Northeast US Shelf (NES)

Goals: understand and predict
• how planktonic food webs change in response to changes in the physical environment
• how those changes impact ecosystem productivity
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Site news: Observations, regional partnerships, and growing team
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10 original PIs in 2017 → NES-LTER team of 60 people in 2019
Biodiversity Patterns
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Cyanobacterial abundance at Martha’s Vineyard Coastal Observatory

Cells ml^-1


Synechococcus
Biodiversity Patterns

Cyanobacterial abundance at Martha’s Vineyard Coastal Observatory

![Graph showing cyanobacterial abundance over time](image1)

![Graph showing correlation between temperature and cyanobacterial abundance](image2)
Biodiversity Patterns

Cyanobacterial abundance at Martha’s Vineyard Coastal Observatory

Sosik, WHOI

MVC0 2003-2018

Jul-Feb

Mar-Jul

Transect Feb 2018

Synechococcus

Temperature (°C)

Cells mL⁻¹
Biodiversity Patterns

Cyanobacterial abundance at Martha’s Vineyard Coastal Observatory

- Congruent spatial and temporal patterns in phytoplankton.
- Correlated with temperature.

Sosik, WHOI
Connecting trophic levels - Herbivorous grazing

Grazing on the cyanobacteria *Synechococcus*

% Primary Production Consumed

- **Summer**
  - Onshore
  - Offshore

- **Winter**
  - Onshore
  - Offshore

Menden-Deuer, URI
Connecting trophic levels-
Herbivorous grazing

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Menden-Deuer, URI
Connecting trophic levels - Herbivorous grazing

Grazing on the cyanobacteria *Synechococcus*

![Graph showing percentage of primary production consumed by grazing on Synechococcus in summer and winter, onshore and offshore.](image)

Menden-Deuer, URI

- Low export
- Summer/mid-shelf
- High stratification
- Regenerated nutrient influx
Connecting trophic levels - Herbivorous grazing

Grazing on the cyanobacteria *Synechococcus*

![Diagram showing percentage of primary production consumed by grazing in summer and winter onshore and offshore.](image)

Menden-Deuer, URI

- **Low export**
  - Summer/mid-shelf
  - High stratification
  - Regenerated nutrient influx

- **High export**
  - Winter/shelfbreak front
  - Low stratification
  - New nutrient influx
Carbon export efficiency

Net Community Production compared to Gross Oxygen Production

Stanley, Wellesley
Carbon export efficiency

Net Community Production compared to Gross Oxygen Production

Stanley, Wellesley
Net Community Production compared to Gross Oxygen Production

- Opposing patterns nearshore vs offshore
- Predict seasonal shifts in export
- Connections with CCE and NGA LTERS