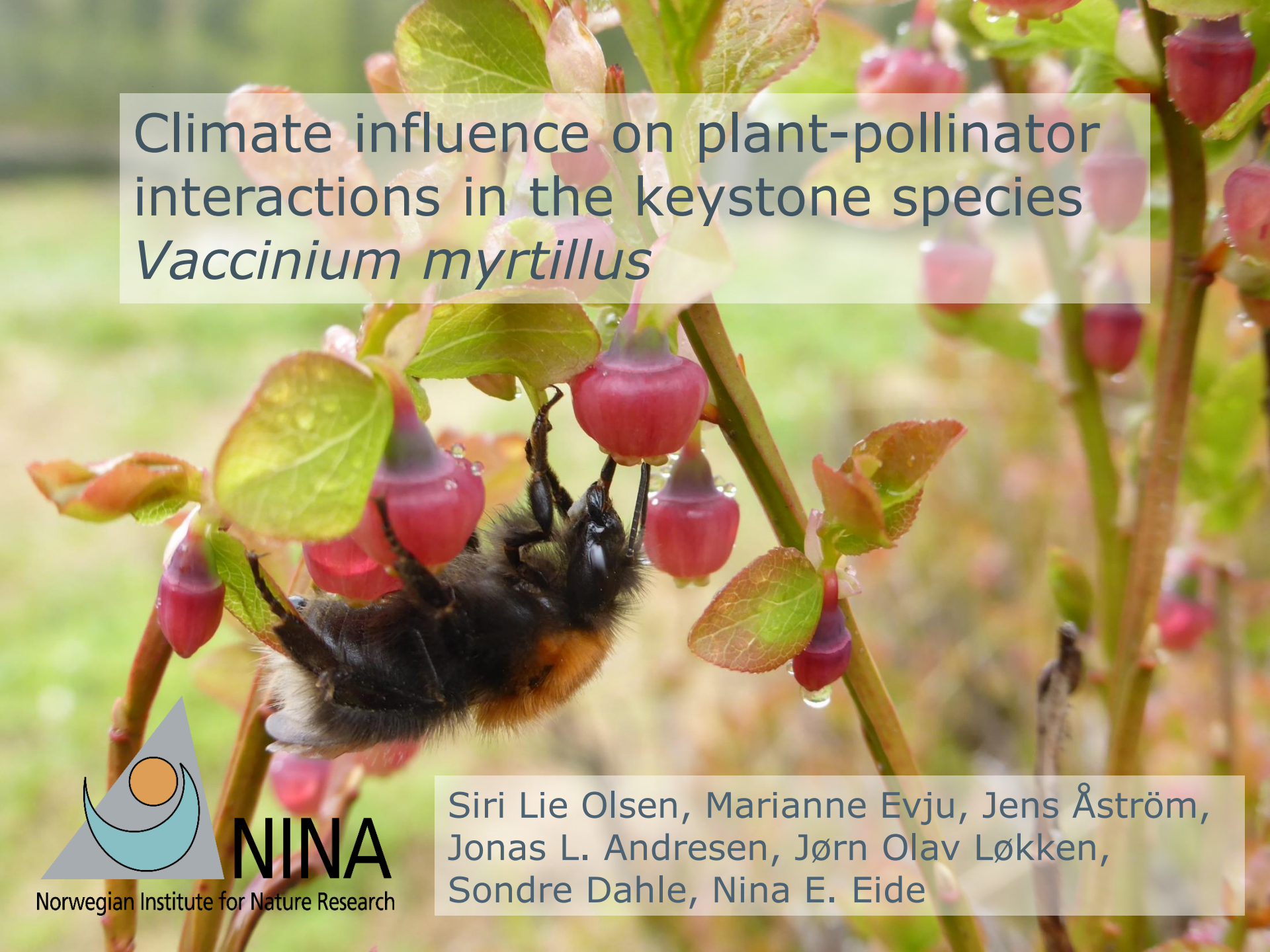
Climate influence on plant-pollinator interactions in the keystone species *Vaccinium myrtillus*



