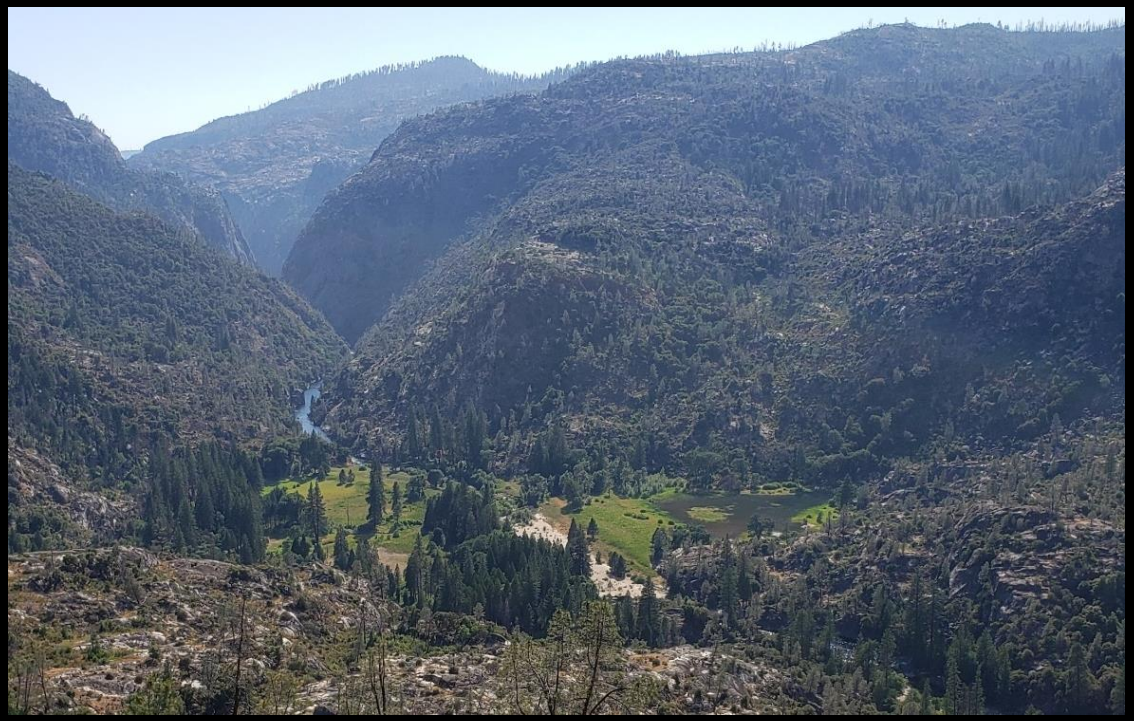
National Park Service
U.S. Department of the Interior
Yosemite National Park
Resources Management and Science

Looking Downstream 2021 update

National Park Service Research in Poopenaut Valley



Greg Stock, Catherine Fong, Rachel Hallnan, Sarah Stock, Elana Rae Engert, Kimiora Ward & Melissa Booher (NPS)

Jeff Holmquist and Jutta Schmidt-Gengenbach (UCLA)

Purpose of Looking Downstream project

Investigate the riverine, riparian, wetland, and meadow ecosystems in Poopenaut Valley below O'Shaughnessy Dam to assess their overall condition and inform future water management for ecological benefit

Methods

- Quantify the hydrology (river, tributary, and groundwater flows) across a range of environmental conditions
- Vegetation surveys of riparian, wetland, and meadow habitats
- Bird and bat surveys of riverine and riparian habitat
- Benthic macroinvertebrate surveys

