

# Introduction

Tundra fires can significantly impact nearby water bodies by adding nutrients through lateral transportation throughout the landscape altering ecosystem processes with consequences for community composition of flora and fauna. Warming in the arctic is coincident with an increase in the frequency and severity of wildfires. It is unclear what are the expected shifts in community ecology as a consequence of changes in fire regime. We conducted point count surveys across 21 lakes on Yup'ik territory of the Yukon-Kuskokwim Delta of Alaska to characterize bird communities and assess if recent or historical tundra fires could have a significant impact on diversity, species richness, or ecological role of lake residing birds.



# Methods

- Recorded bird species, counts, and behavior at lakes nested in recently burned, historically burned, and unburned landscapes.
- Sampled over two week timespan
- Calculated array of diversity metrics to describe differences between control sites and sites burnt in 2015 and 1972

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# Impact of Tundra Fires on Bird Species Diversity in Lakes of the Yukon–Kuskokwim Delta Noah Henkenius<sup>1</sup>, Nigel Golden<sup>1</sup>, Susan Natali<sup>1</sup> <sup>1</sup> Woodwell Climate Research Center







Figure 3: Species diversity as assessed between control site (unburnt), 2015 burn site, and 1972 burn site. Our results suggest that there was not a statistically significant difference in species richness between sites (F=2.752, Pr(>F)=0.0906)

# Results

#### Figure 1: Total bird counts for each burn type.

#### Figure 2: Total bird counts for each burn type by dietary preference and activity

Figure 4: Species richness as assessed between control site (unburnt), 2015 burn site, and 1972 burn site. Our results suggest that there was not a statistically significant difference in species richness between sites (F=2.505, Pr(>F)=0.11)

### Study Area



# Discussion

• We found an overall higher number of bird species within the 1972 burn site (N = 7)compared to the unburnt site (N = 7) and 2015 burn site (N = 7) (Figure 1)

• Our results suggest that the lakes within the 2015 burn area had the highest number of aquatic omnivores in them (species such as Black scoter, Northern Pintail, American Wigeon, Long-tailed duck)

The unburnt and 1972 burn sites had comparatively higher numbers of Aquatic carnivores in them (species such as Pacific Loons, Red-necked grebes, etc.; Figure 2)

# **Conclusions & Future Work**

Our results indicate there could be some evidence that lakes that have recently experienced fire have a different species composition. Future

investigation should be focused on investigating if there is a relationship between the abundance of birds and the changes that occurred within lakes of different burn histories in this region.

Additional sampling could help capture potential environmental gradients within this system.