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Background

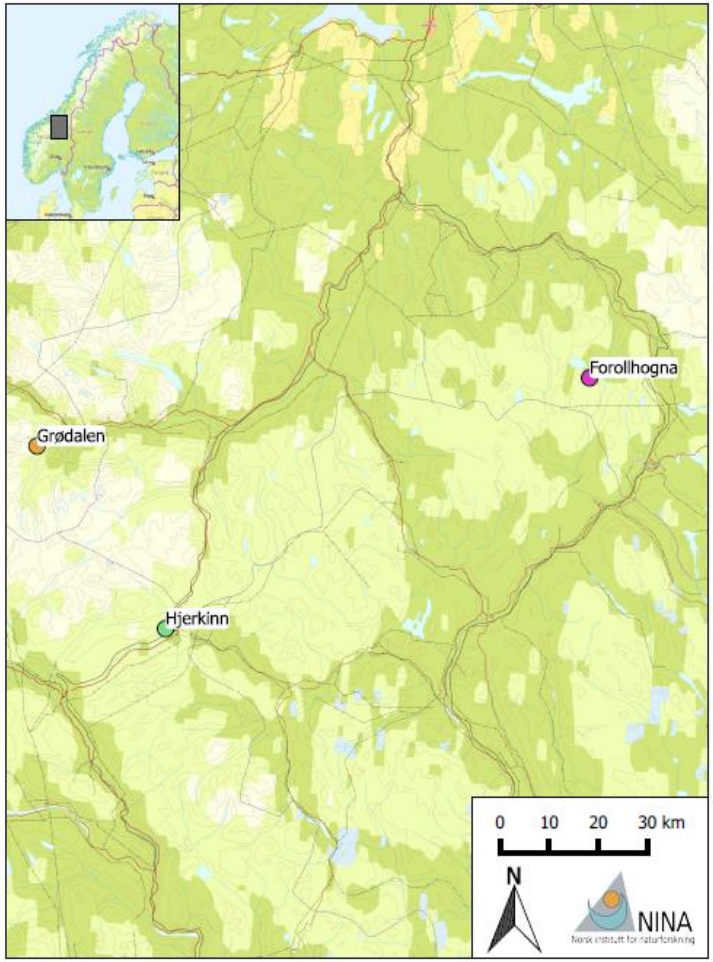
- Climate change is expected to alter all major types of biotic interactions, including plant-pollinator interactions
- Climate-driven changes have been found in alpine plant and insect communities, but the effect on the plant-pollinator interaction is unclear
- How important are the pollinators for seed-production in alpine plants, and does this vary with climate?

Target species

- Bilberry (*Vaccinium myrtillus*)
  - Keystone species
  - Widely distributed along climatic gradients
  - Partly self-pollinated
- Bumble bees
  - Main pollinators of bilberry



Study area



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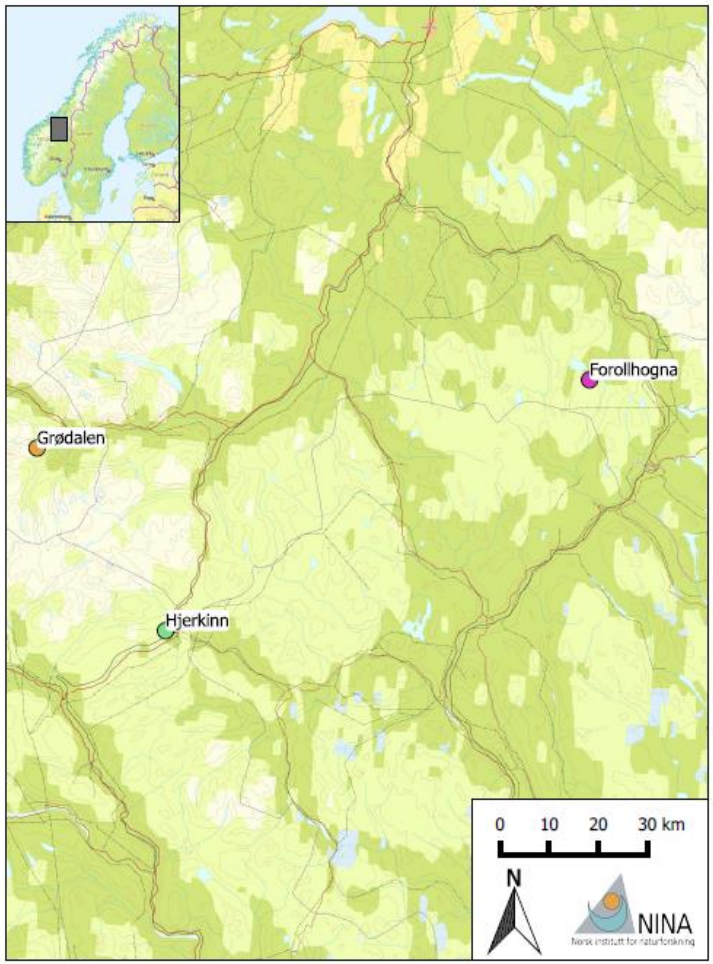
Study area



