The Reservoir Update – 2022

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Projects

- **On-going**
  - Reservoir monitoring
  - Zebra Mussel monitoring
  - Harmful Algal Proliferations (HAPs)
  - Sediment Nutrient Mitigation
  - Sediment bedforms and Microplastics

- **New Projects**
  - HAP monitoring at spring sites in collaboration with USGS
  - HAP monitoring over 12-month period in collaboration with LCRA
  - Supervisor Duties!

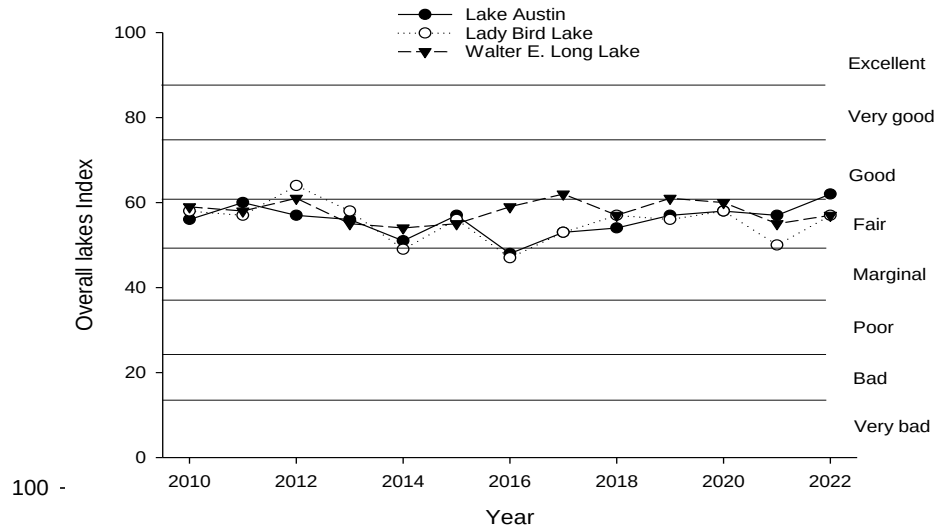
Austin Lakes Index

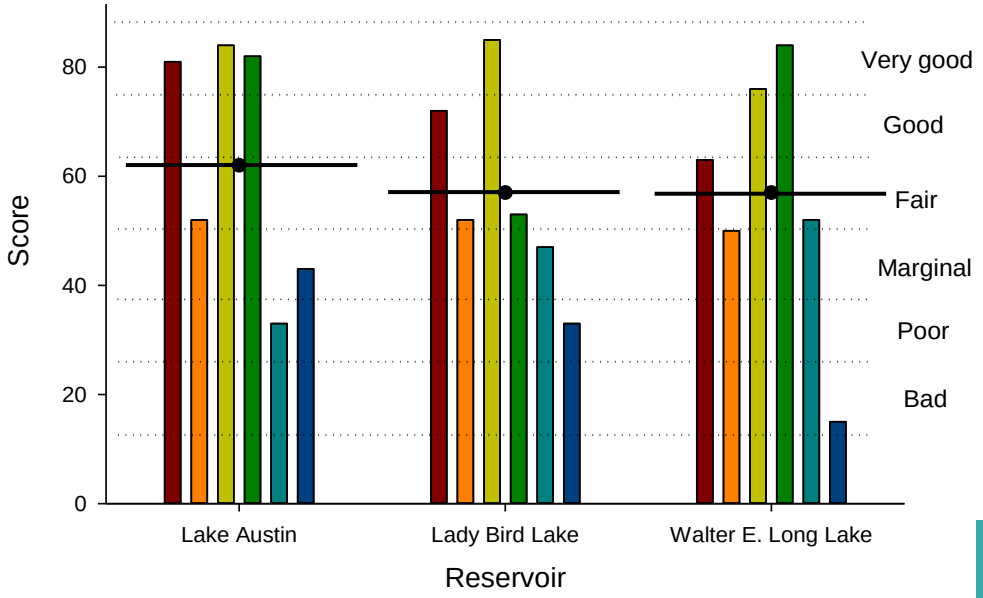
Reservoirs maintaining "fair-to-good" condition

System stressors:

Over-development of Lake Austin shoreline; but, aquatic vegetation starting to comeback!

Excess nutrients in Lady Bird and Walter Long; plenty of aquatic vegetation in each reservoir

