Climate Change and Wildlife

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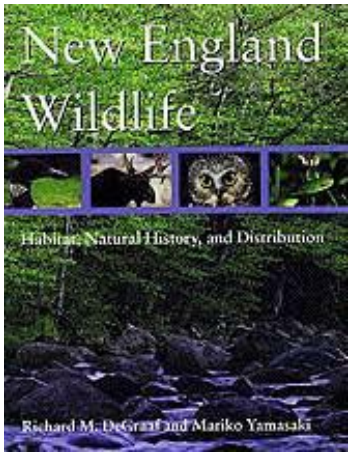
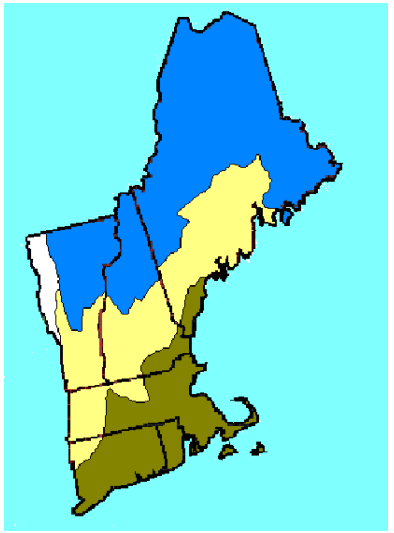
Presentation scope

- “Wildlife”
  - As designated by DeGraaf and Yamasaki
    - Birds (226)
    - Mammals (65)
    - Reptiles (29)
    - Amphibians (23)
- New England



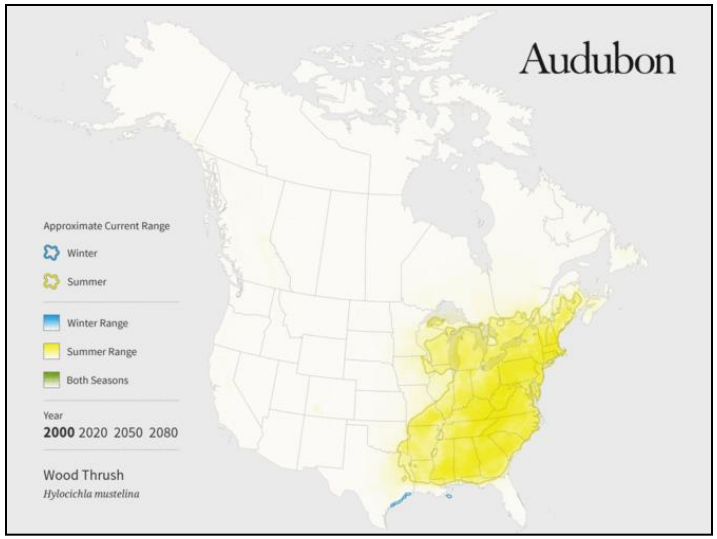


Climate change impacts

Direct effects – Temperature

Root 1988

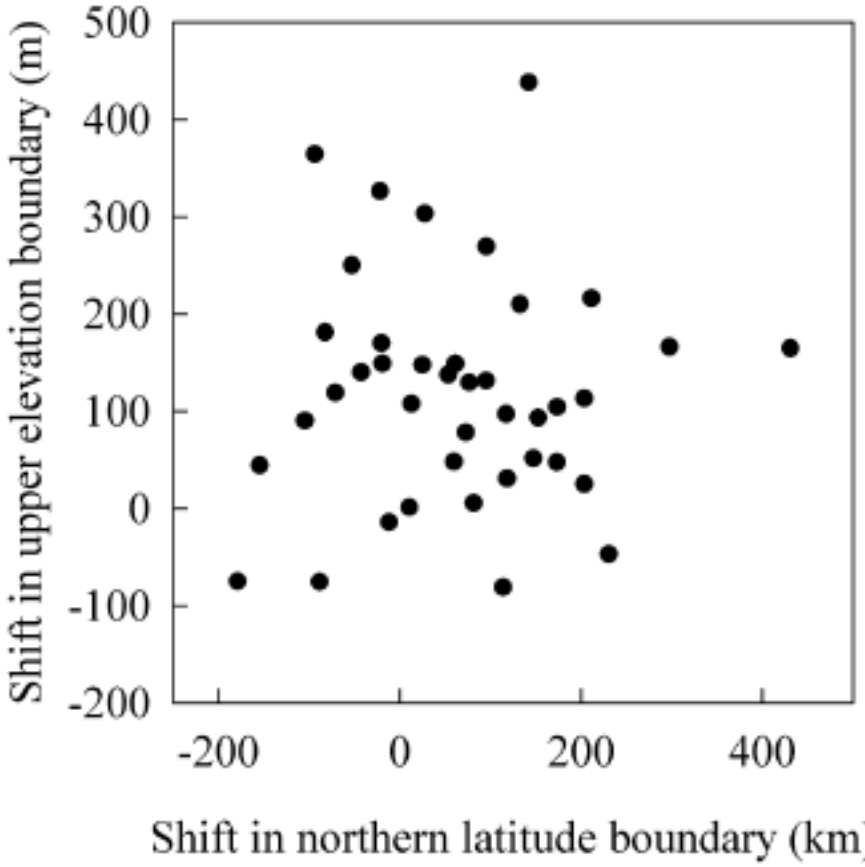
Climate change impacts
Direct effects – Temperature

