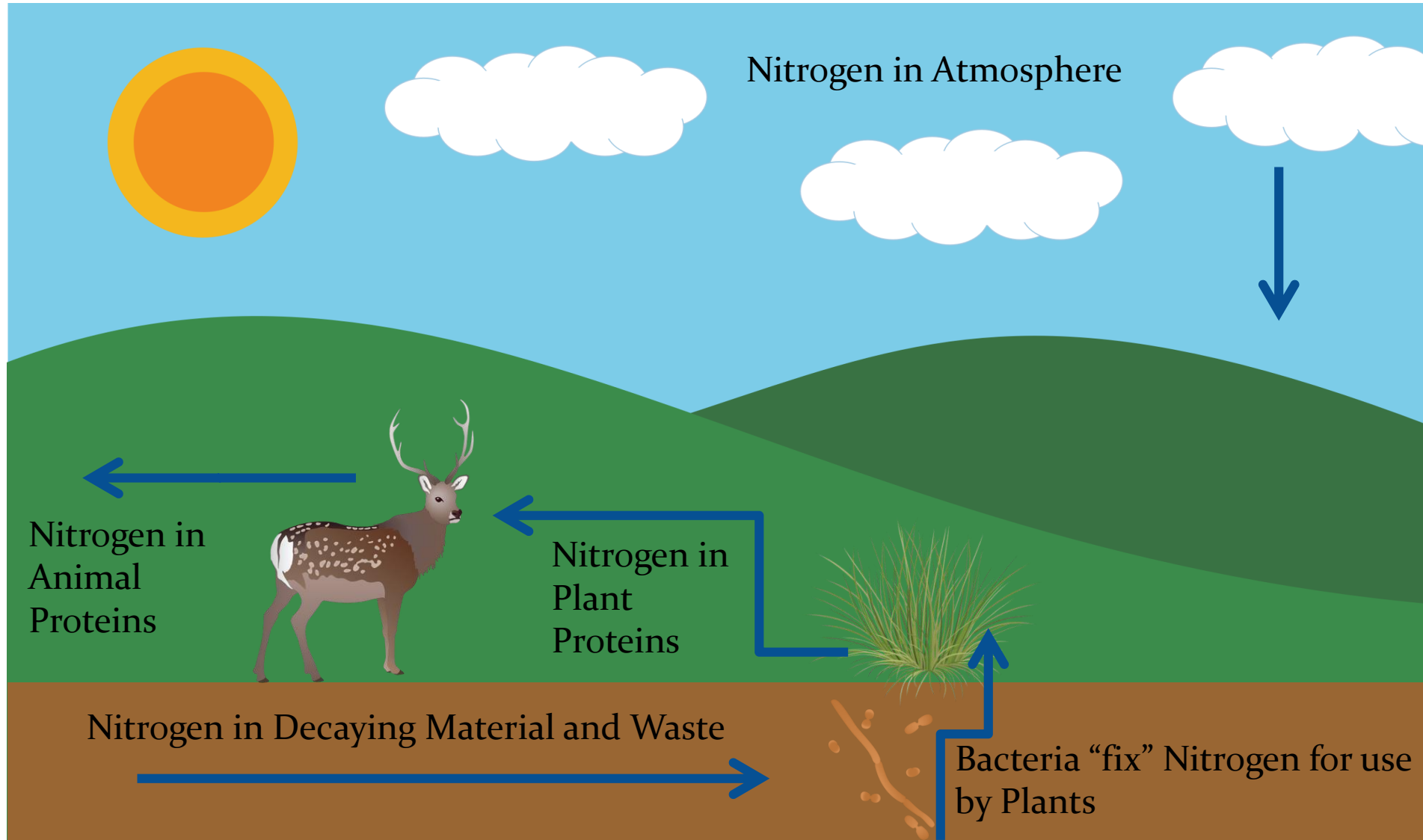
State of the Harbor



Kaitlyn Shaw
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Natural Resources Department
Water Resource Specialist



