Playing with fire: mountain pine beetles in a post-burn environment

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Management Options

Logging/Fire

- cut & burn individual affected trees
- cut/burn unaffected trees to create boundaries
- cut/burn unaffected trees to heterogenize the landscape

Fire

- can mimic a natural disturbance
- necessary in protected areas

BUT…

fire leaves live, partially burned trees

Main Objective

To determine whether burned lodgepole pine stands become sinks or sources for MPB…

Objectives

1. **To track MPB population changes in burned and unburned stands**
2. **To determine MPB colonization differences between burn severities**
3. **To relate MPB colonization to fire injury at the tree level**
4. **To determine MPB reproductive success in burned stands**
5. **To observe responses of MPB natural enemies/competitors to fire**

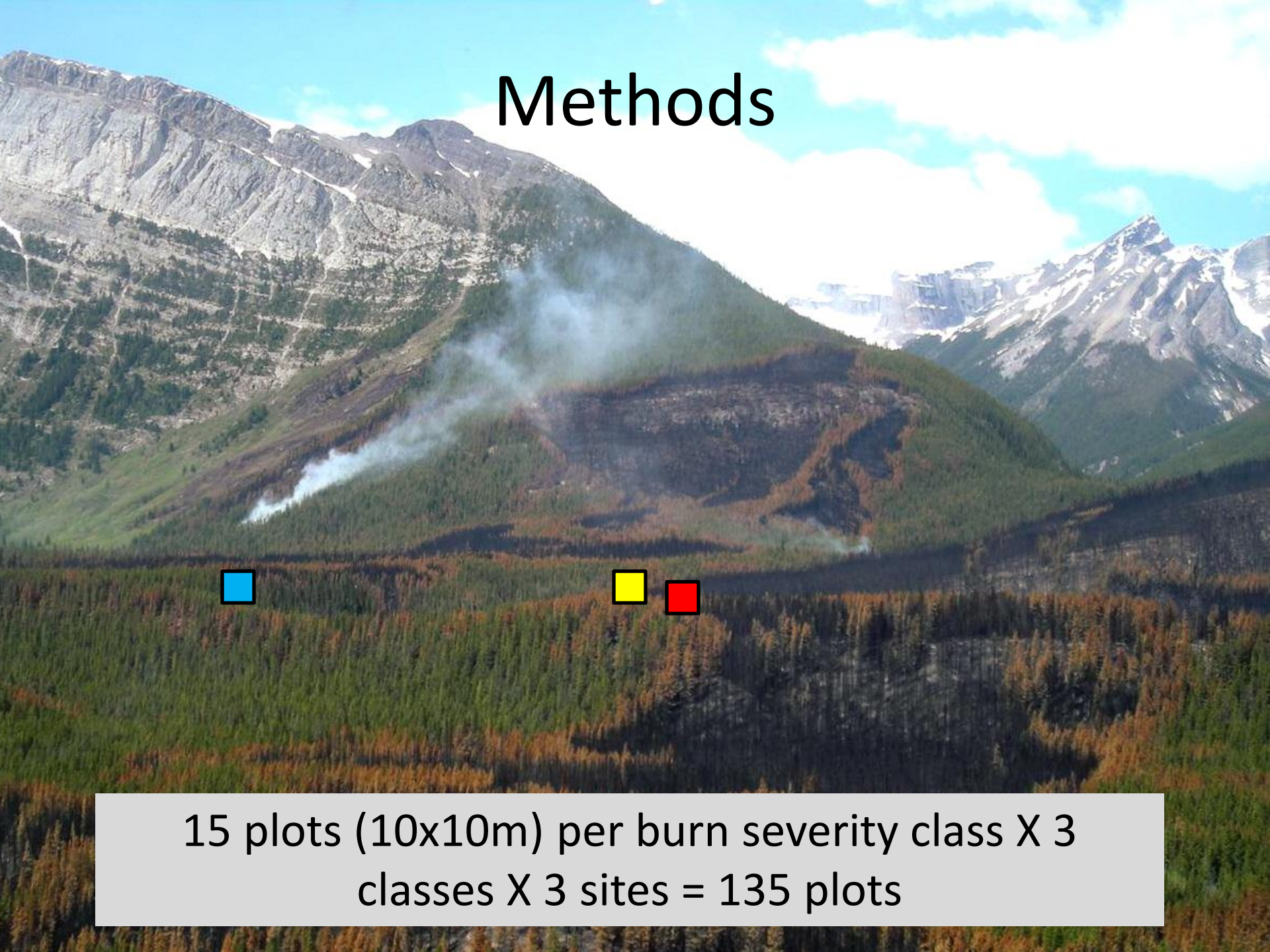
Study Sites

Saskatchewan Crossing

Ya Ha Tinda Ranch

Mt. Nestor

Methods



15 plots (10x10m) per burn severity class X 3 classes X 3 sites = 135 plots

Methods—Spring

- % of trees killed by MPB

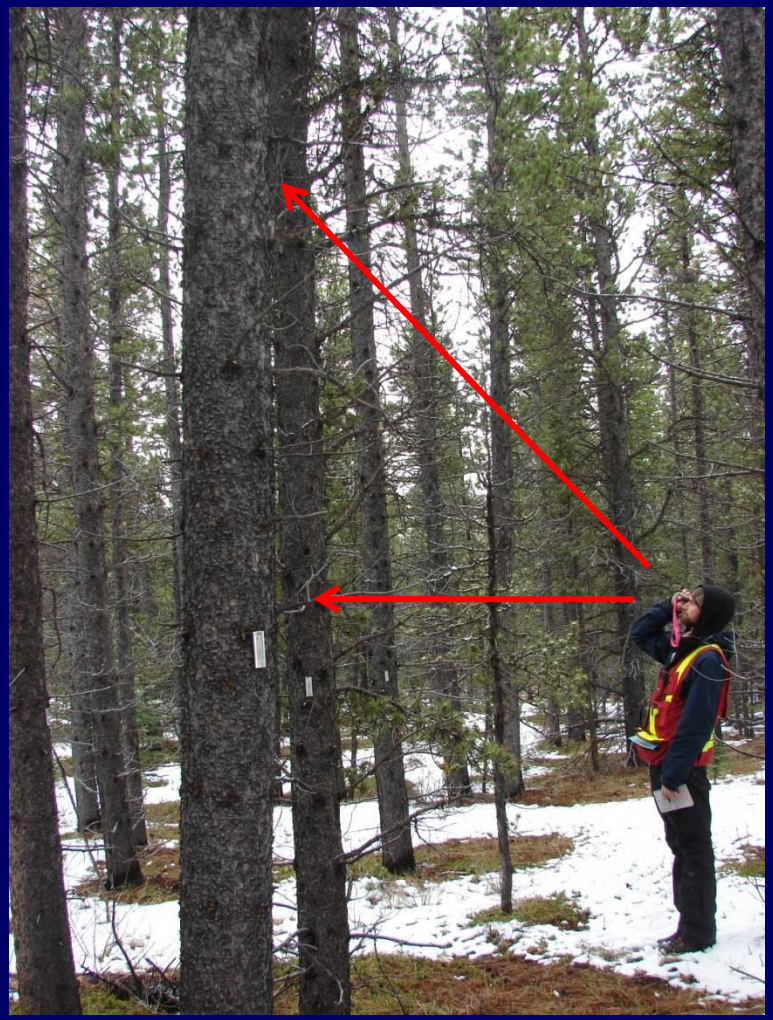
- Each tree:
- length of maternal galleries
- # of larval galleries
- indices of fire injury