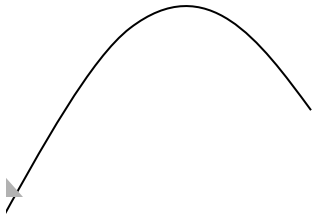


Climate change impacts

Direct effects – Temperature

35 kr



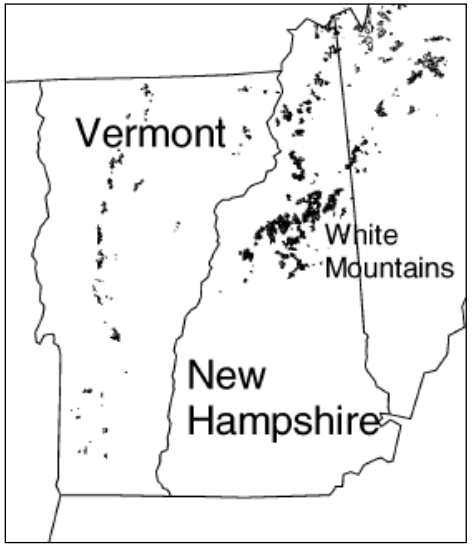


up

Auer and King, 2014

Case Study: Spruce-fir birds

Montane and high latitude habitat specialists



Case Study: Spruce-fir birds

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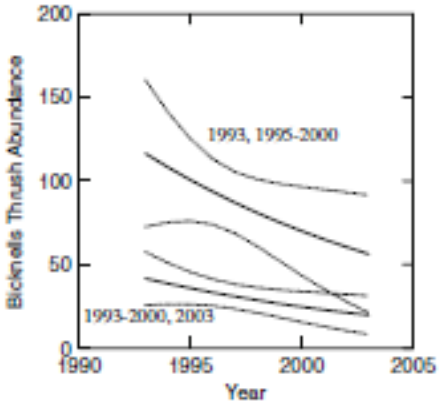
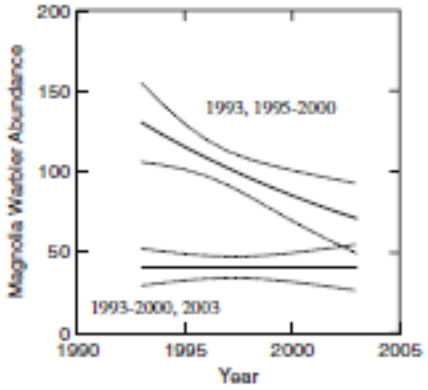
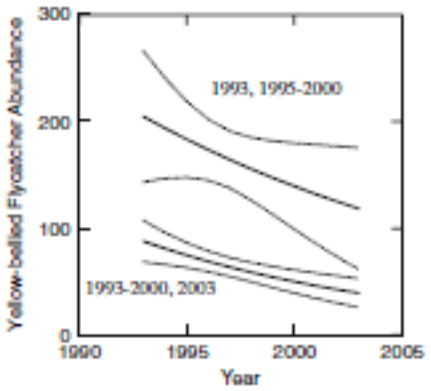