The Nitrogen Cycle



Balance

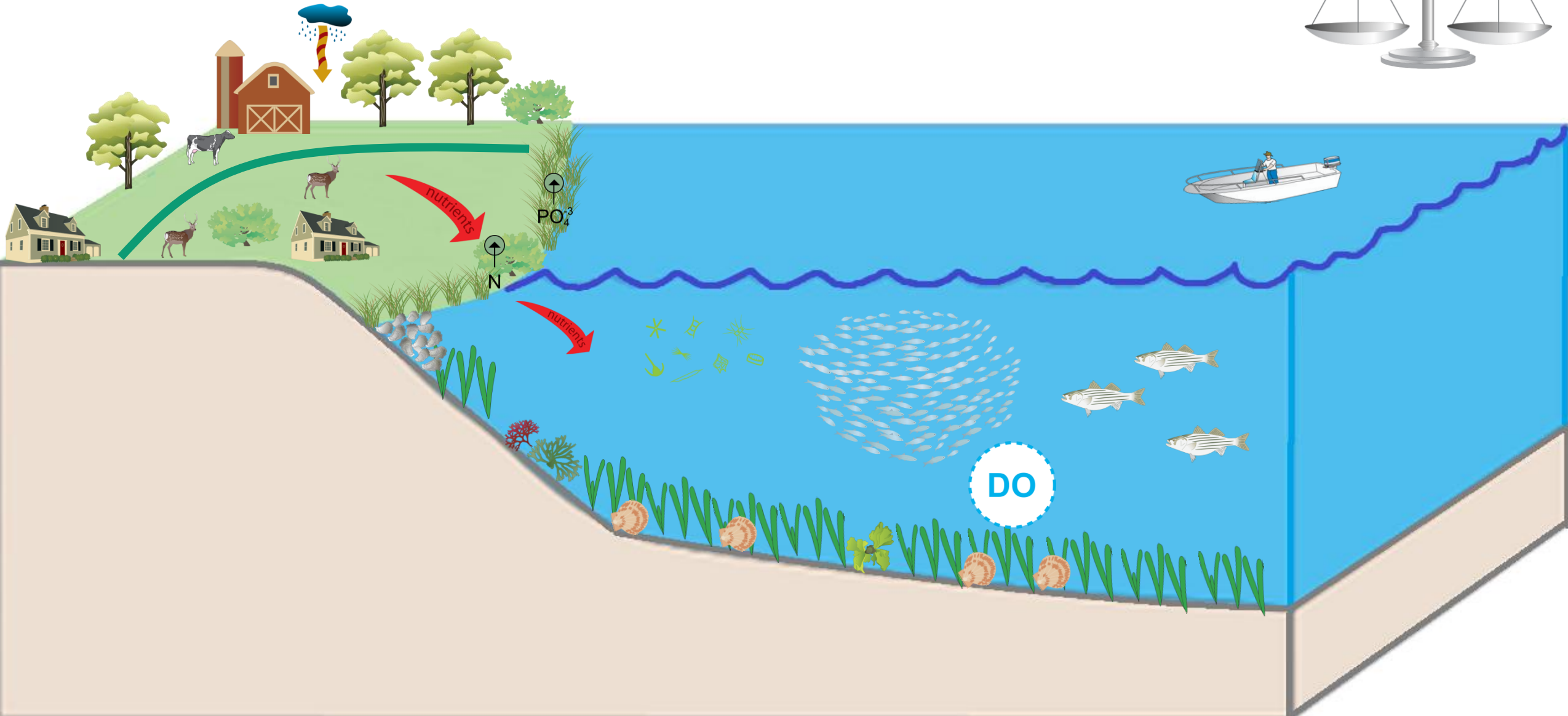


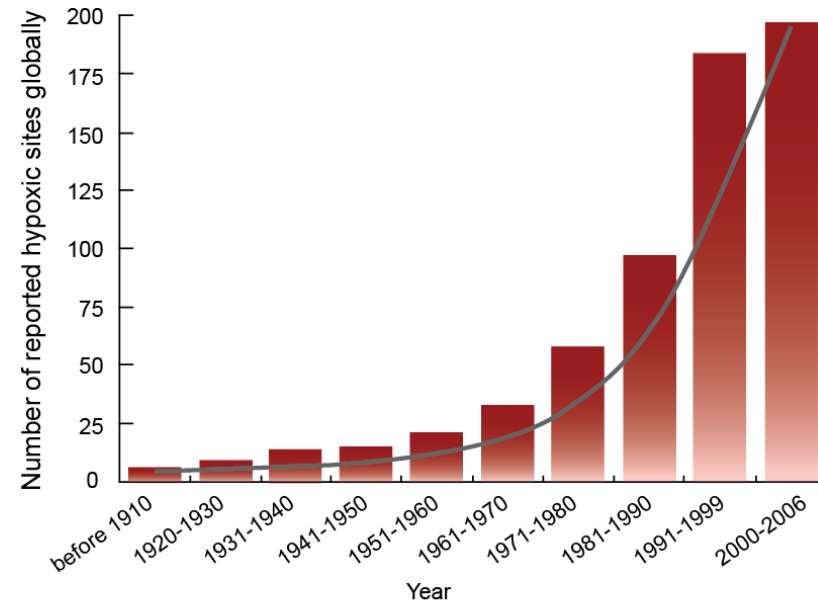
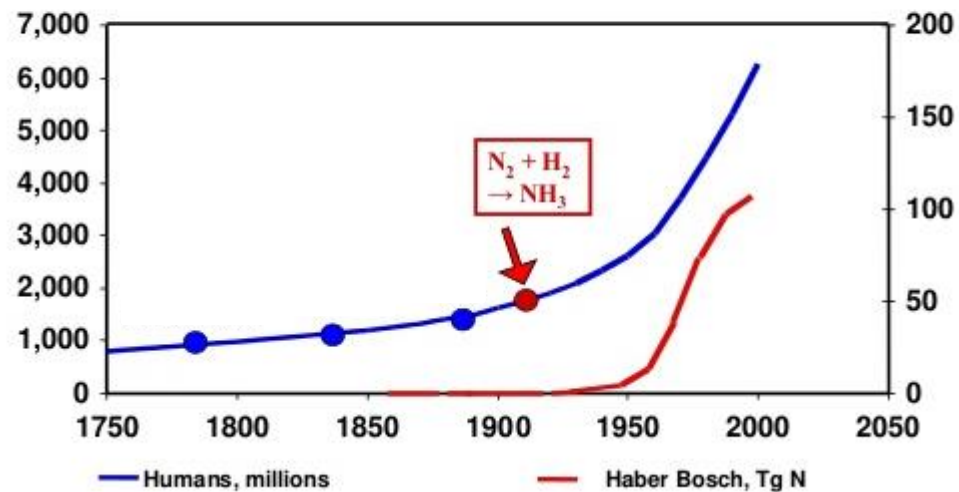


Photo: Tom Montgomery

Alteration of the Nitrogen Cycle

The History of Nitrogen

Invention of Haber Bosch Nitrogen



Adapted from Diaz, R.J. and R. Rutger Rosenberg. 2008. Spreading Dead Zones and Consequences for Marine Ecosystems. *Science* 321, 926.

