Does Turtle Pond Support Wetland Indicator Plants?

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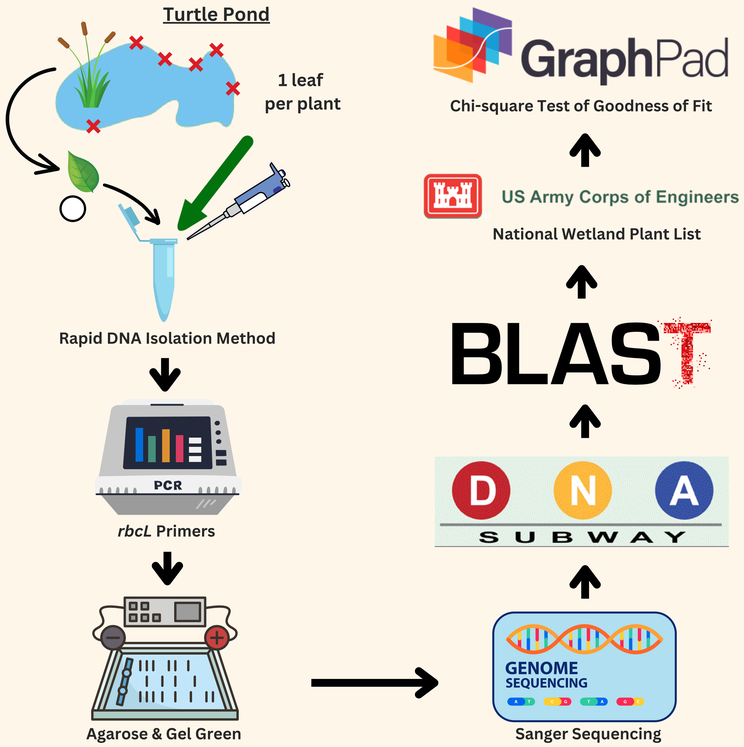
What We Asked It

Based on the vegetation along Turtle Pond, an artificial pond, does Turtle Pond support wetland indicator plants and is Turtle Pond a real wetland?

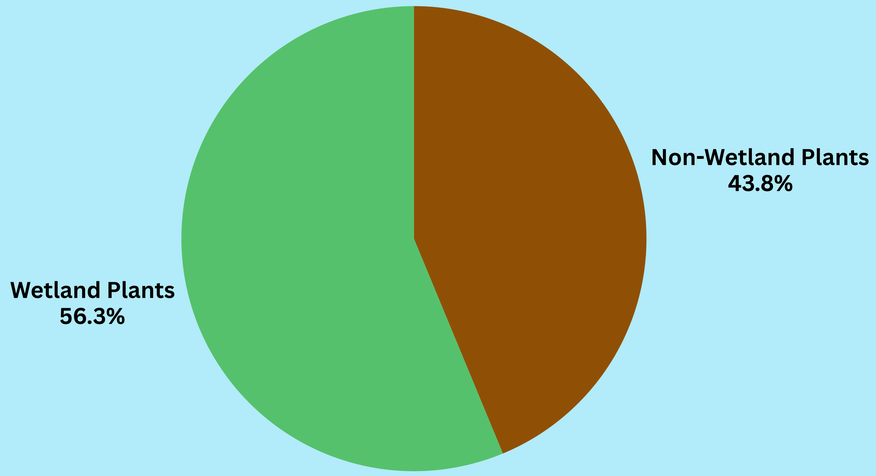
Why We Asked It

- Wetlands support biodiversity, provide services e.g. flood protection
  - Many U.S. wetlands drained for development, >50% lost
- 99% of NYC's wetlands lost
- Turtle Pond classified as a wetland by The Natural Areas Conservancy
- A body of water is not necessarily a wetland
- Plants have wetland indicator ratings
  - **Obligate** (OBL), **Facultative Wetland** (FACW), **Facultative** (FAC), **Facultative Upland** (FACU), **Obligate Upland** (UPL)
  - No rating = not found in wetlands
  - Wetlands have ≥50% of dominant plants with OBL, FACW, FAC ratings

How We Did It



Based on plant species living there, Turtle Pond does **support wetland plants** and is **likely a wetland.** However, **invasive plants** made up the **majority** of **non-native plants.**



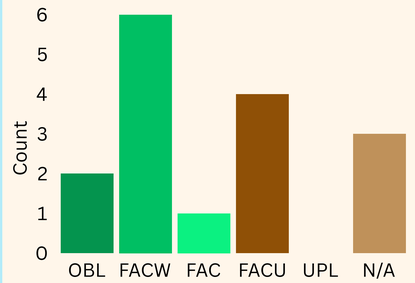
What We Used

Scan me for references!

Who Helped Us

- Allison Mayle, Christina Newkirk, and Carol Henger for their patience, guidance, and for providing reagents.
- The Dalton School and Jenny Hackett for providing equipment
- Alicia Reid for her moral support and guidance

What We Found



% Occurence in Wetlands
OBL: >99%
FACW: 67-99%
FAC: 34-66%
FACU: 1-33%
UPL: <1%
N/A: 0%

Figure 1. **Bar graph showing counts of species by wetland indicator rating.** N/A means no wetland indicator rating. N(OBL)=2, N(FACW)=8, N(FAC)=4, N(FACU)=4, N(UPL)=0, N(N/A)=4. Chi-square test of goodness of fit, p=0.6171

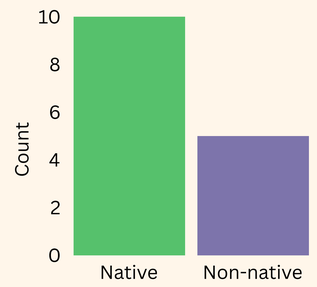


Figure 2. **Bar graph showing counts of species by nativity.** N(Native)=10, N(Non-native)=5. Chi-square test of goodness of fit, p=0.9781

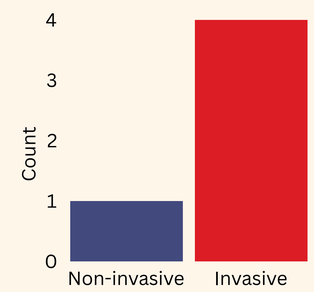


Figure 3. **Bar graph showing counts of non-native species by invasiveness.** N(Non-invasive)=1, N(Invasive)=4. Chi-square test of goodness of fit, p<0.0001

What It Means

- >50% of species are wetland plants; Turtle Pond is probably a wetland
- Not completely conclusive
  - Indicator plants not the only criteria e.g. hydric soil
  - Population size not factored; *Dominant* plants need to be wetland plants
- Collection in Oct., some plants dead/dormant
  - E.g. floating plants like duckweed
- ~33% of species non-native; 80% of non-native species are invasive
  - 33% of NYC flora is non-native, fits expectations
  - Higher than 10% rule for invasive species
- *Phragmites australis* have native & non-native subspecies
  - Barcode not specific enough, could not be determined
- Need for wetland conservation/restoration
  - Loss of biodiversity; 1.4 million in NY at risk for annual flooding

What's Next

- What other *true* wetlands are there in NYC?
- What other invertebrates and algae are present in NYC wetlands?