

Mycorrhizal fungi, mountain pine beetle, and seedling establishment

Justine Karst, Paul Cigan, Gregory Pec,
Nadir Erbilgin, Suzanne Simard*, Janice
Cooke, JC Cahill

University of Alberta

*University of British Columbia



Research team



Funding:
NSERC

AB Conservation Association

Collaborator:

Foothills Research Institute

Supporting organizations:

Alberta SRD

Mikro-Tek

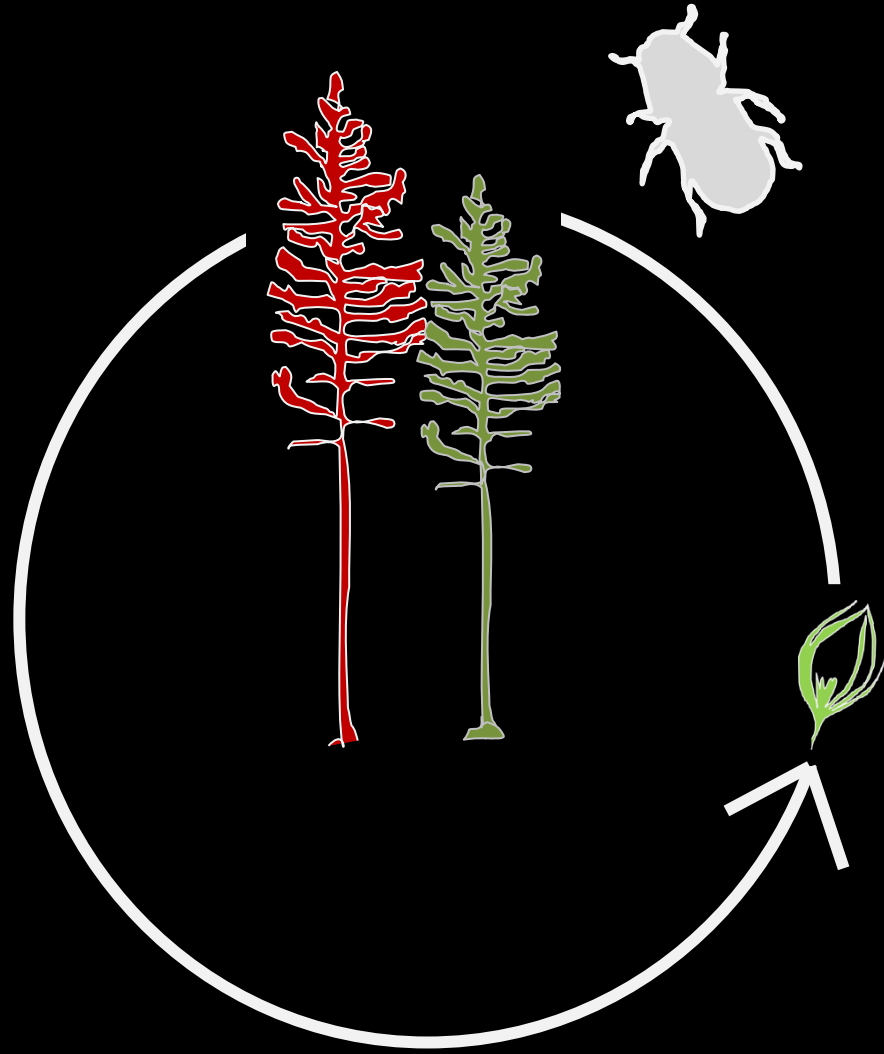
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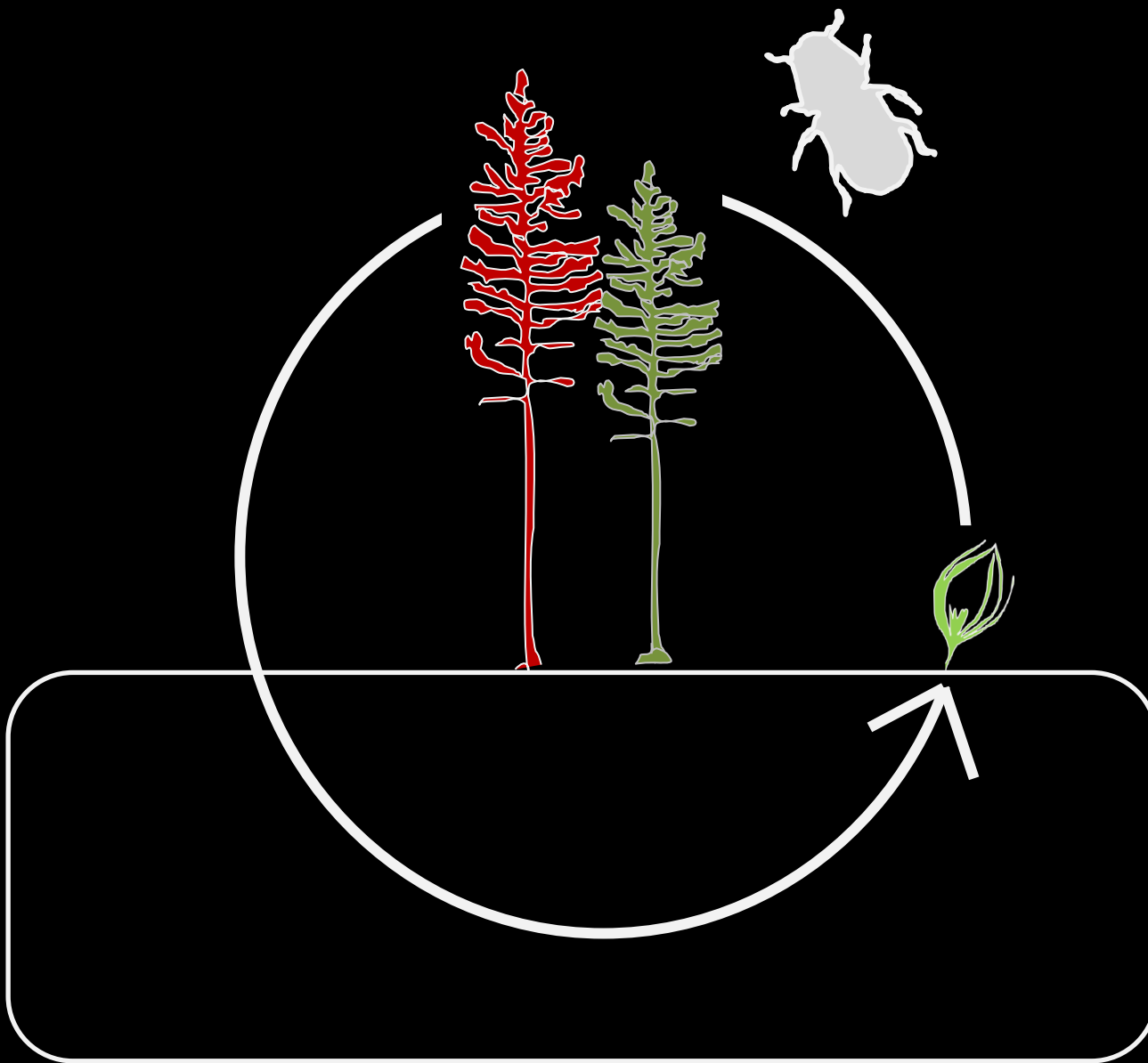
Sundre Forest Products Inc

