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Quantifying Nitrogen Flux at the Sediment-Water Interface

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SEANET

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Quantifying Nitrogen Flux at the Sediment-Water Interface

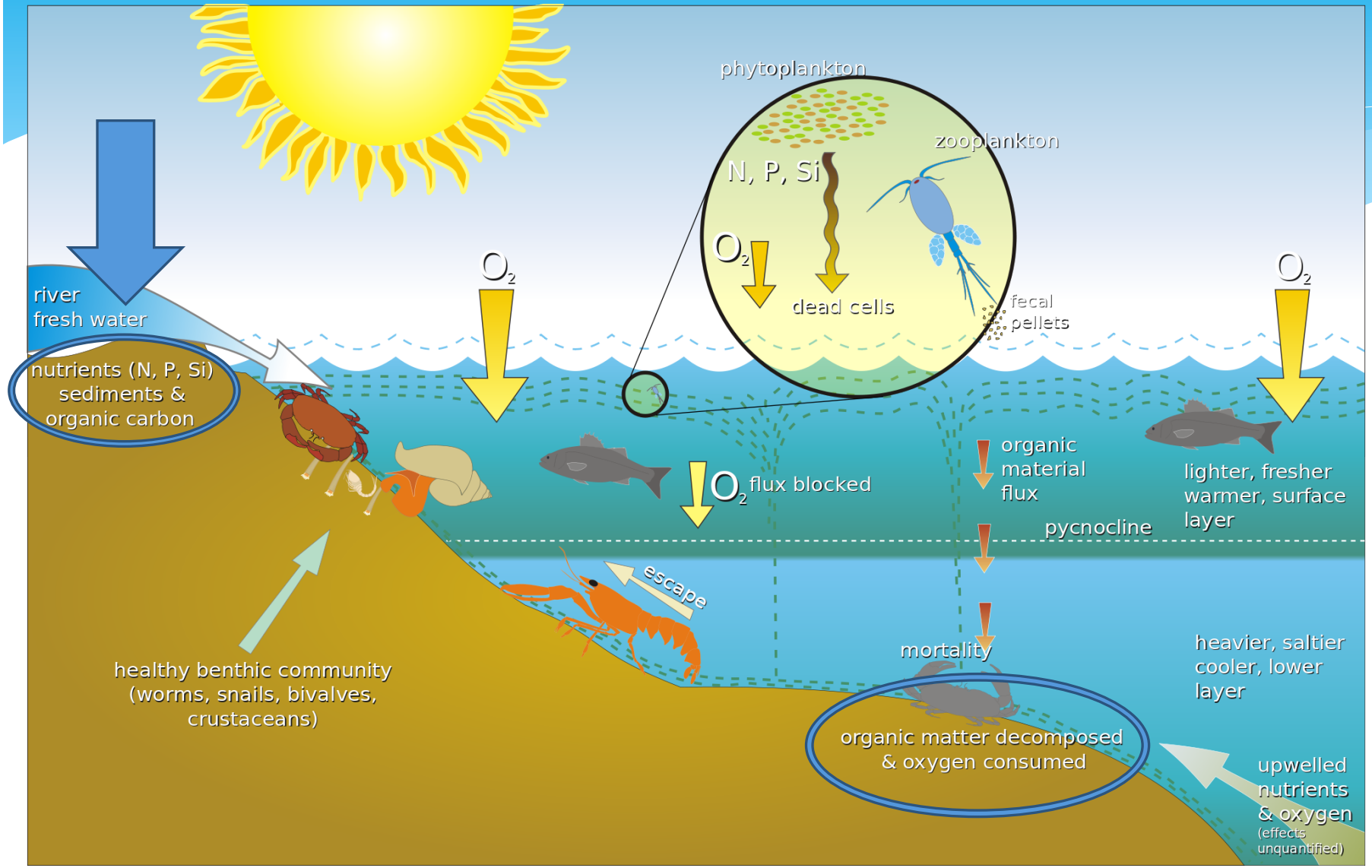
Libby Gorse, SEANET Graduate Student Researcher
Aria Amirbahman, Professor of Civil and Environmental Engineering

The Damariscotta River: Understanding What Makes a Productive Estuary
April 1, 2016