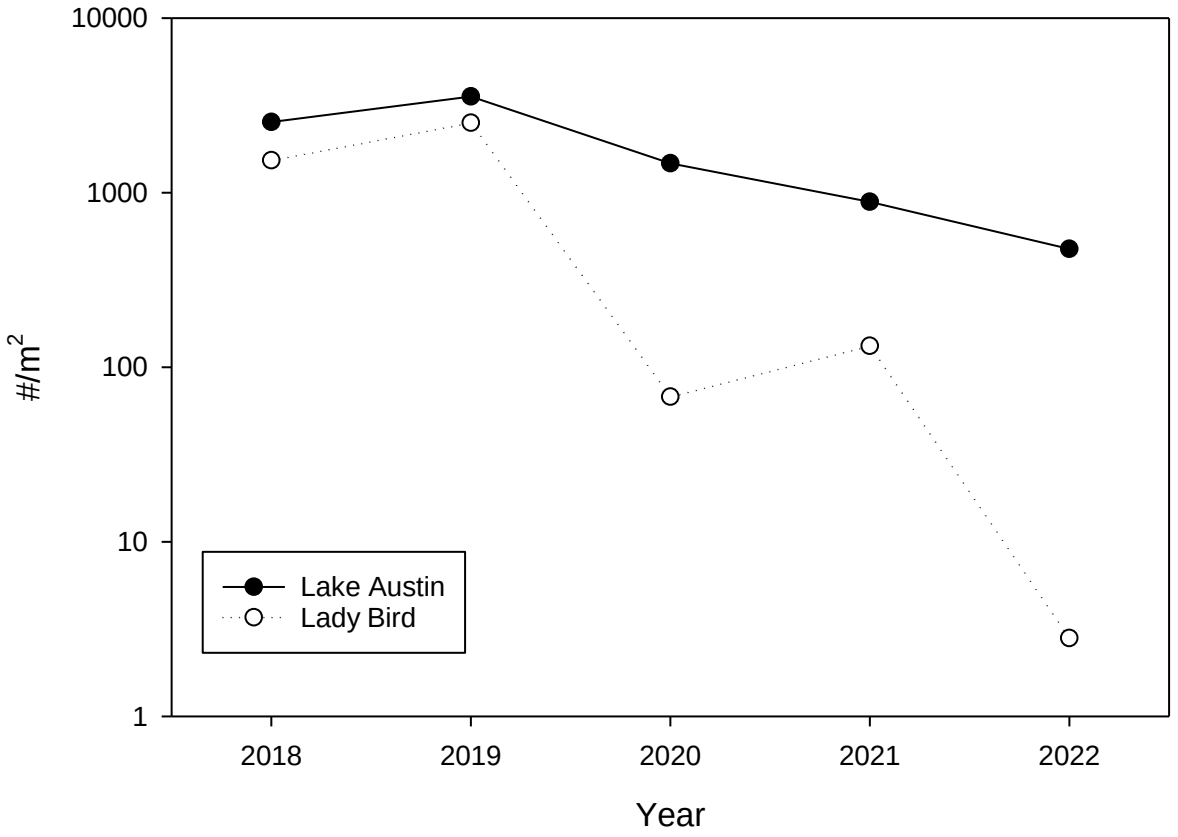




Zebra Mussels

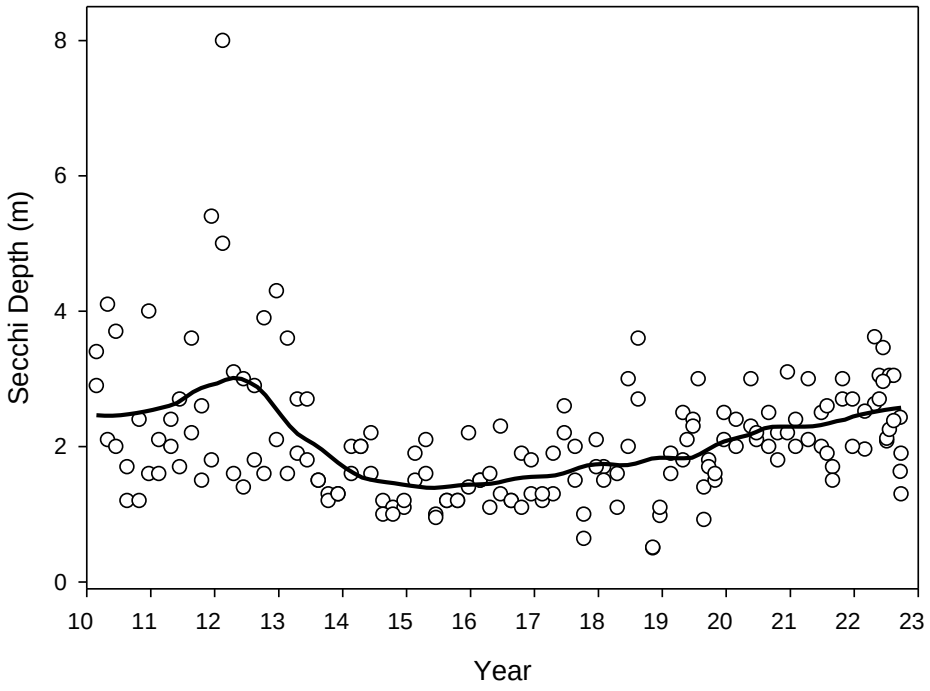
Population continues to vary between sites, but went through a crash

- However, populations appear to be rebounding in 2023 based on visual observations to date

