



# Looking Downstream Spring 2023 update

## National Park Service Research in Poopenaut Valley



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# 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





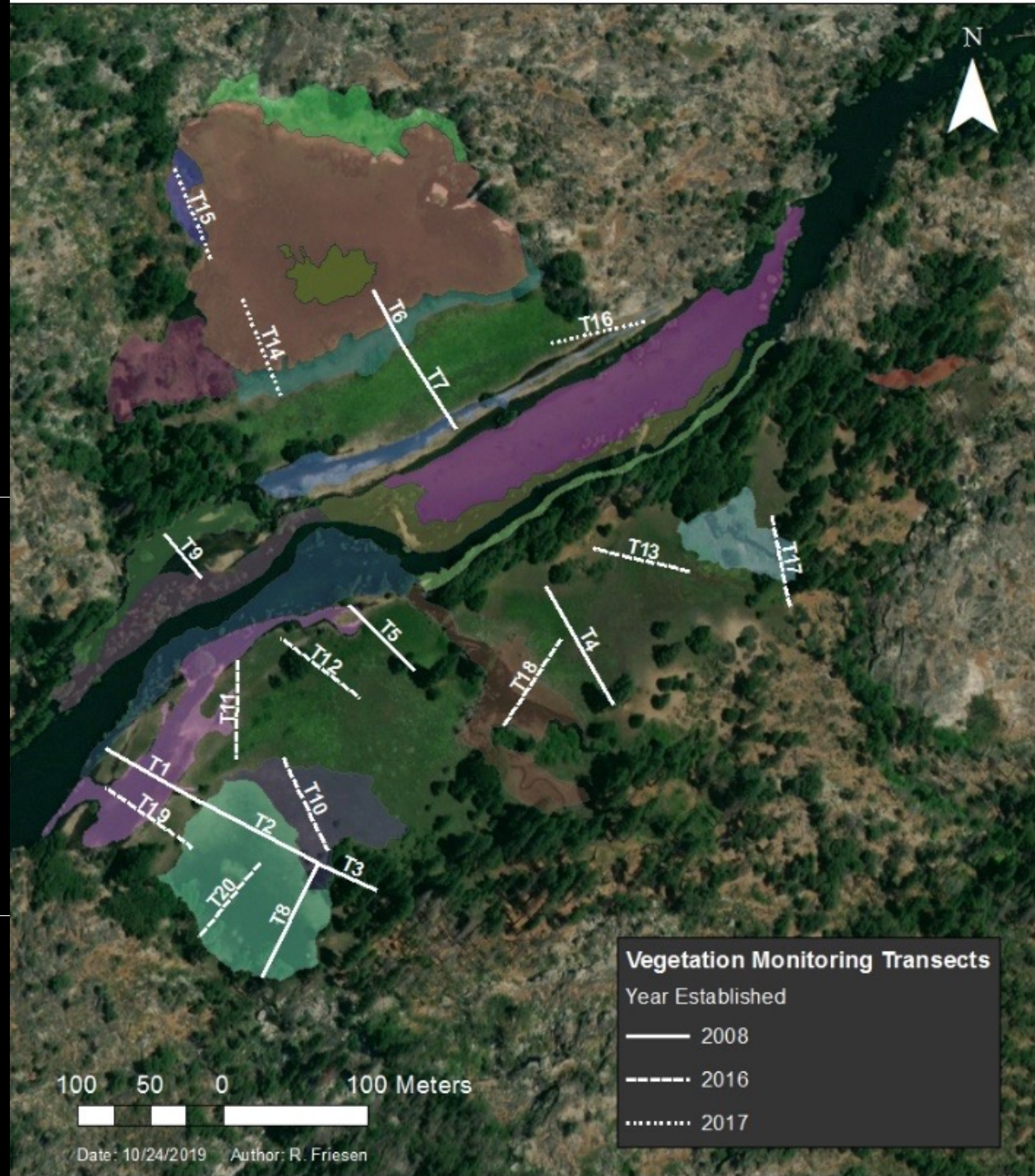
## 2023 Poopenaut Valley hydrologic monitoring