Definitions

* Nutrients – Ammonium, nitrate, nitrite
* Oxic/Anoxic
* Benthos/Benthic Region

Nitrogen is the Limiting Nutrient



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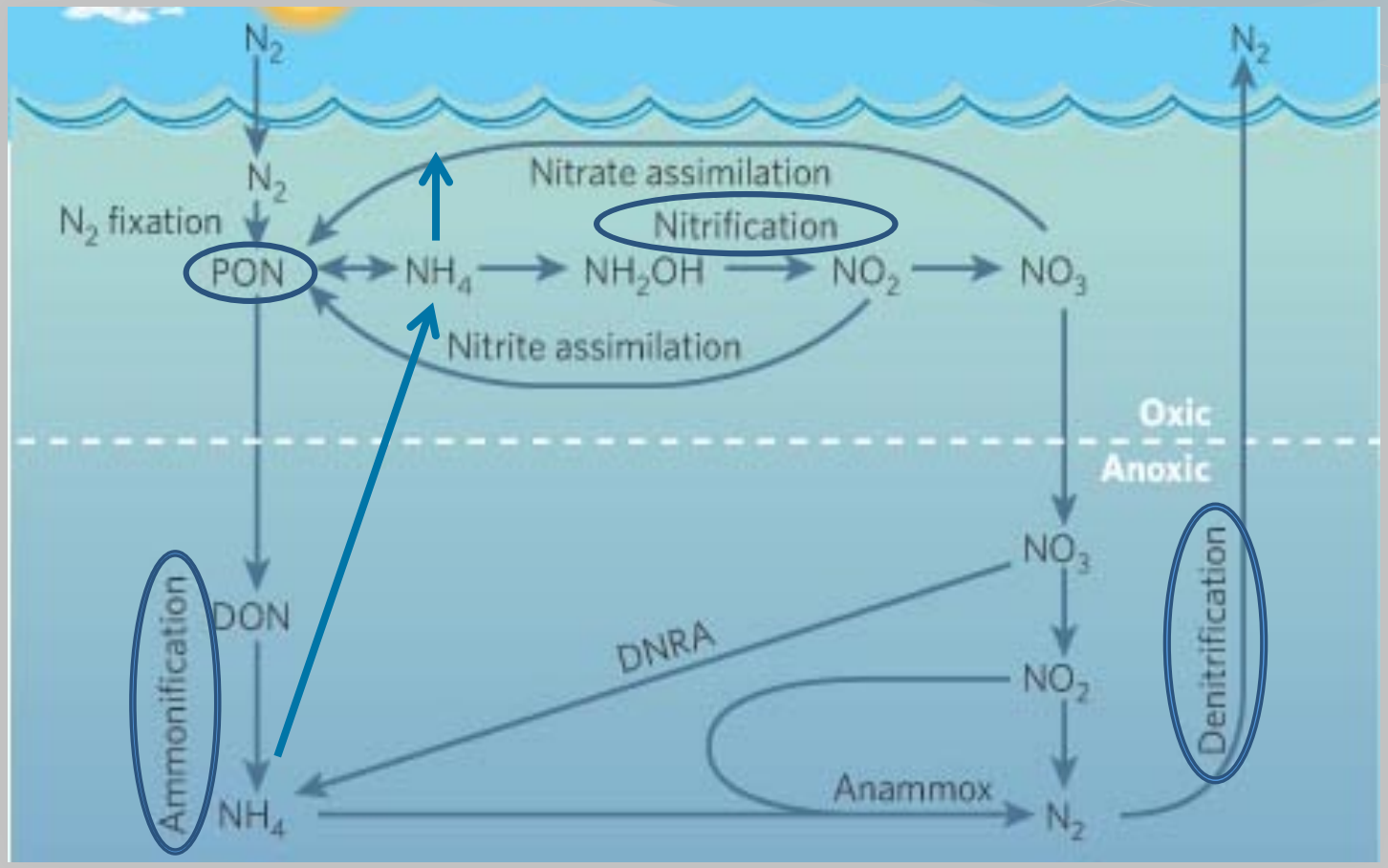
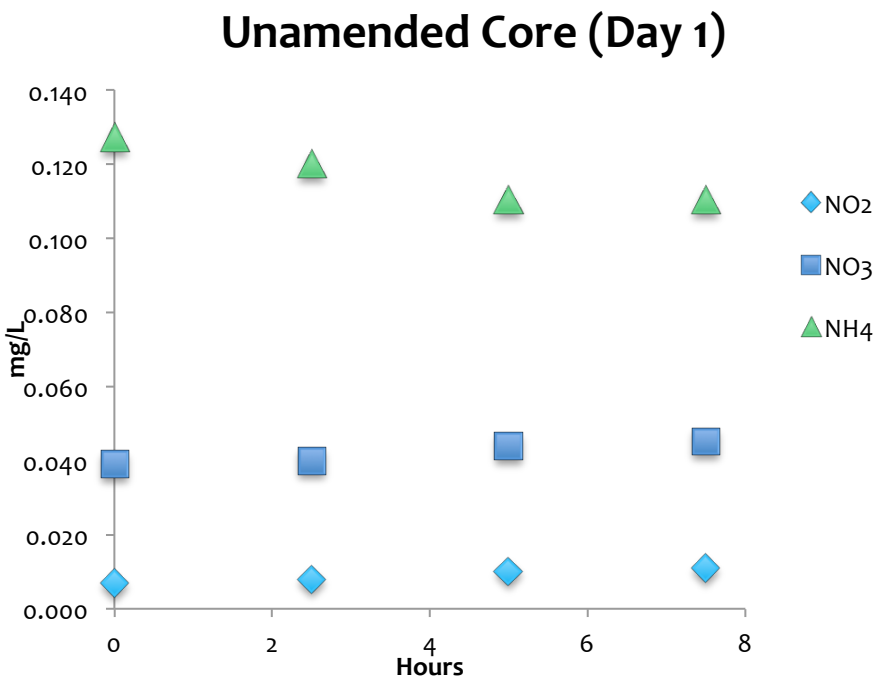
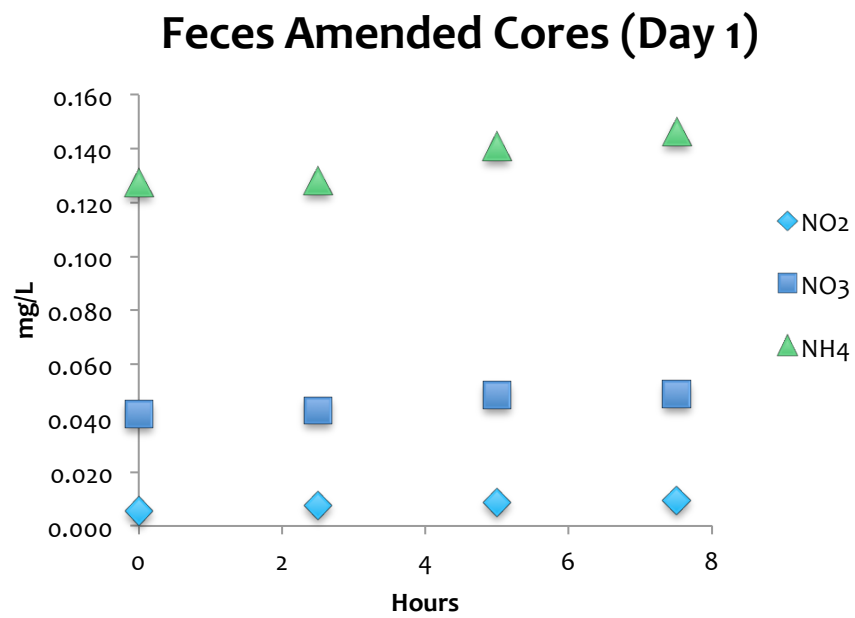
Marine Nitrogen Cycle