Millar Western Forest Products Ltd

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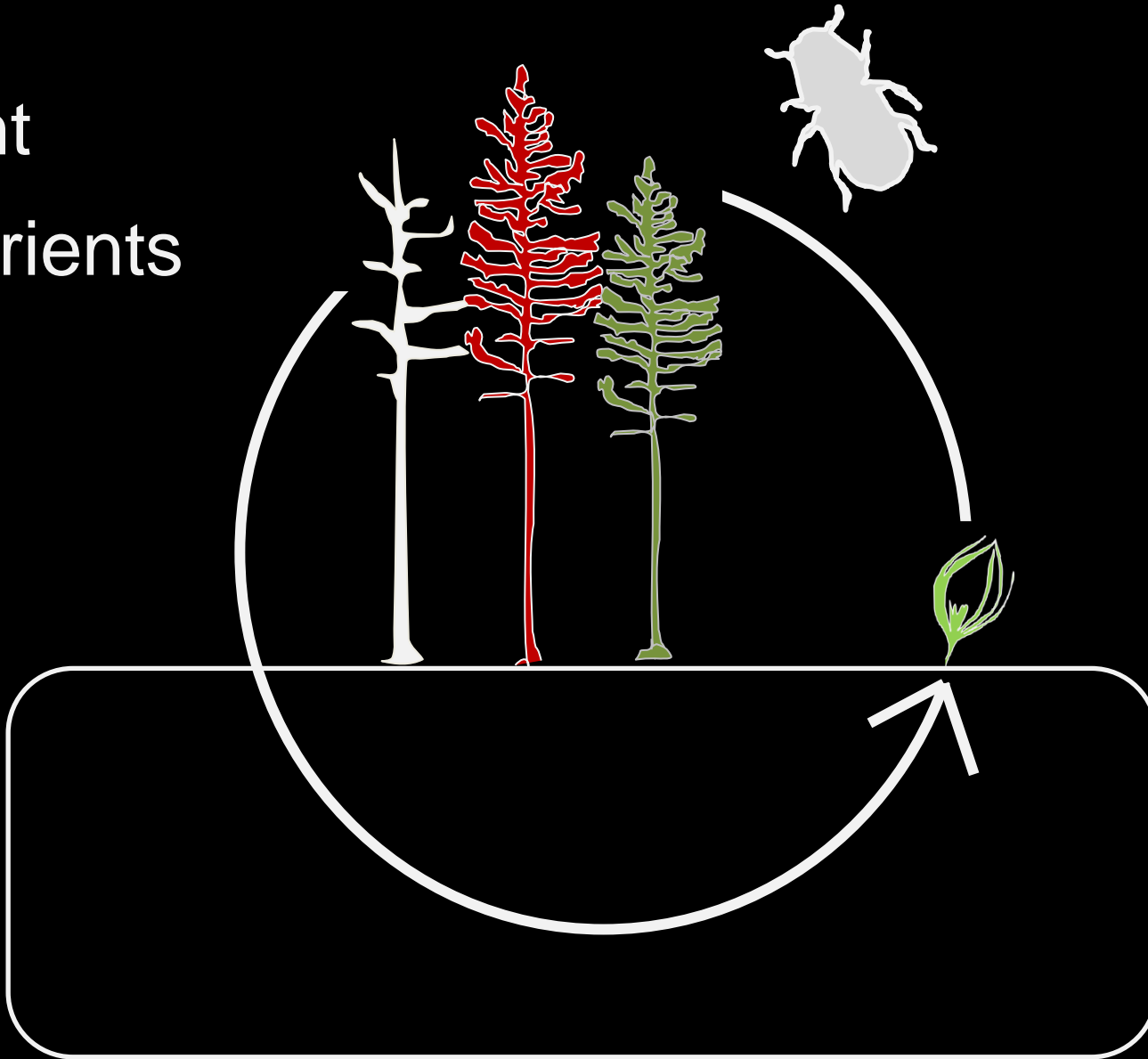




light
nutrients
neighbors

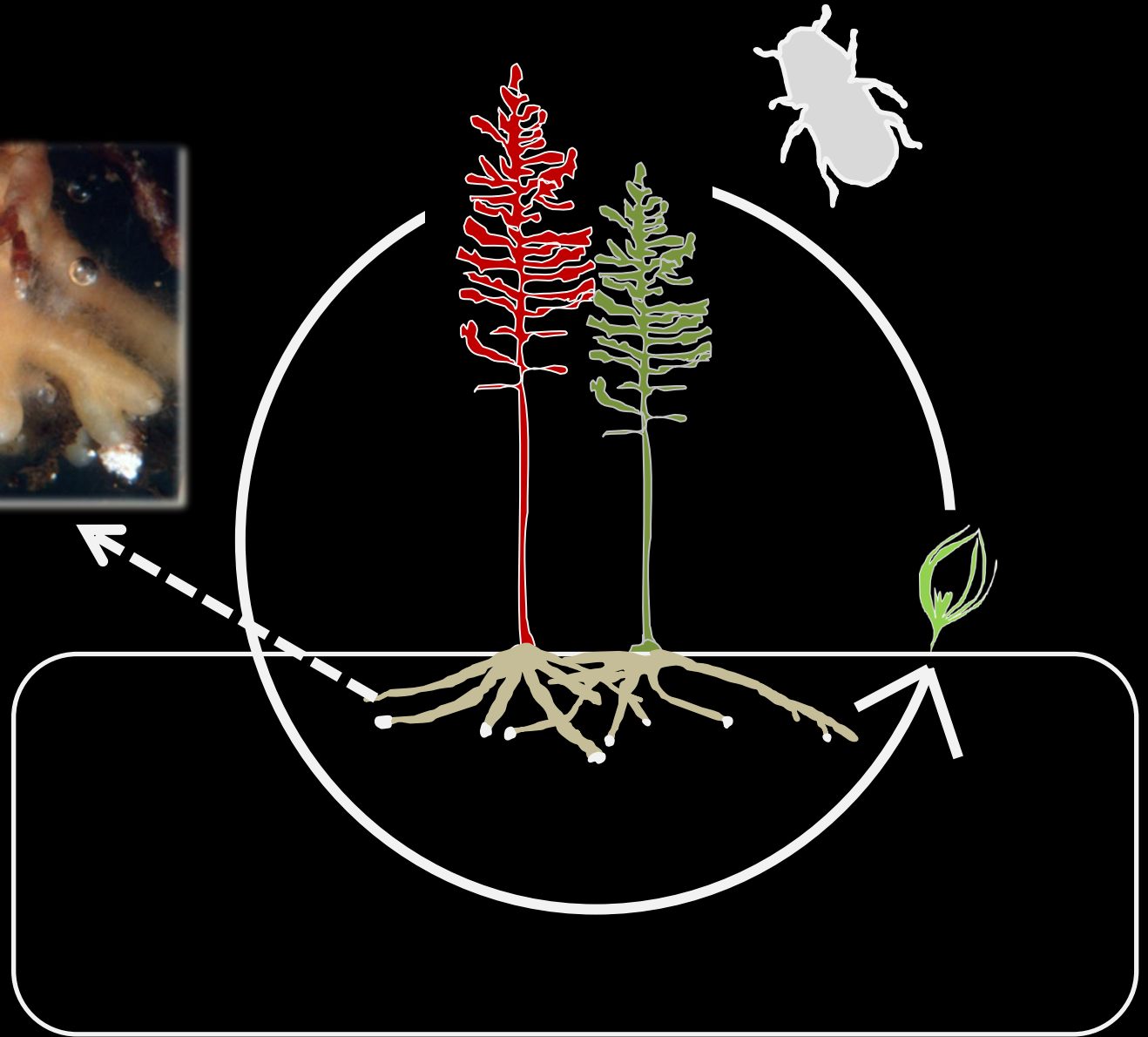


light
nutrients

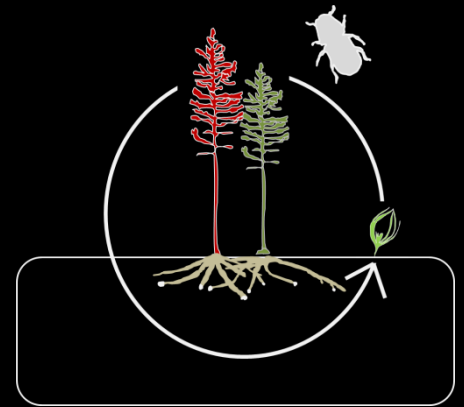
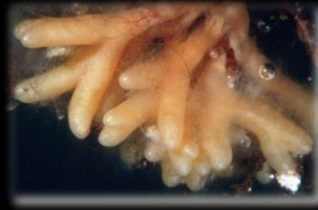