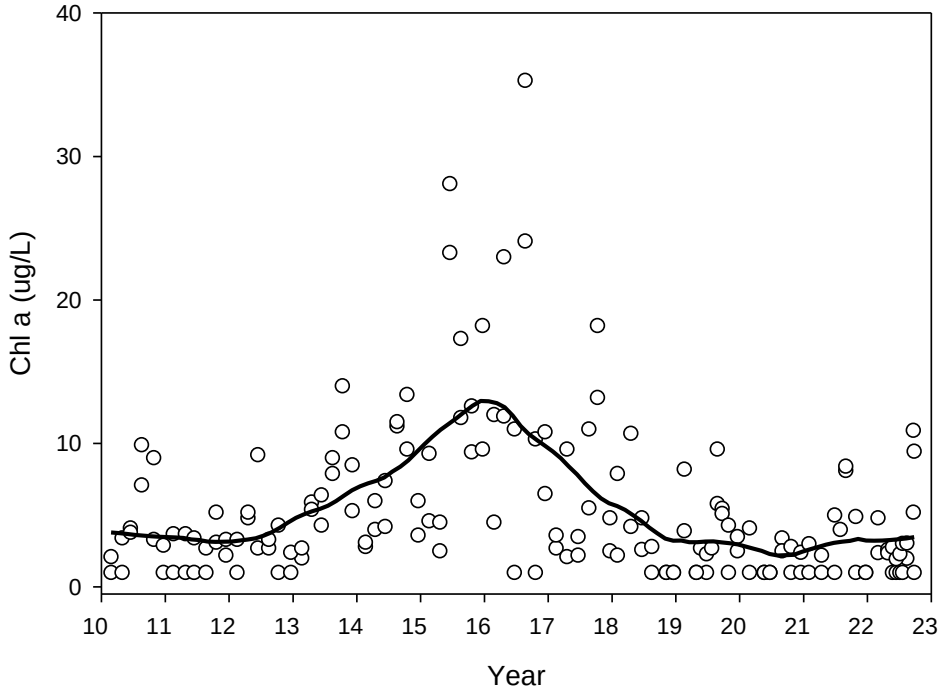


Water Quality Impacts(?) – L. Austin

- **Secchi Disk Depth (i.e., water clarity)**

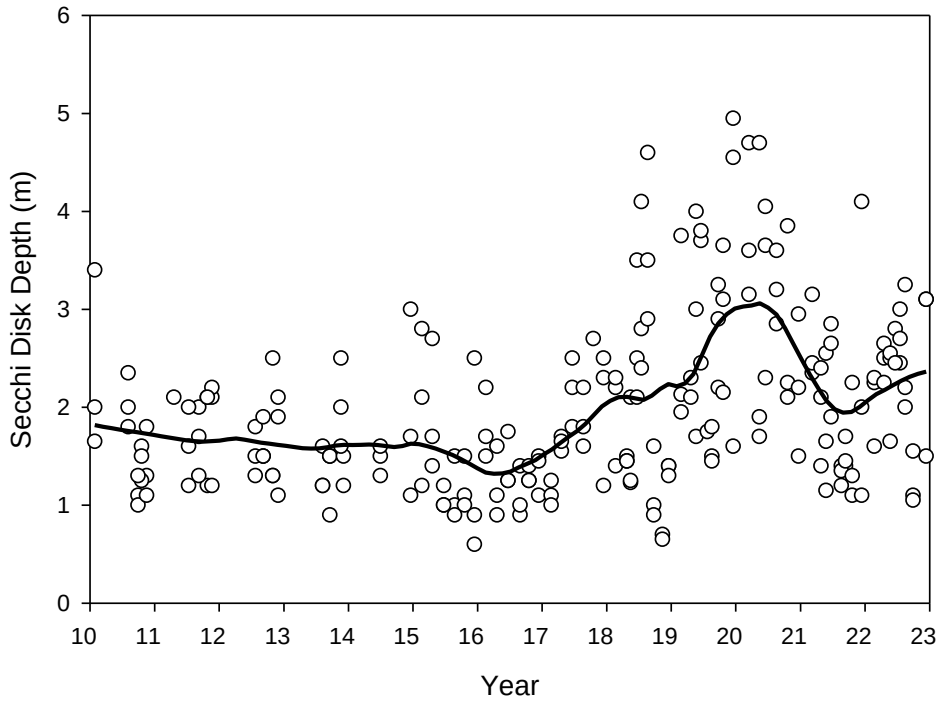


- **Chlorophyll *a* (i.e., floating algal biomass)**

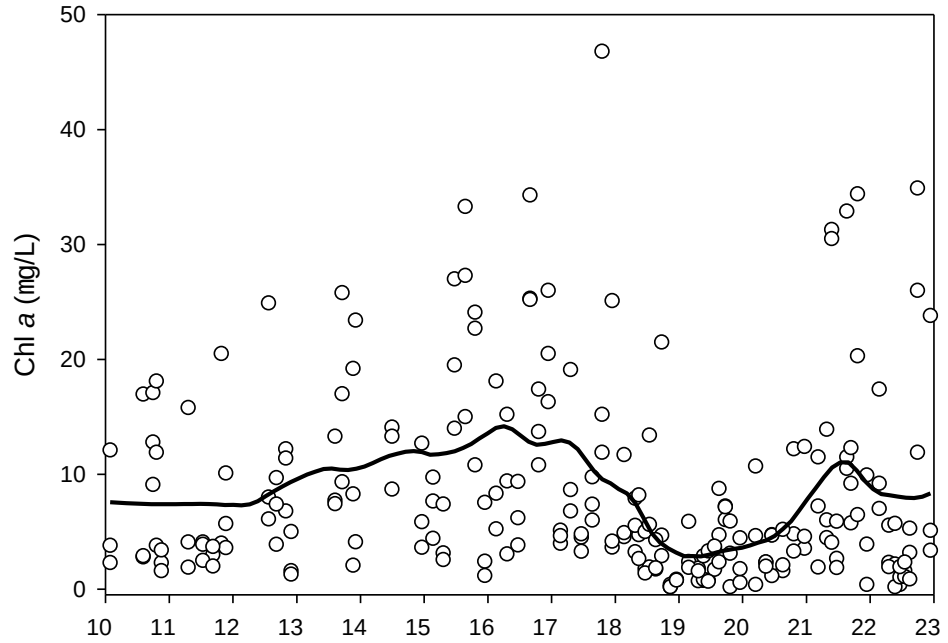


Lady Bird

- **Secchi Disk Depth (i.e., water clarity)**