Nutrient Sources

Turf Fertilizers
Lawn Fertilizers

Atmospheric Deposition

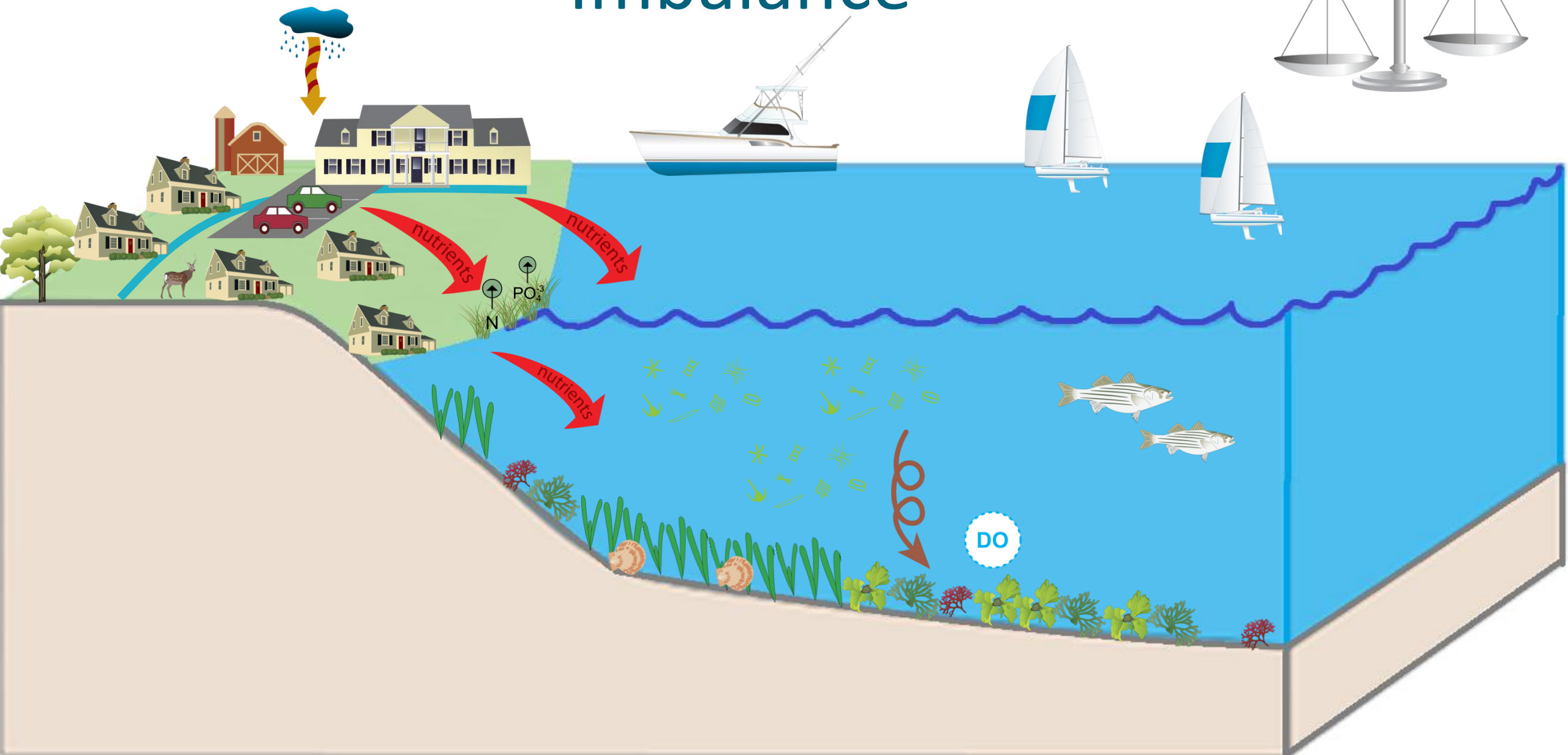
Natural Farm Animals