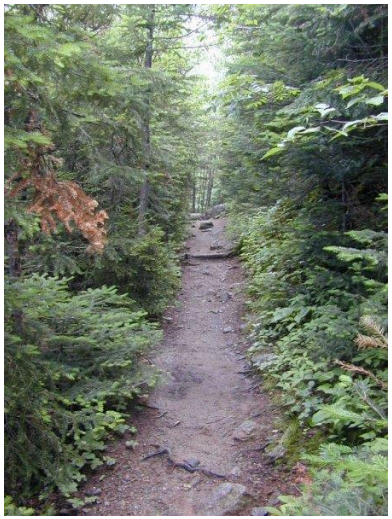
King et al. 2008

Spruce-fir birds

Montane and high latitude habitat specialists

Species[a]	Total blood Hg (*n*)
BITH	0.094 ± 0.47 (43)
BLPW	0.055 ± 0.017 (10)
YRWA	0.091 ± 0.055 (13)
WTSP	0.062 ± 0.026 (12)

Rimmer et al. 2005

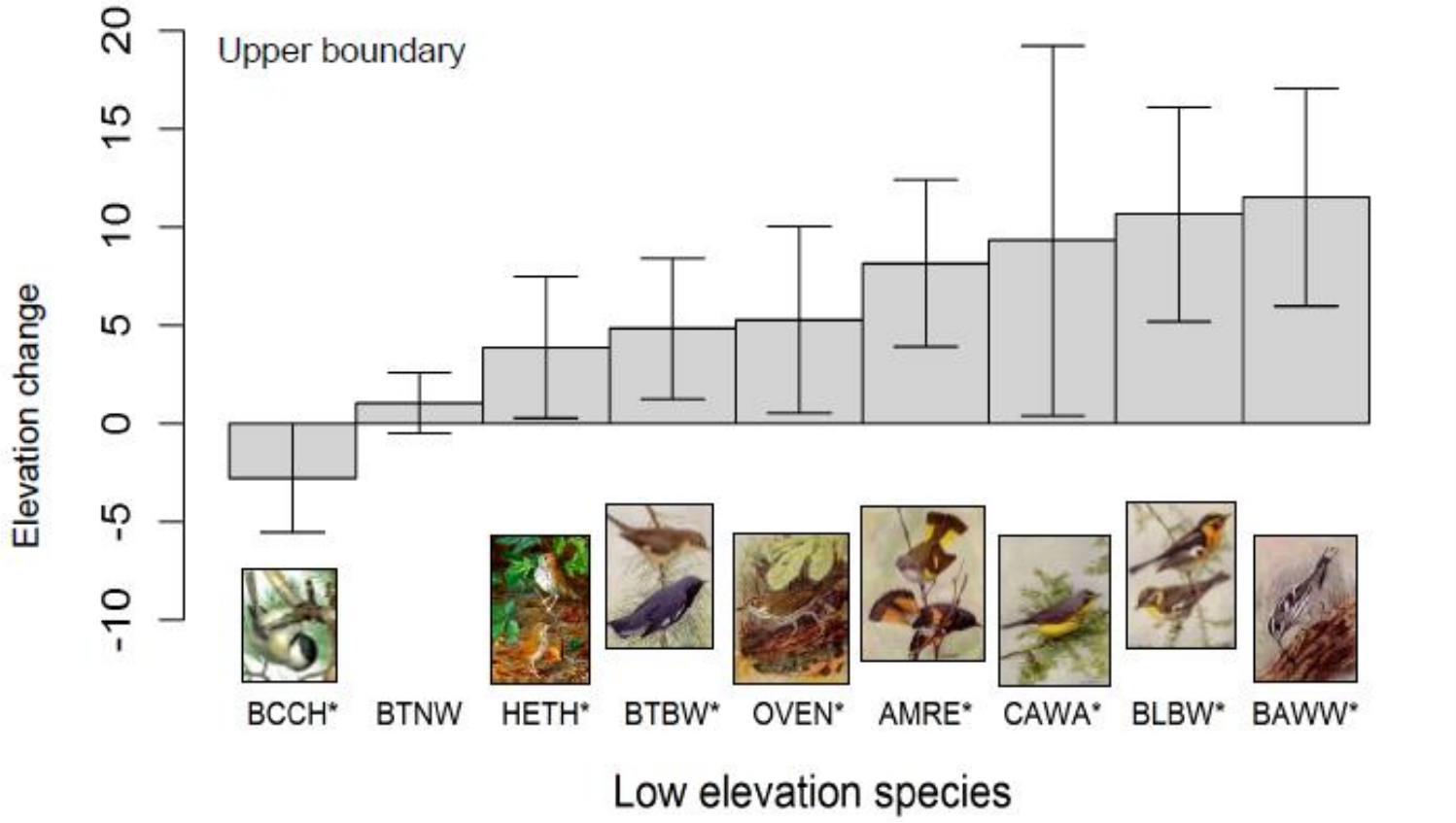


DeLuca and King 2014

Climate?

Climate change impacts

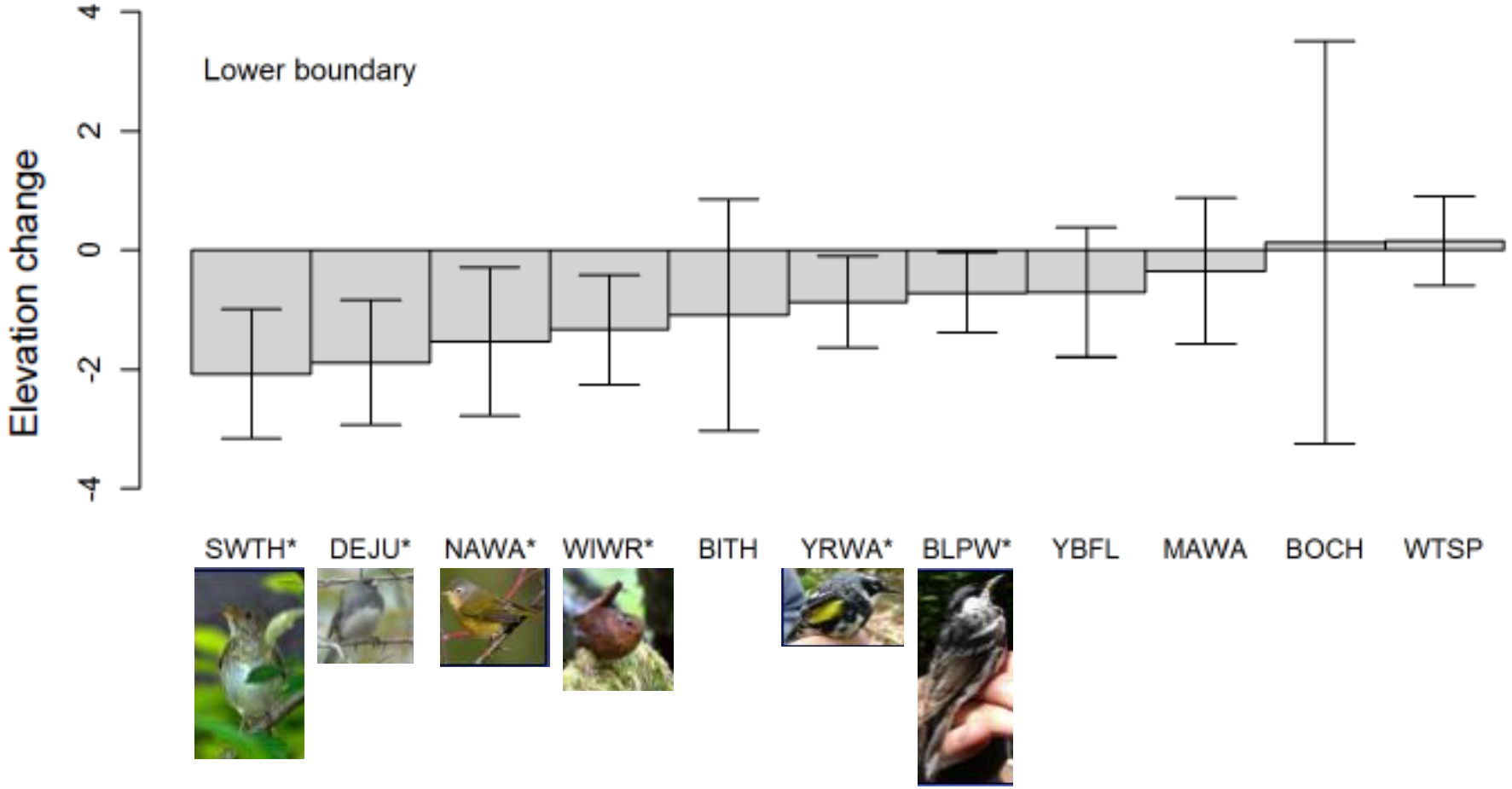
Direct effects – Temperature?