Fire injury indices

Bole char

Duff char

Bole char height



Trapping

- Flight intercept traps
- Landing rate traps

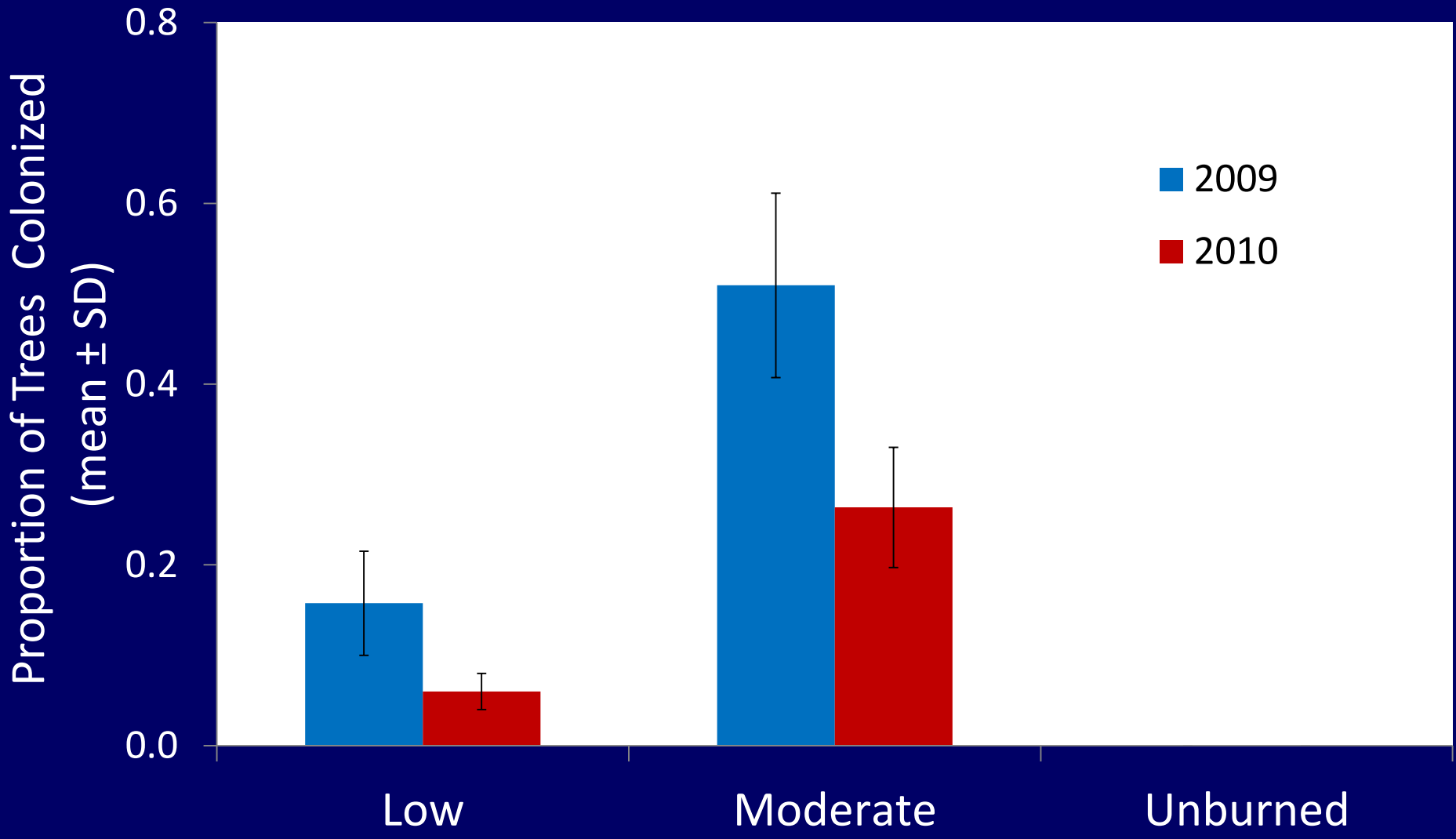