- **Chlorophyll *a* (planktonic algal biomass)**



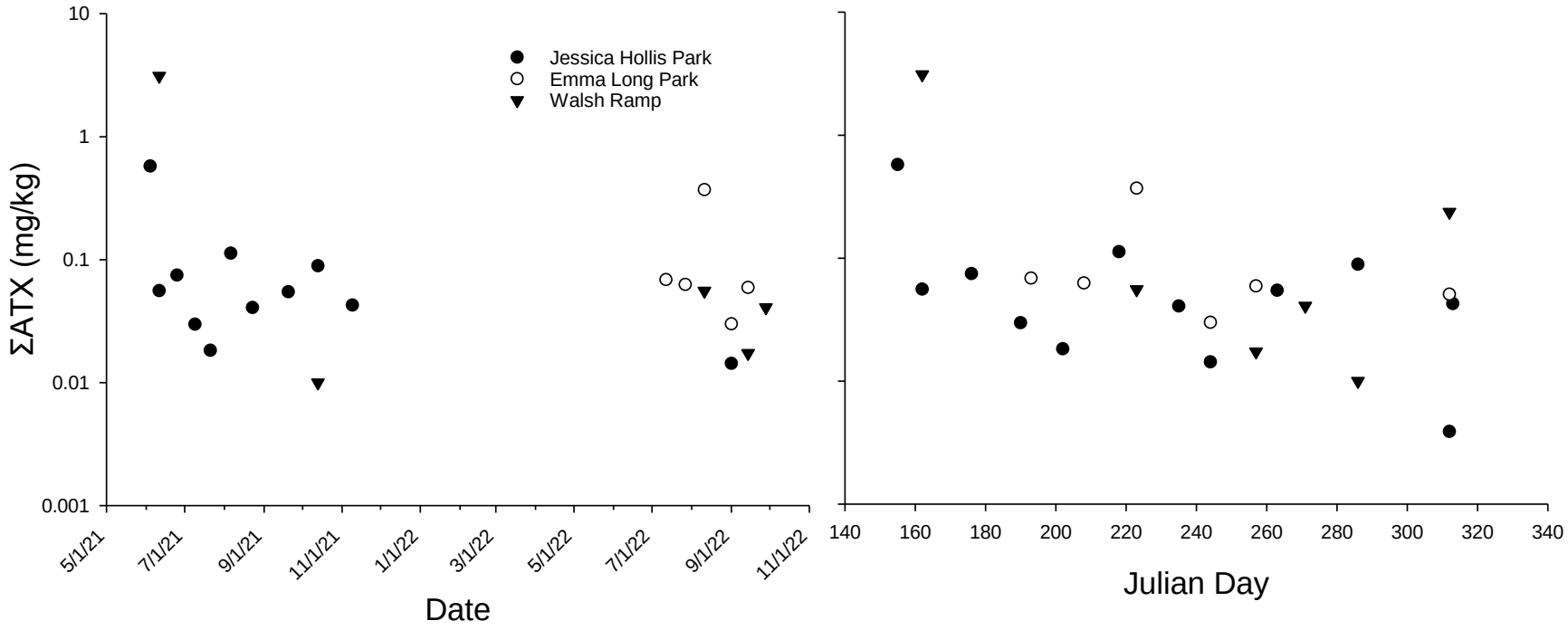
Harmful Algal Proliferations

Continued monitoring 3 sites in Lake Austin and Lady Bird Lake

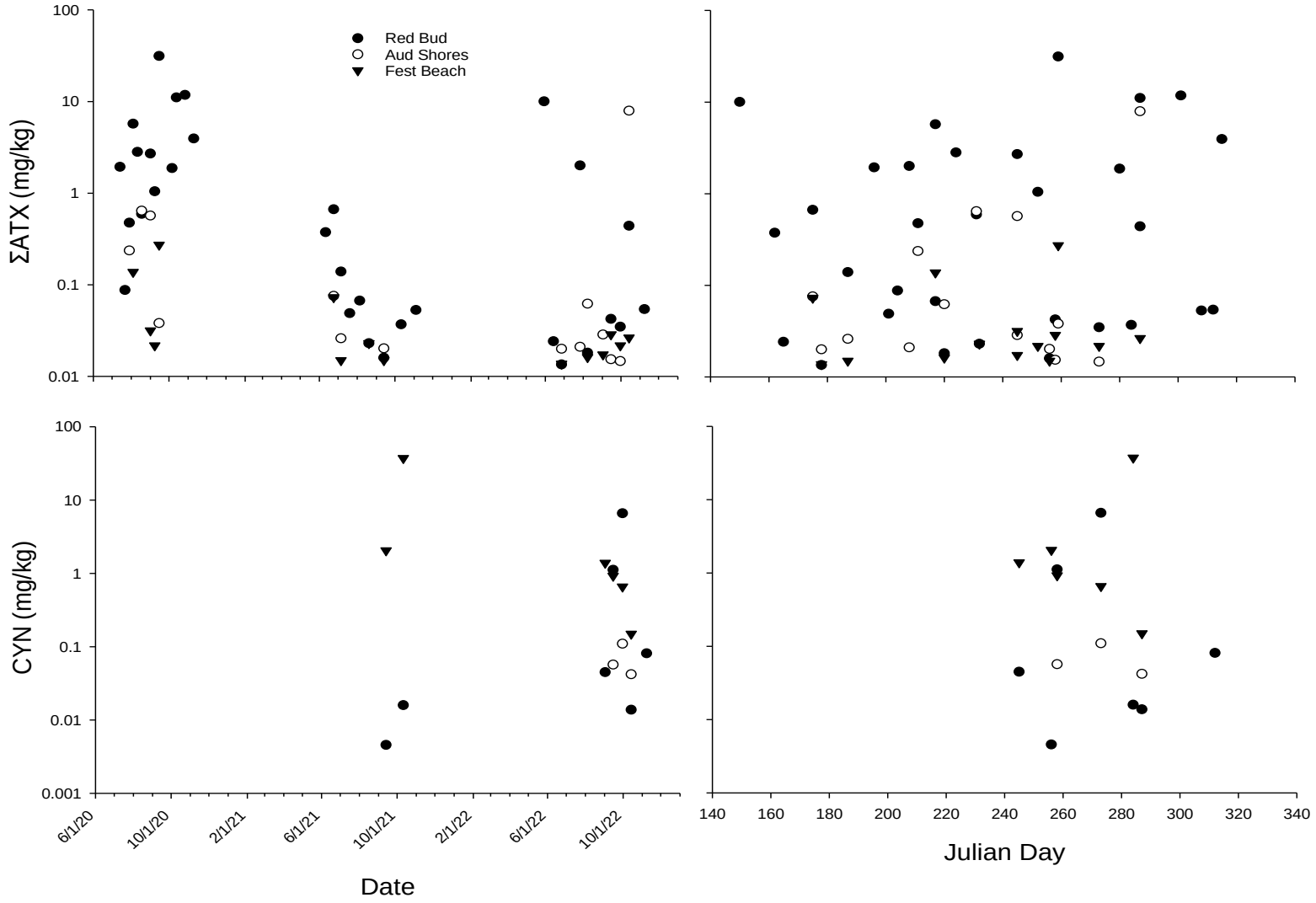
- Abundance/distribution of mats remains very stochastic
- Red Bud remained most consistently positive, but toxic mats popped up at all sites throughout summer

Toxin contents

- **Lake Austin**
  - Detection not consistent among sites;
  - Contents generally similar through observation period



- **Lady Bird**
  - Continued general decline through time
  - Late summer/fall peak contents
  - Cylindrospermopsin now appearing in fall



