NARROW RIVER PRESERVATION ASSOCIATION

# River Watch Program

- 2023 Season Update
- Three Decades of Observations
- Thank you to the 2023 Monitors!

**Presented by Annette DeSilva**
**Narrow River Watch Coordinator**
**&**
**Veronica M. Berounsky**
**NRPA President**


# NRPA's River Watch Program
# 32 Years of Volunteer Monitoring!

Narrow River Preservation Association Annual Meeting
October 3, 2023

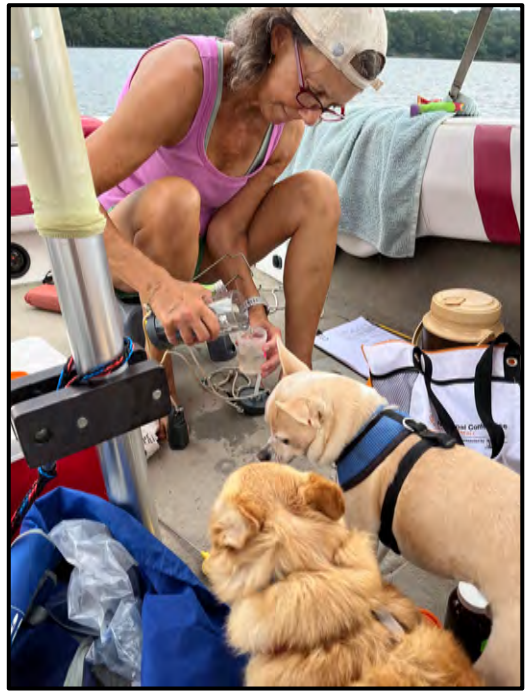
## Monitoring Locations

**Yellow circles on map (started in 1992 unless other year given)**

**Sites in blue text are current sites:**

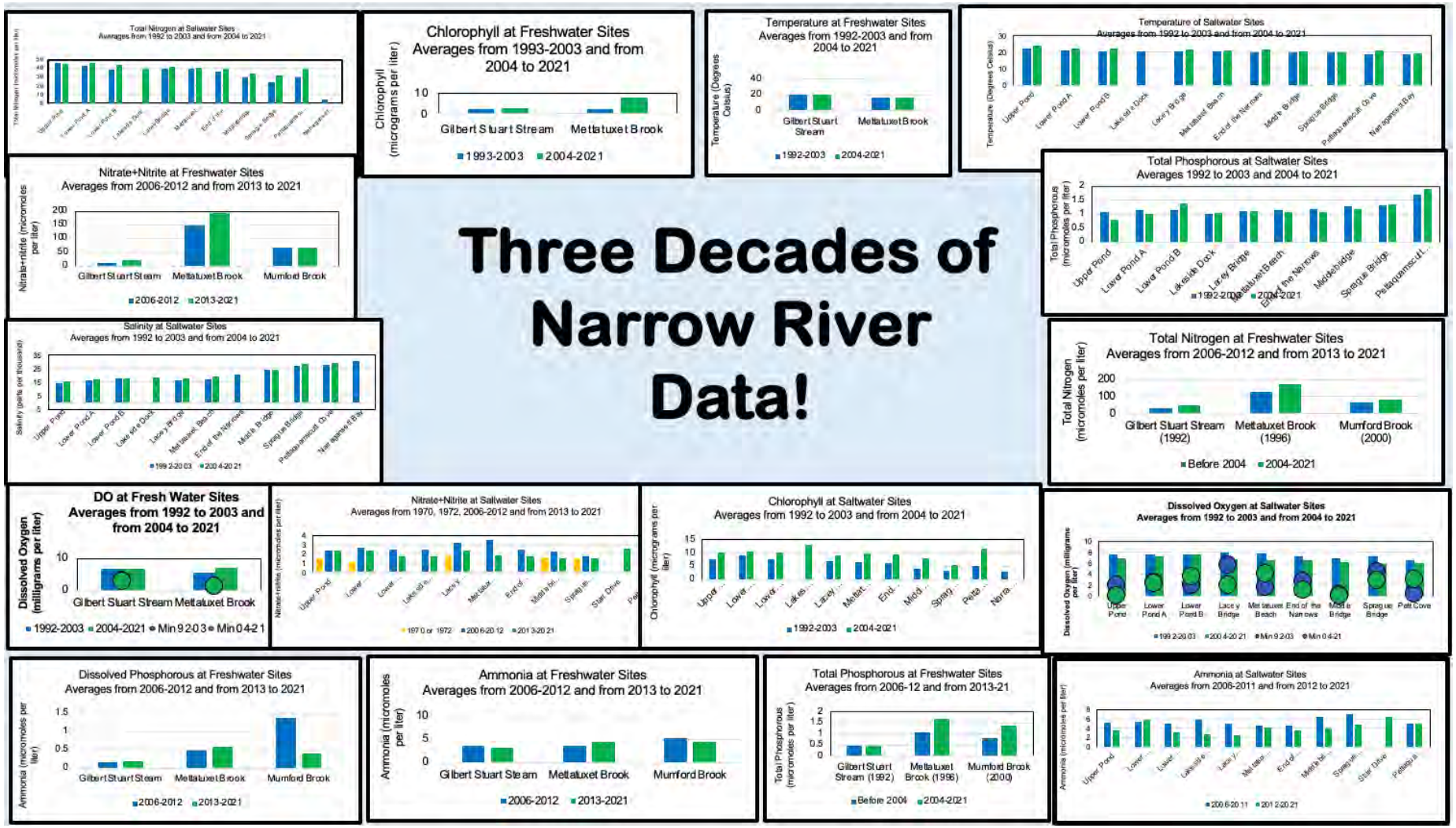
- **NR1 - Gilbert Stuart Stream**
- **NR2 - Upper Pond**
- **NR3 - Lower Pond A**
- **NR4 - Lower Pond B**
- **NR5 - Lacey Bridge**
- **NR6 - Mettatuxet Beach**
- **NR7 - End of the Narrows**
- **NR8 – Middlebridge**
- **NR9 - - Pettaquamscutt Cove (1992-2017)**
- **NR24 – Starr Drive (2018)***
- **NR10 - Sprague Bridge**
- **NR11 - Mettatuxet Brook (1996)**
- **NR12 - Mumford Brook (2000)**
- **NR13 - Lakeside Dock (2004)**
- **NR14 - Lakeside Outfall (2004-2017)**