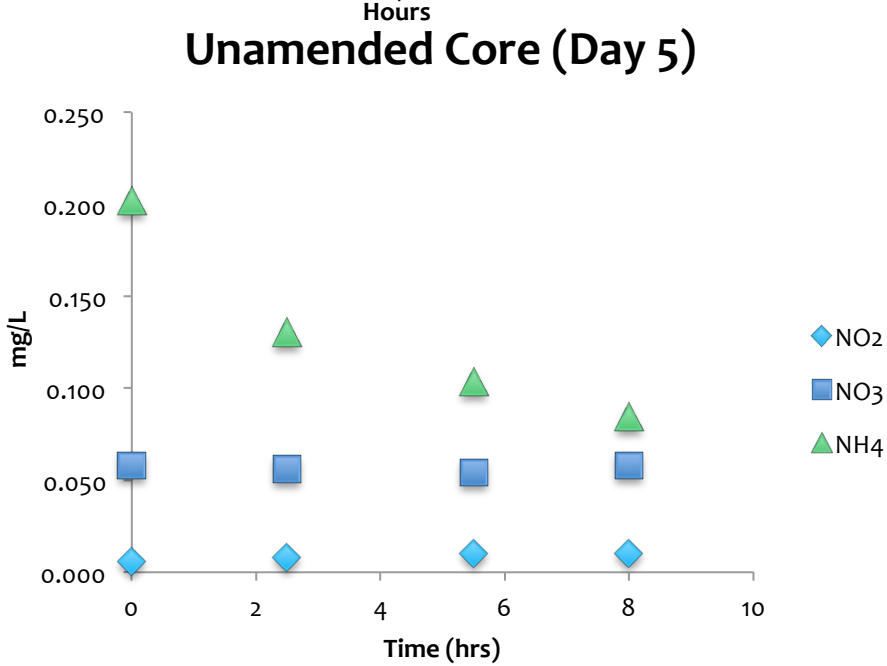


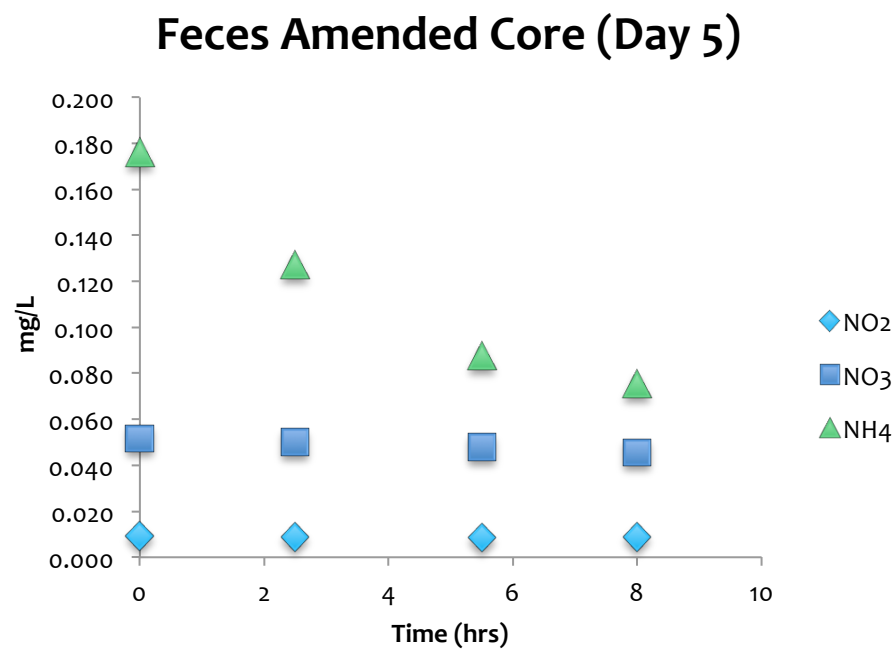
Arrigo, K. (2005). Marine microorganisms and global nutrient cycles. *Nature*. 437, 349-355

PARAFILM
LABORATORY FILM
59.7
Syringe Sampler Parts
Syring Needles Covers And Bottles


Unamended Core (Day 1)
0.140
0.120
0.100
0.080
0.060
0.040
0.020
0.000
mg/L
0
2
4
6
8
Hours
NO2
NO3
NH4


Feces Amended Cores (Day 1)
0.160
0.140
0.120
0.100
0.080
0.060
0.040
0.020
0.000
mg/L
0
2
4
6
8
Hours
NO2
NO3
NH4


Unamended Core (Day 5)
0.250
0.200
0.150
0.100
0.050
0.000
mg/L
0
2
4
6
8
10
Time (hrs)
NO2
NO3
NH4


Feces Amended Core (Day 5)
0.200
0.180
0.160
0.140
0.120
0.100
0.080
0.060
0.040
0.020
0.000
mg/L
0
2
4
6
8
10
Time (hrs)
NO2
NO3
NH4

Future Work

* To study nitrogen flux in different settings
  * Sediment types
  * Bivalve species
  * Influence of macrofauna
* To study in-situ nitrogen flux

Acknowledgments

* This work was funded in part by:
* NSF award #1355457 (SEANET)
* Maine Sea Grant
* UMaine Graduate Student Government

Supported by National Science Foundation award #1355457 to Maine EPSCoR at the University of Maine.