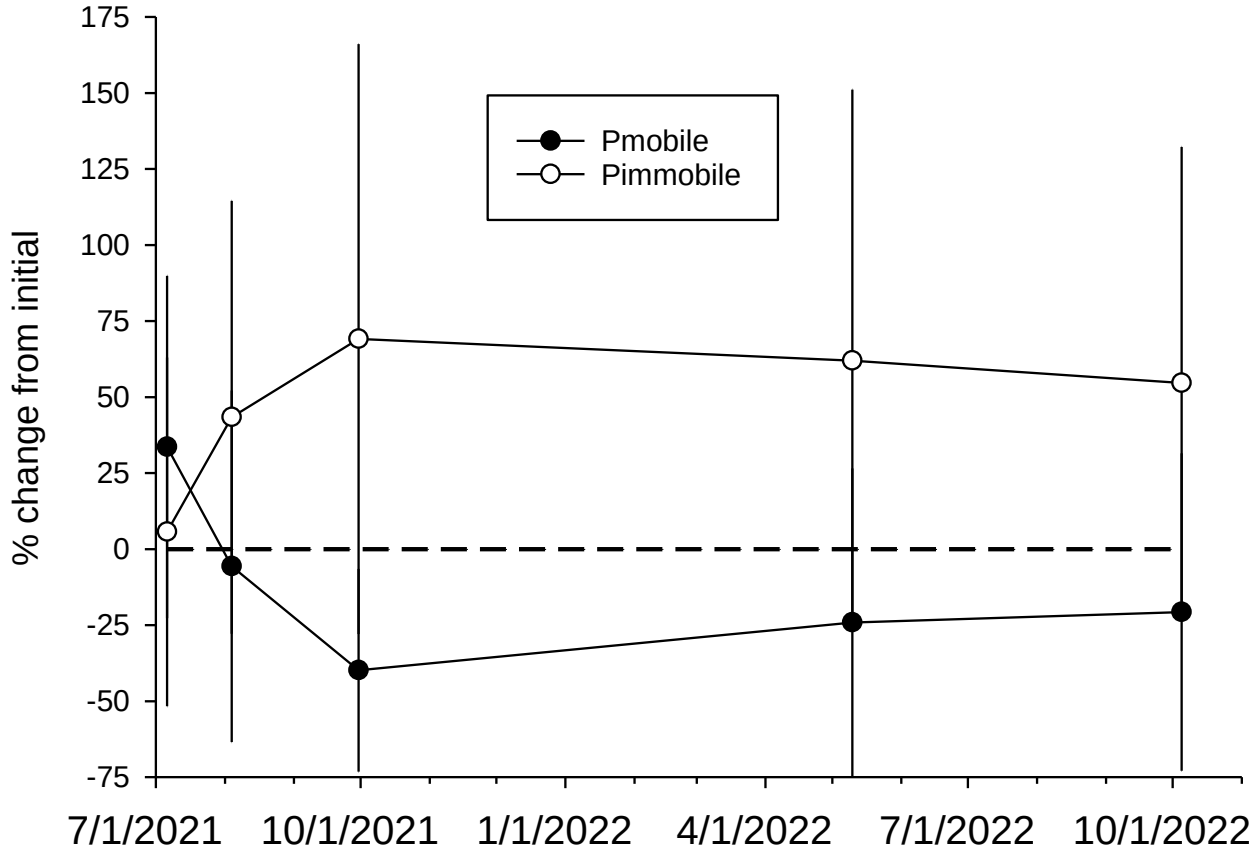
Sediment Nutrient Mitigation

Year 2 of applying lanthanum-modified bentonite

- In addition to Red Bud, applied product at Festival Beach
- New site has different sediment chemistry, also impacted much more by urban tributaries

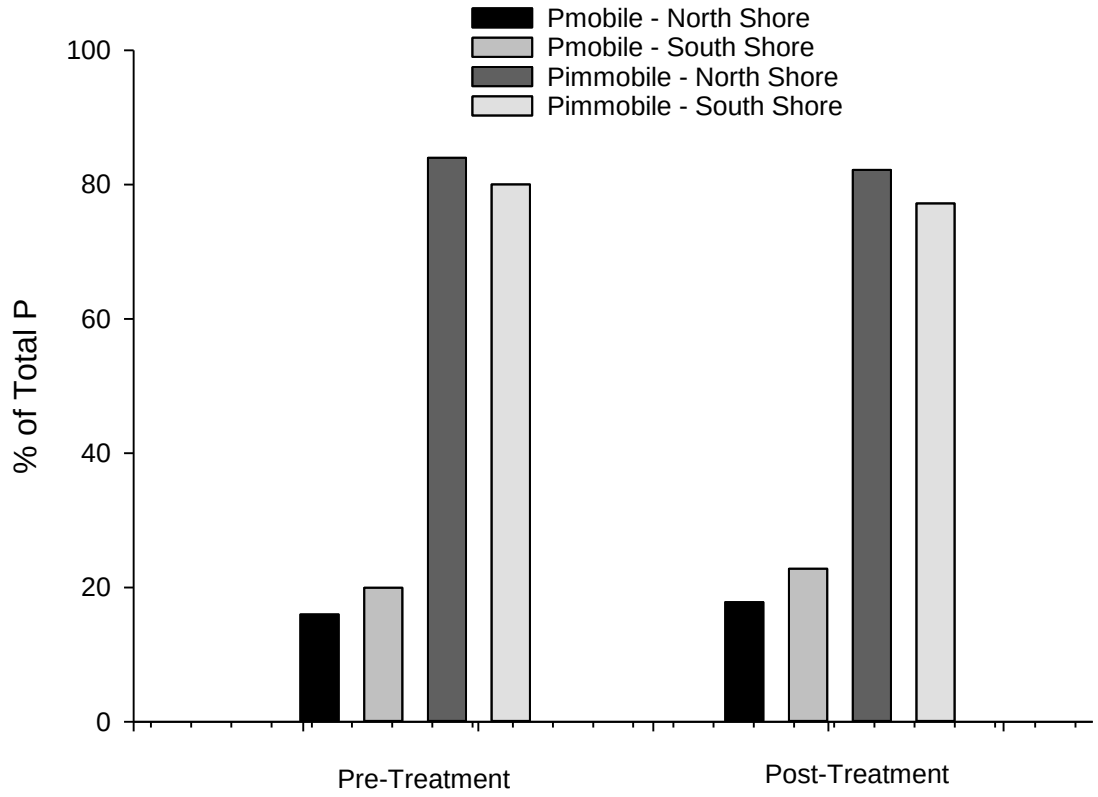
Red Bud

- **Over-winter, little change in sediment Phosphorus fractions**
  - Applied half as much LMB in 2022 to maintain low bioavailable sediment P-contents
  - Bioavailable P (“Pmobile”) remains about 25% lower than the original content
  - Unavailable P remains about 50% higher than before start of experiment