Treeline ecotone

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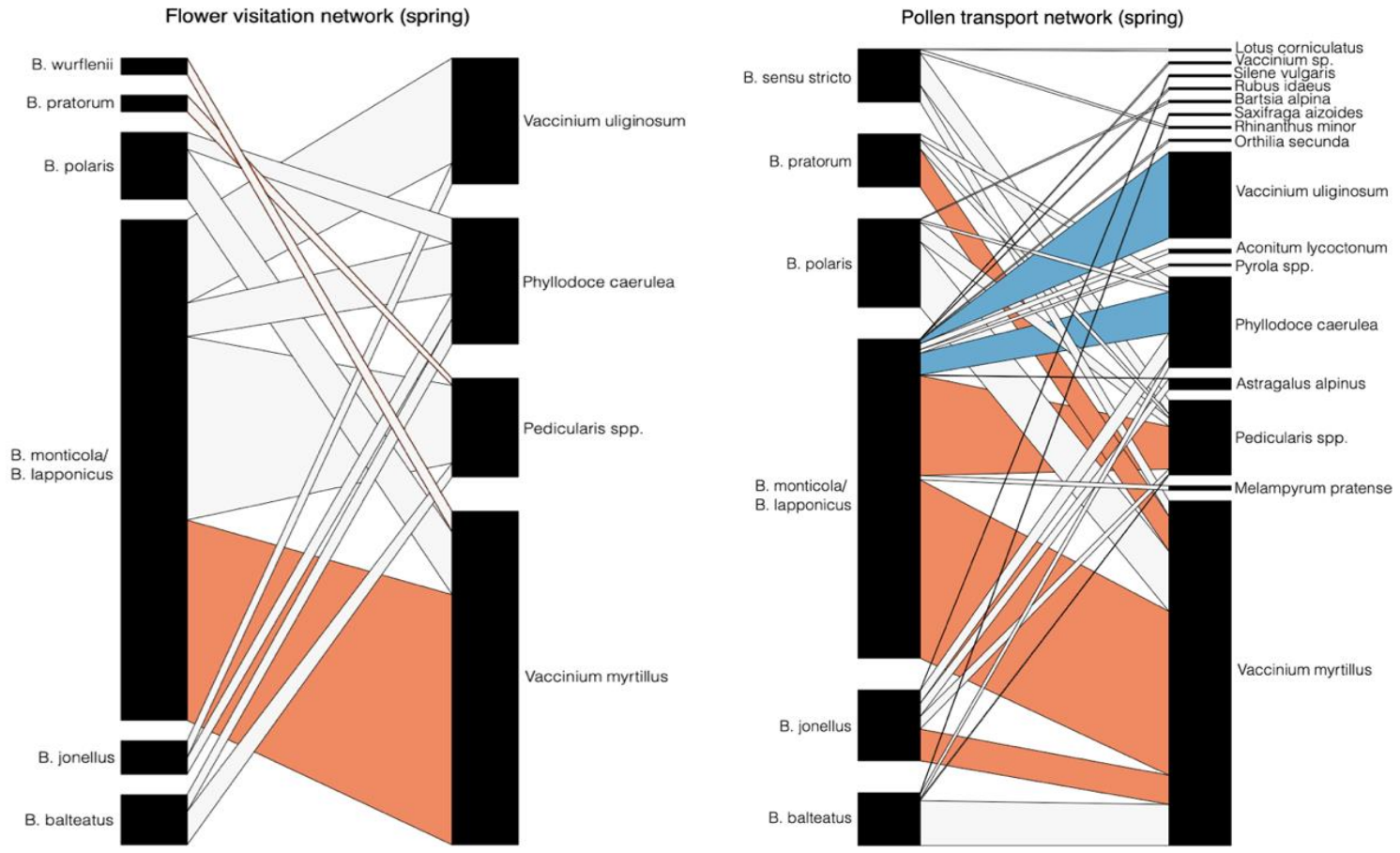
Bumble bees

