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The Ecology of Rocky Mountain Castilleja

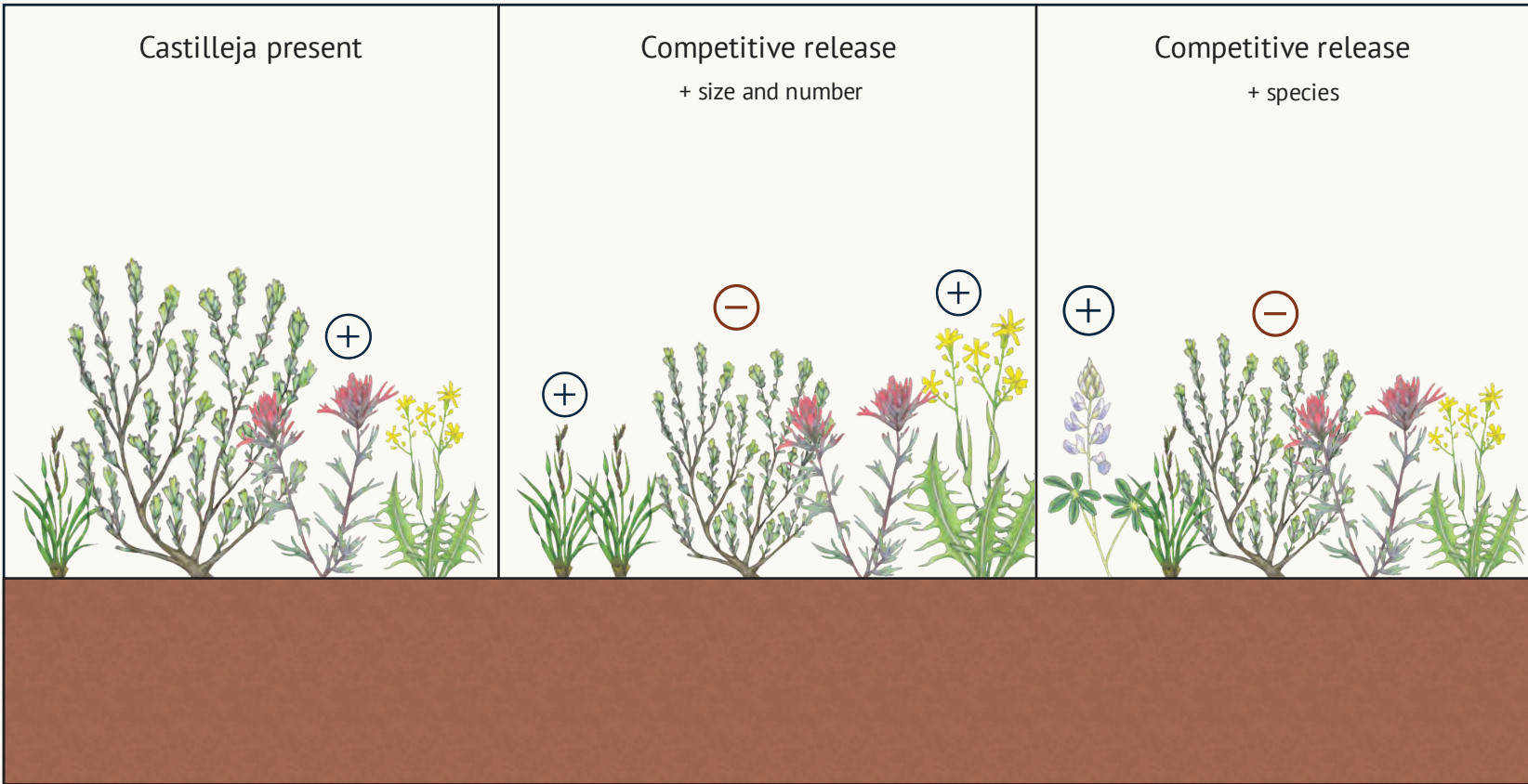
How do temporal, spatial, and environmental changes alter symbiotic relationships?
How do these altered symbiotic relationships, in turn, impact the surrounding biotic and abiotic environment?