light
nutrients
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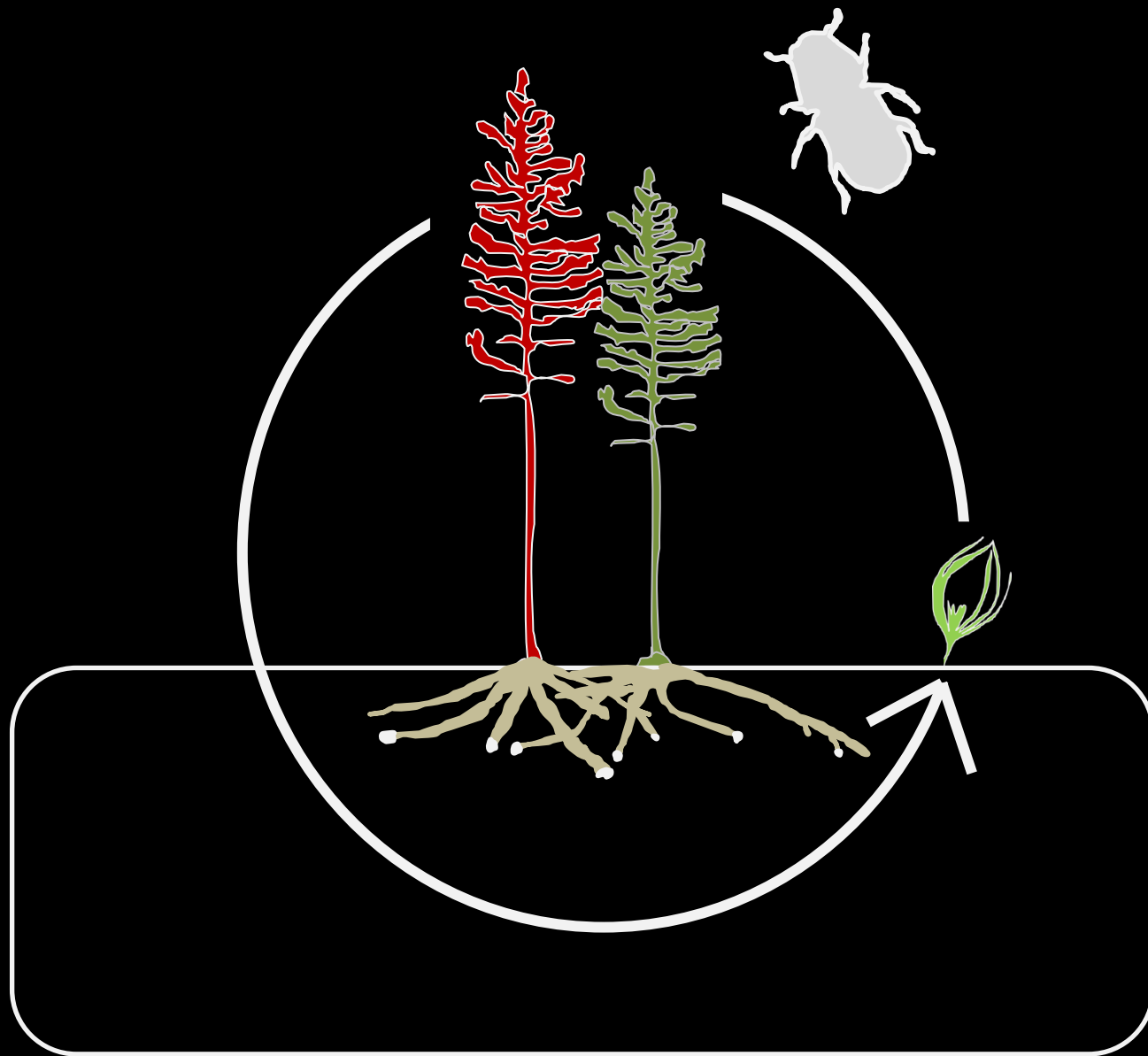


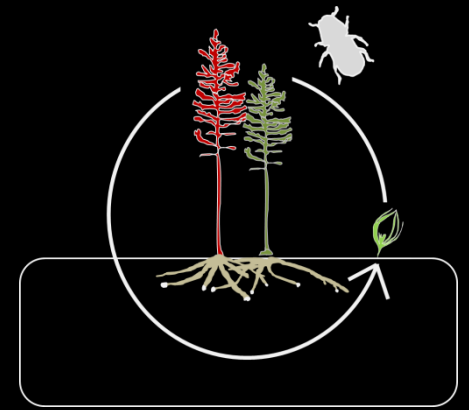


Ectomycorrhizas

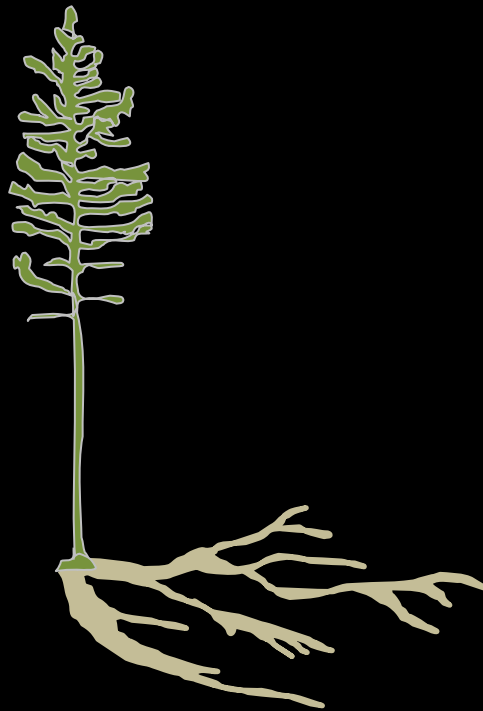
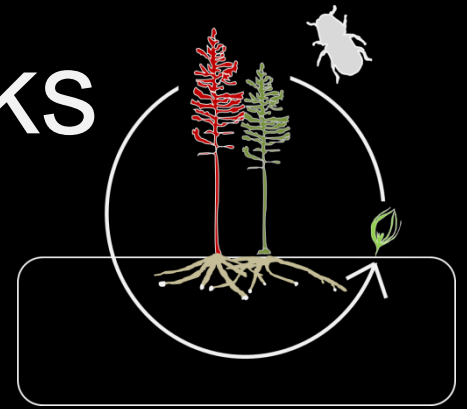


- Sensitive to soil nutrient levels
- Dependent on trees for carbon
- Responsible for seedling nutrient & water uptake
- Critical for seedling establishment and survival





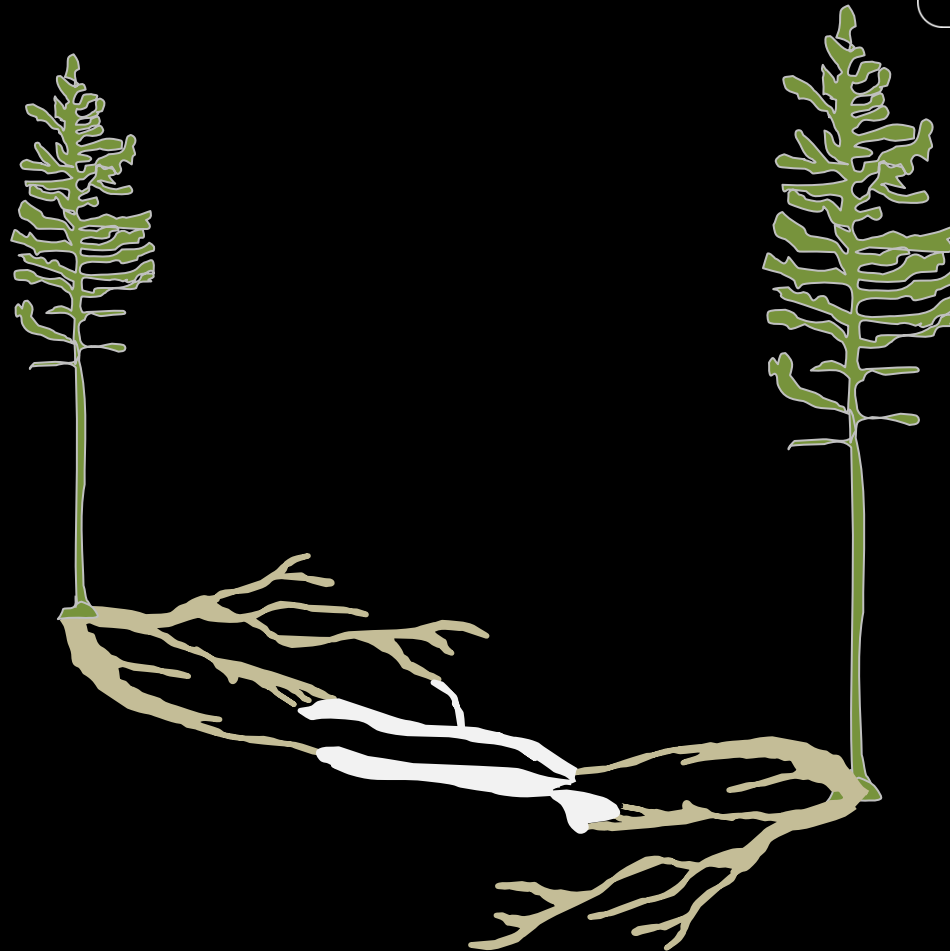
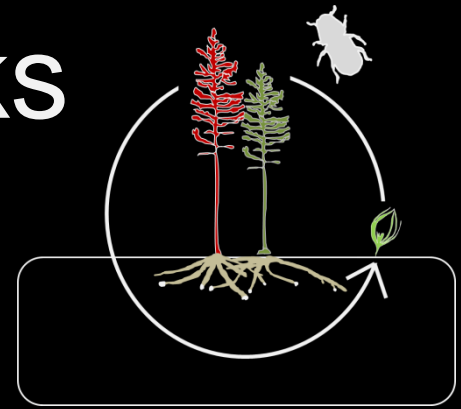
Ectomycorrhizal networks