- Foraging activity of bumble bees over the course of the bilberry flowering season
  - Flower visits on all plant species
  - DNA metabarcoding analysis of corbicular pollen loads

Andresen 2019

Bumble bees



Andresen 2019

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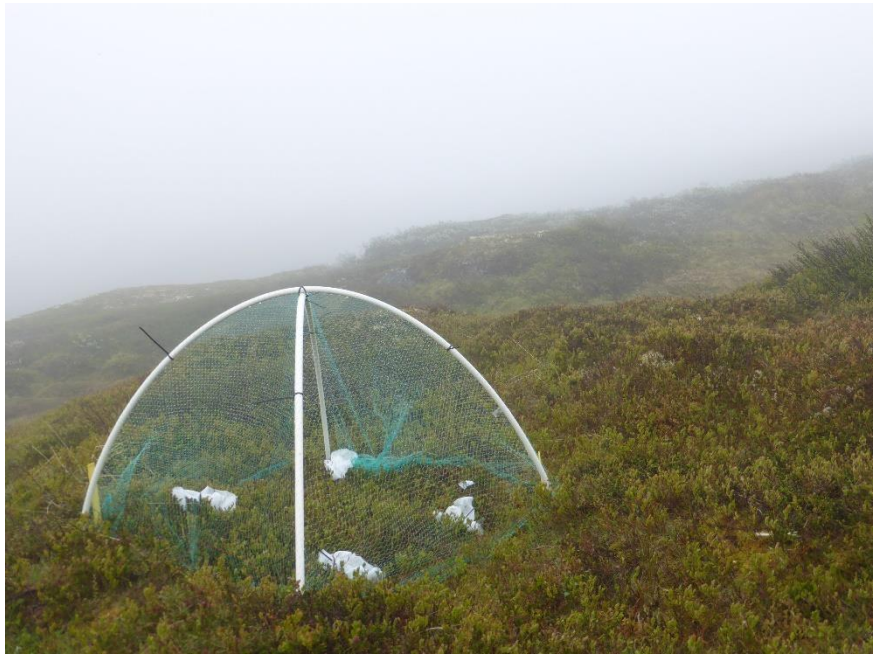
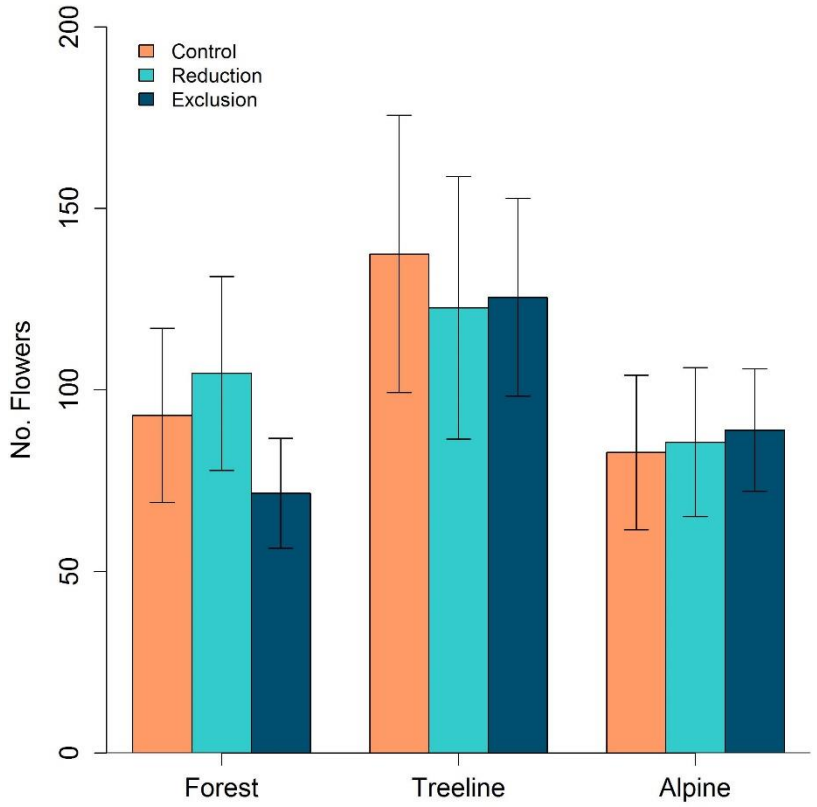
Pollinator exclusion experiment