- River & tributary discharge
- Seasonal pond stage
- Groundwater levels
- Inundation mapping



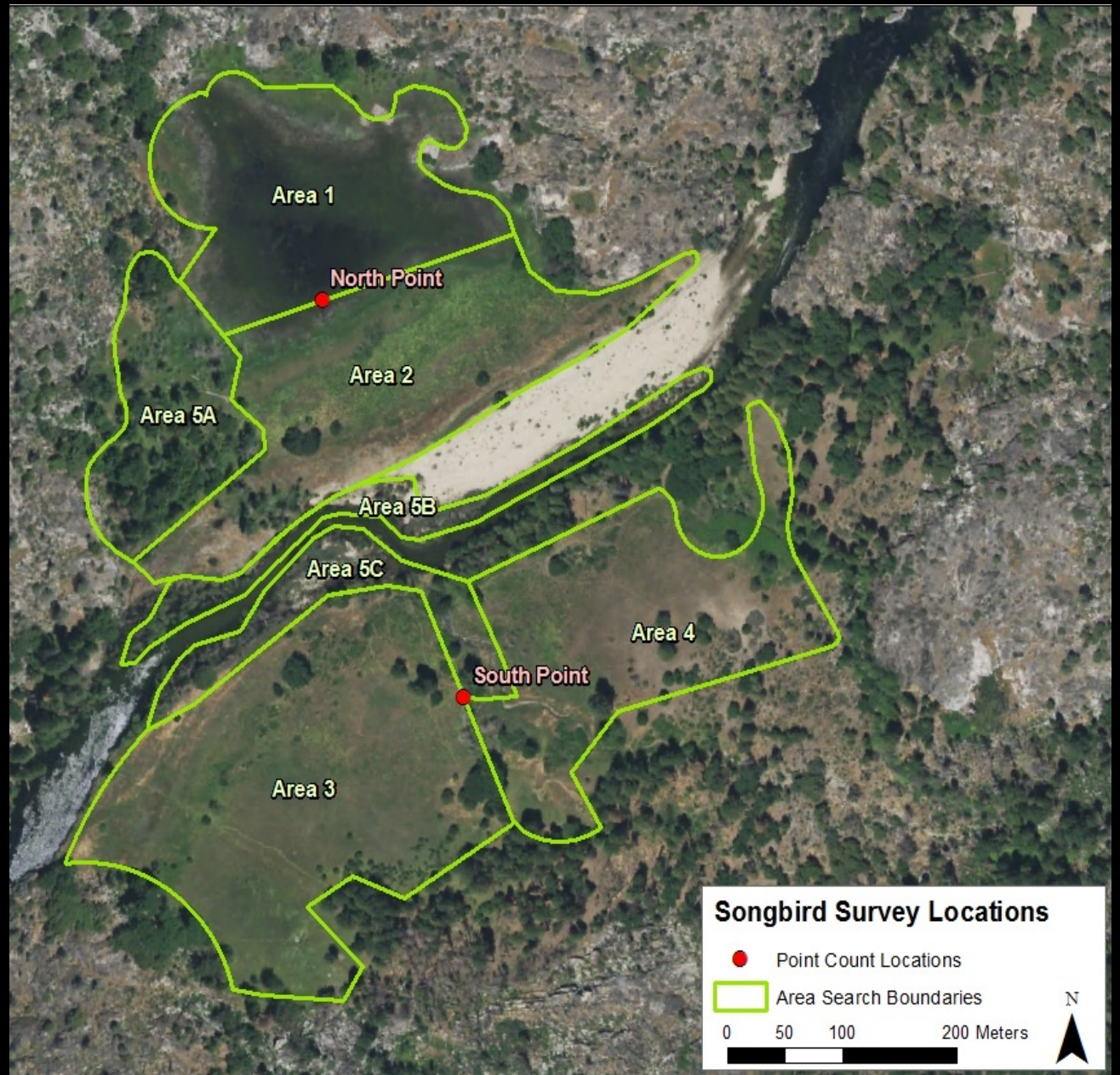
# 2023 Poopenaut Valley vegetation monitoring