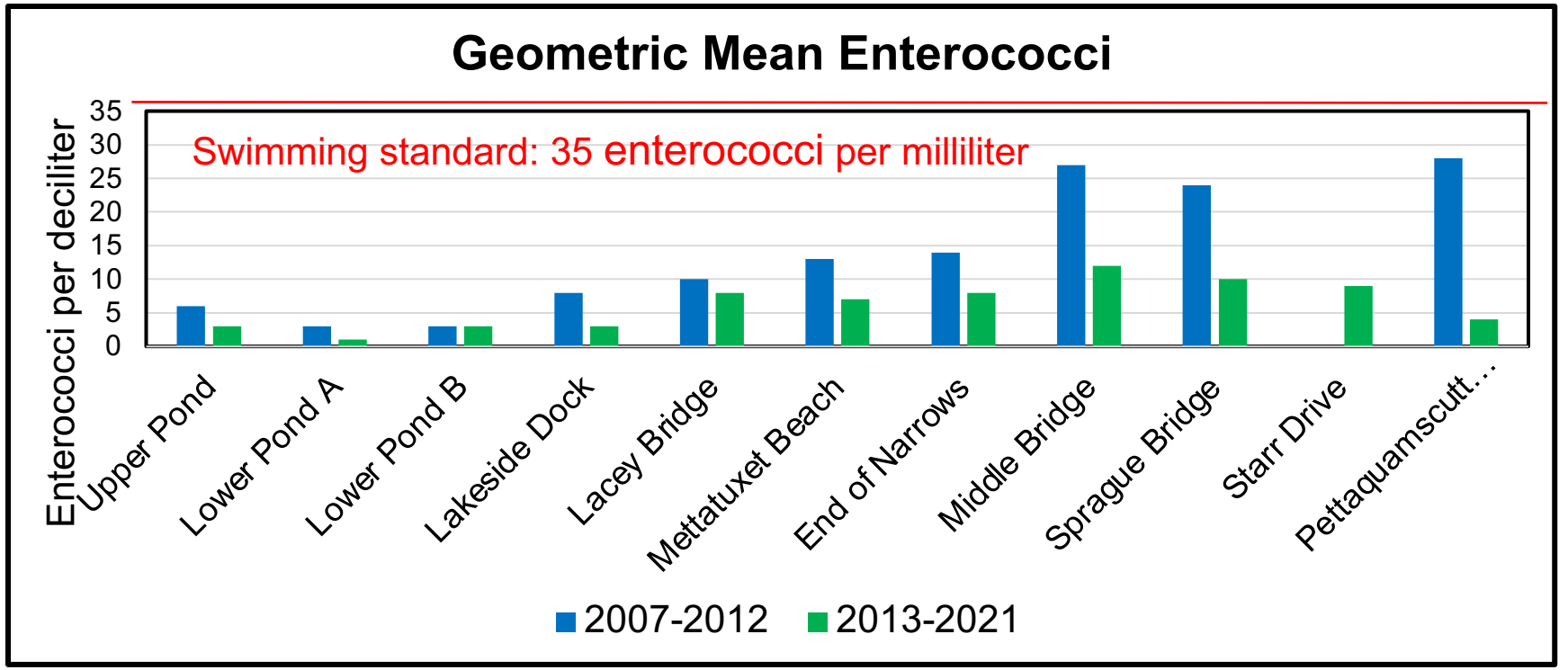
# 2023 Monitoring Season: Late May - October

