Environmental Aesthetics of Habitat Heterogeneity

Northern California Botanists

January 13, 2024

Aesthetics in Habitat Restoration

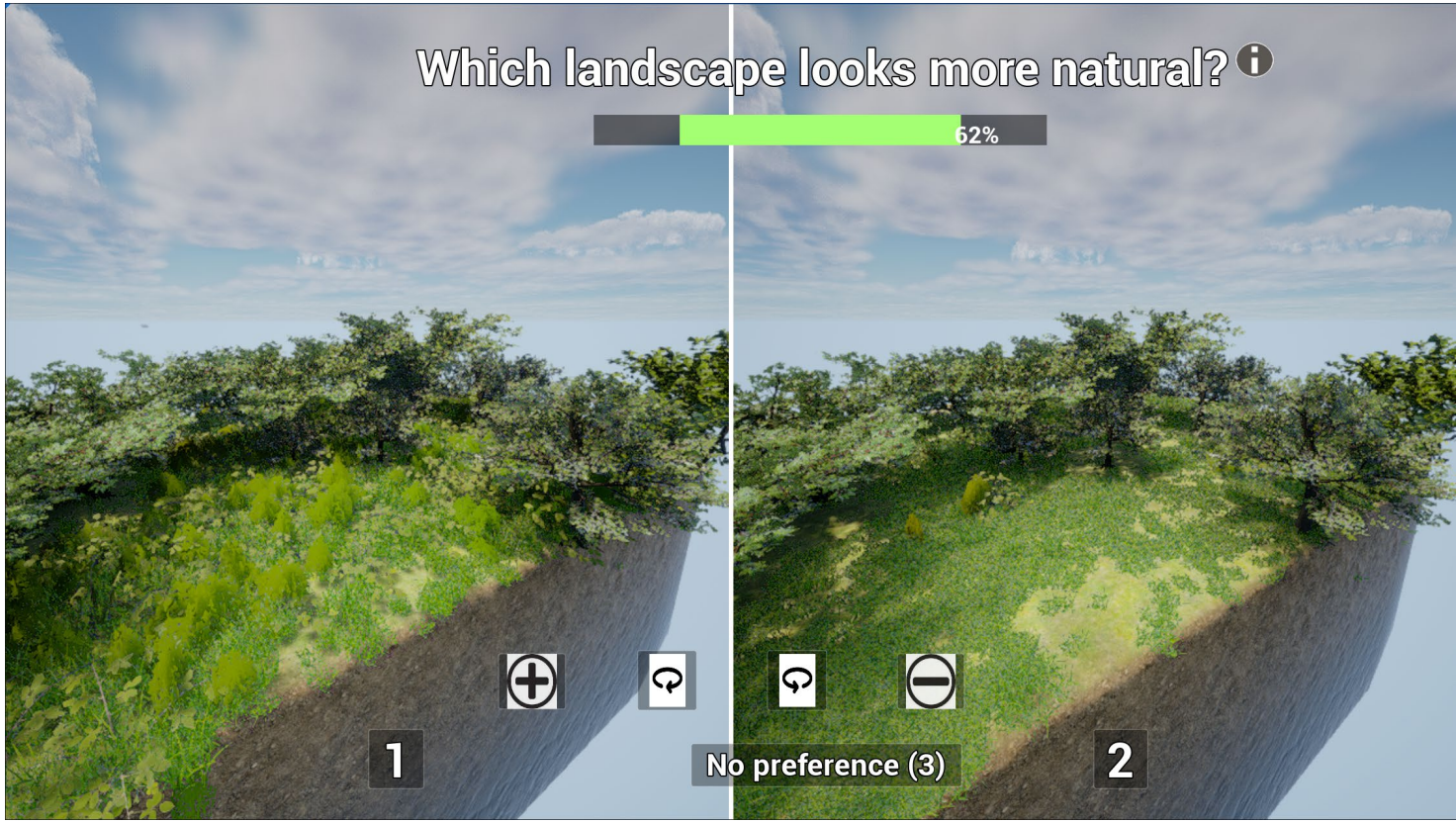
- Most restoration projects focus on ecological outcomes more than social outcomes.
- Projects improve social outcomes by including stakeholders more.
- Mismatch between project outcome and stakeholder expectation can hinder restoration.
- Stakeholders have stronger opinions on aesthetics than ecological design.

