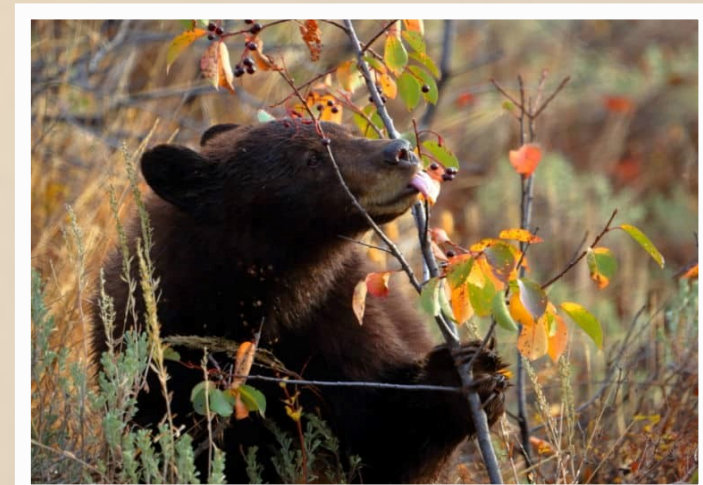


# How Fire Severity Influences Black Bear Space Use



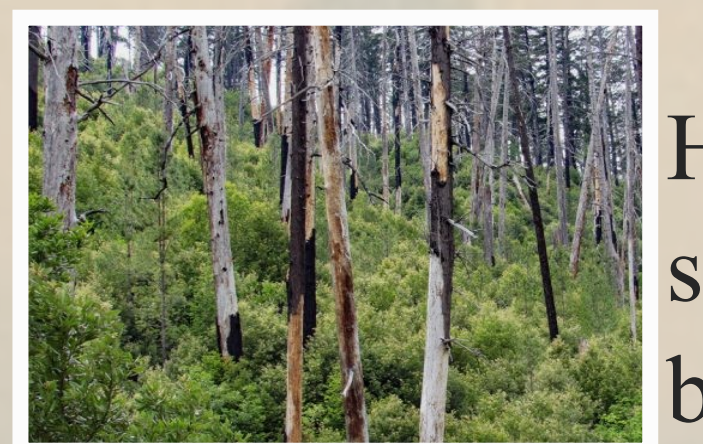
## Introduction

The American black bear (*Ursus americanus*) is the most common bear in North America and found throughout Utah in a variety of habitat types.



Food source availability is believed to be the driving force behind black bear movement, habitat selection, and home range formation.

Wildfire is a major disturbance in the forested regions black bears occupy and can cause dramatic habitat changes that displace black bears.