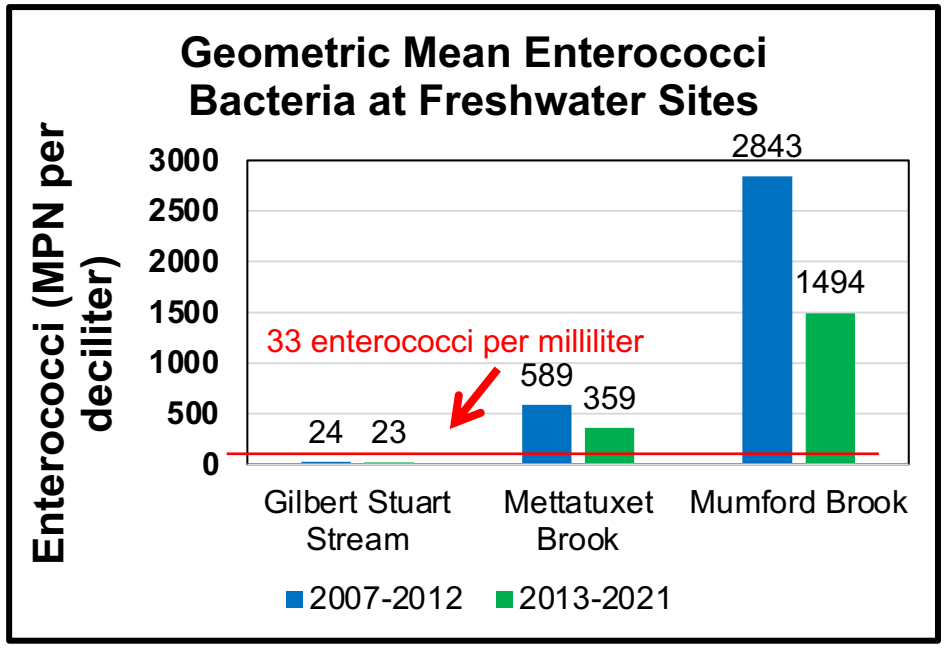


Narrow River volunteer, Chris Gouveia, in action taking samples and measurements on her boat in the Upper Pond (NR-2). Furry friends supervise!

- What is Monitored and Sampled:
  - Temperature
  - Salinity
  - Dissolved Oxygen
  - Chlorophyll
  - Bacteria
  - Nutrients
  - pH


Three Decades of Narrow River Data!
Total Nitrogen at Saltwater Sites
Averages from 1992 to 2003 and from 2004 to 2021
Chlorophyll at Freshwater Sites
Averages from 1993-2003 and from 2004 to 2021
Chlorophyll (micrograms per liter)
Gilbert Stuart Stream
Mettatuxet Brook
1993-2003
2004-2021
Temperature at Freshwater Sites
Averages from 1992-2003 and from 2004 to 2021
Temperature (Degrees Celsius)
1992-2003
2004-2021
Temperature of Saltwater Sites
Averages from 1992 to 2003 and from 2004 to 2021
Nitrate+Nitrite at Freshwater Sites
Averages from 2006-2012 and from 2013 to 2021
Nitrate+nitrite (micromoles per liter)
Mumford Brook
2006-2012
2013-2021
Total Phosphorous at Saltwater Sites
Averages 1992 to 2003 and 2004 to 2021
Total Phosphorous (micromoles per liter)
Salinity at Saltwater Sites
Averages from 1992 to 2003 and from 2004 to 2021
Salinity (parts per thousand)
Total Nitrogen at Freshwater Sites
Averages from 2006-2012 and from 2013 to 2021
Total Nitrogen (micromoles per liter)
Gilbert Stuart Stream (1992)
Mettatuxet Brook (1996)
Mumford Brook (2000)
Before 2004
2004-2021
DO at Fresh Water Sites
Averages from 1992 to 2003 and from 2004 to 2021
Dissolved Oxygen (milligrams per liter)
Gilbert Stuart Stream Mettatuxet Brook
1992-2003
2004-2021
Min 9 2 0 3
Min 0 4 2 1
Nitrate+Nitrite at Saltwater Sites
Averages from 1970, 1972, 2006-2012 and from 2013 to 2021
Chlorophyll at Saltwater Sites
Averages from 1992 to 2003 and from 2004 to 2021
Dissolved Oxygen at Saltwater Sites
Averages from 1992 to 2003 and from 2004 to 2021
Dissolved Phosphorous at Freshwater Sites
Averages from 2006-2012 and from 2013 to 2021
Ammonia (micromoles per liter)
Ammonia at Freshwater Sites
Averages from 2006-2012 and from 2013 to 2021
Total Phosphorous at Freshwater Sites
Averages from 2006-12 and from 2013-21
Ammonia at Saltwater Sites
Averages from 2006-2011 and from 2012 to 2021