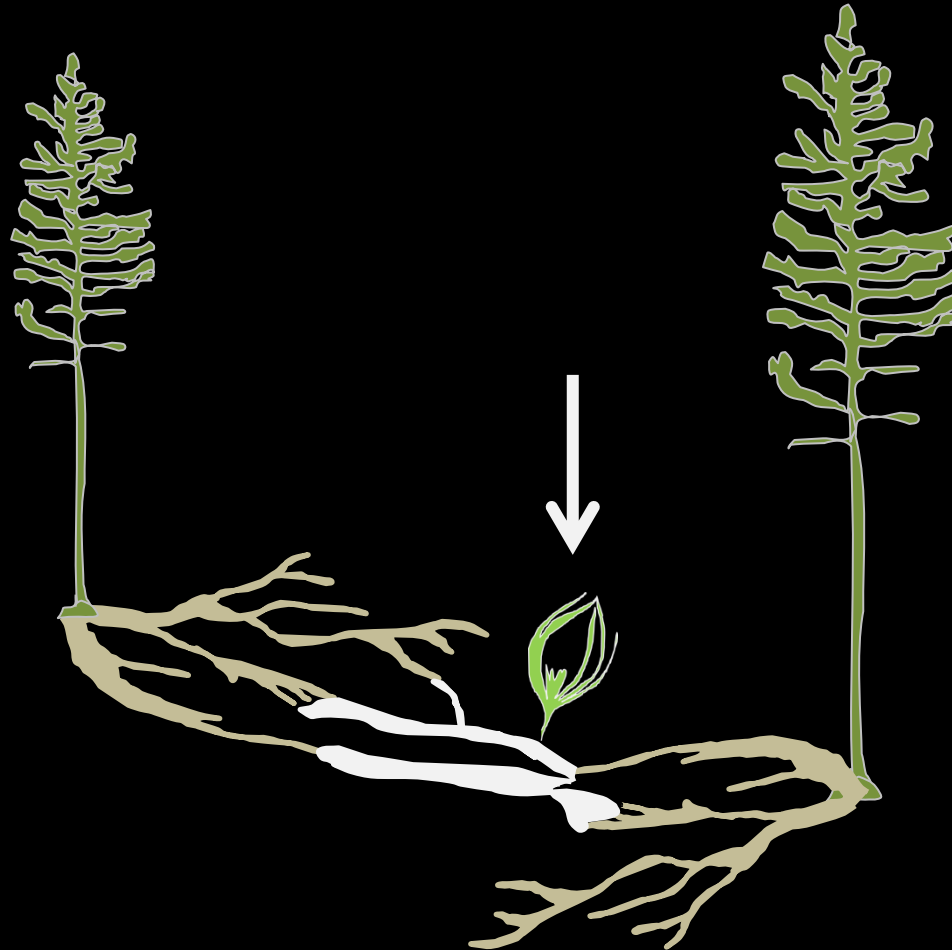
Ectomycorrhizal networks



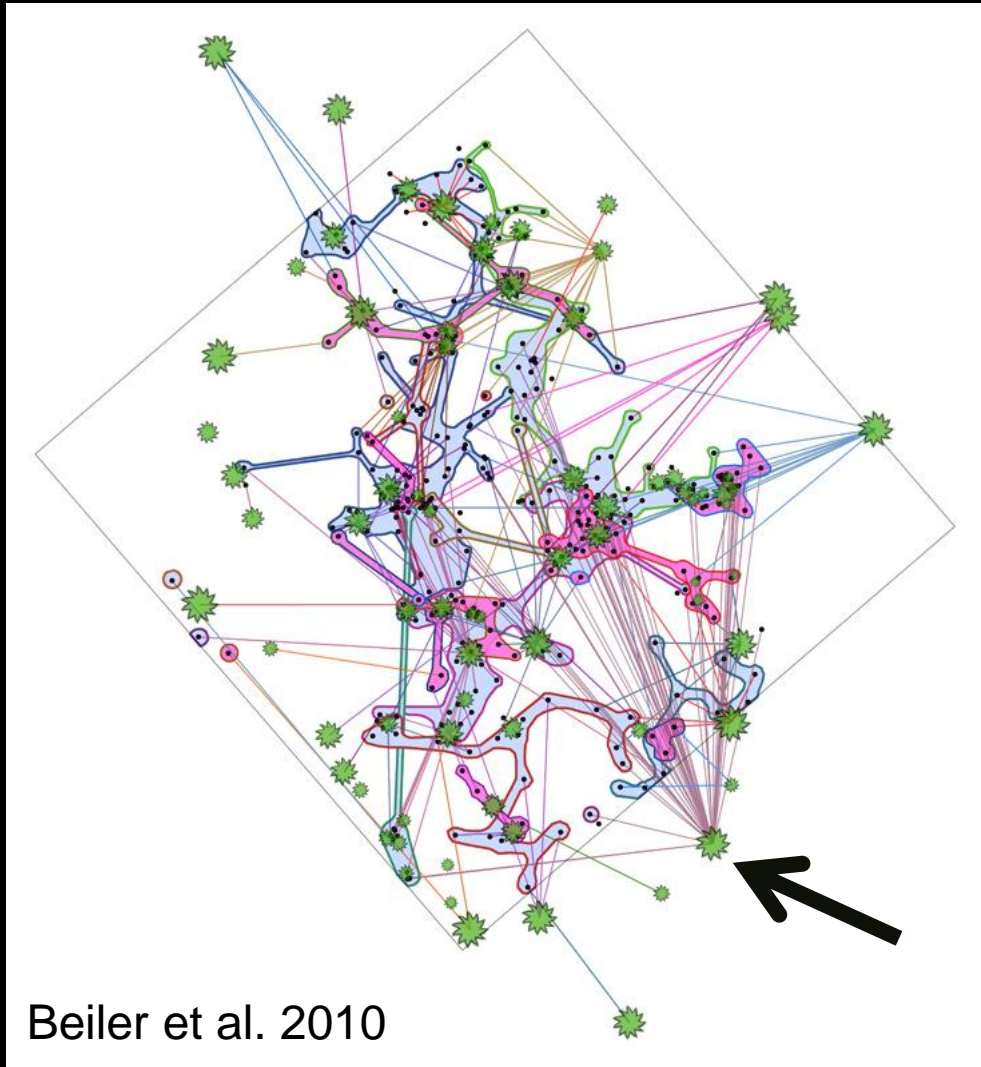
Ectomycorrhizal networks



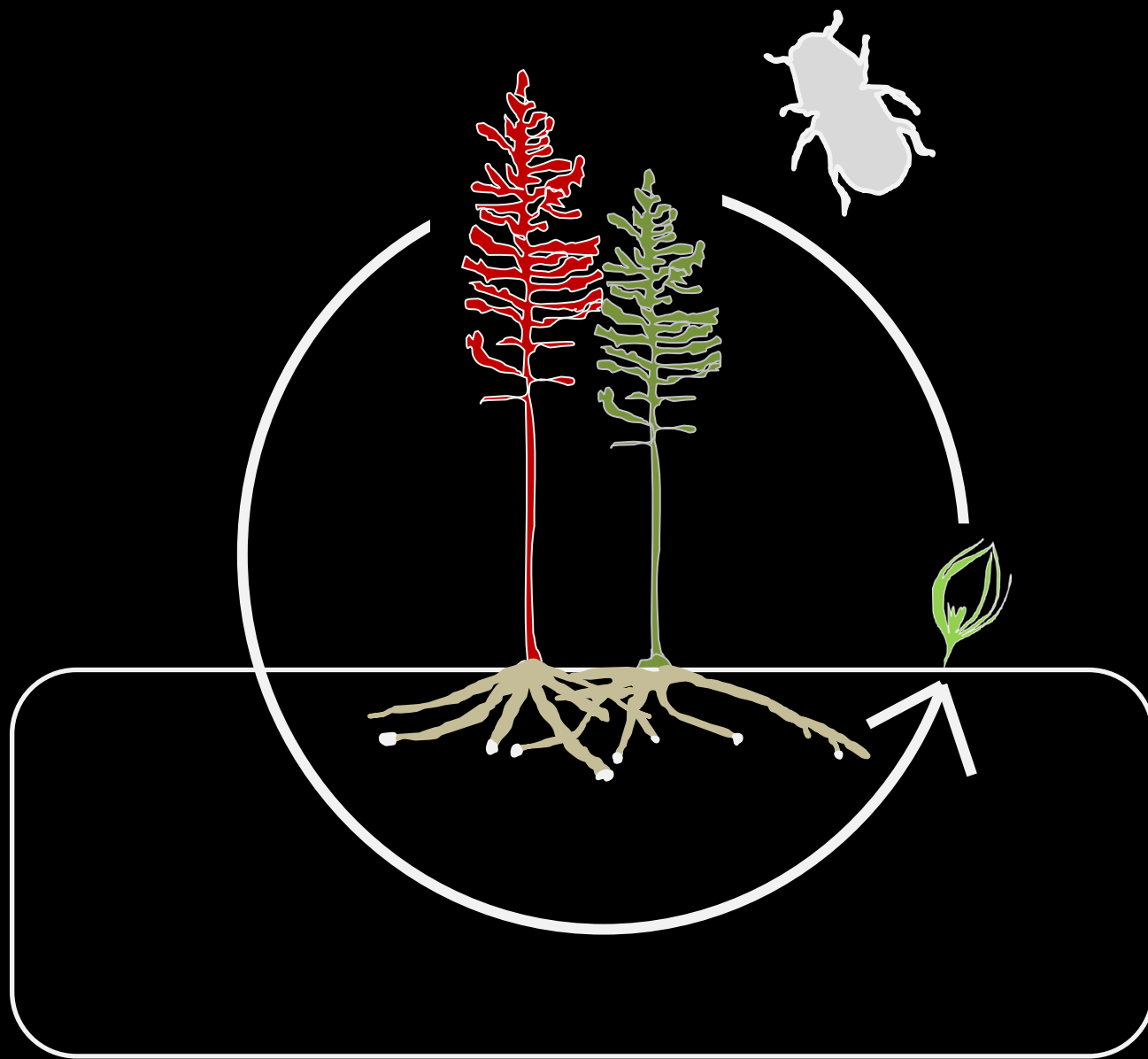
Ectomycorrhizal networks



