

# Contrasting Urban and Natural Wetlands in South-central New York

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# Introduction

- Urbanization increasing globally
- Contrast urban wetlands with natural wetlands
- Urban wetlands expected to have higher nitrogen levels and fewer plant species in comparison to natural wetlands



# Design

- 26 wetlands were surveyed over the summers of 2010 and 2011
- 18 natural wetlands comprised of three categories: Emergent, Scrub/Shrub, and Forested
- 8 urban wetlands
- Collected vegetation, soil chemistry, and water chemistry data



# Vegetation

- Stratified random sampling locations
- Herbaceous cover
  - 1 m<sup>2</sup> quadrats
- Shrub cover
  - 10 m<sup>2</sup> quadrats
- Species count and estimate percentage cover for herbaceous plants and shrubs
- Trees every three sampling locations
  - 100 m<sup>2</sup> quadrats
  - Species and circumference at breast height were recorded



# Water and Soil

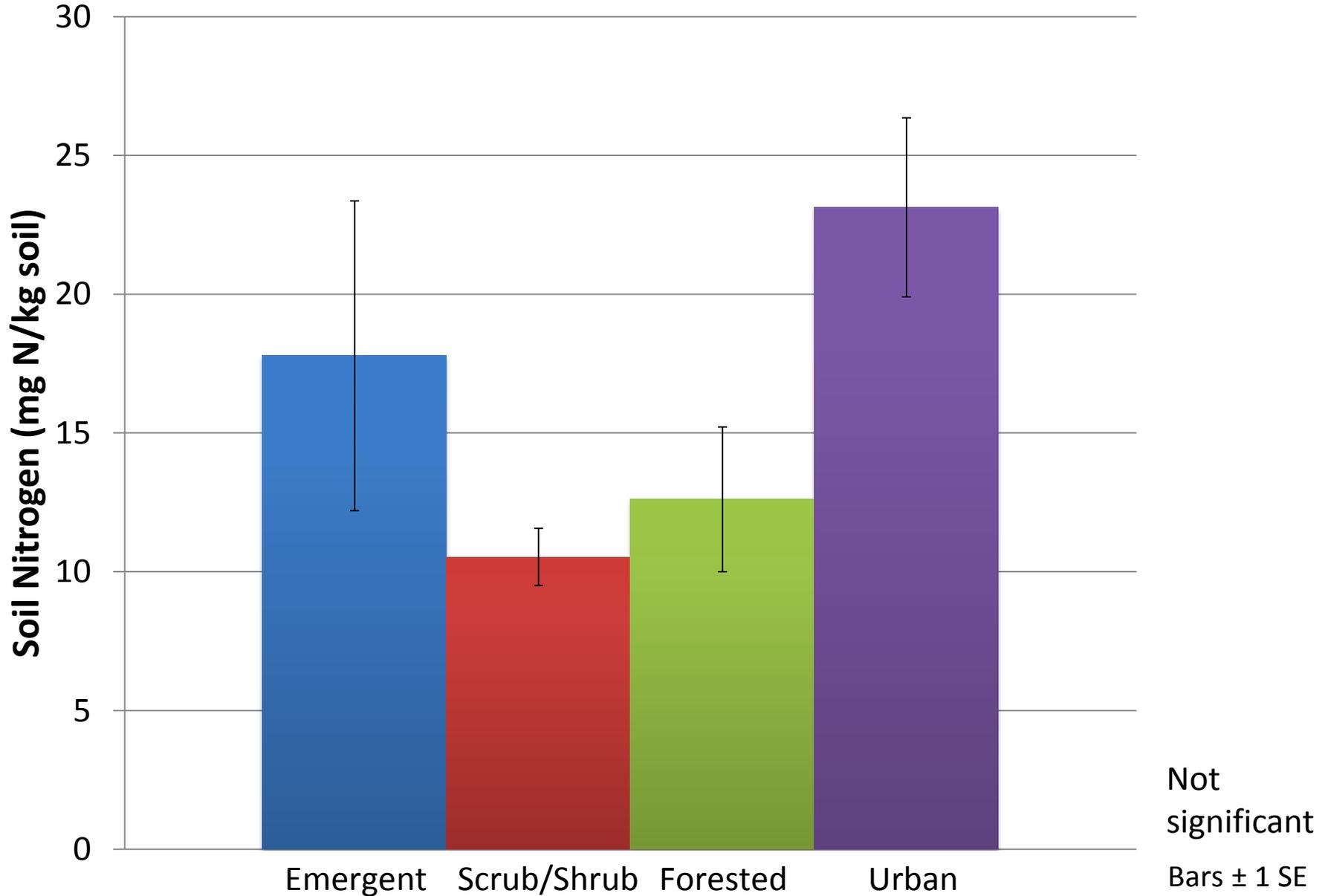


- Three water and soil samples
- Taken at each end and middle of wetland
- Water: grab sample
- Soil: top 5 cm