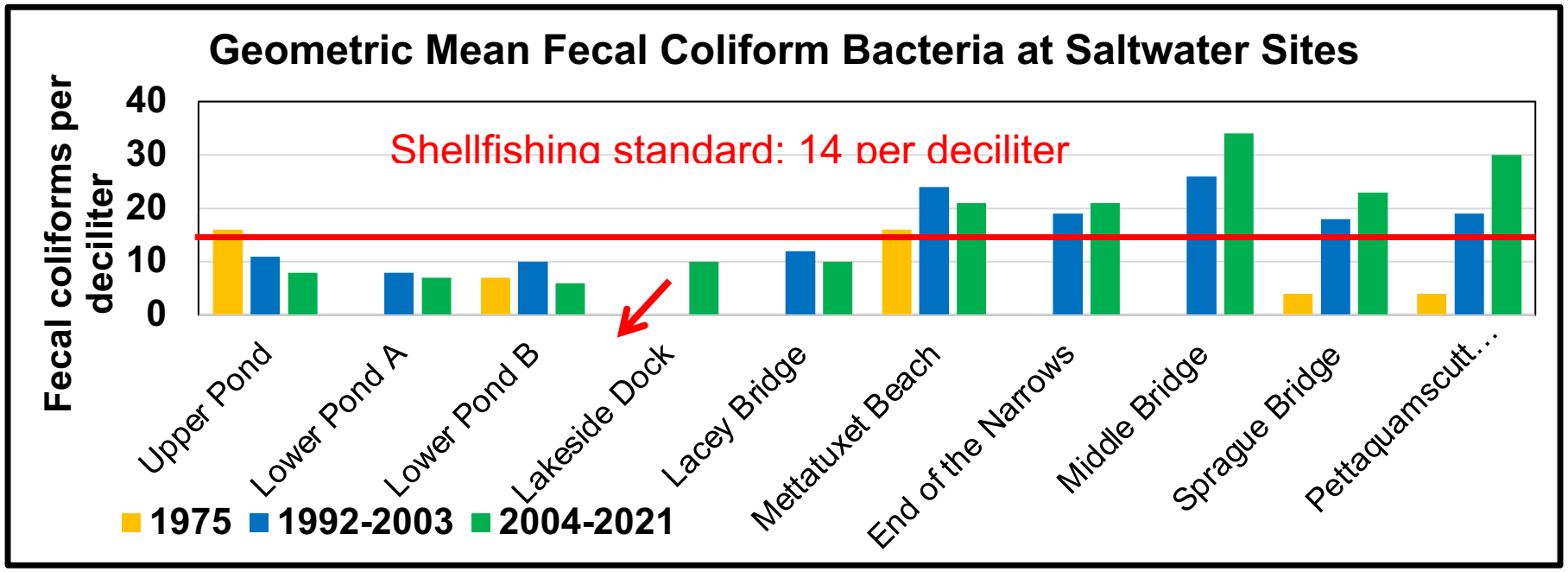


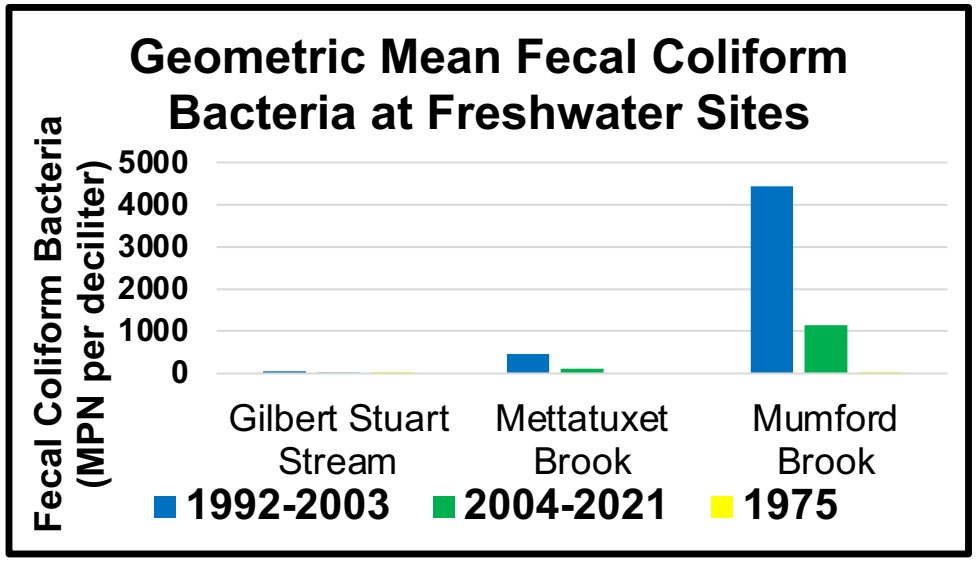




# Is it safe to swim?

## Bacteria: Enterococci - Observations:

- At saltwater sites, the enterococci geometric mean does not exceed the standard for safe swimming. 🙂
- The deepwater sites at the north end of the river have the lowest enterococci geometric means.
- The levels increase as you go south along the river.
- At the saltwater sites, the geometric means are lower in the more recent years than in the earlier year.