Trapping

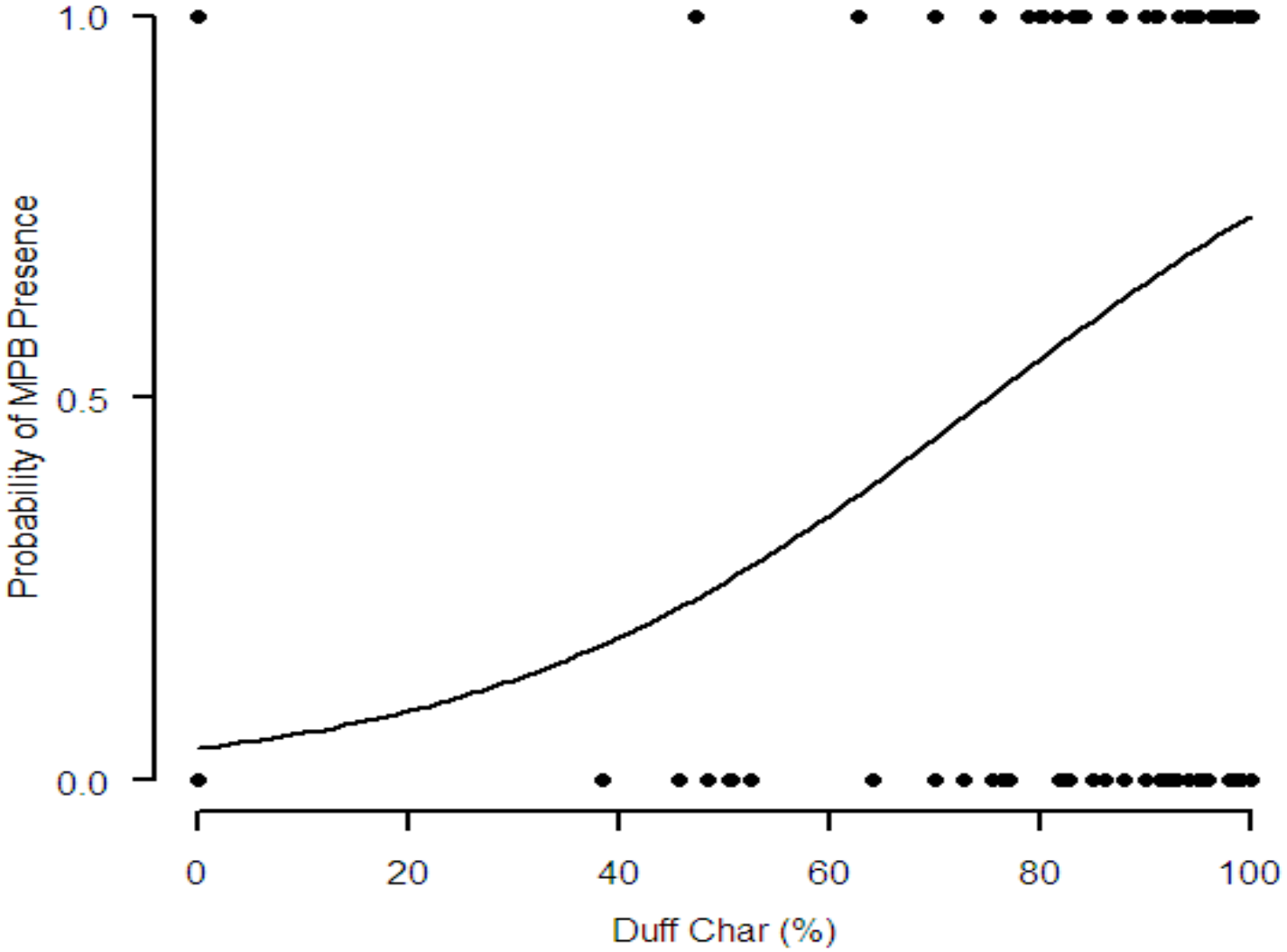
- Emergence traps

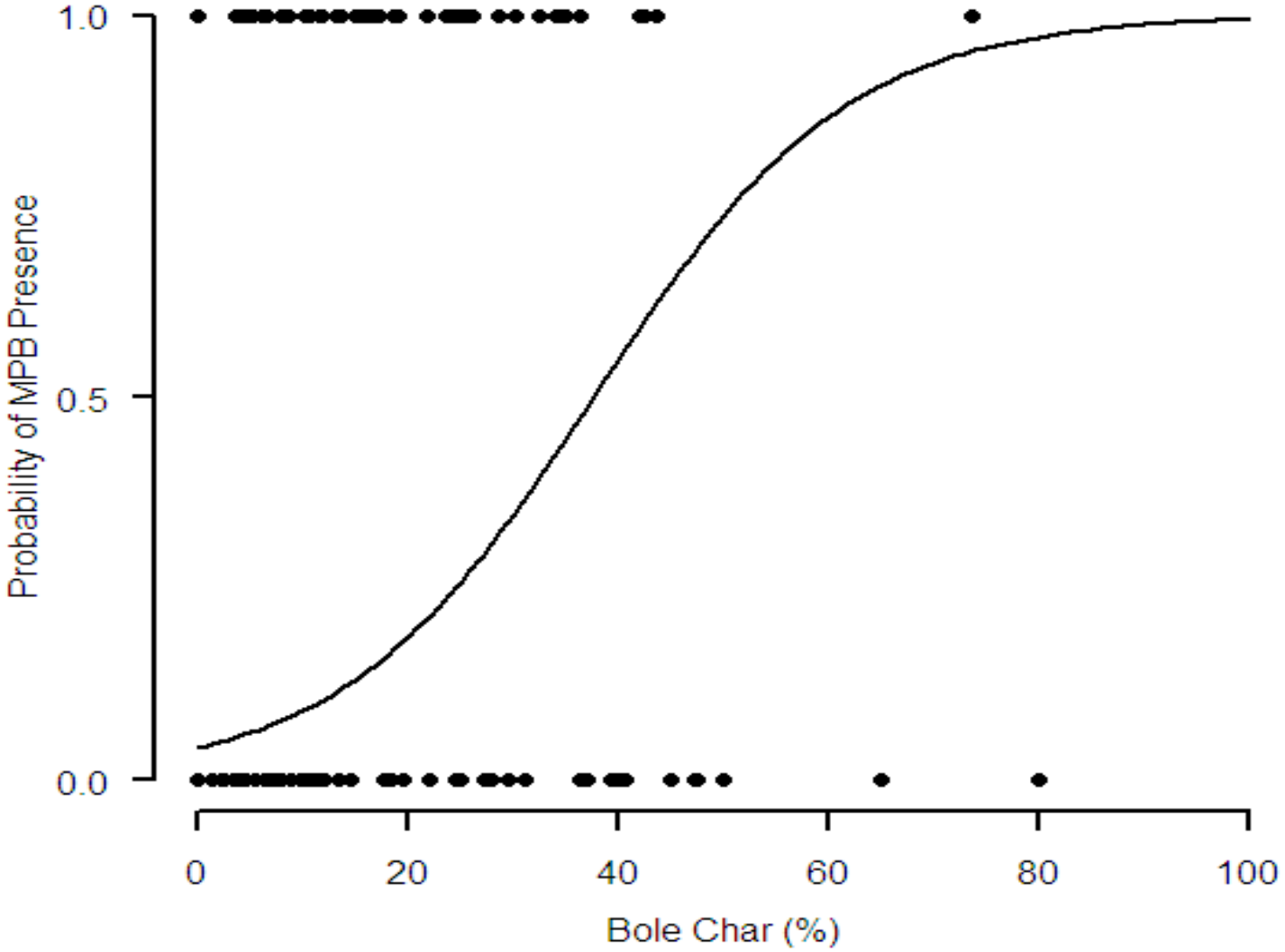
Methods—Fall

- # of entrance holes
- Collect traps
- MPB productivity per tree

Preliminary Results—Mt. Nestor




1.0
0.5
0.0
Probability of MPB Presence
0
20
40
60
80
100
Duff Char (%)