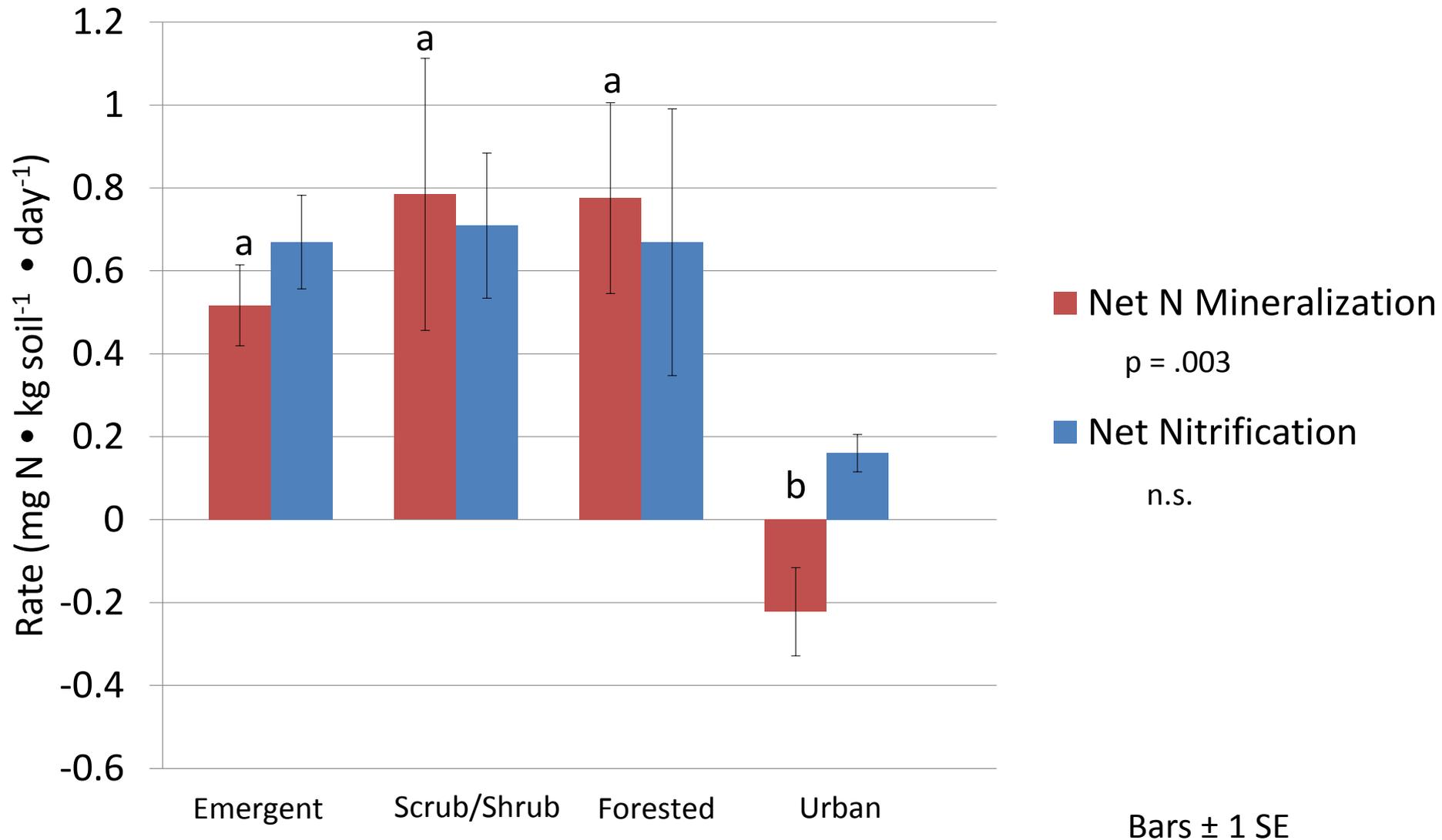
# Results



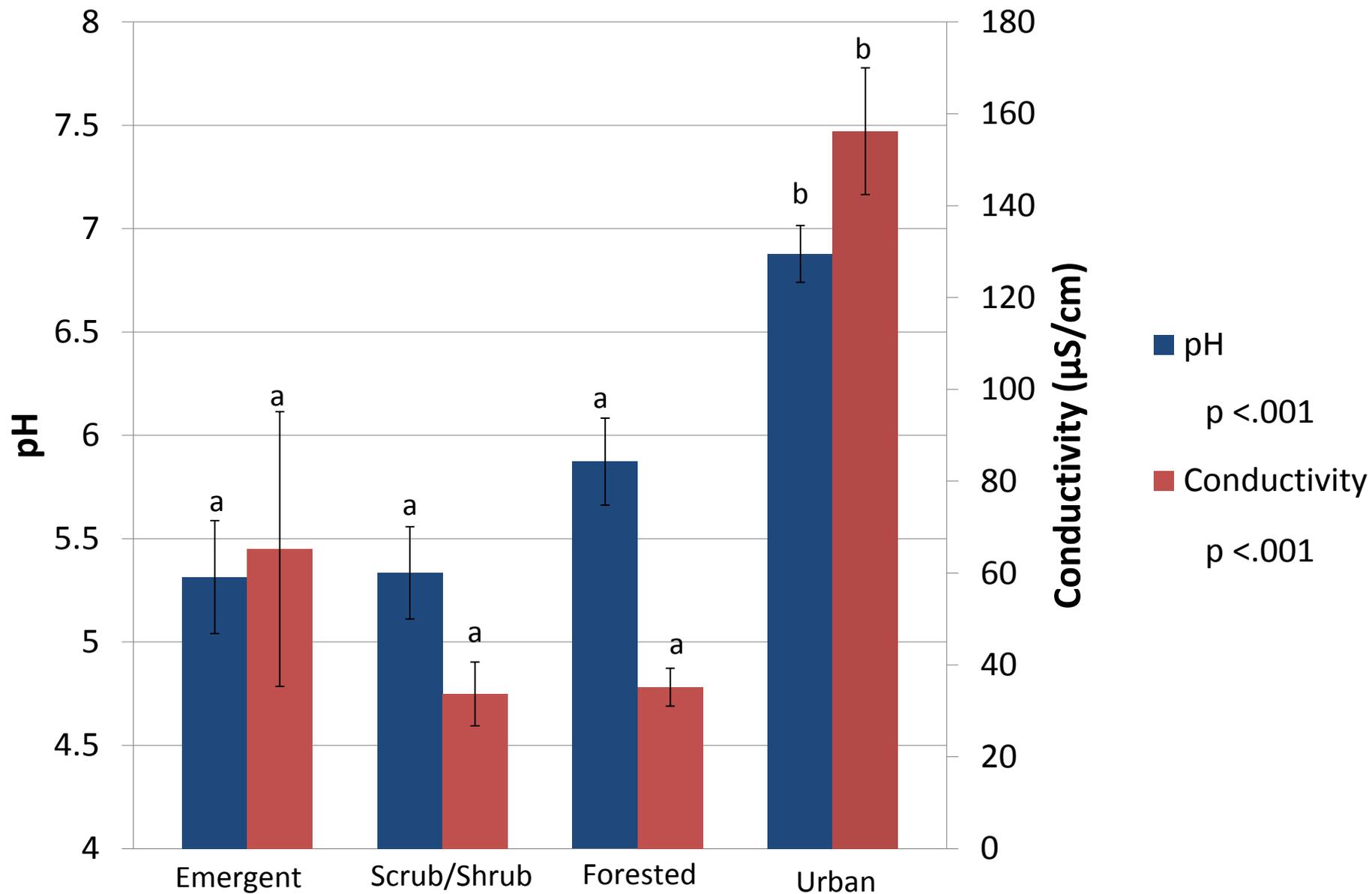