- At the freshwater sites, the enterococci levels are high.




# The River continues to be closed to shellfishing

**Bacteria: Fecal Coliform - Observations:**

- At the saltwater sites, the shellfishing standard is exceeded at all sites below Lacey Bridge.
- For the freshwater sites, with the exception of Gilbert Stuart Stream, the fecal coliform geometric means are extremely high.

# What are Nutrients?

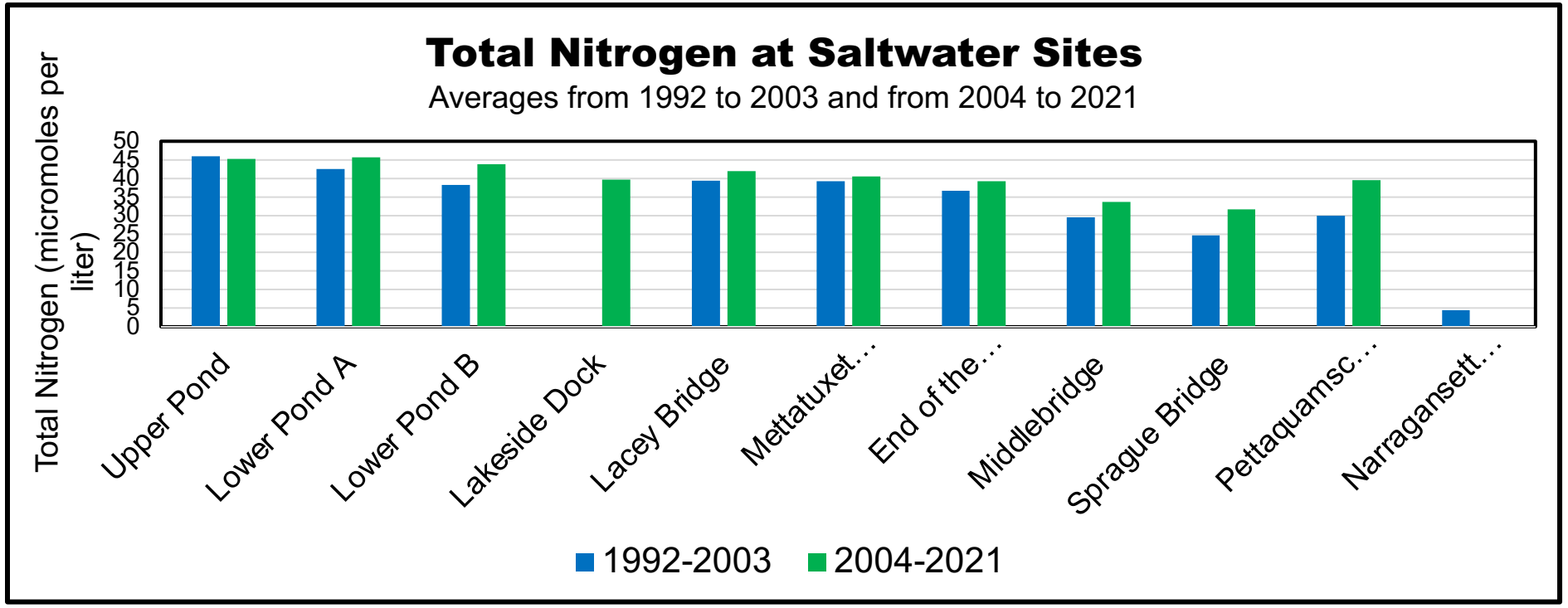
- Substances that are necessary for plants and animals to grow, such as nitrogen and phosphorus