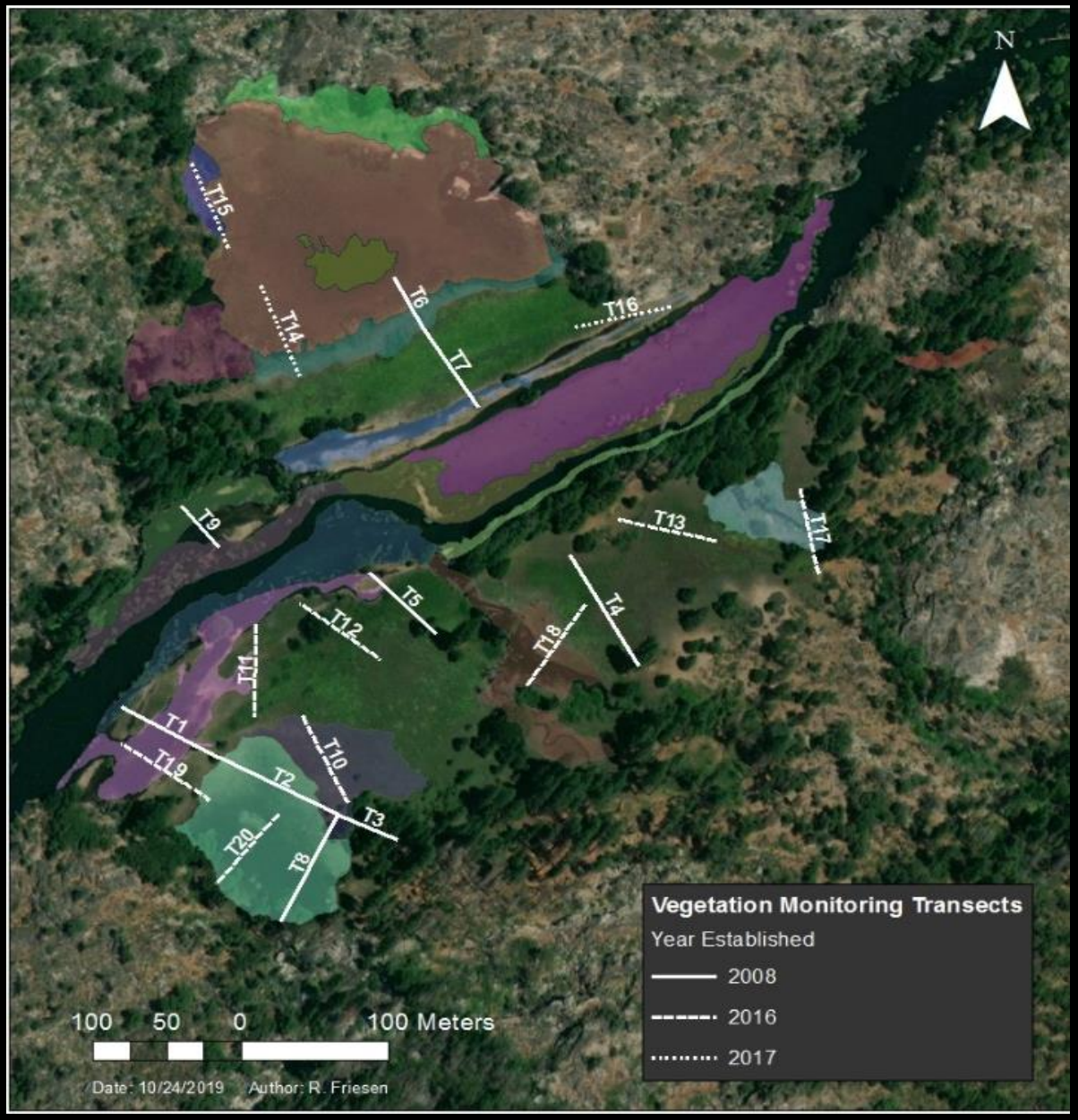


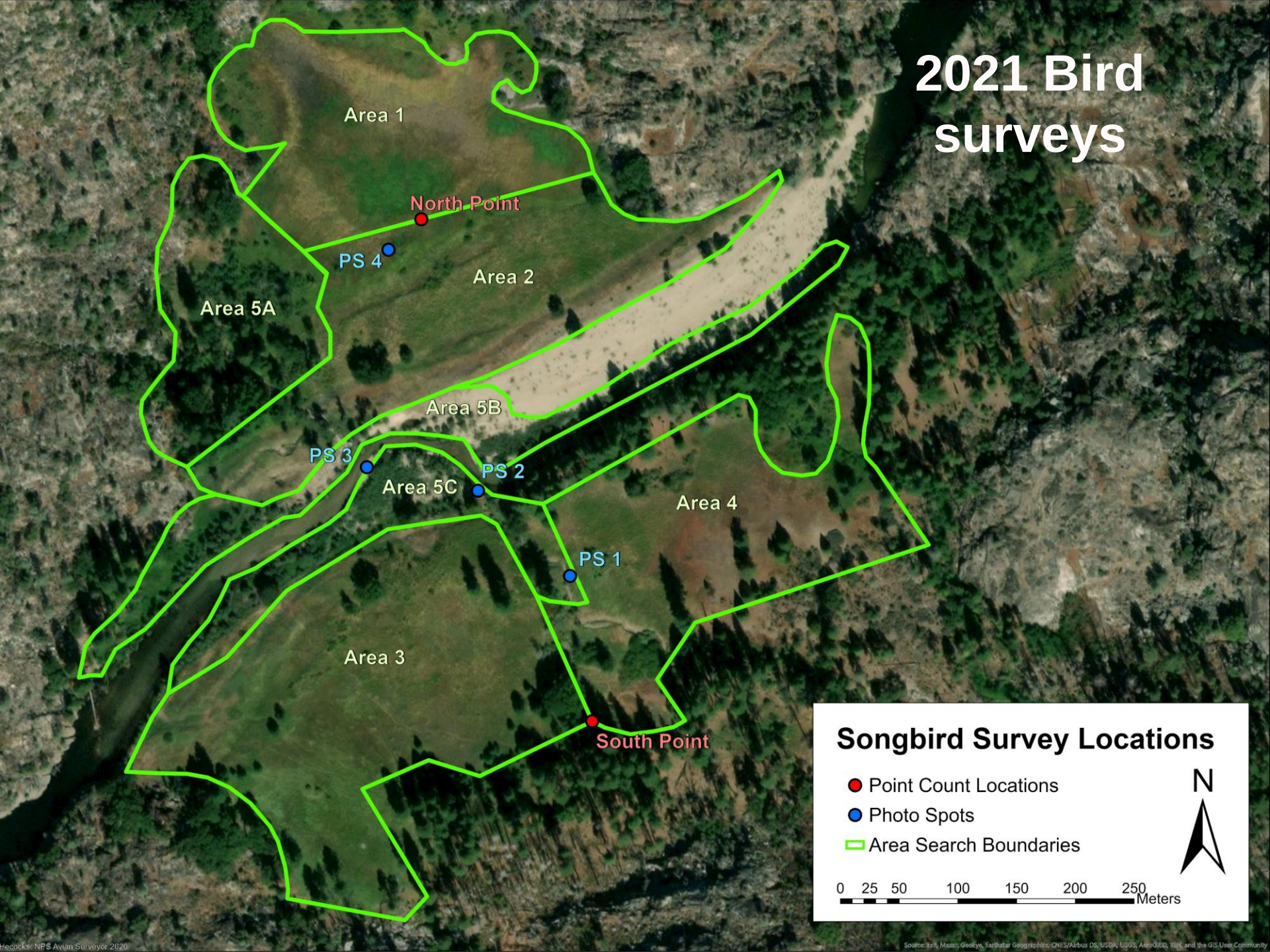


2021 Looking Downstream activities

- Monitored river, tributary, and seasonal pond levels; essentially minimum flows throughout the year
- None of the wetland areas met the Army Corps of Engineer's wetland definition (depth to groundwater criteria) in 2021
- Analyzed (and still analyzing) 14 years of groundwater and wetland vegetation data
- Monitored vegetation transects
- Conducted bird surveys (point counts, area searches, and territory mapping)
- Conducted benthic macroinvertebrate and algal surveys