DeLuca et al. In Prep.

Climate change impacts

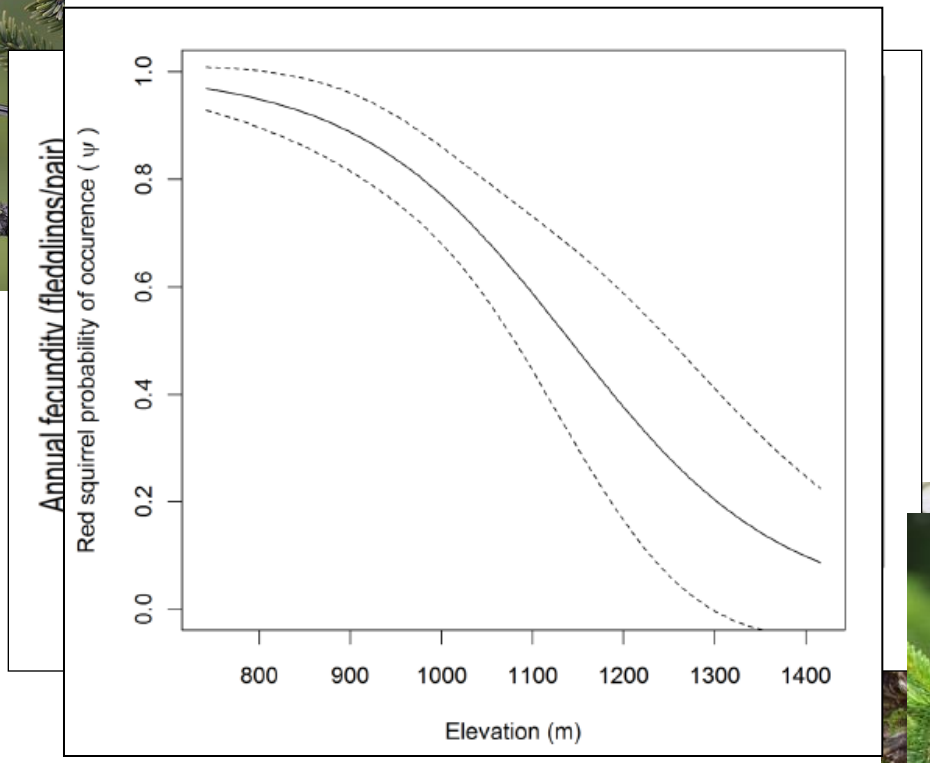
Direct effects – Precipitation?



DeLuca et al. In Prep.