Pollinator exclusion



Pollinator reduction

Results



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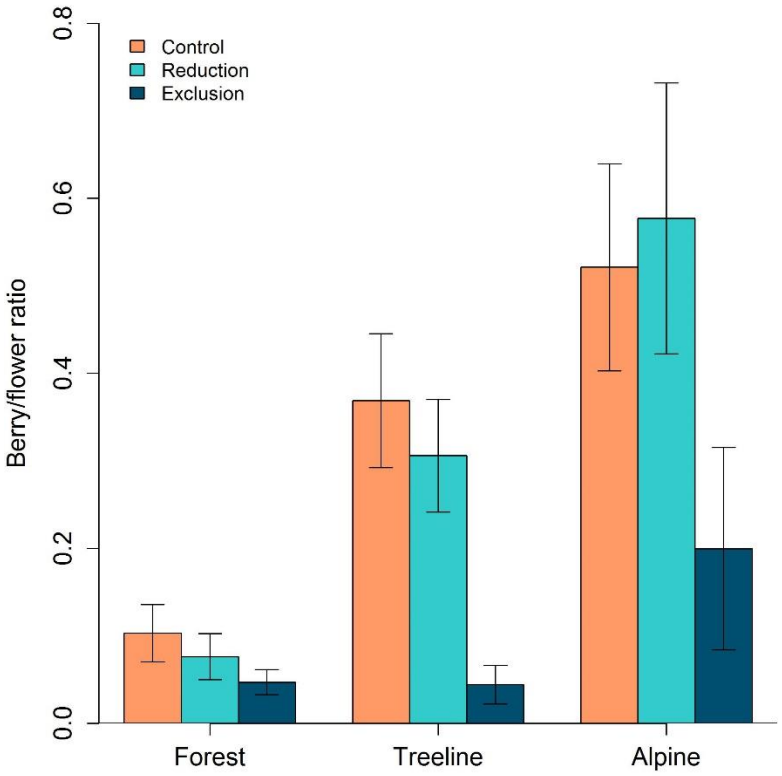
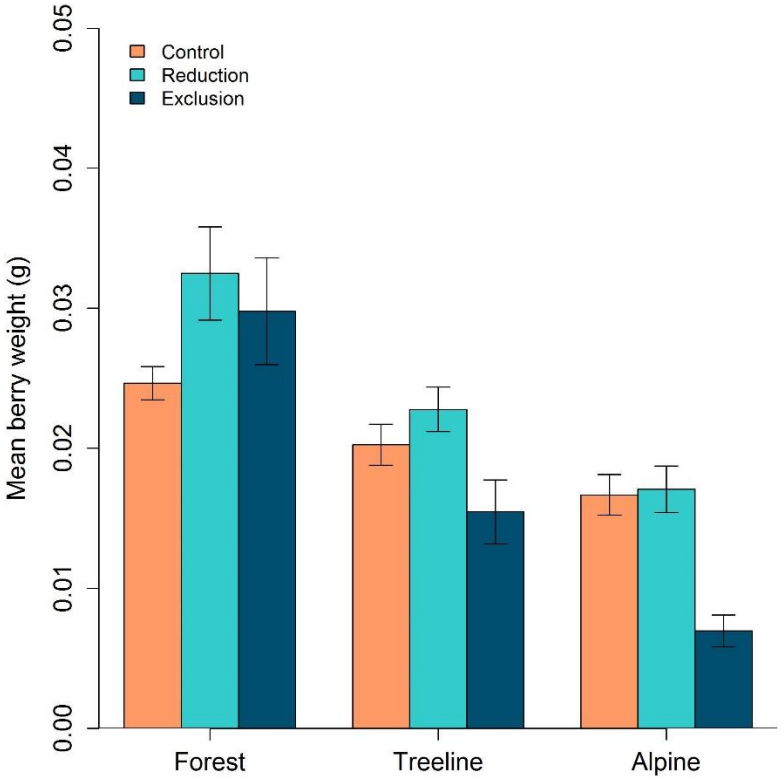
Results