Ecology of *Castilleja*

- 1 **Generalist partial heterotrophs** that connect to hosts **belowground** via a unique organ called the **haustorium**
- 2 This symbiosis has **broader implications** for grassland and prairie communities where parasites are present
- 3 The ecology of hemiparasitism is still rather **understudied**



The Robinhood Theory (Direct effects)



Research Questions

- 1 Is the presence of *Castilleja* species associated with more diverse plant communities?
- 2 Is the presence of *Castilleja* species associated with plant community compositional changes?
- 3 Do the *Castilleja* species of the Colorado Rockies exhibit host preference?



Dr. Rick Williams



Makena Lang



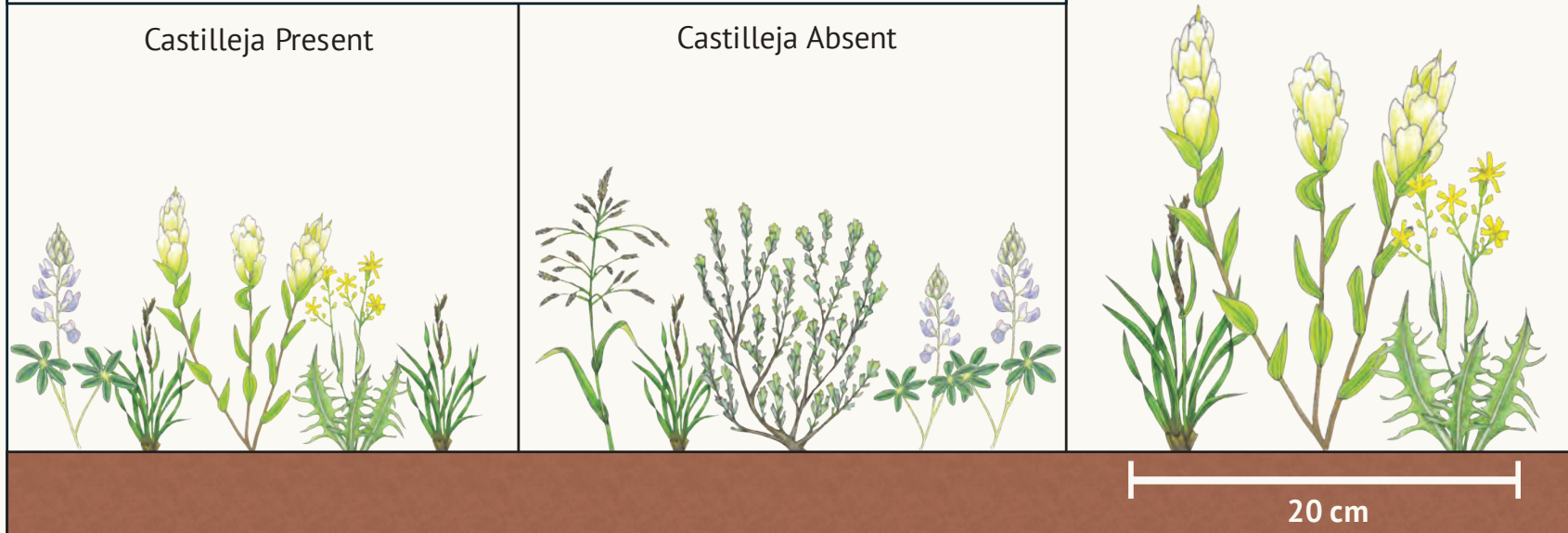
Anders Hastings

Methods

- 220 Paired *Castilleja* presence/absence plots across 7 sites for 2 years
- Three *Castilleja* Species: *C. septentrionalis*, *C. linariifolia*, *C. chromosa*
- Collected species cover and count data for all individuals
- Assessed presence/absence for indicator species

Nearest Neighbors

Species that occurred in close proximity to *Castilleja*



Community Diversity increased in association with *Castilleja*