# Total Extractable Soil Nitrogen



# Soil Nitrogen Mineralization and Nitrification

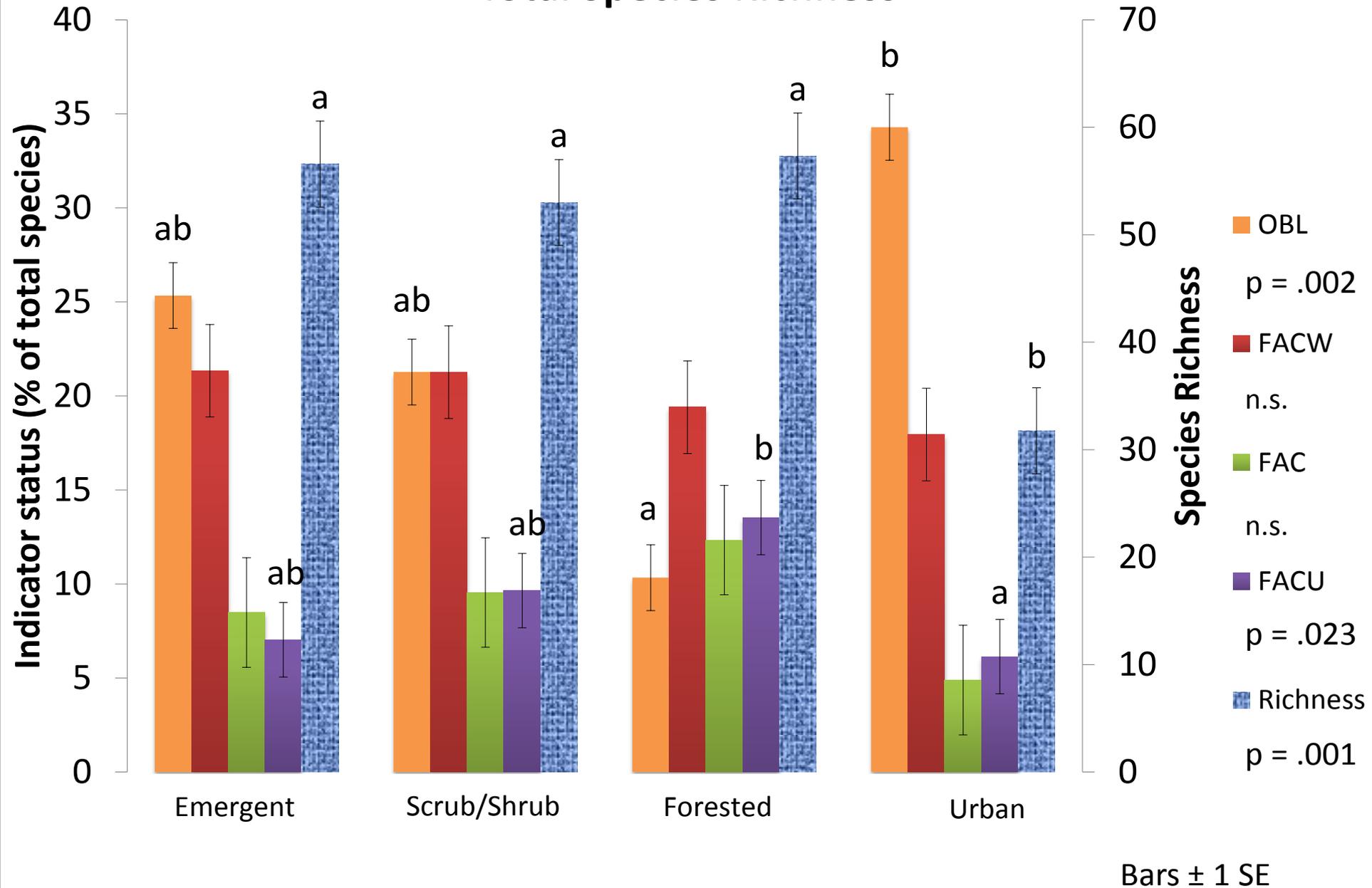