- Repeat point intercept transects
- Repeat photopoints
- Invasive plan surveys



# 2023 Poopenaut Valley bird surveys

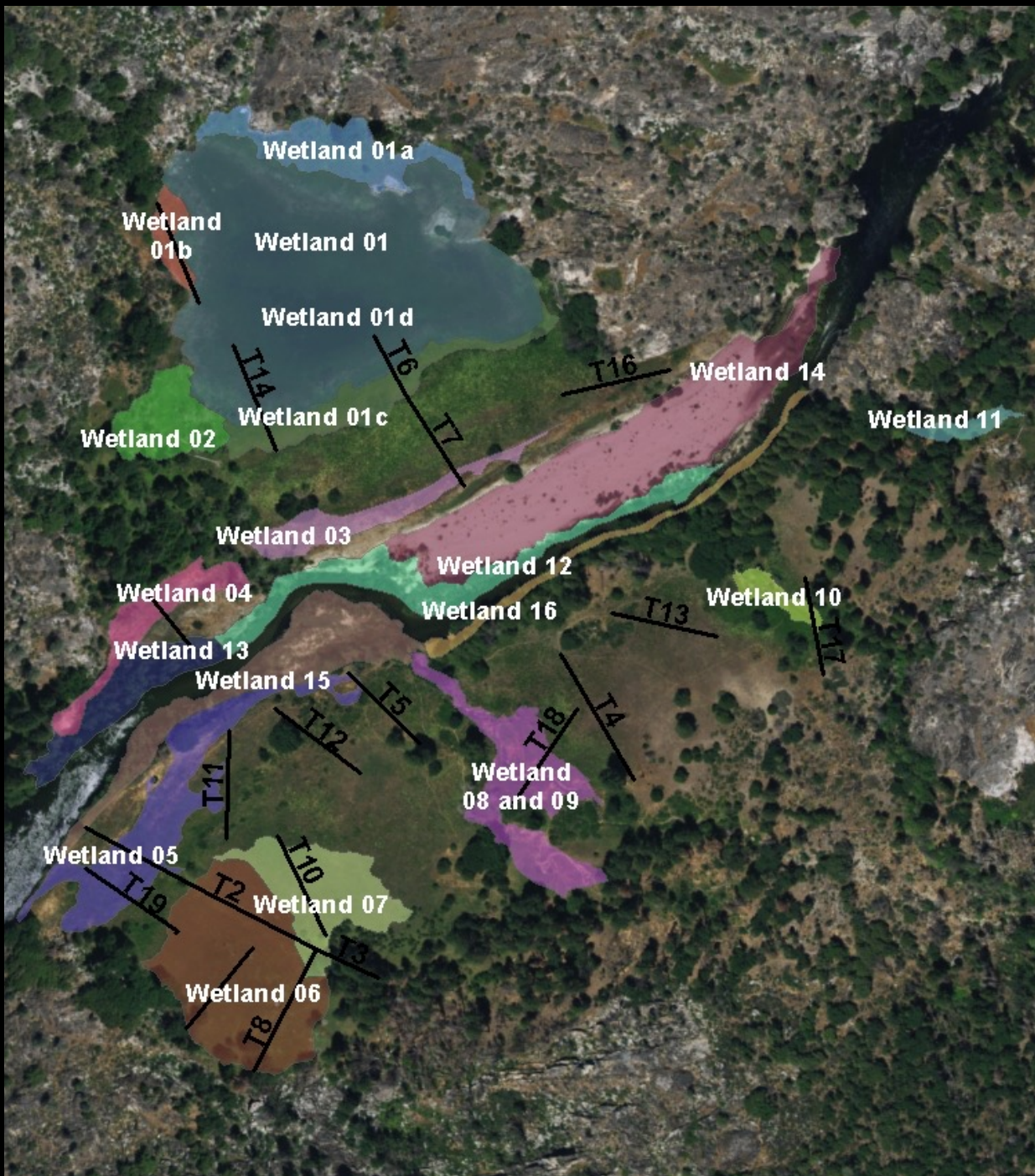
- 18<sup>th</sup> consecutive year of breeding bird surveys in Poopenaut Valley
- Bird surveys will begin in early May
- Surveys will include point counts, area searches, and territory mapping
- Access limited to south side of Poopenaut Valley