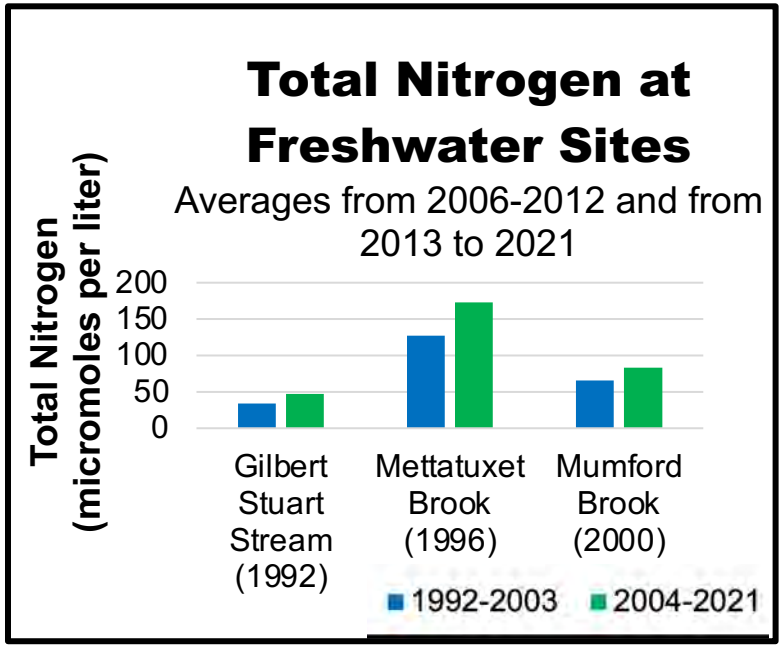
**Why do we worry about Nutrients?**

- Nutrients lead to algal blooms which  decrease sunlight and which are harmful to eelgrass beds
- Decaying algae depletes dissolved oxygen which can form hypoxic (low oxygen) conditions and harm fish and shellfish and other organisms