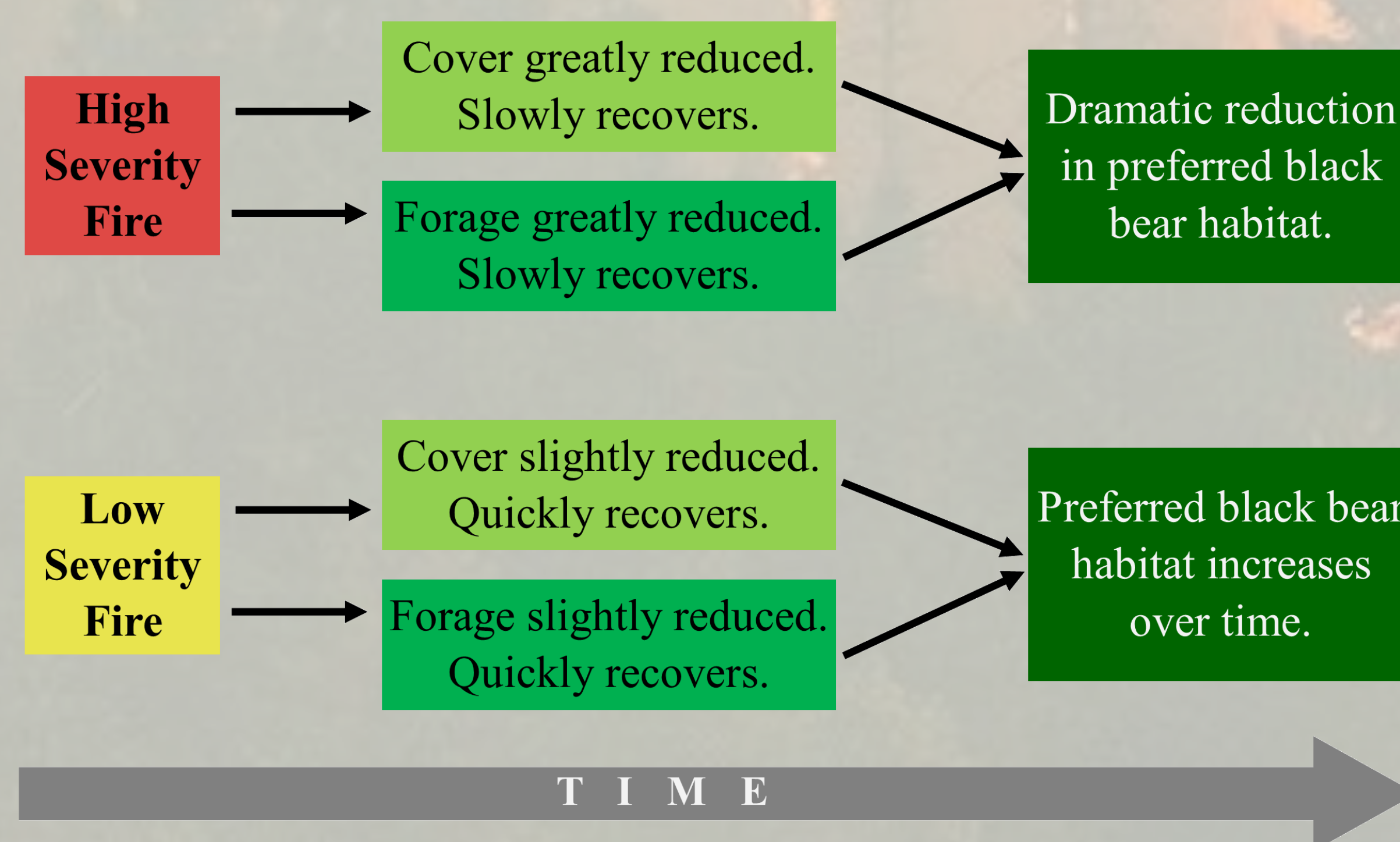


However, because fires can create landscape mosaics of vegetation types and support growth of early successional plant species, post-burn areas can prove to be valuable for black bears over time.

**I examined how fires throughout Utah state have influenced black bear space use over time.**

## Hypotheses

- High severity patches will remain depleted of forage and cover for several years post burn.
- Low severity patches will support increased growth of early successional plant species and provide more forage and cover.