# Poopenaut Valley wetlands and inundation levels

USACE definition of wetlands:  
*“Soil saturation to within 40 cm of the ground surface for 12.5% of the growing season 5 out of every 10 years”*



# Non-native vegetation suppressed by inundation

Substantial reduction in non-native woolly mullein (*Verbascum thapsus*) in Poopenaut Pond between 2014 and 2019

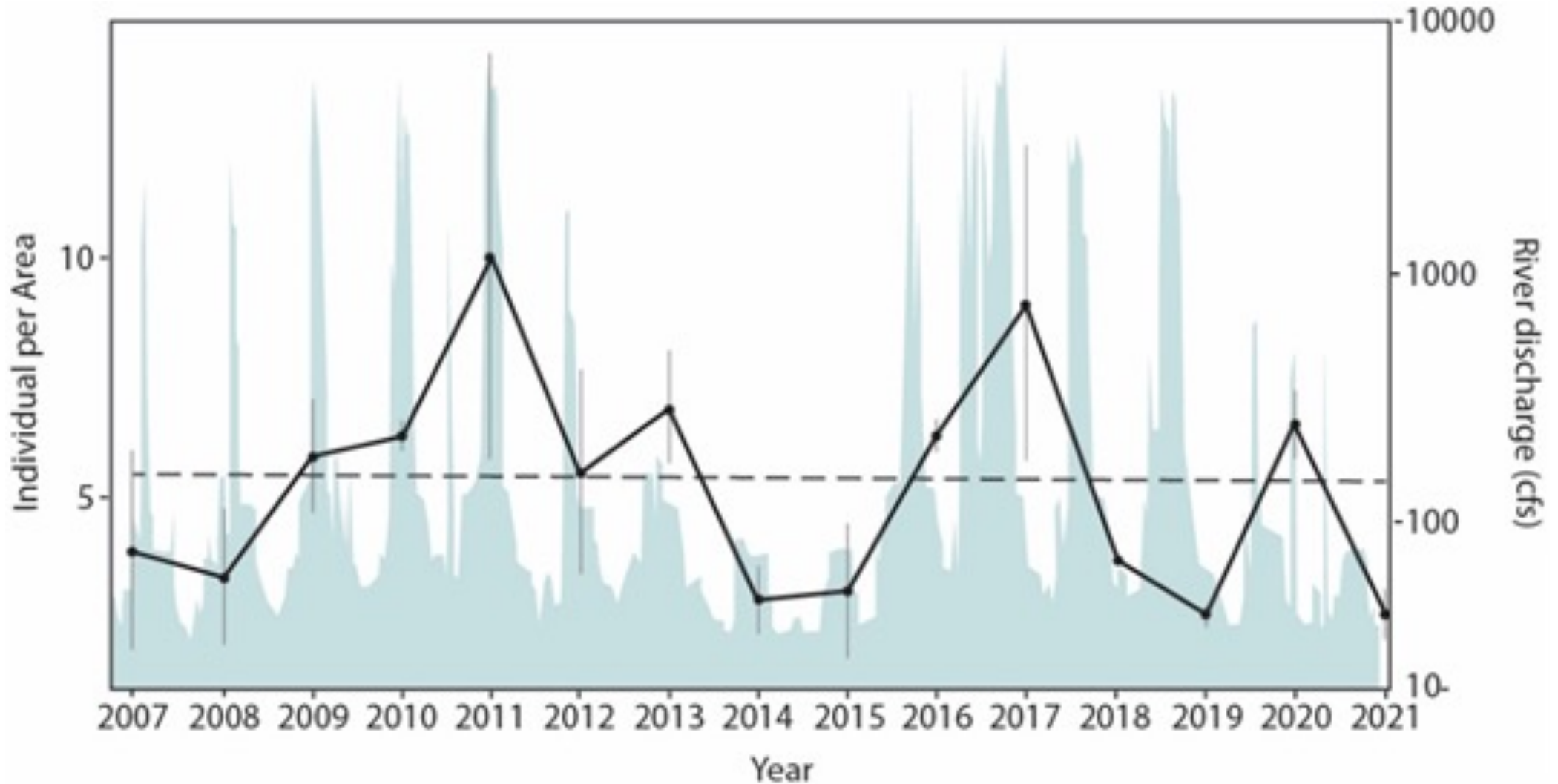


2014



2019