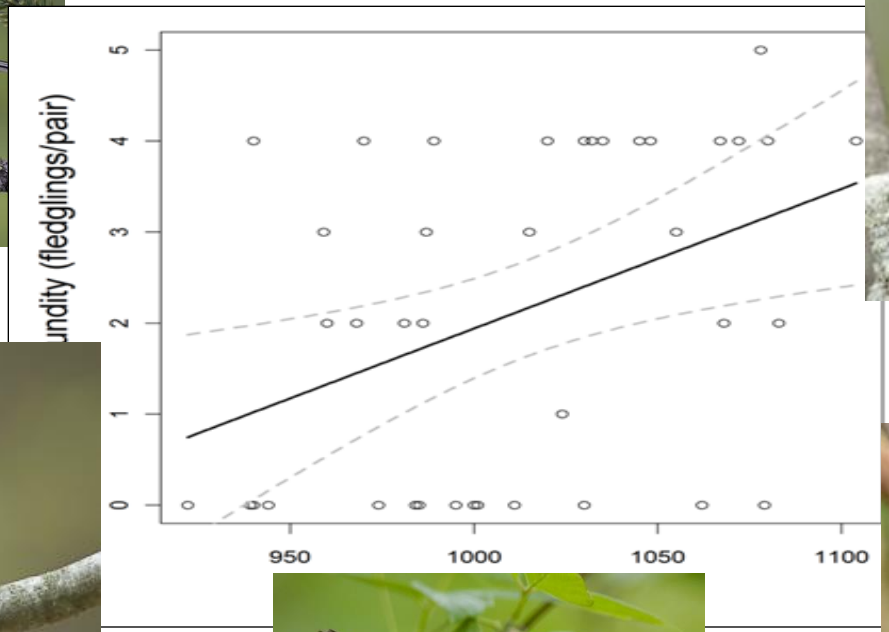
Climate change impacts

Indirect effects – Predation?



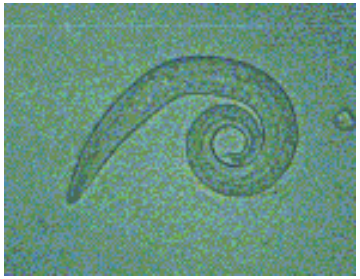
Climate change impacts

Indirect effects – Competition?