Wastewater

Stormwater

Landfill



Imbalance



N

PO₄³⁻

DO

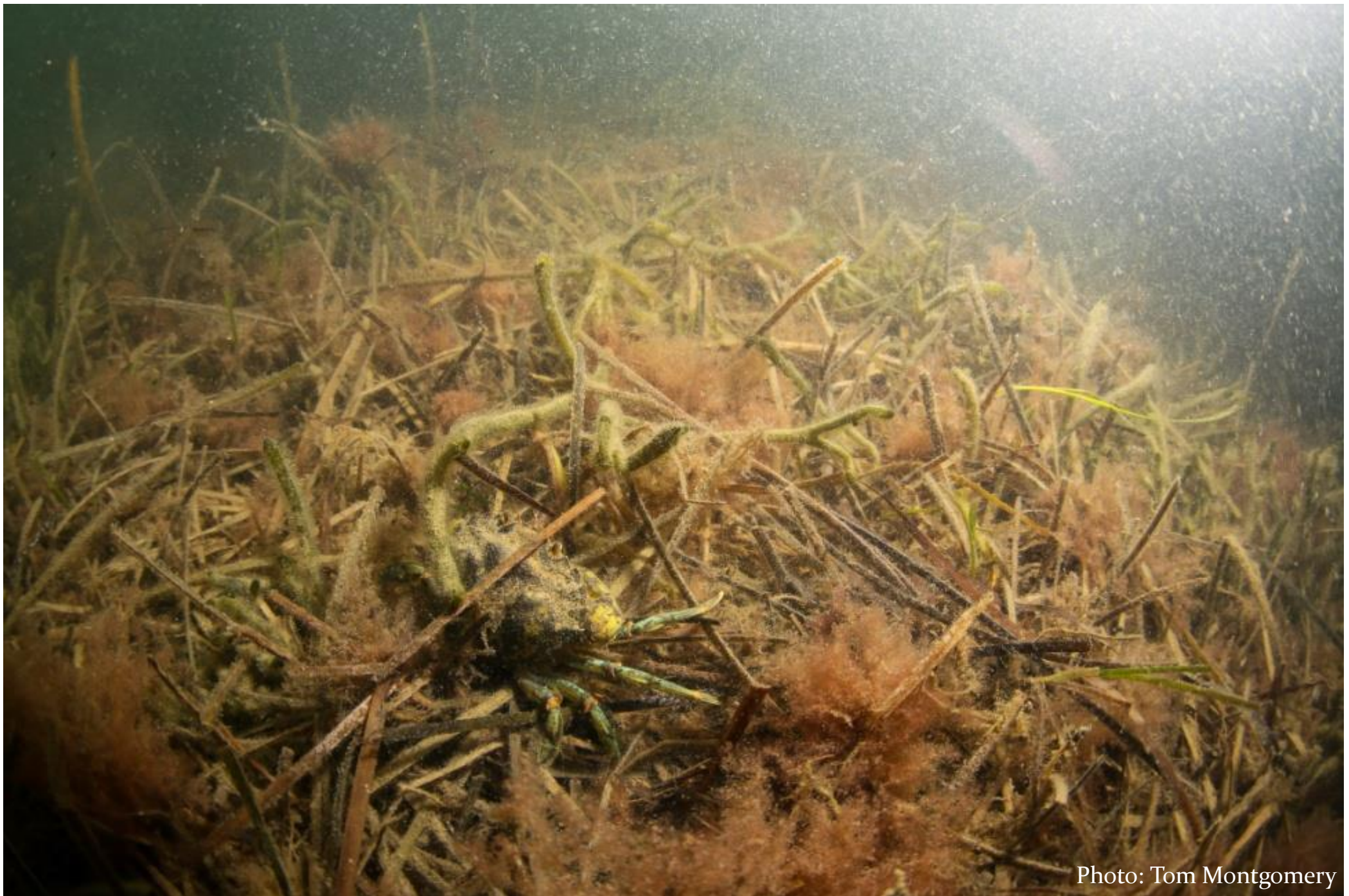
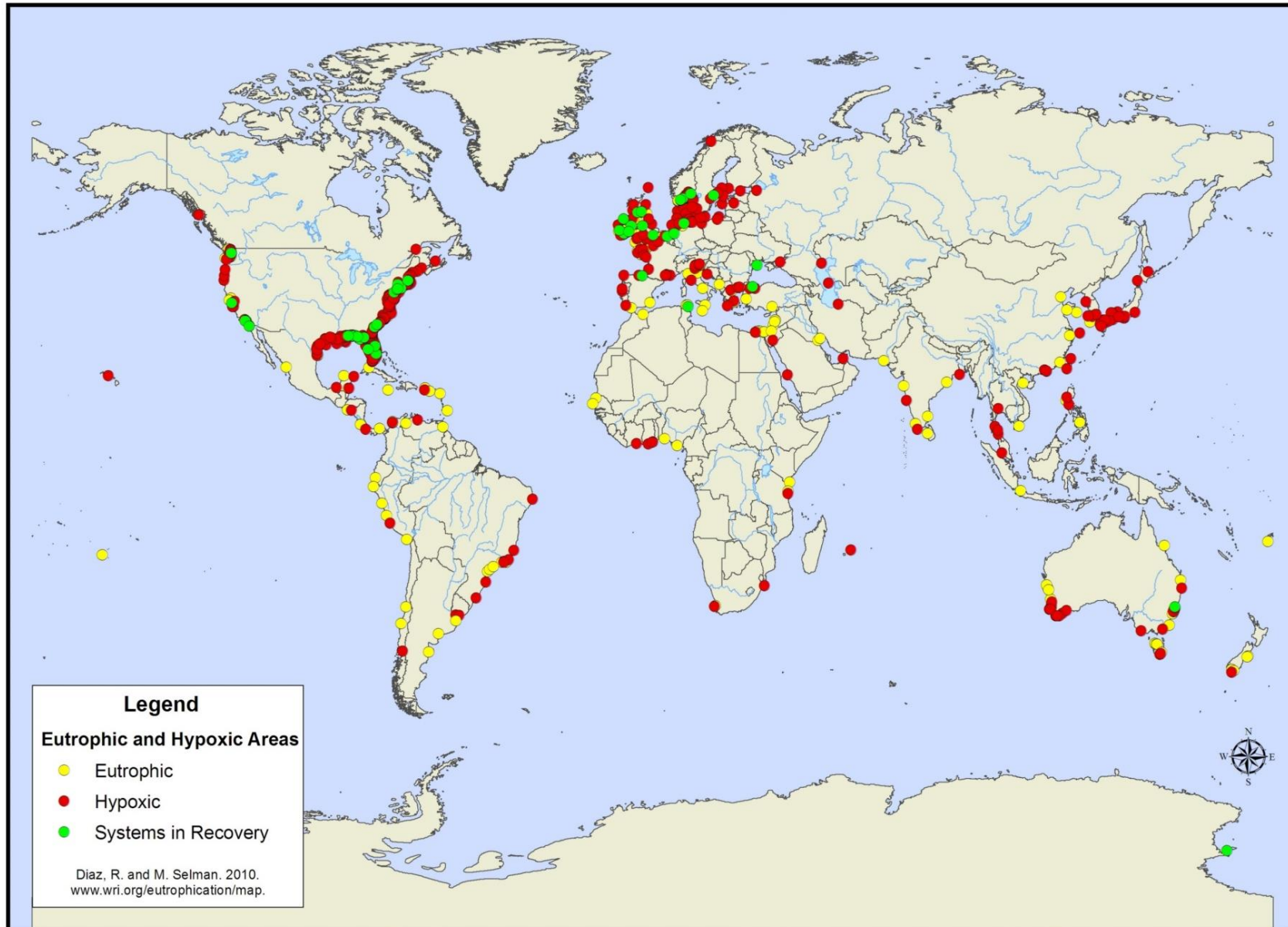