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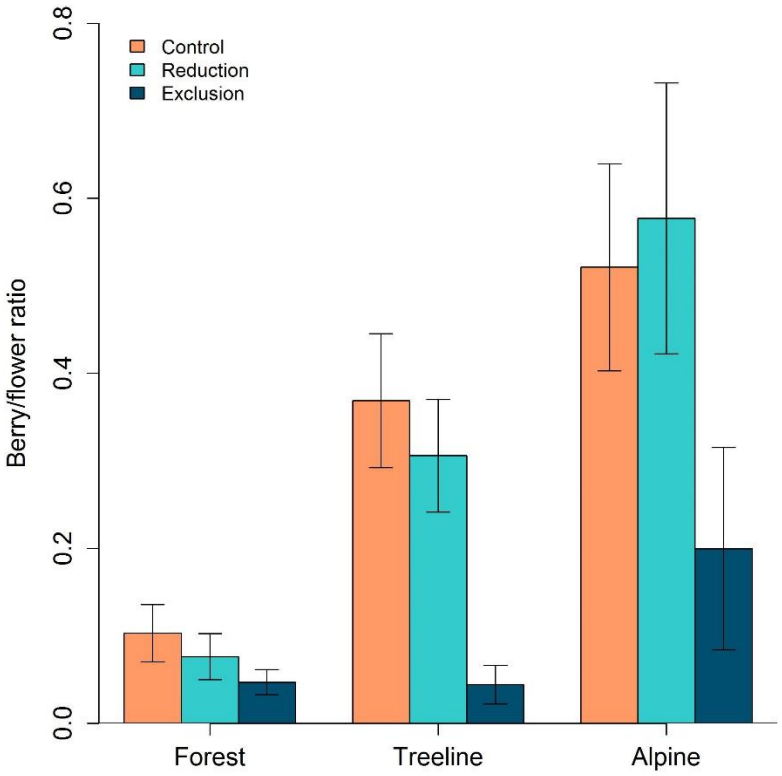
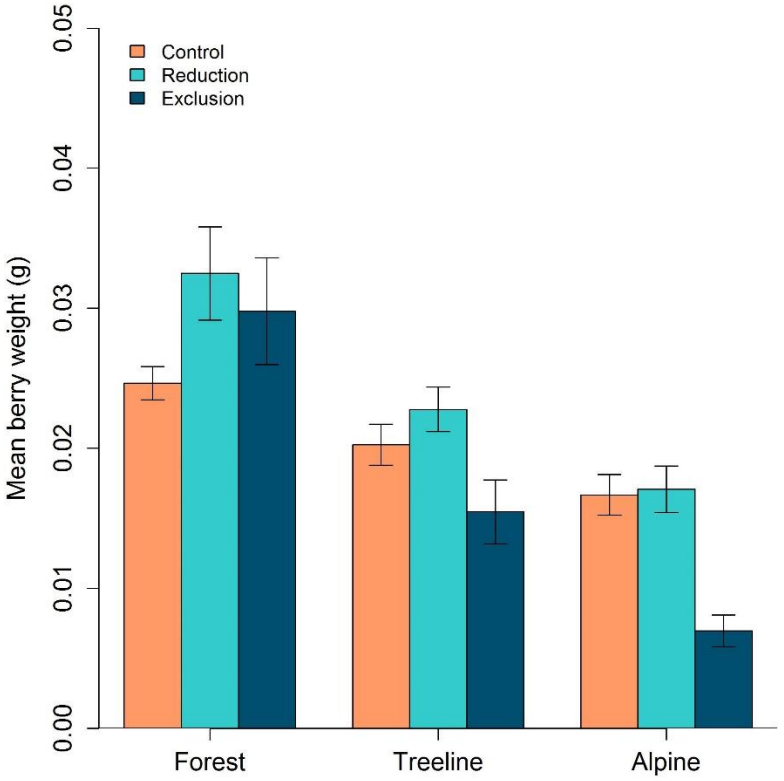
Results





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Conclusions

- Excluding (but not reducing) pollinator abundance reduces fruit set and fruit mass in bilberry
- The importance of pollinators seems to increase towards colder climates

Remaining questions…

- Does this mean that bilberry fruit set will be less dependent on pollinators in a warmer climate?
- How will this influence the climate-driven upslope movement of bilberry?


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