2021 Vegetation monitoring in Poopenaut Valley

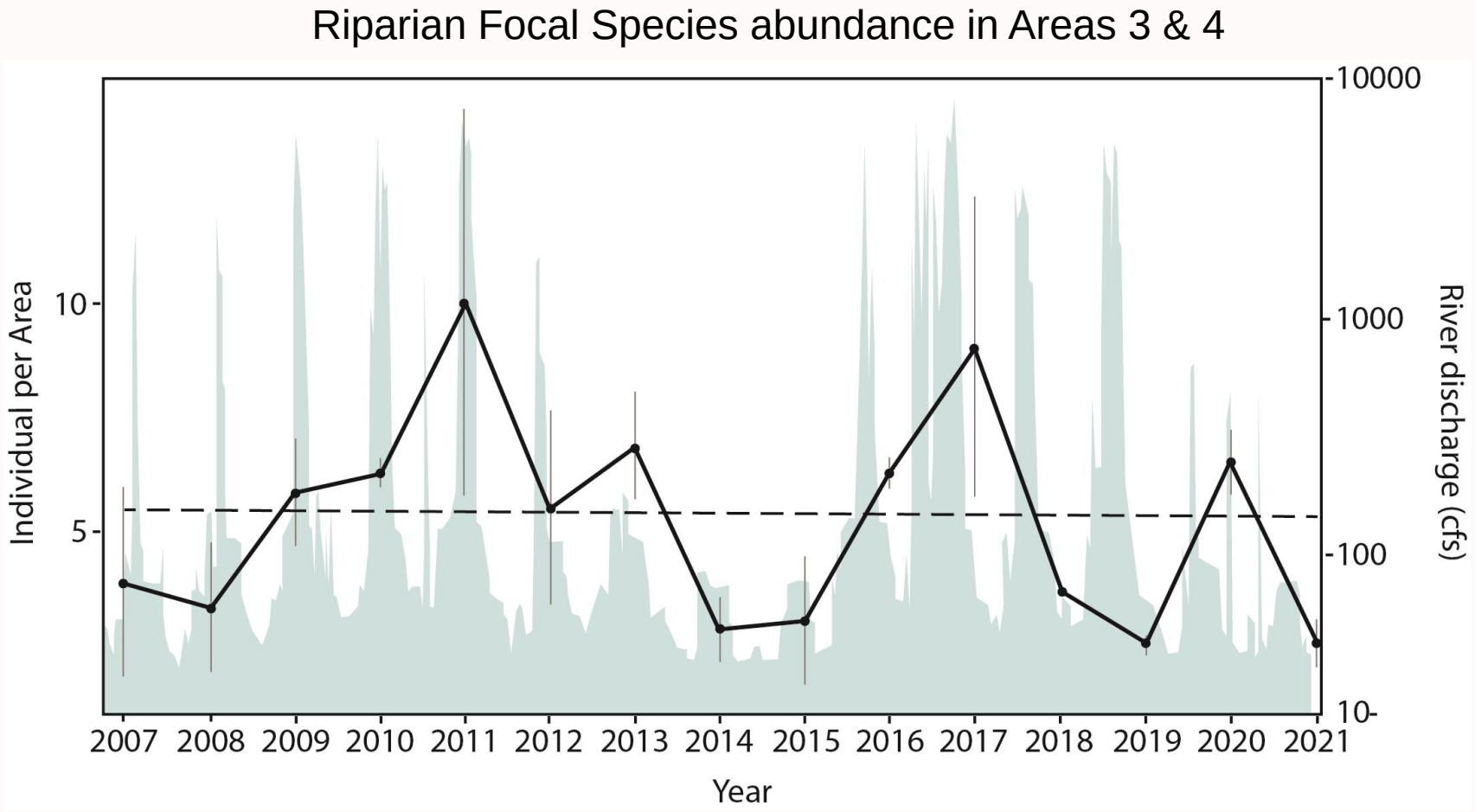



2021 Bird surveys
Area 1
North Point
PS 4
Area 2
Area 5A
Area 5B
PS 3
PS 2
Area 5C
Area 4
PS 1
Area 3
South Point
Songbird Survey Locations
Point Count Locations
Photo Spots
Area Search Boundaries
N
0 25 50 100 150 200 250
Meters
Hecocks: NPS Avian Surveyor 2020
Source: Esri, Maxar, Geoeye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Riparian Focal Species abundance

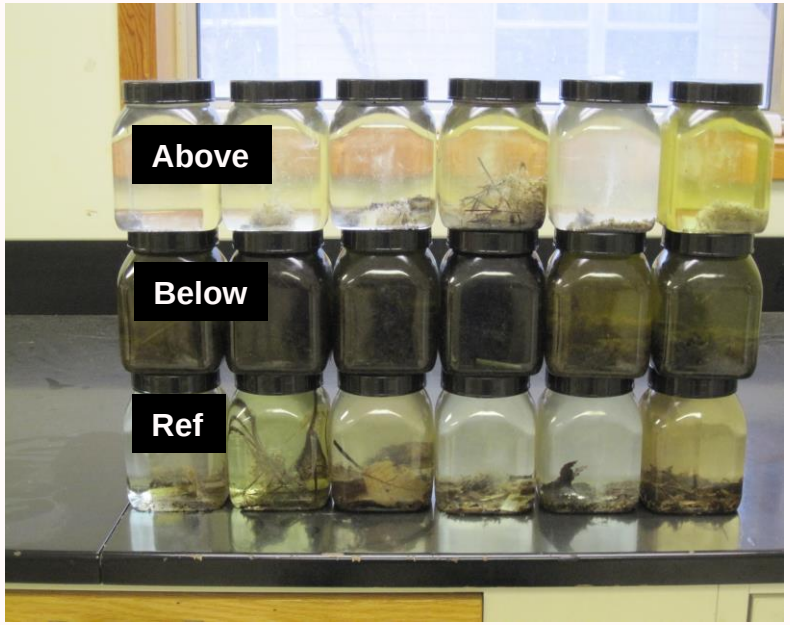






2021 Macroinvertebrate and algal surveying

- Algal biomass appears to have increased below the dam in 2021, but the invasive diatom *Didymosphenia geminata* remained absent
- Midge densities continue to be lower, and percentage of stoneflies, mayflies, and caddisflies continue to be higher, than levels seen prior to 2017 flooding



Planned NPS work for 2022

- Monitoring river, pond, and groundwater levels in Poopenaut Valley
- Vegetation monitoring transects
- 5-year wetland delineation
- Groundwater-wetland relationship analyses
- Bird surveys
- Macroinvertebrate and algae sampling
- Compile and review all post-2014 Looking Downstream data to inform updated UTREP document; technical review