PFAs in Ceded Territories

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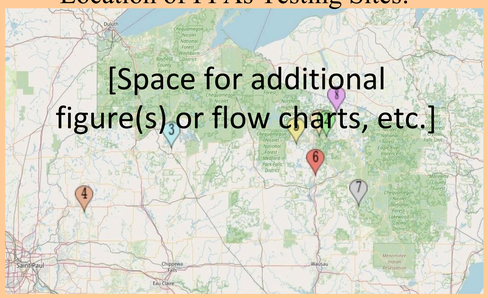
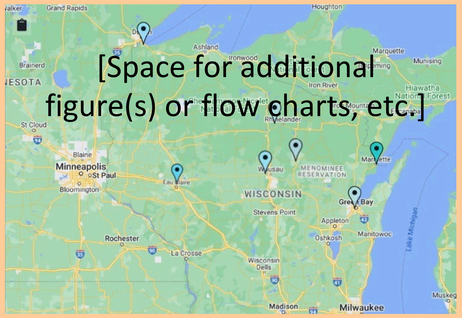
Introduction

- PFAS: resilient,durable,labeled "forever chemicals."
- Global prevalence in wildlife; extensive industrial use.
- Animal studies indicate diverse toxic effects.
- Human studies link PFAS to obesity, cancer, developmental issues.
- Concerns in Great Lakes Region, particularly in Tribal Nations.
- Study aims to quantify PFAS in flora and fauna vital to Tribal communities.
- Anticipated correlation between lake and sap PFAS contamination.

Location of PFAs Testing Sites:



Location of PFAs Source Sites:



C olu mn 1	C olu mn 2	Lake PFAS Concentration mean (ng/L)	Sap PFAS Concentration mean (ng/L)
	Location		
1	Allequash L	0.279	0.269
2	Aurora L	0.286	0.277
3	Grindstone L_WI	0.43	0.416
4	Balsam Lake	0.255	0.245
5	Bear River	0.342	0.328
6	Bearskin Lake	0.627	0.614
7	Pelican Lake	0.278	0.266
8	Big Lake (MI border)	0.356	0.337

Location	Lake PFAS Concentration mean (ng/L)	Distance to Nearest Major PFAs Source	Avg Distance to Major PFAs Sources
Allequash L	0.279	37	125.429
Aurora L	0.286	40	127.143
Grindstone L_WI	0.43	75	158.286
Balsam Lake	0.255	84	180
Bear River	0.342	50	127.857
Bearskin Lake	0.627	14	109.143
Pelican Lake	0.278	27	96.429
Big Lake (MI border)	0.356	50	131.429

Results

Correlation Coefficient (PFAs Lake and Sap):

- Calculated R value is 0.9997.
- **Implication:** Indicates a strong positive correlation, suggesting that high Lake PFAs scores are correlated with high Tree Sap PFAs scores, and vice versa.

Correlation Coefficient (PFAs Lake and Distance Source):

- Calculated R value is -0.3893.
- **Interpretation:** Technically negative correlation, but emphasizes a weak relationship between PFAs concentration and proximity to PFAs sources.

Discussion/Conclusions

CorrelationBetween PFASConcentrations inLake and Sap:

- *Significance:* Reveals a strong correlation between lake and sap PFAS concentrations, emphasizing the intricate interplay in the environment.

Weak Negative Correlation with Proximity:

- *Limitation:* Weak negative correlation between PFAs concentration and distance
- **Call for Future Research:** Future studies and funding can contribute to a more thorough understanding and identification of PFAs sources.

PFAS Contamination in Ceded Territories:

- Significant prevalence of PFAS contamination in aquatic ecosystems.
- Highlights potential risks and impact on Tribal communities reliant on local resources.

Conclusion:

- Study contributes significantly to PFAS discourse in Indigenous territories.
- Established correlation underscores the need for ongoing monitoring and awareness campaigns.
- Future research should prioritize mitigation strategies for sustainable natural resource use.

•Methods

Investigate directcorrelation between lake and sapPFAS concentrations.

- **Sampling Criteria:** 47 lakes within Ceded Territories, varying harvest levels, and distances from PFAS sources.
- **Guidelines:** Followed Environmental and Great Lakes Division (EGLE, 2022) for sample collection.
- **Lake Water Sampling:**
  - Used PFAS-free equipment, powderless nitrile gloves. Samples promptly capped and double-bagged.
  - Collected water samples employing direct sampling techniques.
  - Sent to Wisconsin State Laboratory of Hygiene for quantification (ng/L).
- **Sap Collection for Maple Syrup:**
  - Selected trees near lakes with a minimum diameter of 10 inches.
  - Utilized basic tools for sap collection.
  - Sap samples sent to Wisconsin State Laboratory of Hygiene for PFAS quantification.

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