Photo: Tom Montgomery

World Hypoxic and Eutrophic Coastal Areas



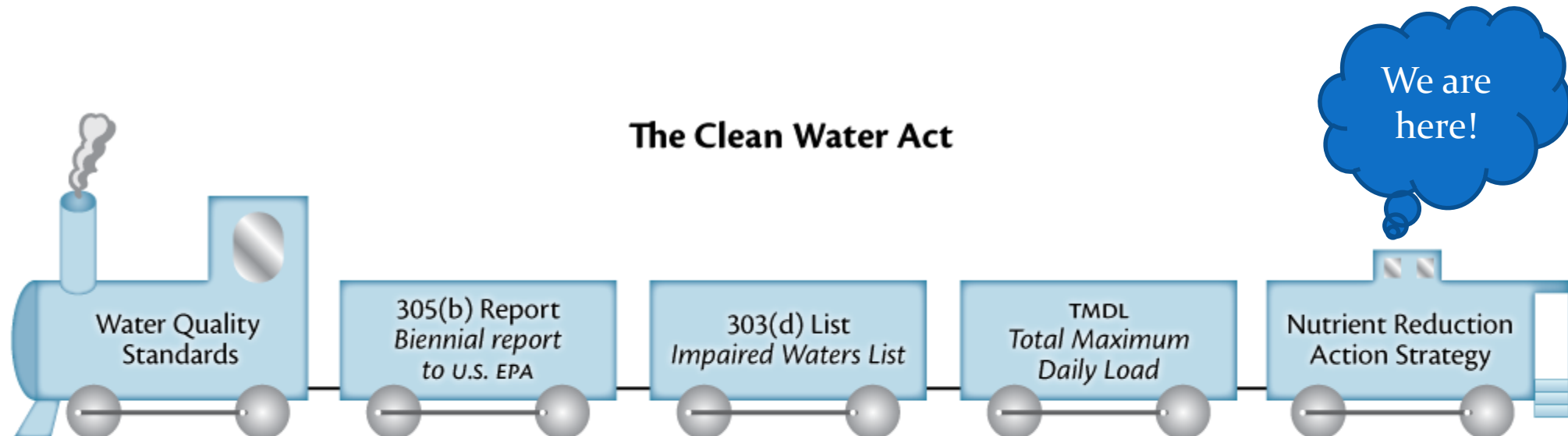
Why do we care?



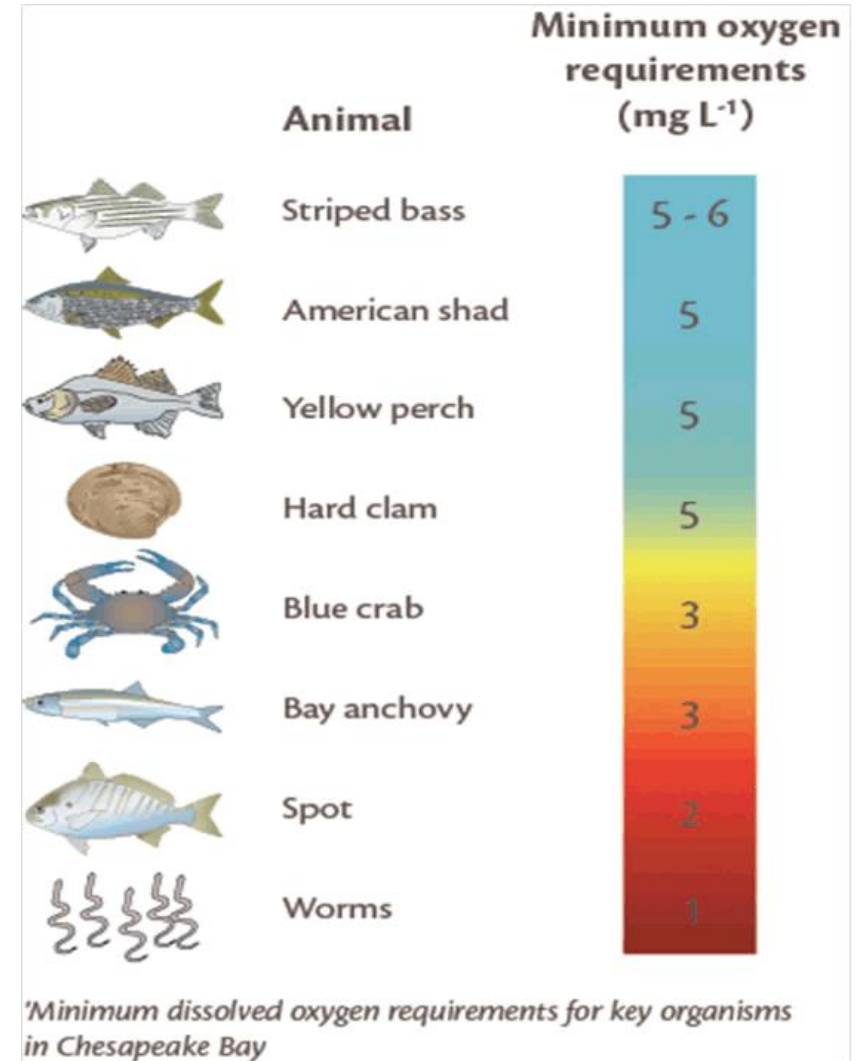
Shellfishing along the Cape's south coast, including Nantucket Sound, was banned by the state Monday due to a potentially toxic phytoplankton bloom. TIM WOOD PHOTO