Habitat Heterogeneity and Aesthetics

- Habitat heterogeneity describes landscape complexity
- Restored habitats could often benefit from more heterogeneity.
- Heterogeneity often influences visual aesthetics
- When does increasing heterogeneity increase visual preference by stakeholders?

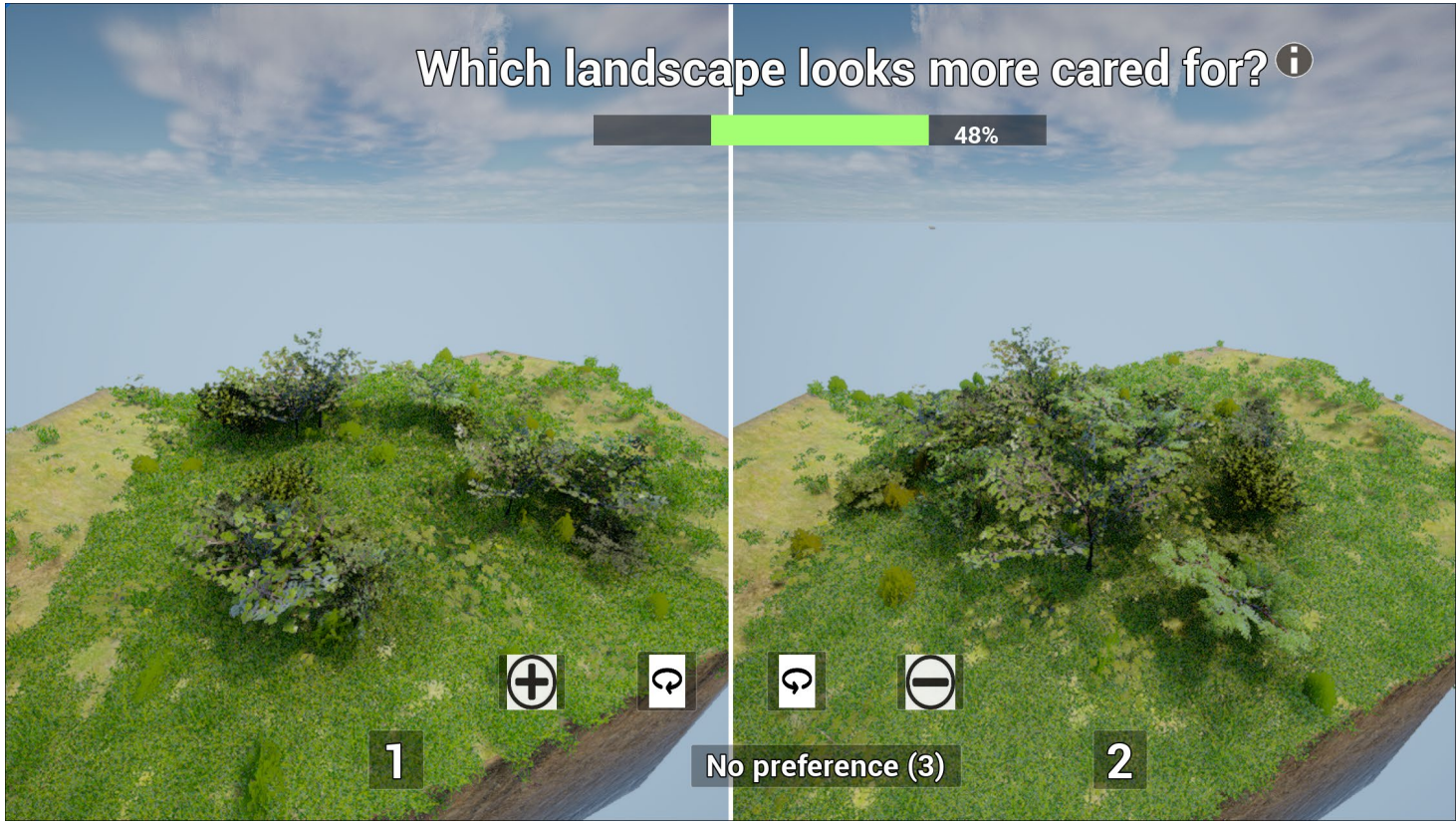
Choose Between High and Low Heterogeneity Landscapes