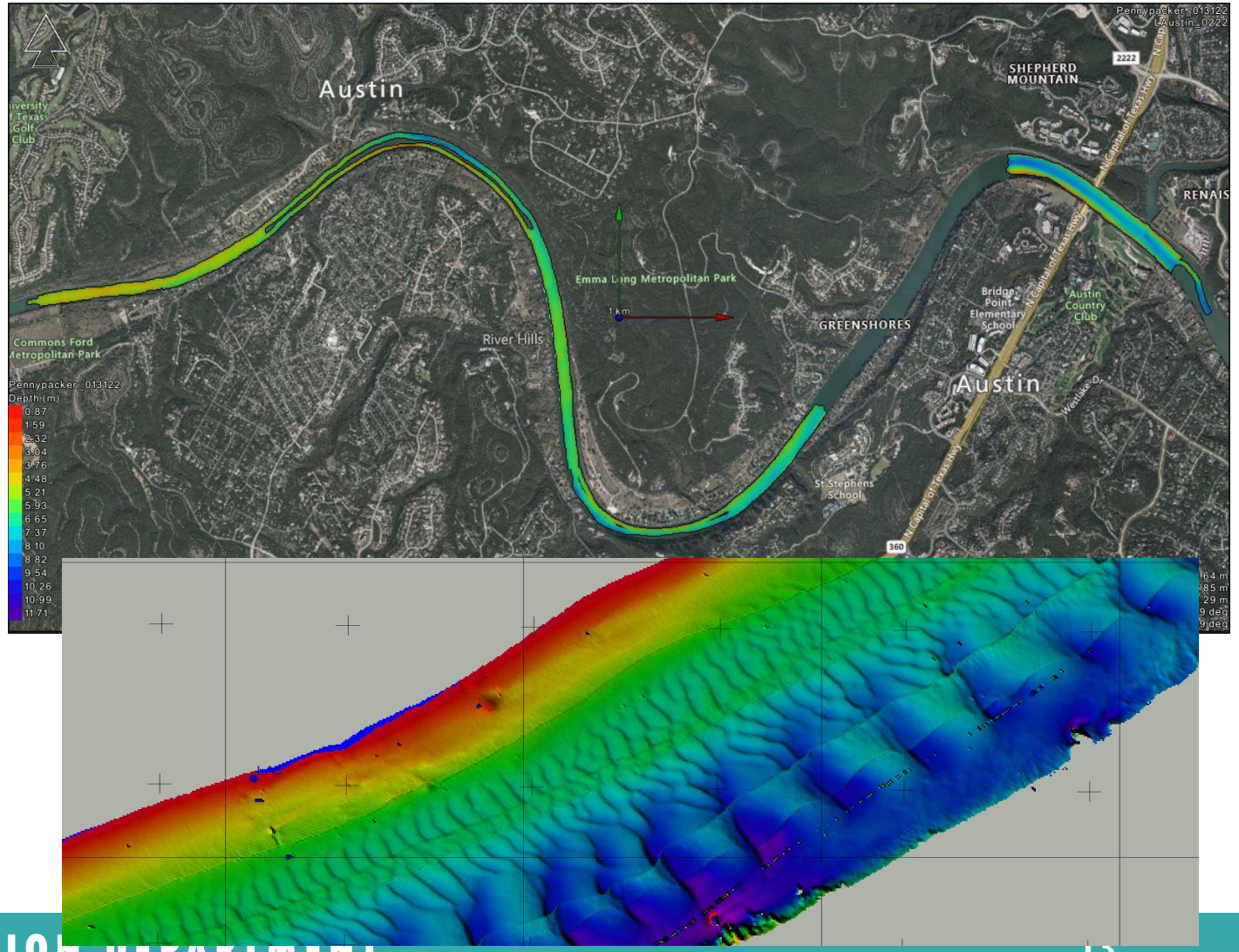
Festival Beach

- **Approximately same amount of LMB applied as year 2 of Red Bud**
  - Treatment sites – North Shore
  - Control Sites – South Shore
- **Did not see any treatment effect**
  - But, Pmobile did not increase
  - Large pulses of sediment from urban tributaries impacted this location throughout summer
  - Will increase amount of LMB applied in 2023