Ectomycorrhizal networks

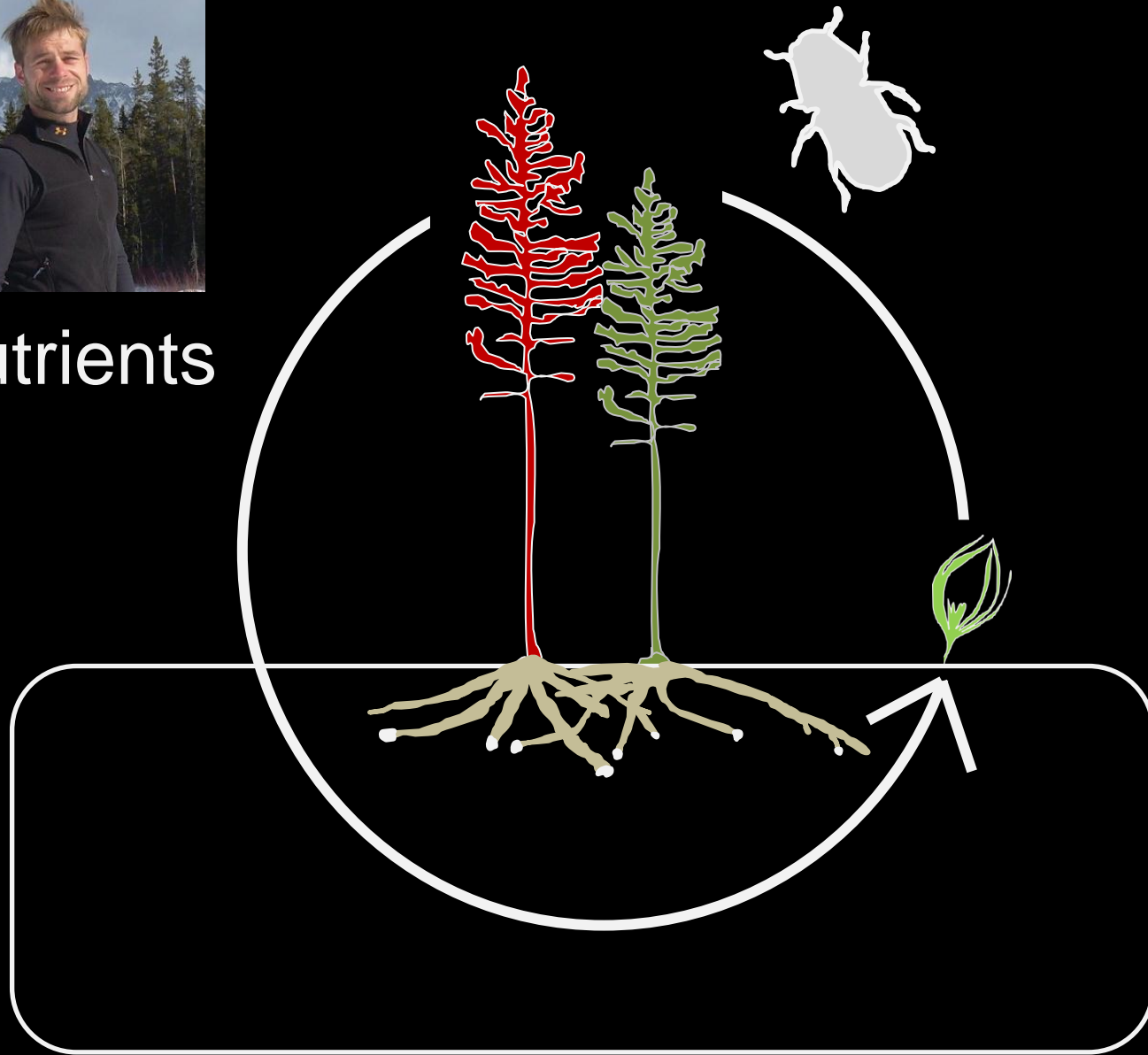


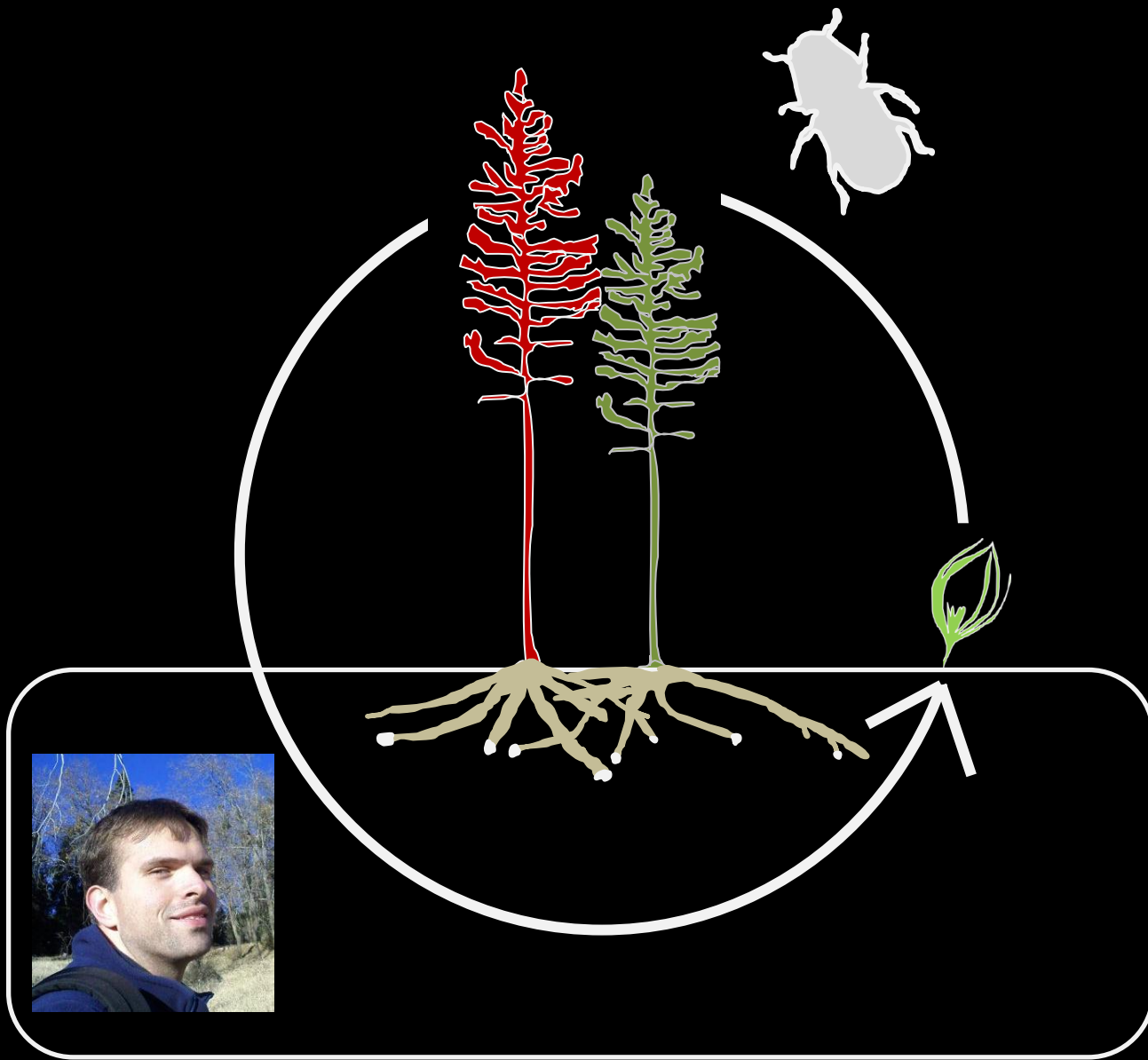
Beiler et al. 2010



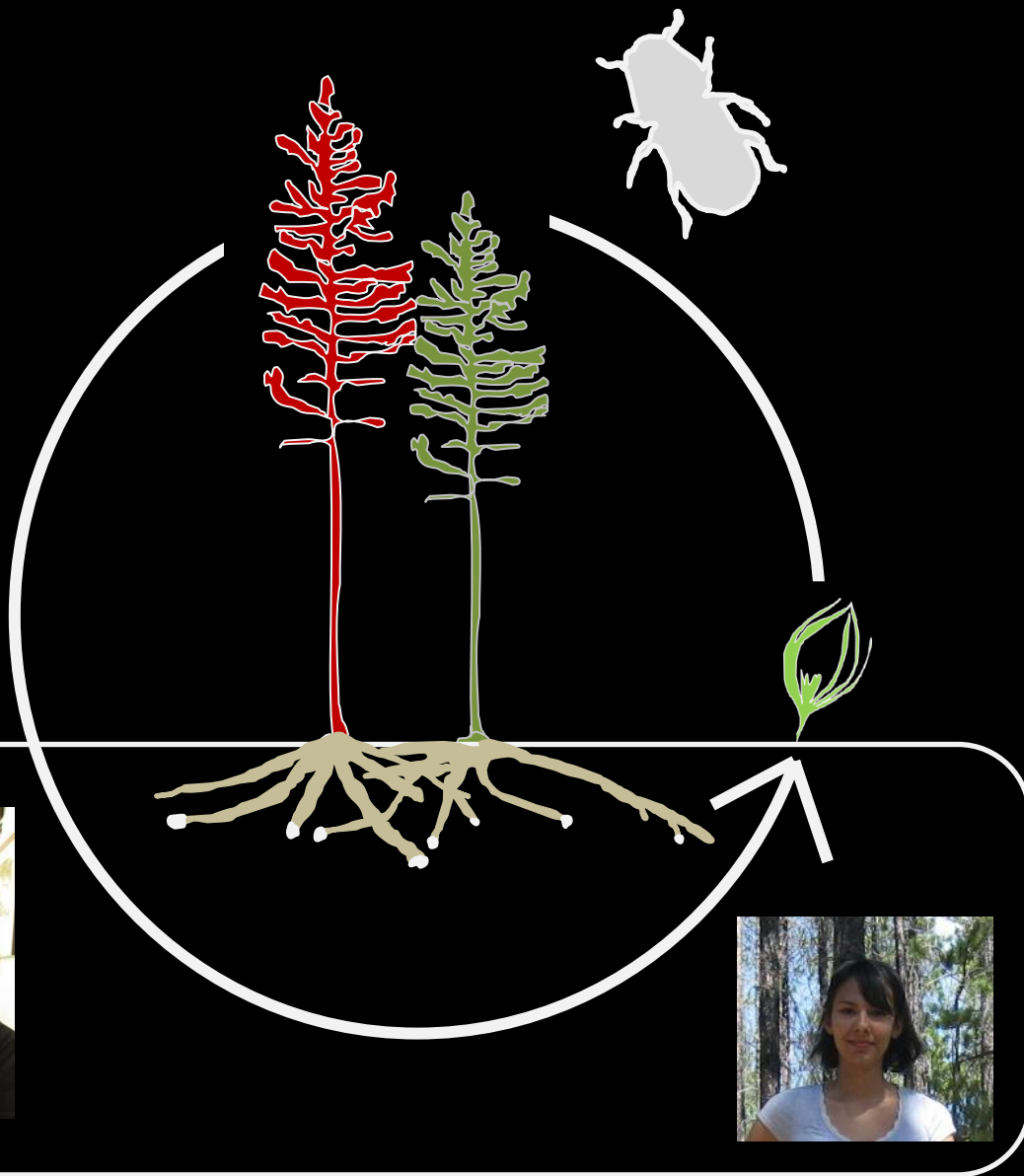


nutrients



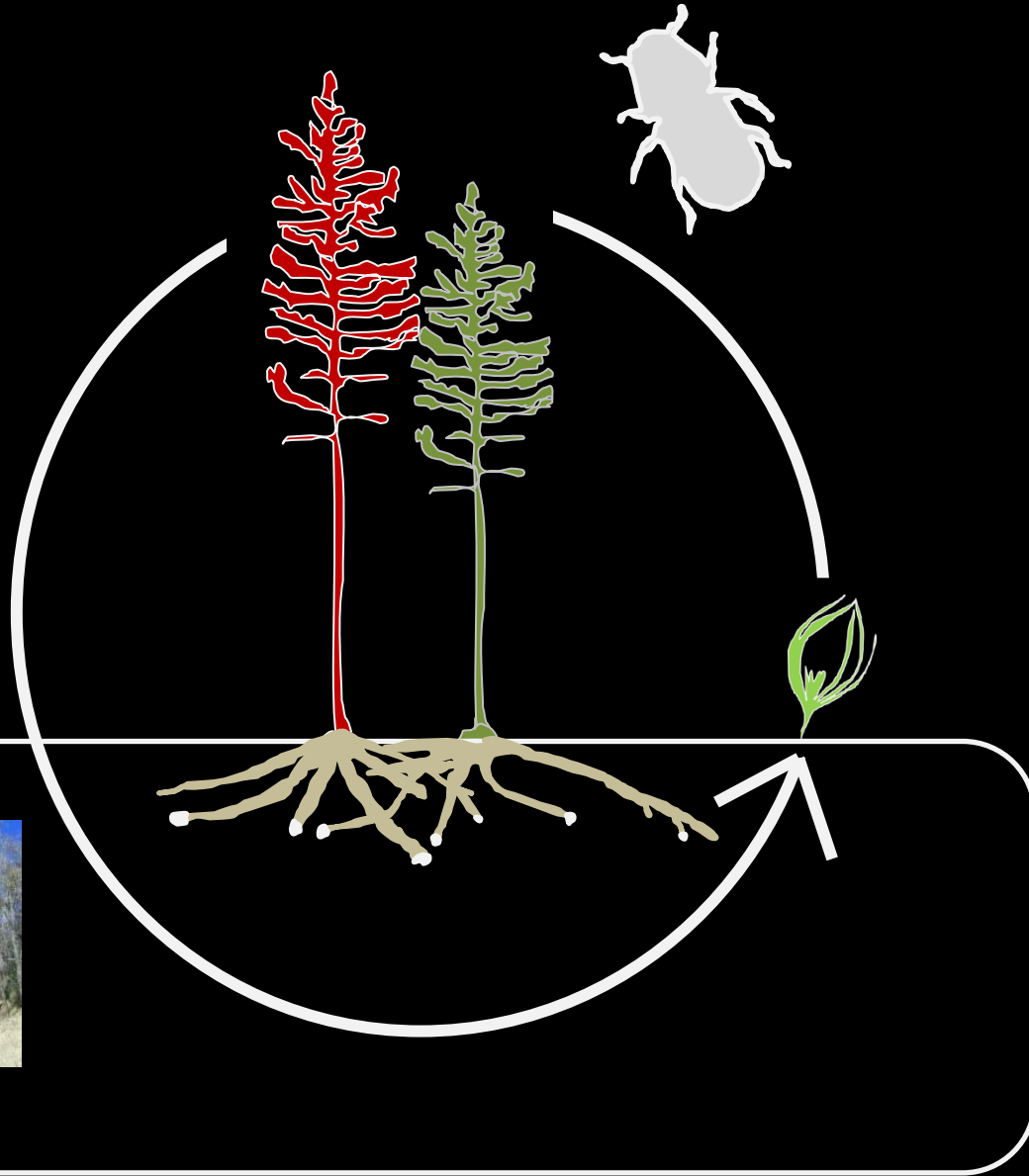