Indirect and cascading effects

Moose and climate change



Indirect and cascading effects

Rodents

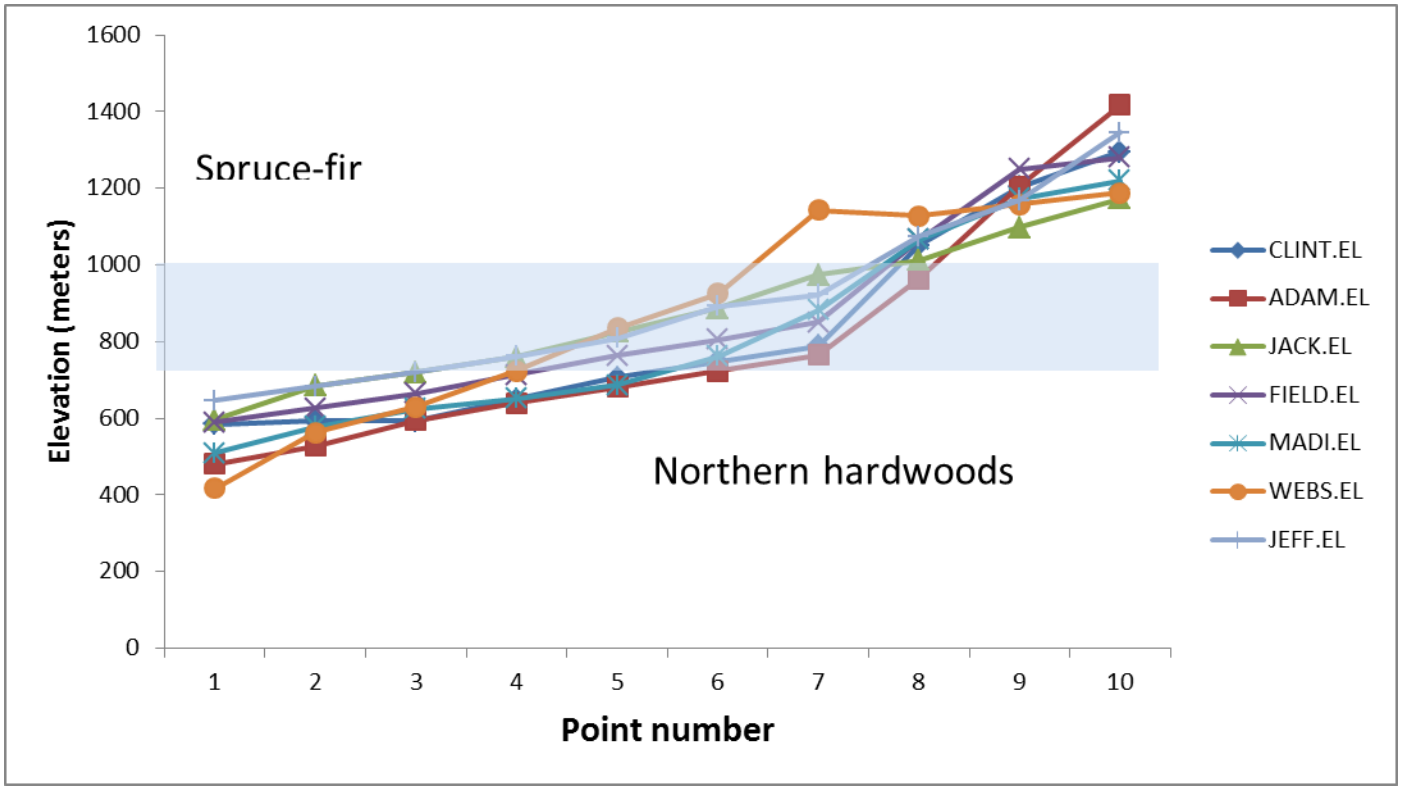
Pauli et al. 2013

Indirect and cascading effects

Rodents

Climate change impacts

Emergence of novel communities?



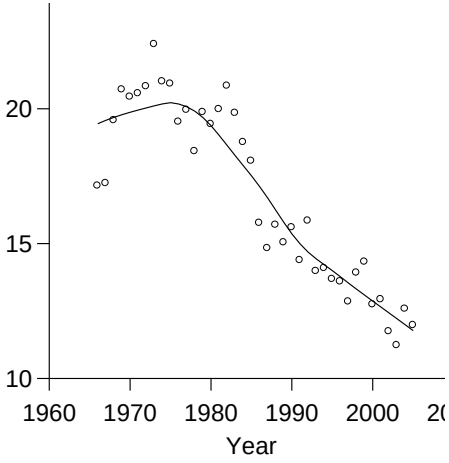
Phenological shifts and asynchrony with food

Both et al. 2006

Rodenhouse et al. 2009

Climate change impacts

Indirect effects - succession

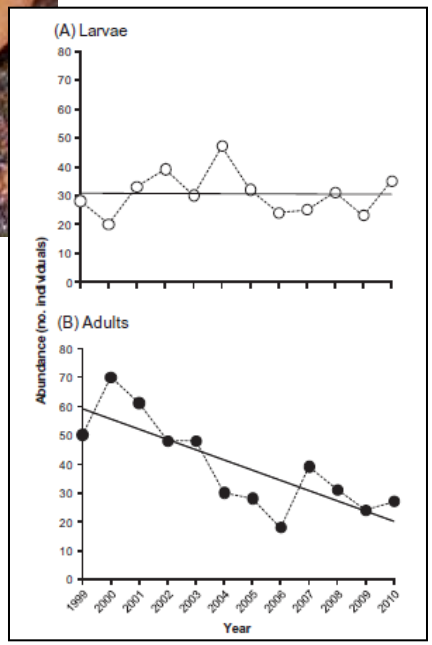


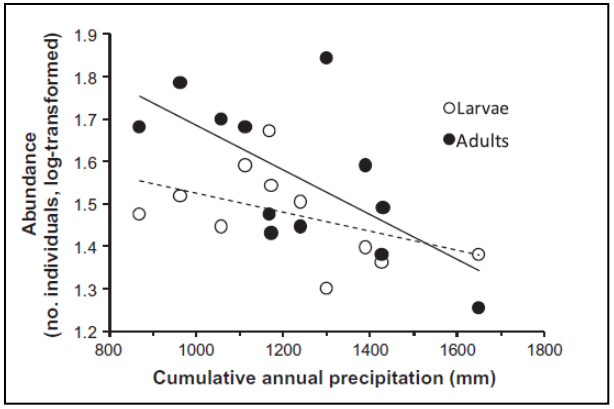
Extreme events

Flooding

Extreme events

Flooding





Extreme events

Drought

Conclusions and discussion

- Vulnerability varies with species' traits
- Shifts observed with latitude and elevation
  - Consider landscape context and local relief
- Impacts on habitat and hydrology
  - Manage for resistance resilience
- Reconsider conservation goals
  - Novel and no-analog communities
- Adopt strategies robust to uncertainty
  - "low regrets"


Questions?