# Riparian Focal Species abundance relationship to river discharge (2007-2021)



# Benefits of 2017 high flows to algae cover and aquatic macroinvertebrates



# Algae in samples, 2016

Above

Below

Ref



# Algae in samples, 2017

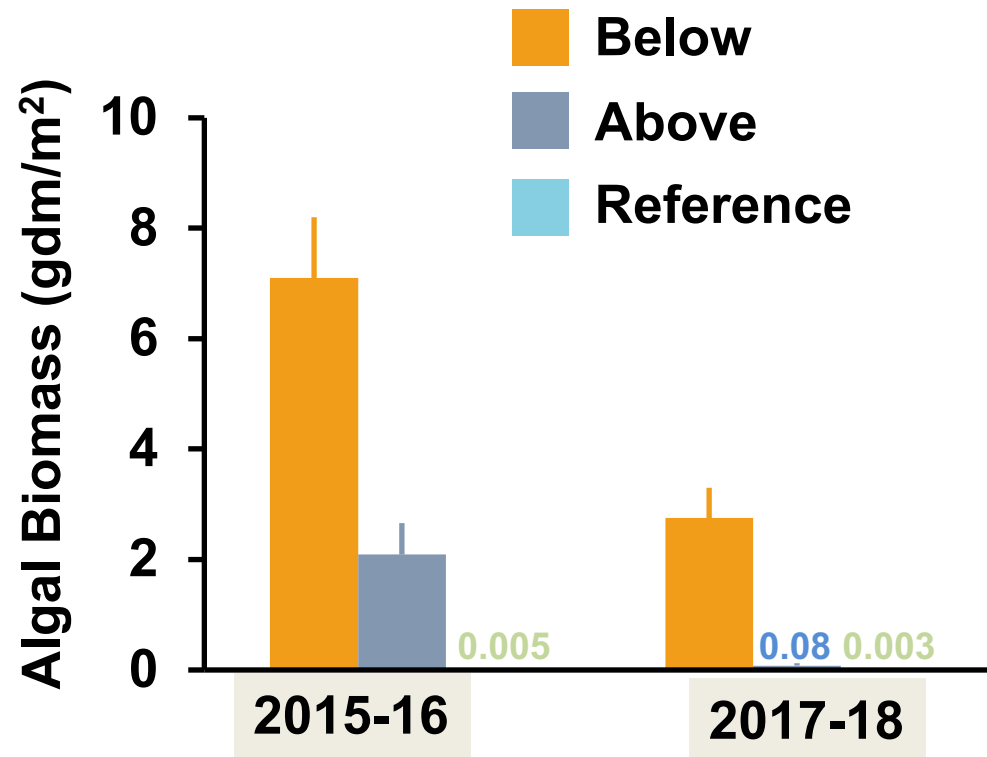
Above

Below

Ref



# Algal growth much lower after 2017 high flows



# Algal growth much lower after 2017 high flows

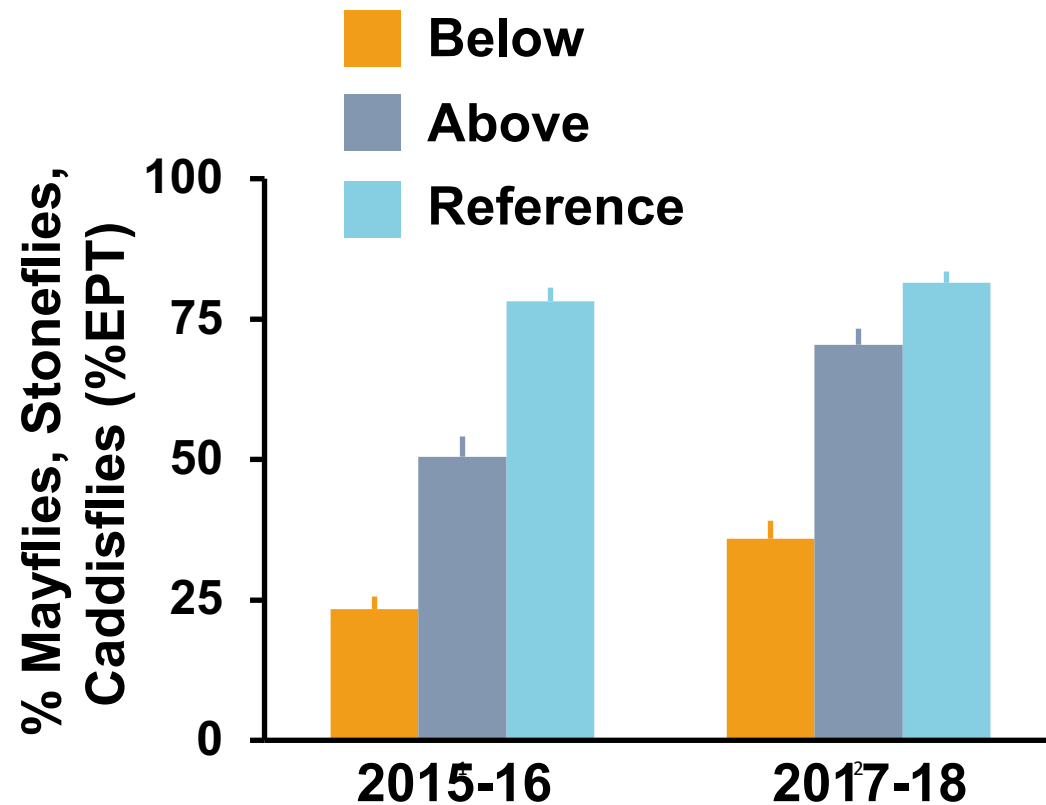


2016



2017

# Proportion of mayflies, stoneflies, and caddisflies (EPT) increased after 2017 high flows



Giant Stonefly, *Pteronarcys princeps*

# New EPT taxa below reservoir after 2017 high flows

*Epeorus* sp.



*Ameletus* sp.

*Rithrogena* sp.



*Ephemerella excrucians*

*Caudatella hystrix*

*Caudatella heterocaudata*

*Attenella* sp.

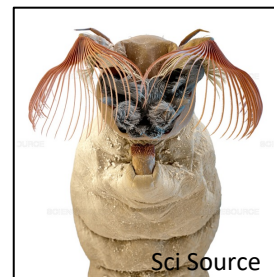


*Glossosoma* sp.