- Varied one type of heterogeneity per question
- Real floodplains and tree positions and sizes
  - Restored forests
  - Reference forests
- Hypothetical restored sites using real floodplains
  - Real Oxbow
  - Real Floodplain
  - Real Levee



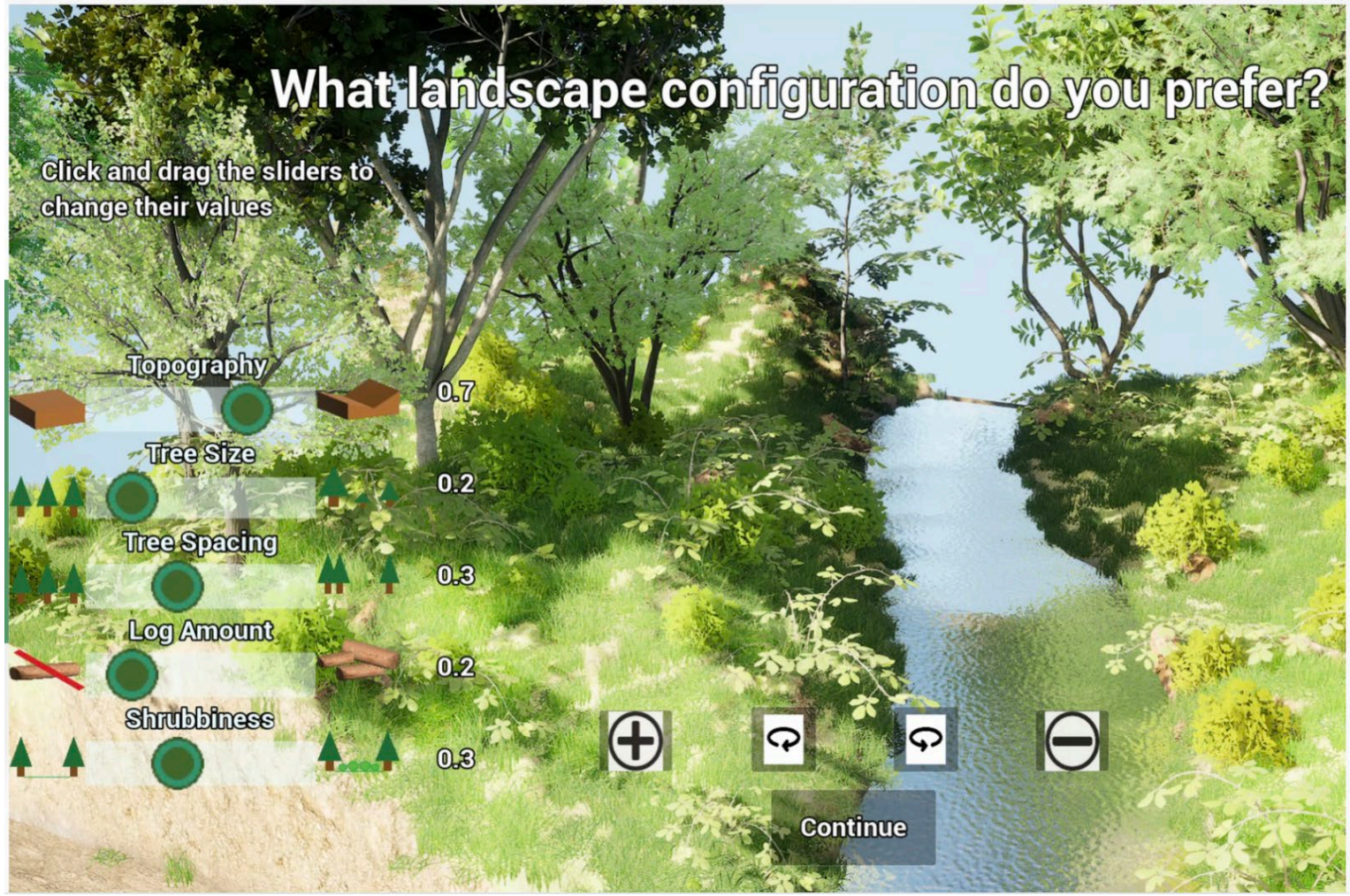
Choose Between High and Low Heterogeneity Landscapes

