



# Multi-decadal patterns of vegetation succession after tundra fire on the Yukon-Kuskokwim Delta, Alaska

GV Frost, RA Loehman, LB Saperstein, MJ Macander, PR Nelson, DP Paradis, SM Natali. 2020. *Environmental Research Letters* 15:025003.



## Science Questions

Fire is increasingly frequent in Low Arctic tundra, but its long-term impacts remain poorly understood. Current knowledge is mainly based on short-term impacts of fire in tussock tundra.

- How do vegetation and species-diversity change in the decades after fire in lichen-dominated tundra?
- How do soil properties and thaw depth change after fire?
- What biophysical factors most influence landscape vulnerability and resilience to tundra fire?

## Analysis

We collected field measurements and developed quantitative cover maps of plant functional types using Landsat data to characterize tundra succession across a 45-year fire history gradient.

## Results

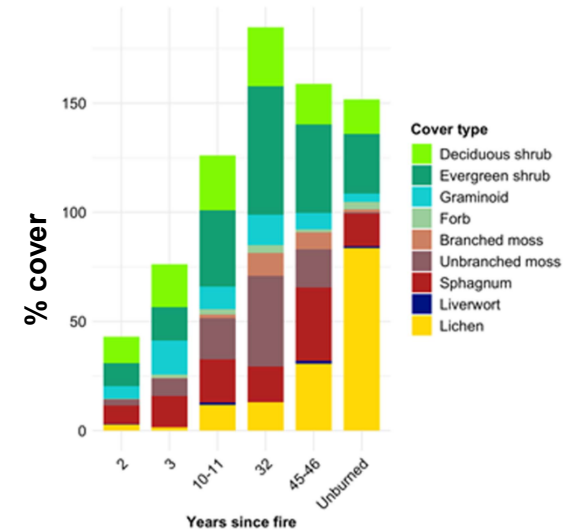
Historically, the functional diversity of YKD tundra has recovered from fire within several decades. Lichen mortality is high, but most moss cover and surface peat tends to survive fire, which favors survival of existing vascular plants and limits seed recruitment. Shrub cover increases after fire, but this increase does not necessarily persist over time.

## Significance

This study improves our ability to predict and monitor post-fire succession across Arctic climatic and environmental gradients.

## Award Information

This work was supported by NASA ABoVE Award #NNH16CP09C.



*We applied field measurements of vegetation to characterize successional change and map the cover of plant functional types across fire history gradients on the YK Delta.*