# Soil pH and Conductivity



Bars  $\pm$  1 SE

# Wetland Indicator Status and Total Species Richness

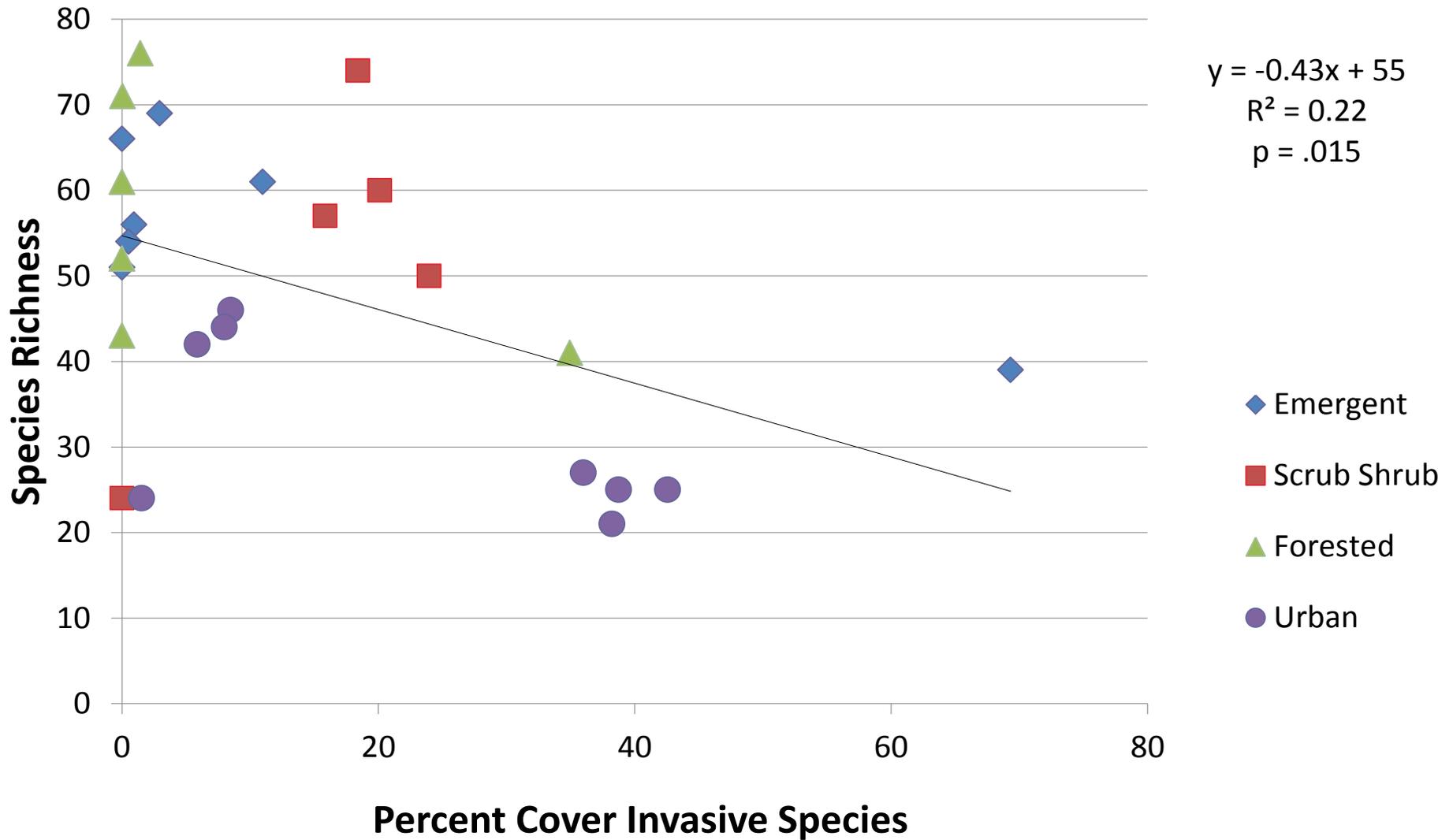


# Reduced Species Richness

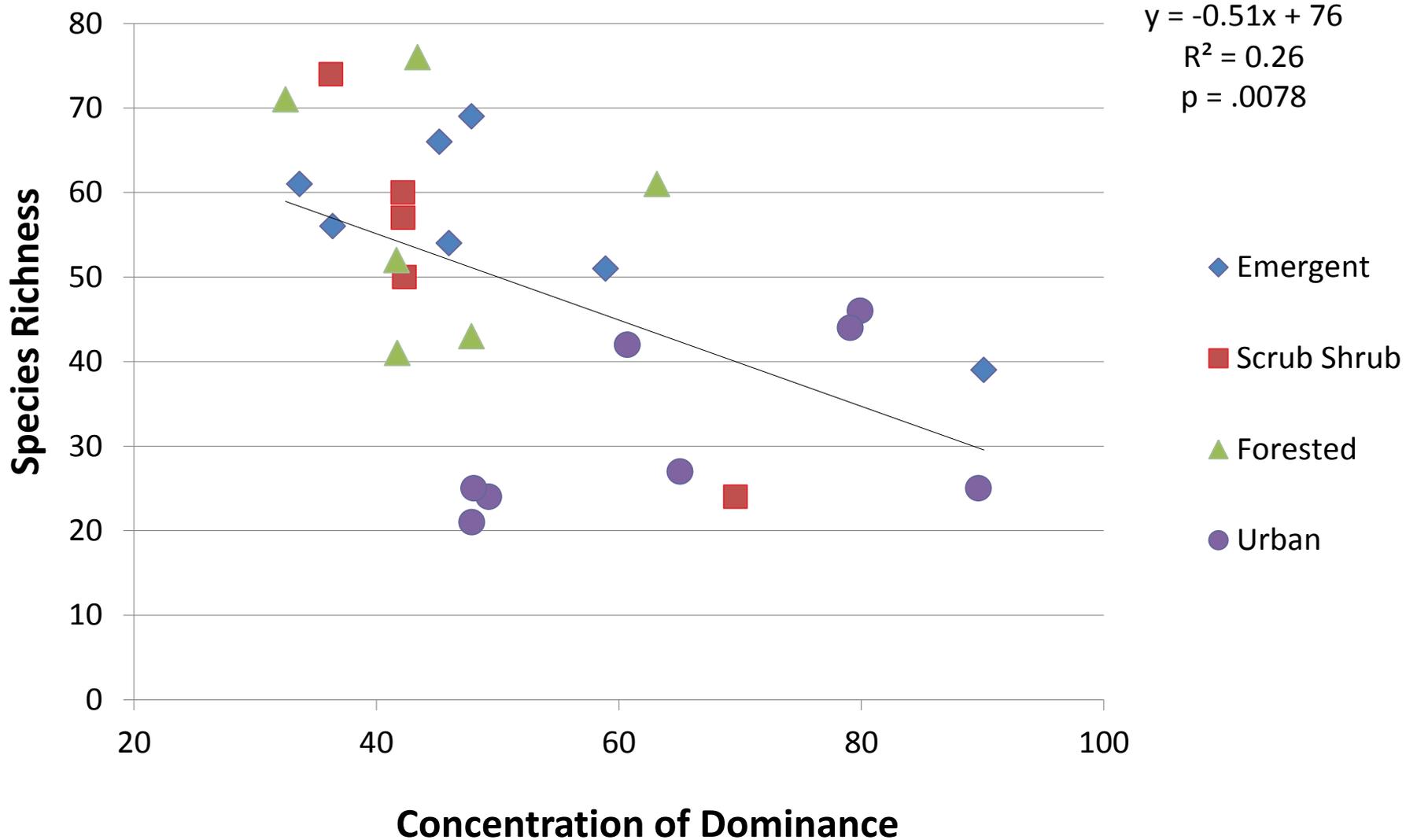
- Is it correlated to...
  - Presence of dominate species?
  - Biogeochemical conditions?