1.0
0.5
0.0
Probability of MPB Presence
0
20
40
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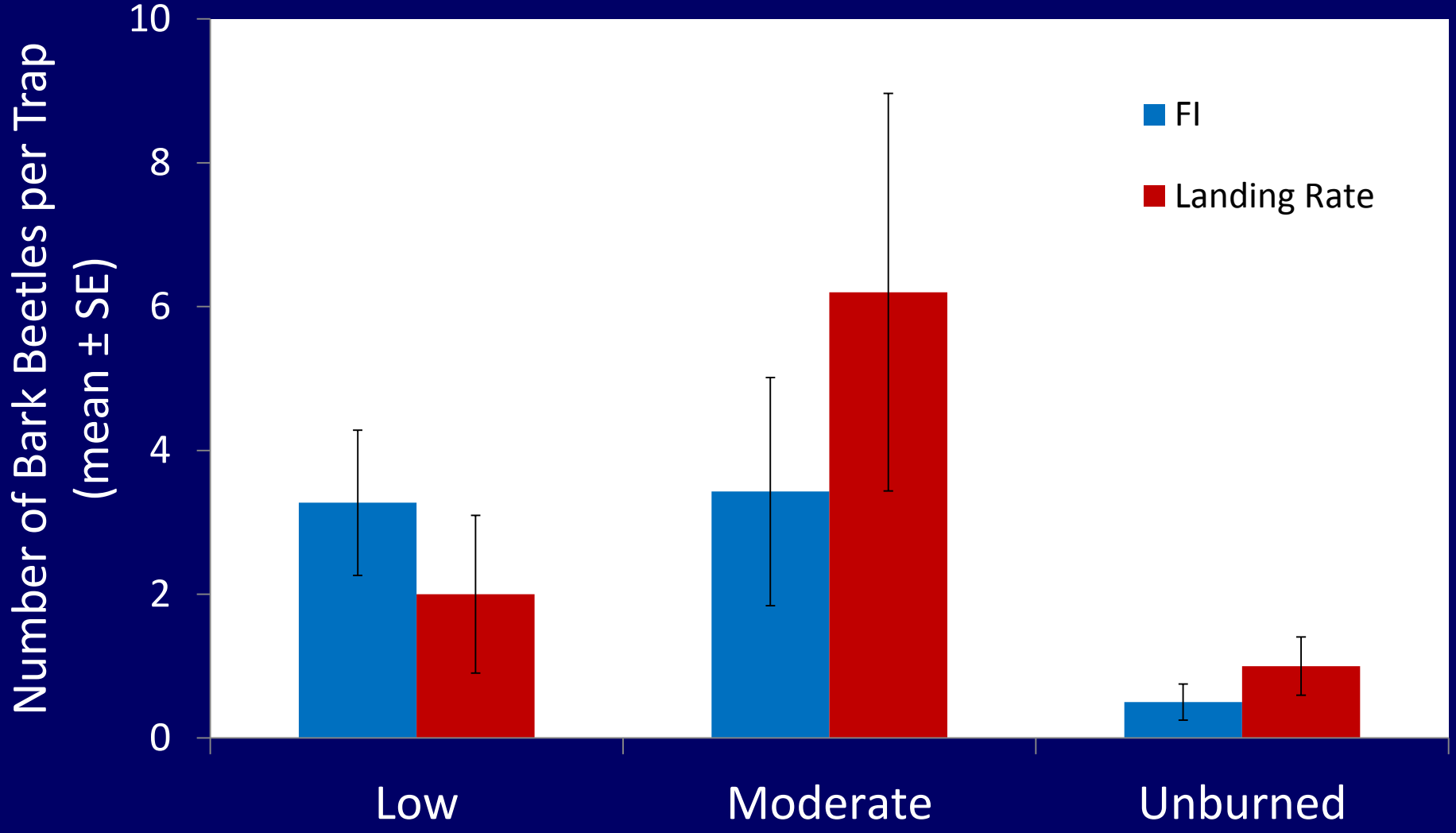
80
100
Bole Char (%)

Current Work—Bark Community



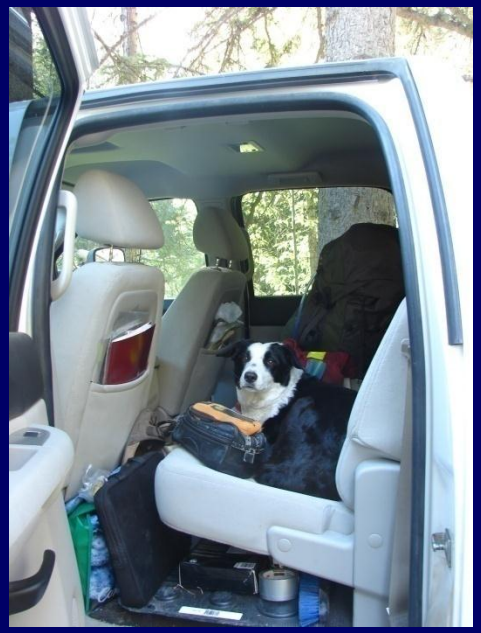
Future Work

Mark-Recapture Study—Can MPB produced in a burned stand colonize adjacent healthy trees?

Population Dynamics—Create a population model for MPB in burns and healthy stands

Reproduction—Phloem sandwiches

Acknowledgements



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Parks Canada
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Alberta Sport, Recreation, Parks, and Wildlife Foundation
Alberta Conservation Association
Assistants and Volunteers!

http://mpb.alberta.ca/files/images/woods_on_fire.jpg

Thank you!