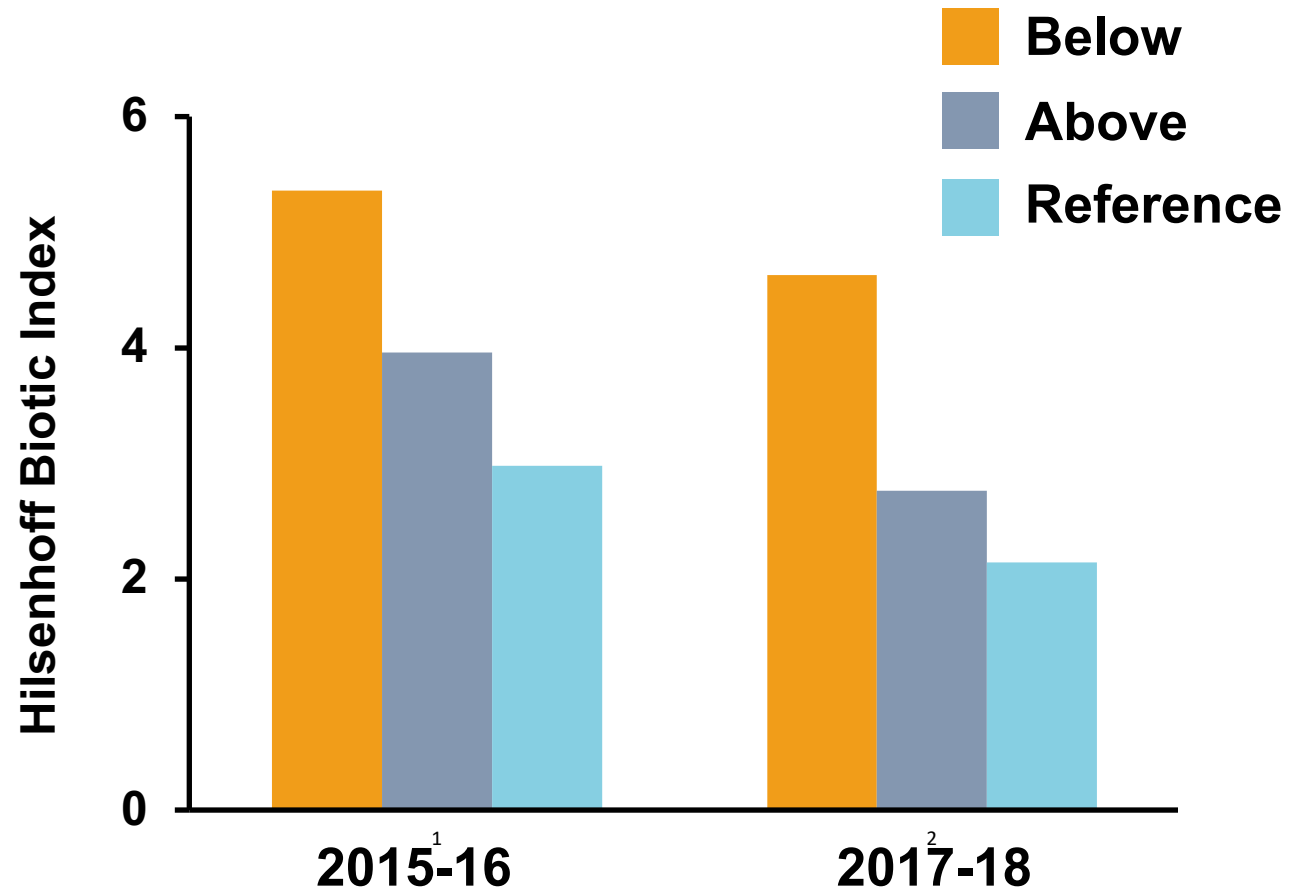
*Isoperla* sp.

*Prosimulium* sp.

*Helodon* sp.



# “Tolerant” fauna reduced after 2017 high flows



chironomid larva, Neil Fal, UK Wildlife