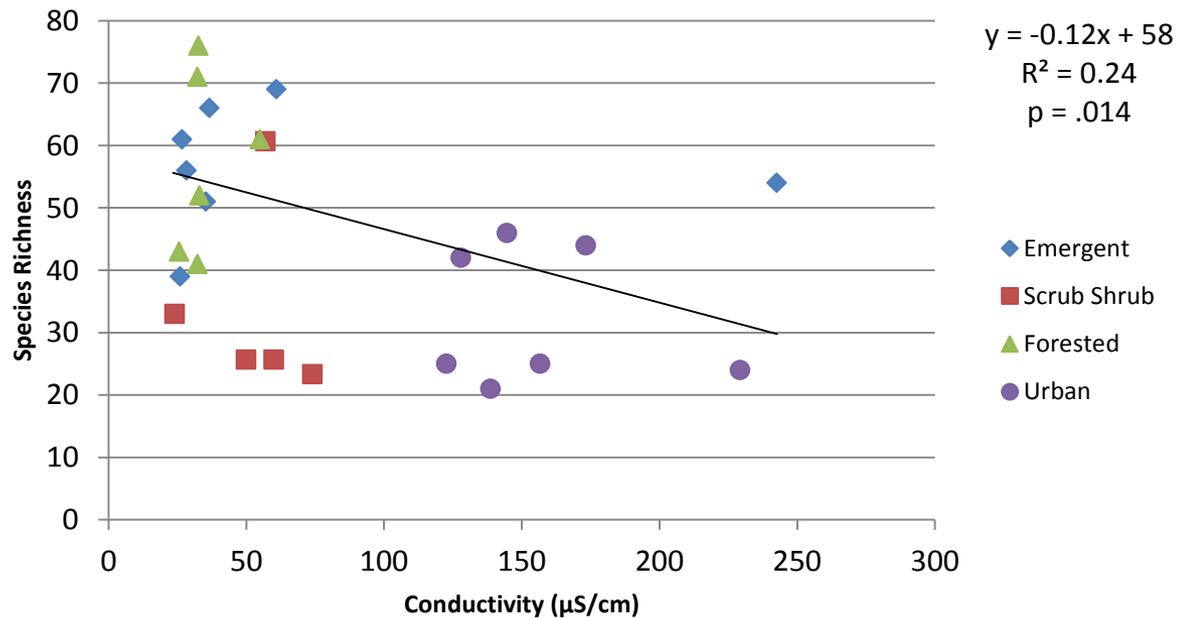
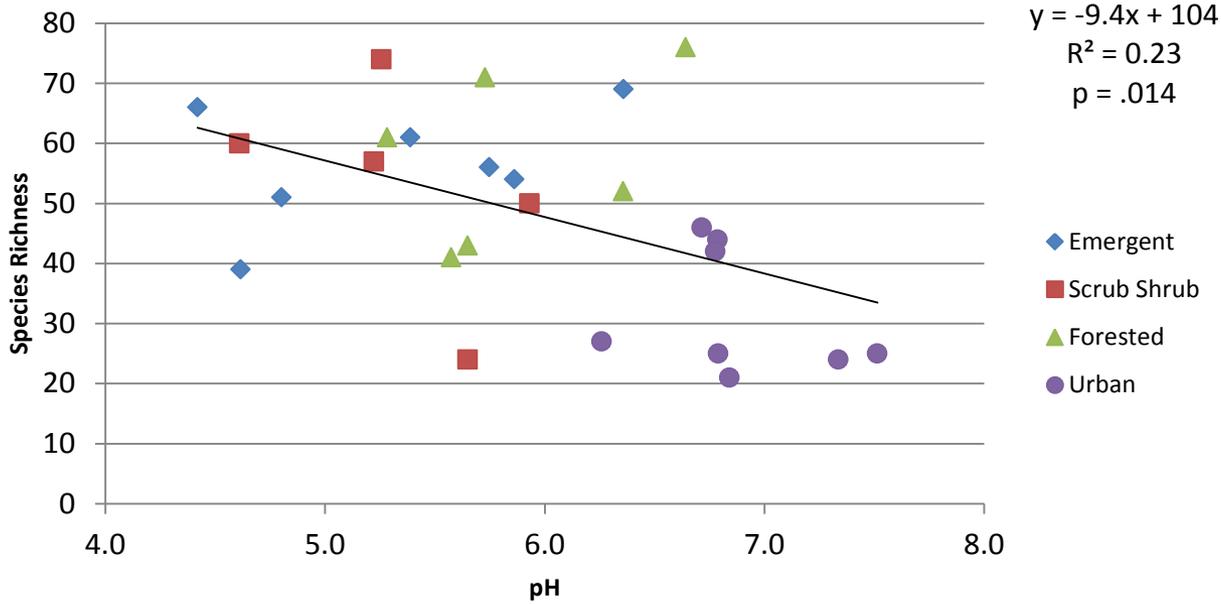
# Total Species Richness vs. Invasive Cover