What is being done?



Water Quality Goals



Massachusetts Estuaries Project (MEP) Status as of October 2016

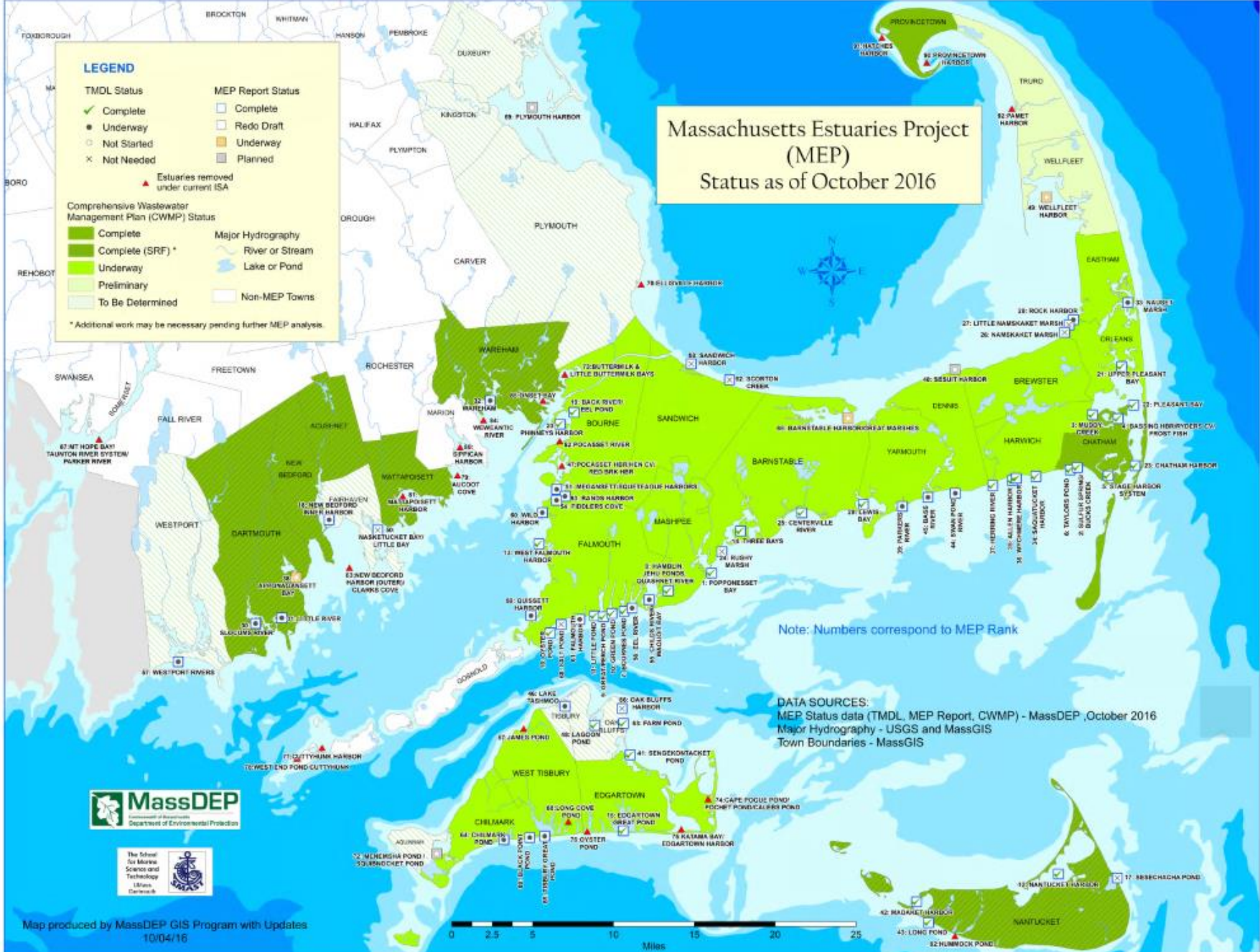
LEGEND

TMDL Status	MEP Report Status
✓ Complete	□ Complete
● Underway	□ Redo Draft
○ Not Started	□ Underway
✕ Not Needed	□ Planned
	▲ Estuaries removed under current ISA

Comprehensive Wastewater Management Plan (CWMP) Status

■ Complete	Major Hydrography
■ Complete (SRF) *	— River or Stream
■ Underway	— Lake or Pond
■ Preliminary	□ Non-MEP Towns
■ To Be Determined	

* Additional work may be necessary pending further MEP analysis.