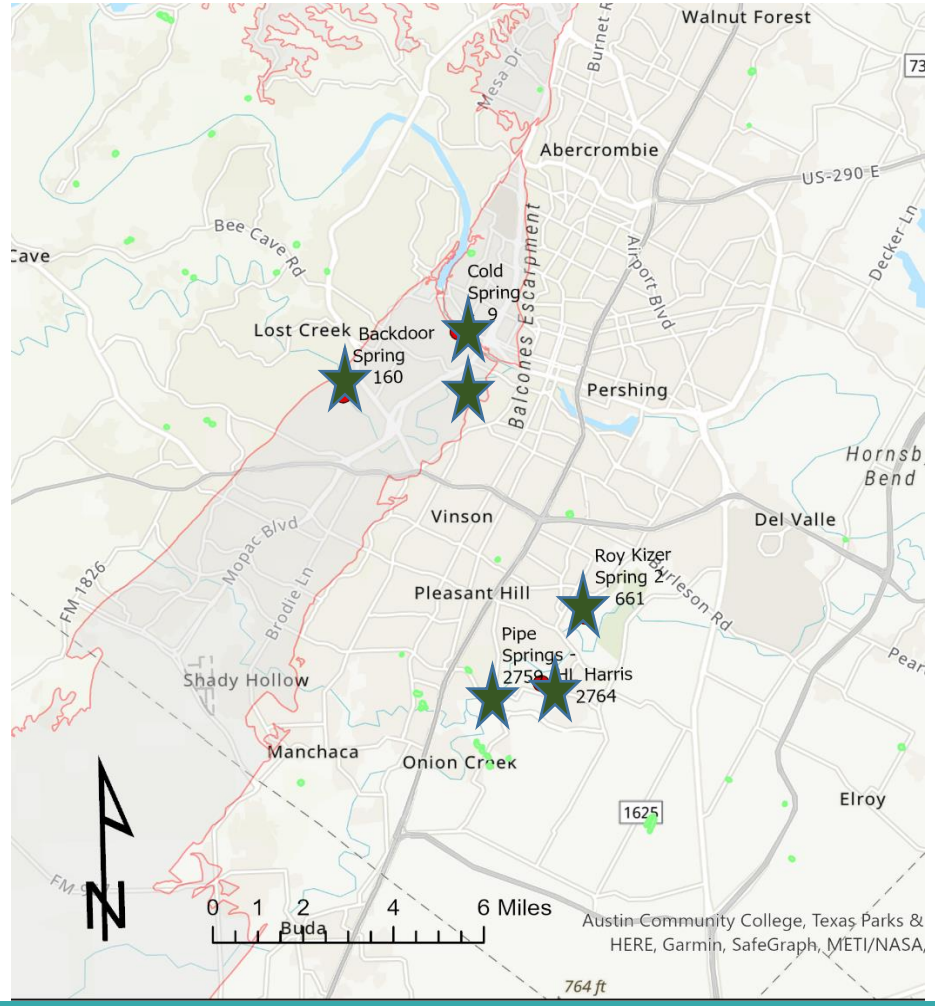
Sediment Bedforms and Microplastics

- **Continuing mapping sediment topography, reservoir bathymetry in Lake Austin and Lady Bird**
  - Modeling is looking at sediment movement, deposition dynamics by comparing bedforms between years
- **Surface sediment samples have also been collected**
  - Being analyzed for microplastic and nutrient (carbon and nitrogen) contents and isotopic signatures



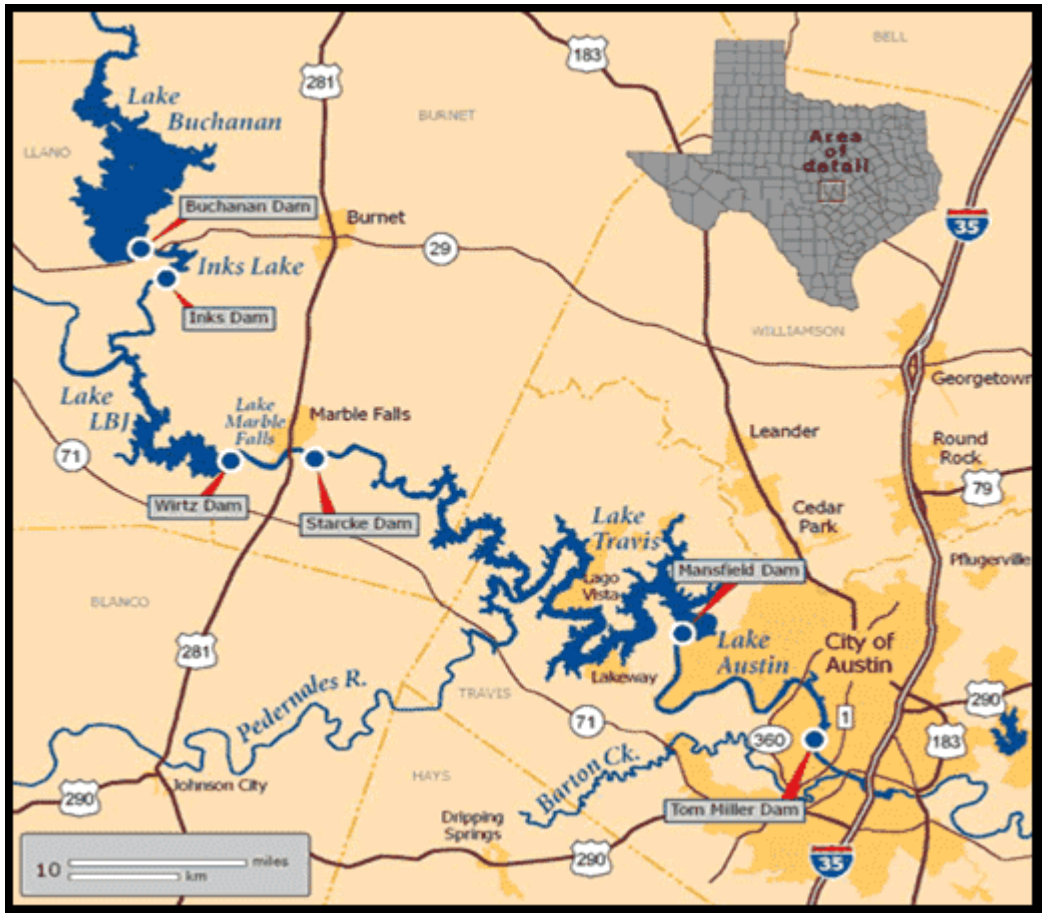
New: Expansion of HAP monitoring

- **Spring Sites**
  - 3 sites in Edwards, 3 sites in eastern prairies (still selecting appropriate sites)
  - 4 discreet sampling events through 2023 of mats, sediments, water
  - Continuous monitoring of spring discharges and water chemistry
  - Modeling of current and historic water quality to find drivers of HAPs at site(s)



Expansion of HAP monitoring

- **LCRA Collaboration**
  - 12-month joint effort coupling sampling timing across 3 sites in 4 reservoirs – Inks, LBJ, Austin, Lady Bird
  - Sampling water, mats, and sediments
  - Understand temporal dynamics, similarities in sites supporting HAPs



Questions?