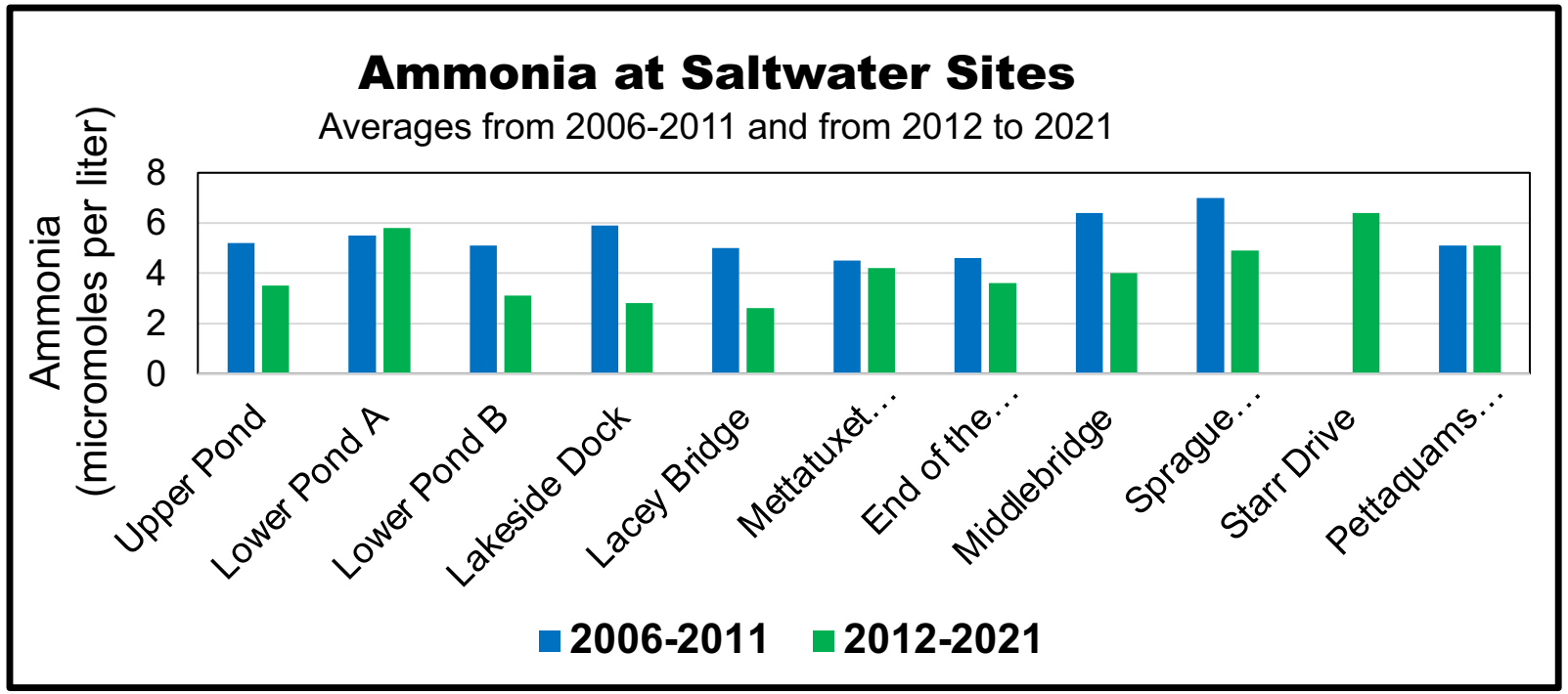
**Where do Nutrients come from?**

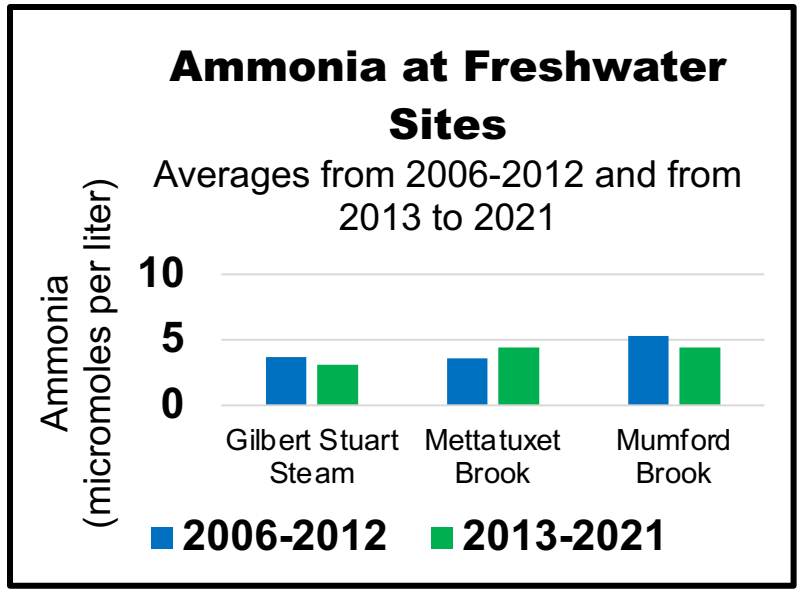
- From streams, groundwater, rain, and the air
- Stormwater runoff picks up nutrients and bacteria from lawns, roads, and pet waste
- Excess fertilizer use leads to runoff of excess nutrients to the River