neighbors





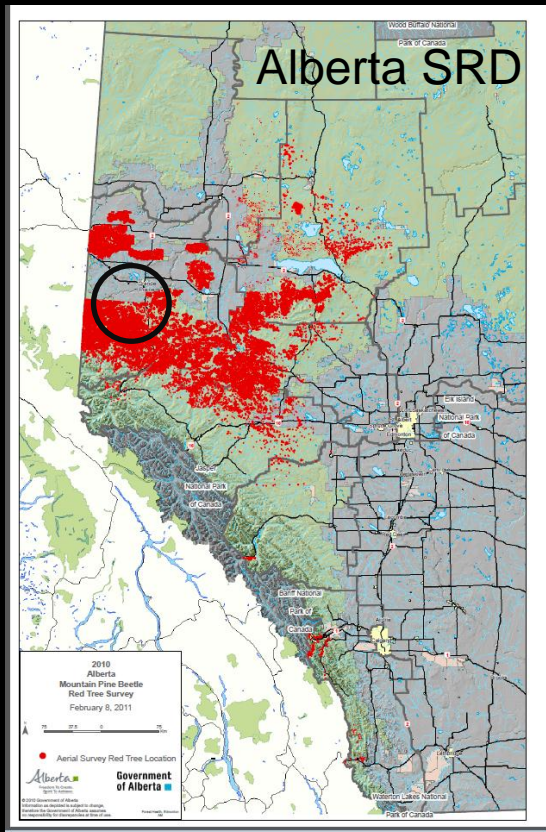
light
nutrients



Project scope

- Surveys & experiments in the field
- Greenhouse experiments
- Next generation sequencing technology
- Focal species