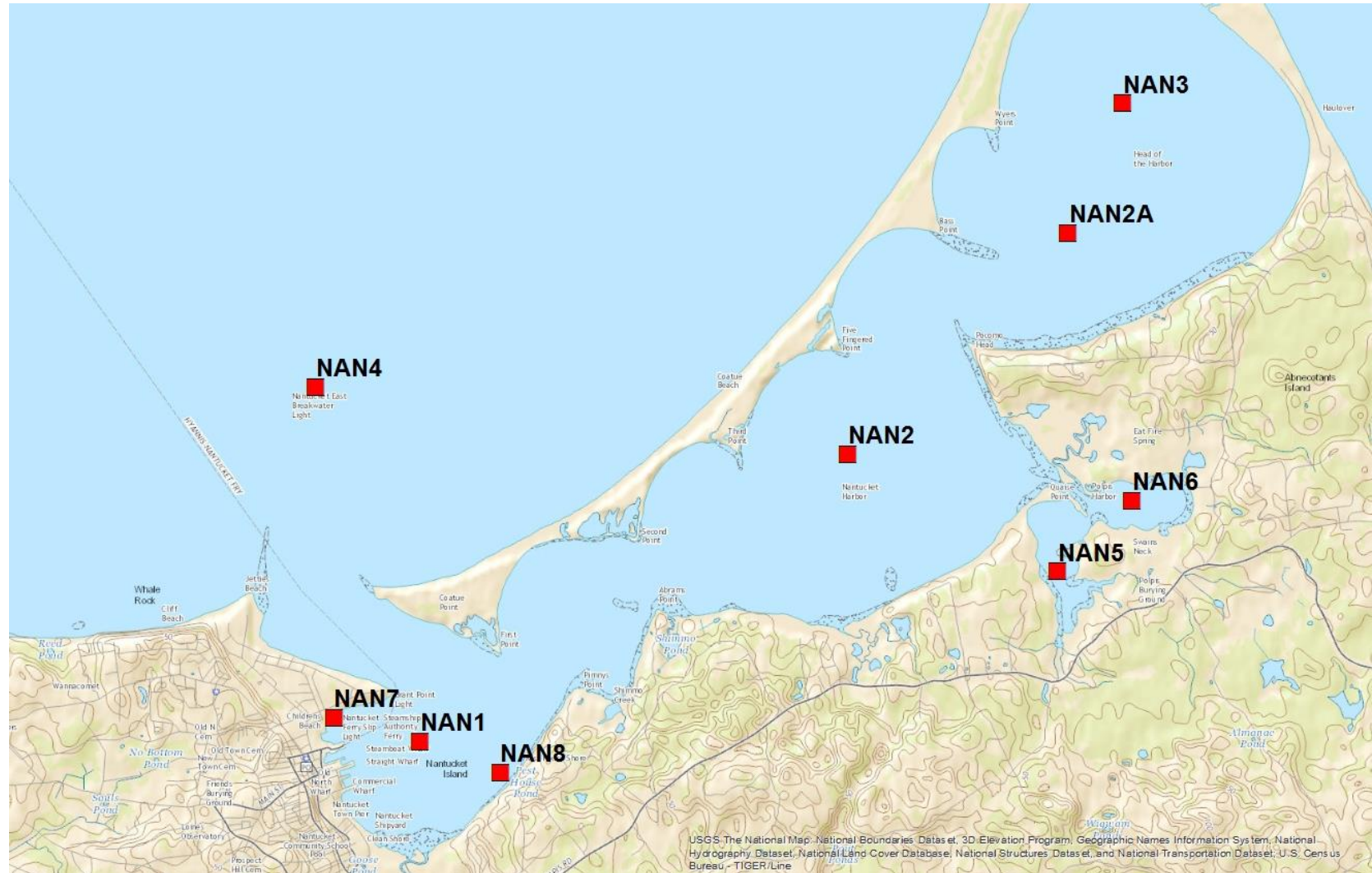
Note: Numbers correspond to MEP Rank

DATA SOURCES:
MEP Status data (TMDL, MEP Report, CWMP) - MassDEP, October 2016
Major Hydrography - USGS and MassGIS
Town Boundaries - MassGIS



Water Quality Sampling Program

- Routine testing.
- Weekly algae monitoring.
- Education and outreach.