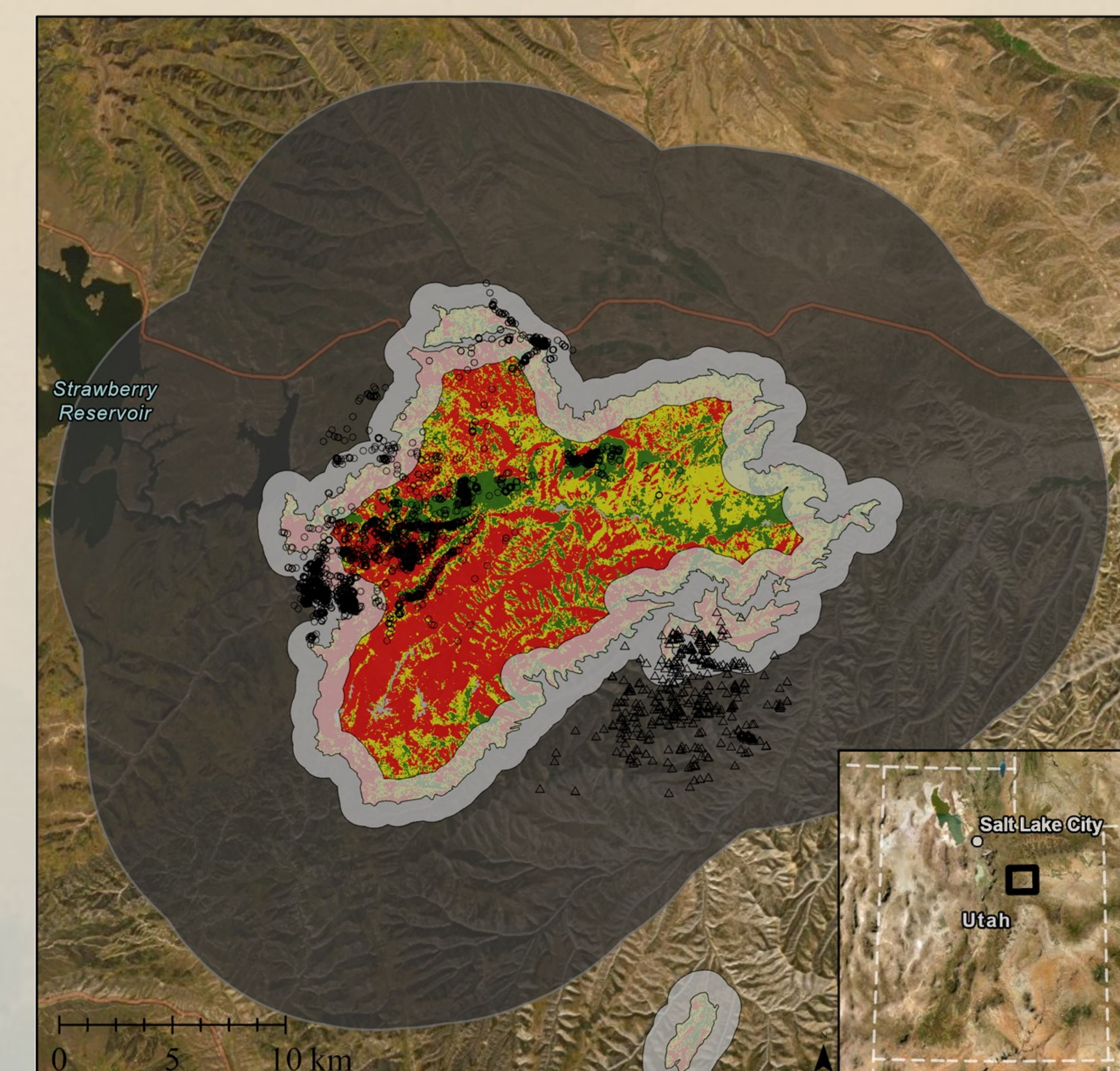


Therefore, black bears will avoid high severity burned patches, but will select for low severity burned patches and fire edges. Selection for low severity patches will be stronger 2-5 years post burn.

## Methods

### Determined “fire categories” of areas available to bears

- Fire Core
  - High Severity Burn
  - Low Severity Burn
  - Unburned
- Fire Edge
  - High Severity Burn
  - Low Severity Burn
  - Unburned
- Outside Fire Perimeter
  - 10k Buffer



Fire categories for the Dollar Ridge fire, along with locations of two individual black bears

### Determined “time since burn categories” as it pertains to each bear location

- <1 year
- 2 years
- 3-5 years
- 5-10 years
- >10 years

### Based on movement data from 77 GPS collared black bears distributed throughout Utah state:

- Totaled number of observed black bear locations within each fire category and within each time category
- Compared to number of black bear locations expected in each category, if black bears were distributed randomly across the landscape

This was used to determine whether black bears are selecting for specific locations and designated categories.

**This research provides crucial insights for how to manage black bear populations following a fire as well as how to manage for fire that will benefit black bear viability.**

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