 - lodgepole pine
 - white spruce

Field site selection



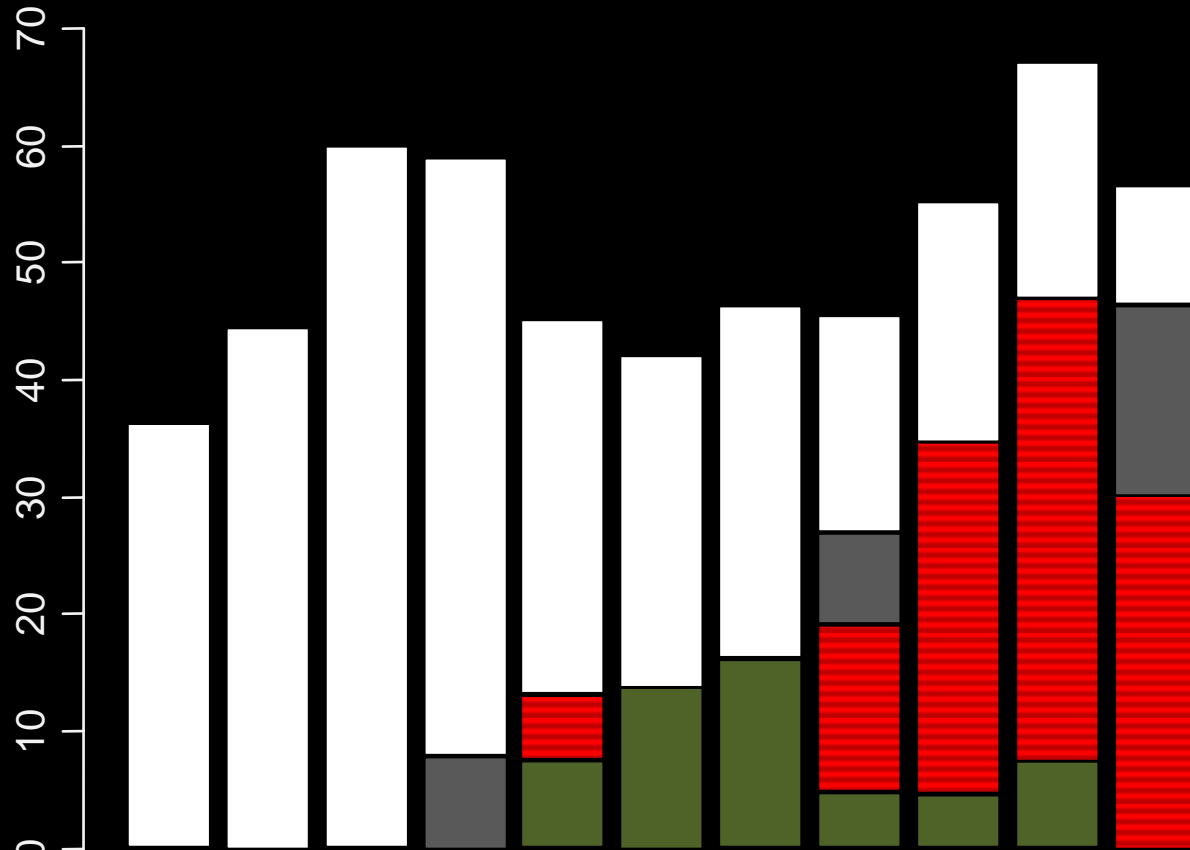
2010 red tree survey

- > 80% lodgepole pine
 - ≥ 70 years old
 - Mid-low elevations; ≤ 1470 m
 - Mesic
-