Water Quality Sampling Program

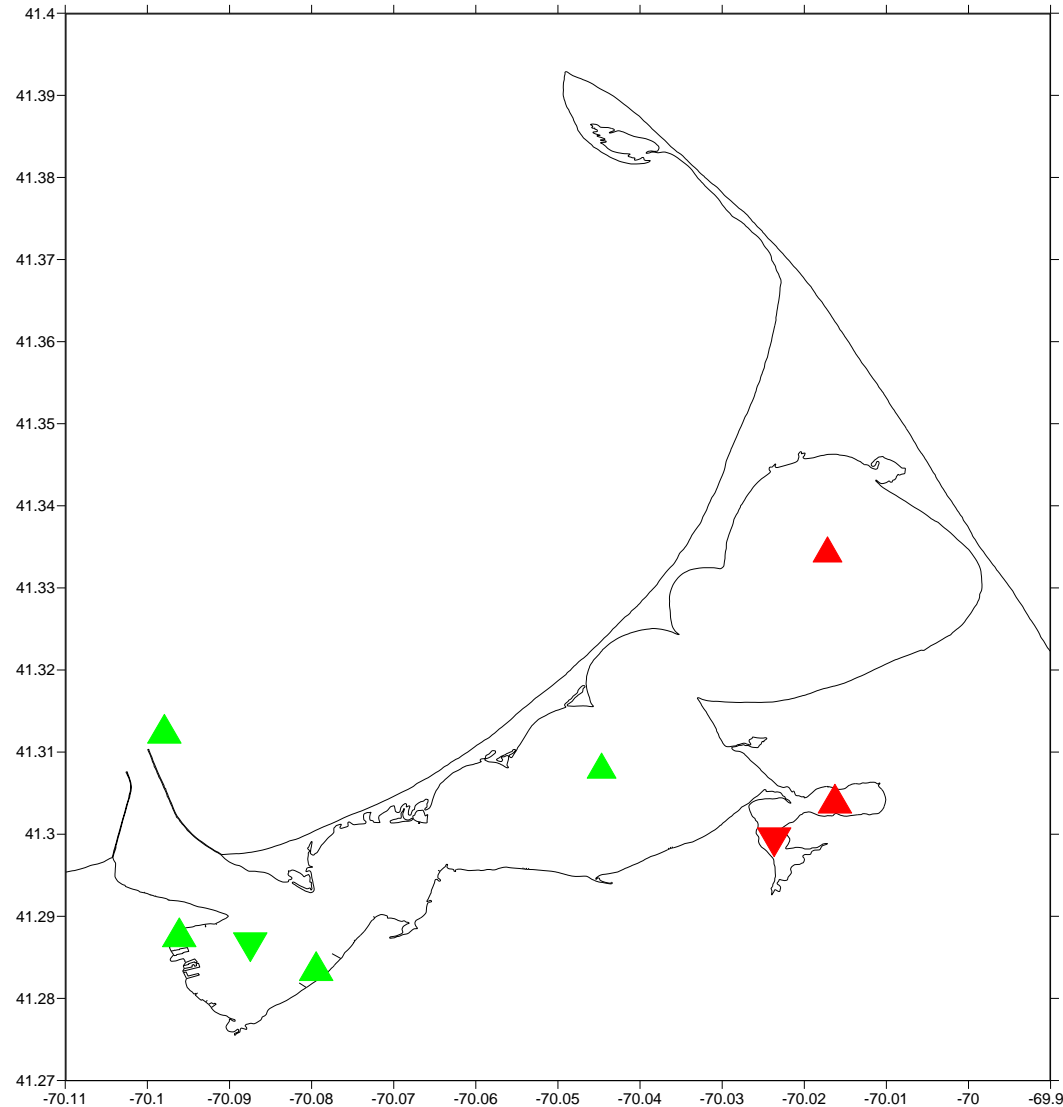
- Routine testing.
- Weekly algae monitoring.
- Education and outreach.



Nantucket Harbor Long Term Trends

 Achieving goal
 Not achieving goal

 Improving
 Worsening



Additional Research

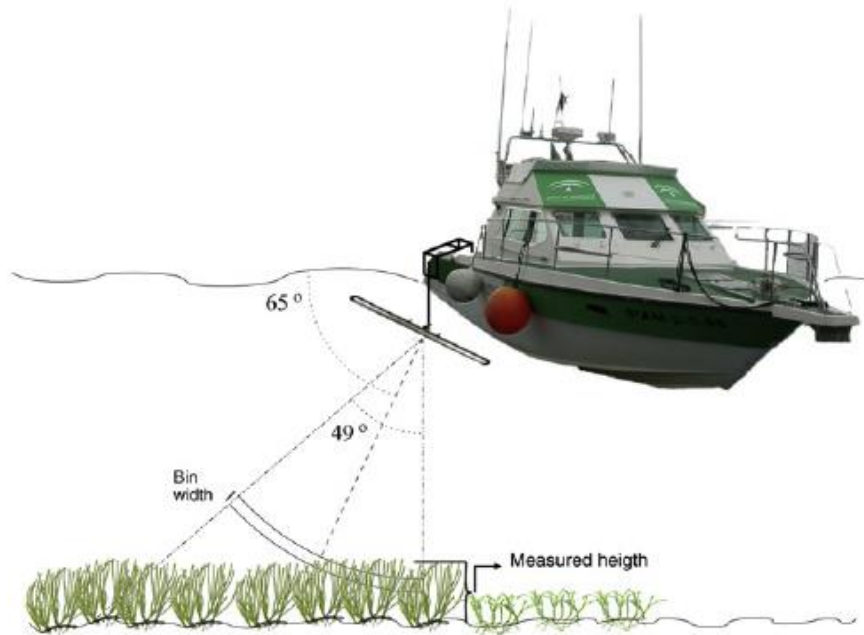


Image: [Noela Sánchez-Carnero](#)



Questions?