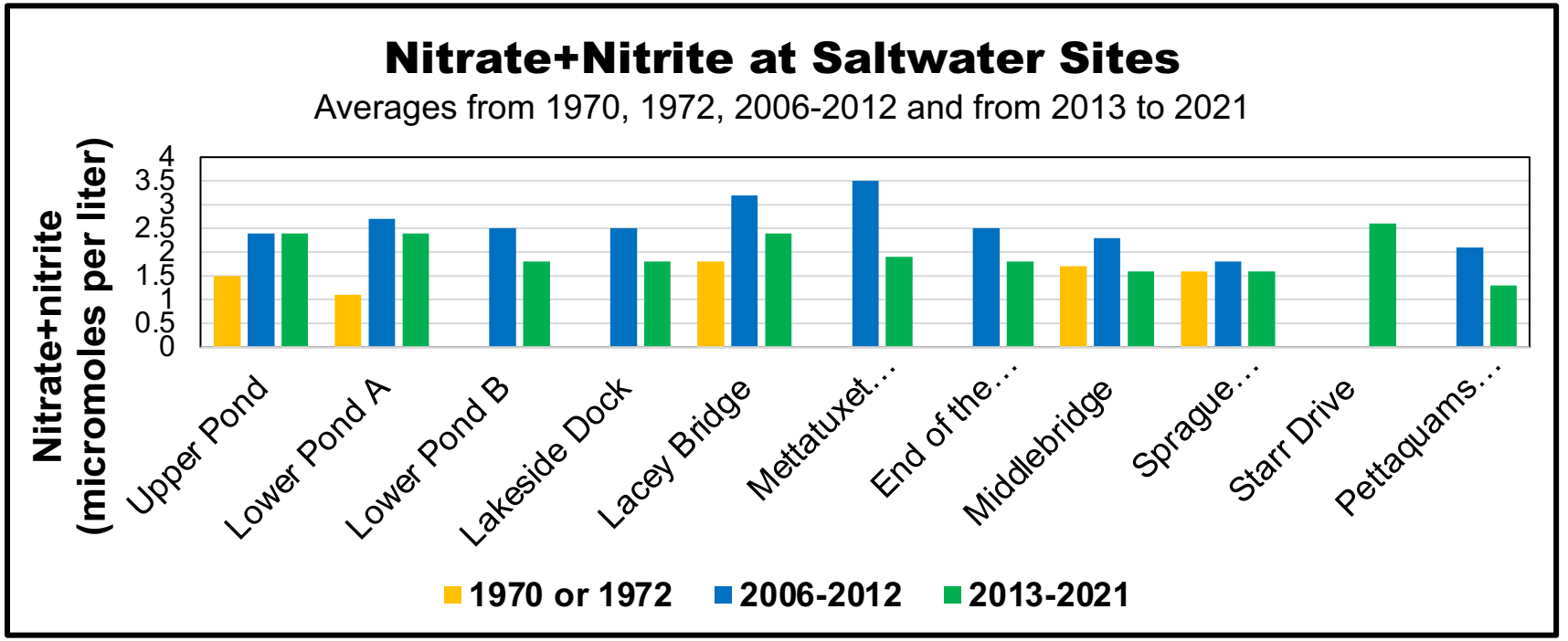



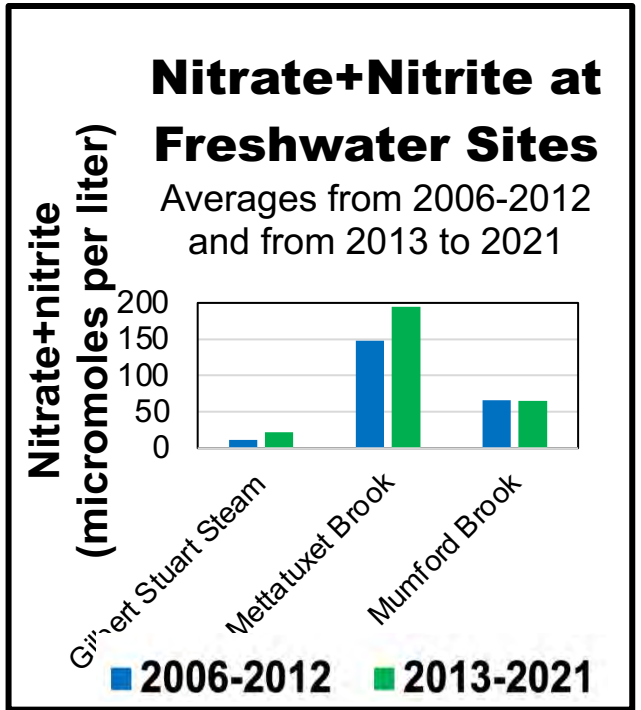

Total Nitrogen means the sum of all forms of the nutrient, nitrogen




Ammonia is an inorganic form of nitrogen produced by decaying organic matter, excreted by animals, and found coming from leaking septic systems




Nitrate and nitrite are inorganic forms of nitrogen that appear together and come from groundwater. They also result from the nitrification (conversion) of ammonia with oxygen.

# 2023 Narrow River Volunteer Monitors

**(# = Years as a Volunteer Monitor)**

- Rich Bourbonnais (1)
- Jeri Levesque (1)
- Deborah Casey (1)
- Betsy Motyl (3)
- Nancy McLean (3)
- Michael Remington (3)
- Mark Silverman (3)
- George & Suzanne Faucher (3)
- Rick Schultz (3)
- Michelle Goldman (3)
- Kare Sullivan (3)
- Chris Gouveia (4) & John Gouveia (1+)
- Marcia Izzi (4)
- Karen Killian (4)
- Alison, Ted, and Lily Kutcher (5)
- Jill O'Neill (5)
- Margaret Bradley (6)
- Elizabeth Donovan (6)
- Eric & Jennifer Kohlsaat (7)
- Paula Santos (13)
- Perry Moylan (14)
- Craig Wood (14)
- Rosemary (17) and David (11+) Smith
- Marc Lamson (18)
- Veronica Berounsky (20)
- Annette DeSilva (32)

***Thank you to Elizabeth Herron of the URI Watershed Watch Program***

***Thank you to Eric Peterson for his help compiling the River Watch data into the NRPA database.***

***Thank you to all of the volunteers!***