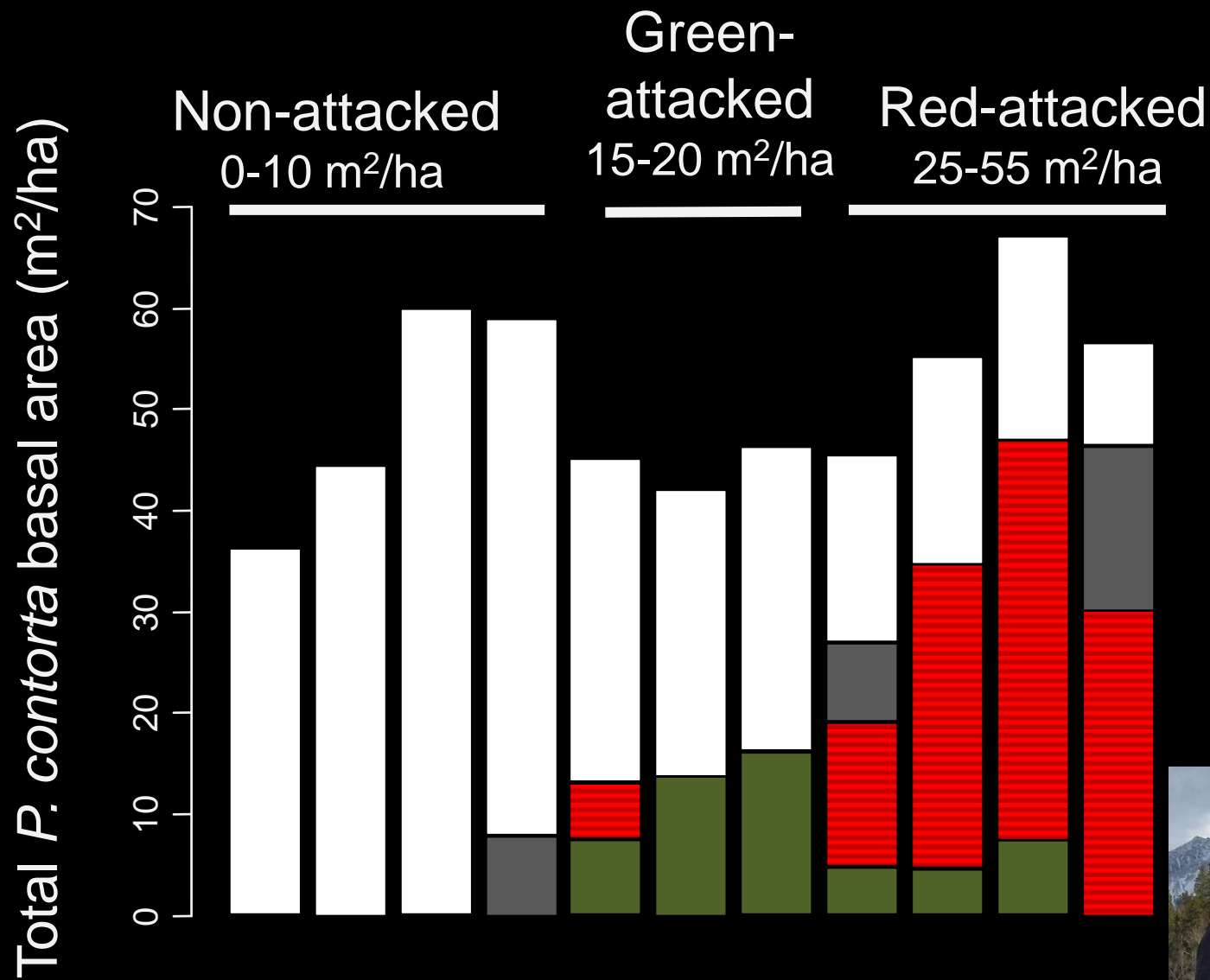
11 sites in different stages of attack, adjacent to PSPs

MPB attack intensity & stage

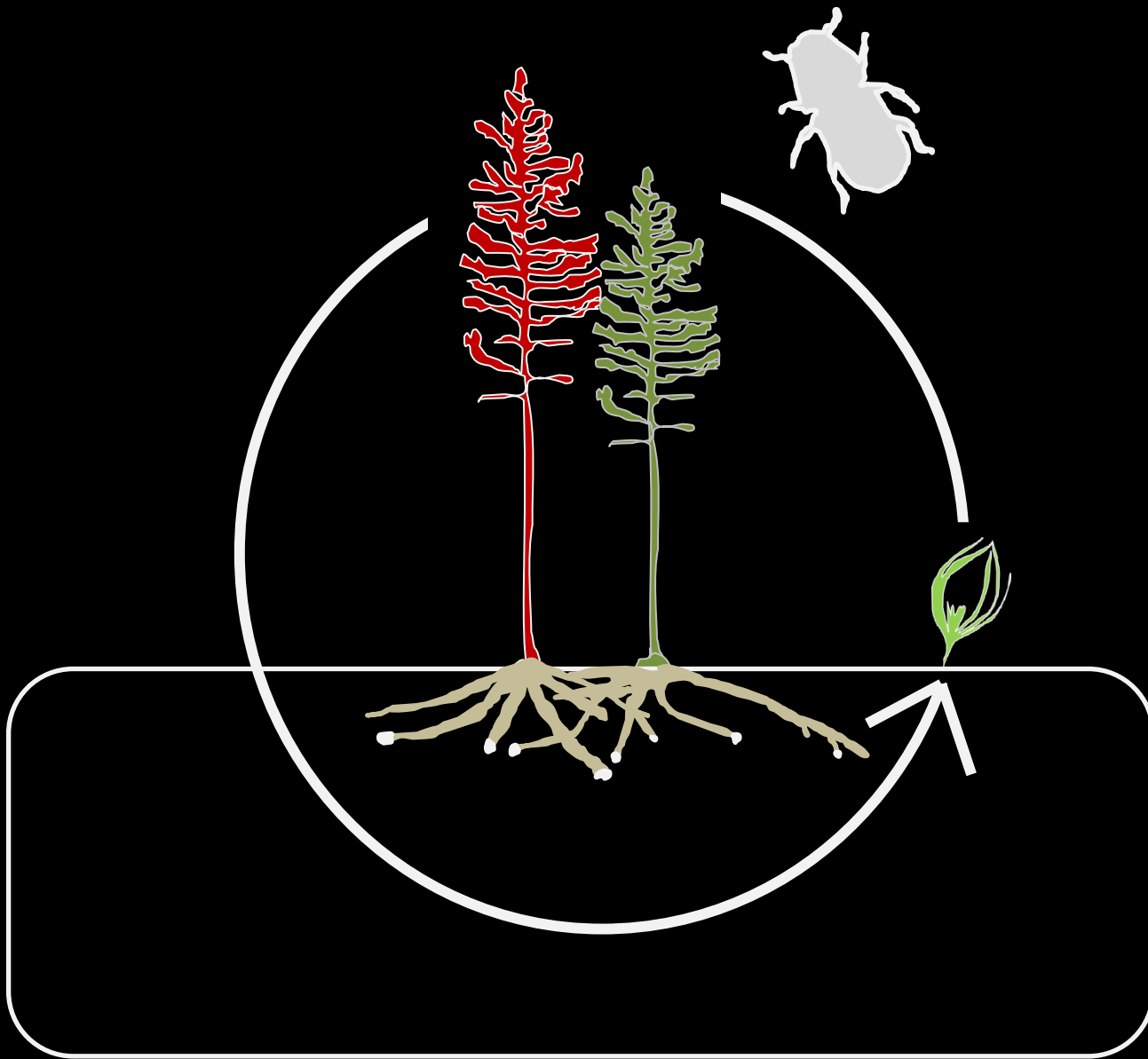
Total *P. contorta* basal area (m^2/ha)



2011 Survey Data – Cigan et al.



2011 Survey Data – Cigan et al.



Forest mortality