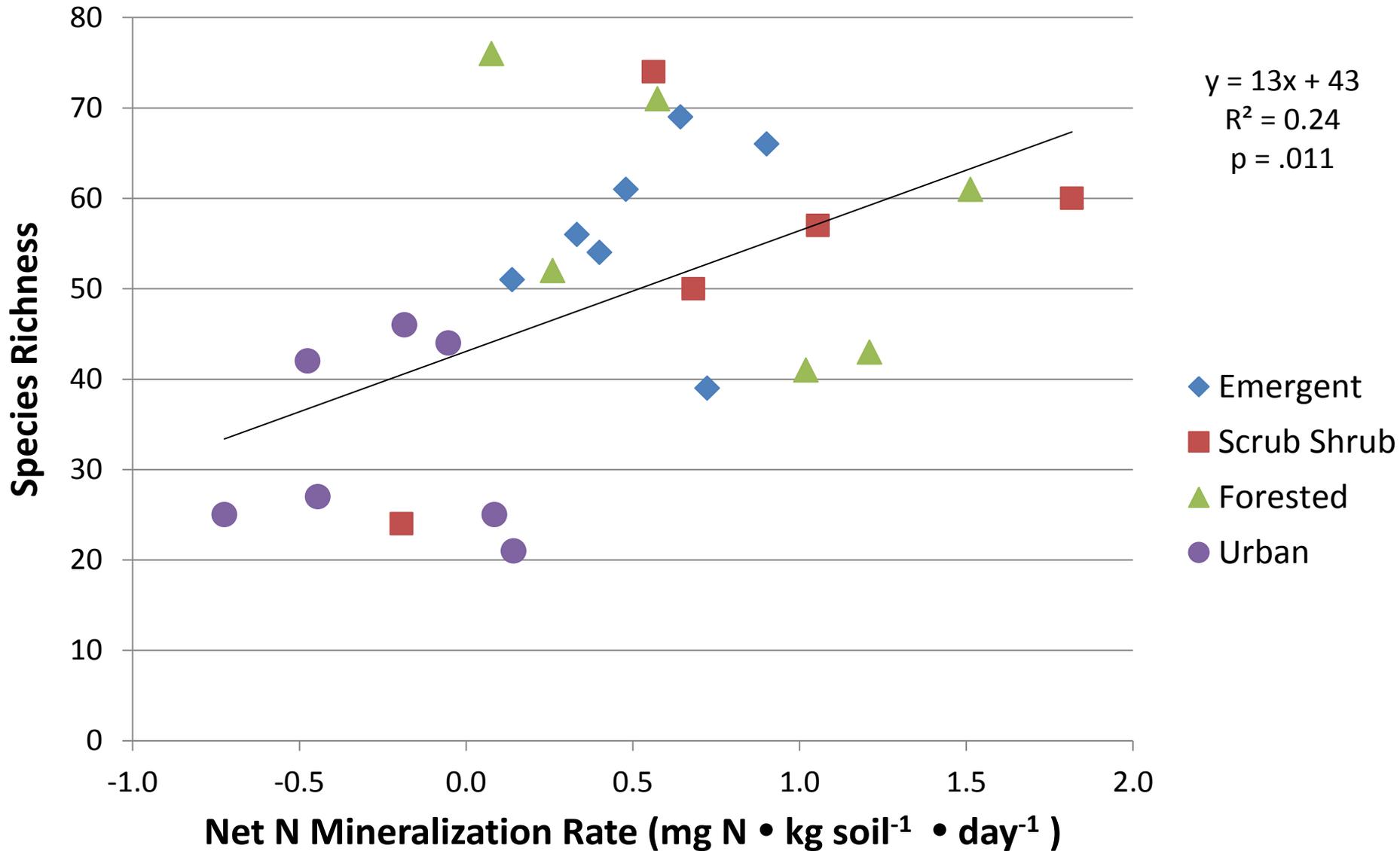
# Total Species Richness vs. Concentration of Dominance



# Total Species Richness vs. Soil pH and Conductivity



# Total Species Richness vs. Nitrogen Mineralization



# Conclusions

- Urban wetlands differed from natural wetlands
- Biogeochemistry
  - Greater pH, higher conductivity, lower N-mineralization
- Vegetation
  - Reduced species richness
    - Significant negative correlation with invasive cover, concentration of dominance, soil conductivity, and soil pH
    - Significant positive correlation with N mineralization

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