- Varied one type of heterogeneity per question
- Real floodplains and tree positions and sizes
  - Restored forests
  - Reference forests
- Hypothetical restored sites using real floodplains
  - Real Oxbow
  - Real Floodplain
  - Real Levee



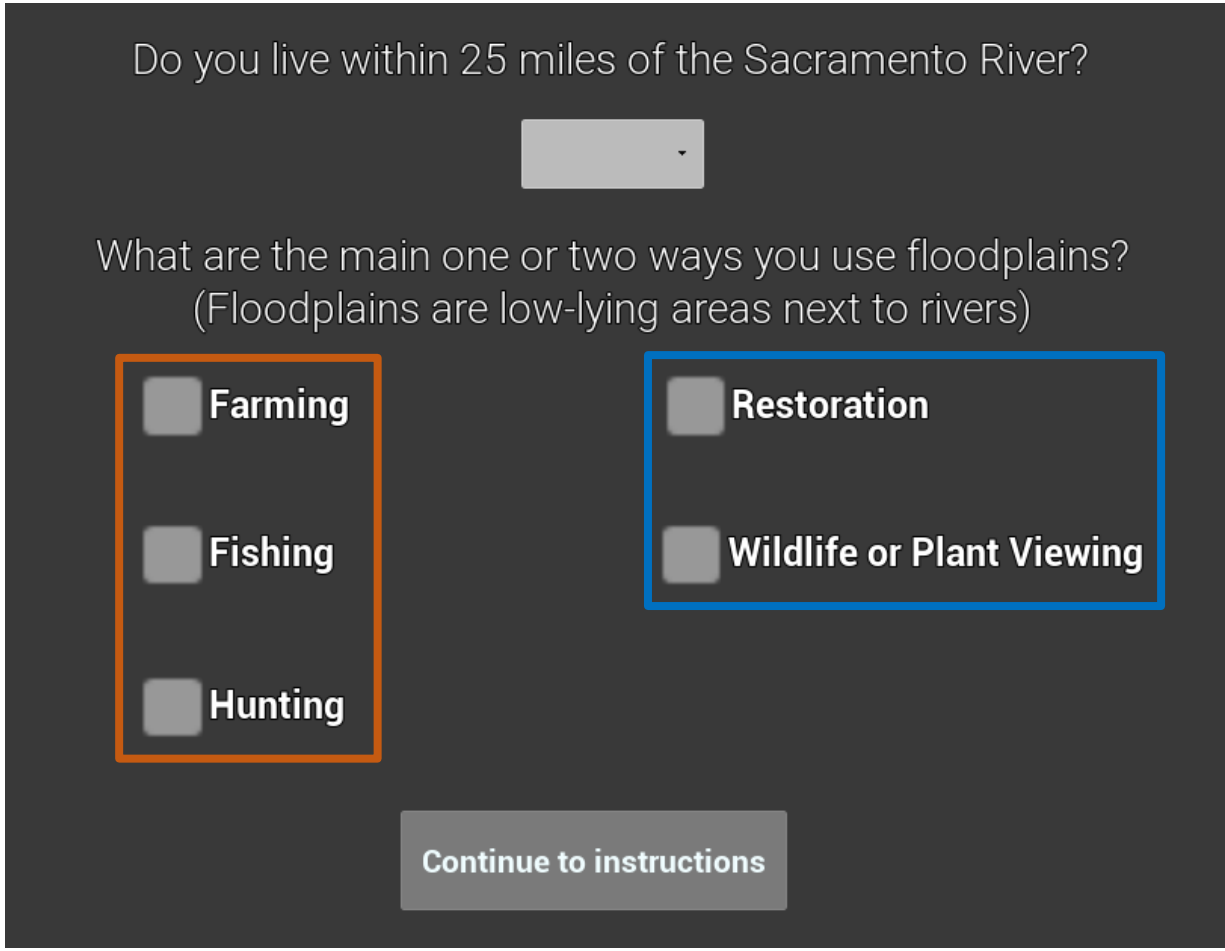
Build Your Own Landscape

- Allowed participants to design their ideal landscape with sliders in real time



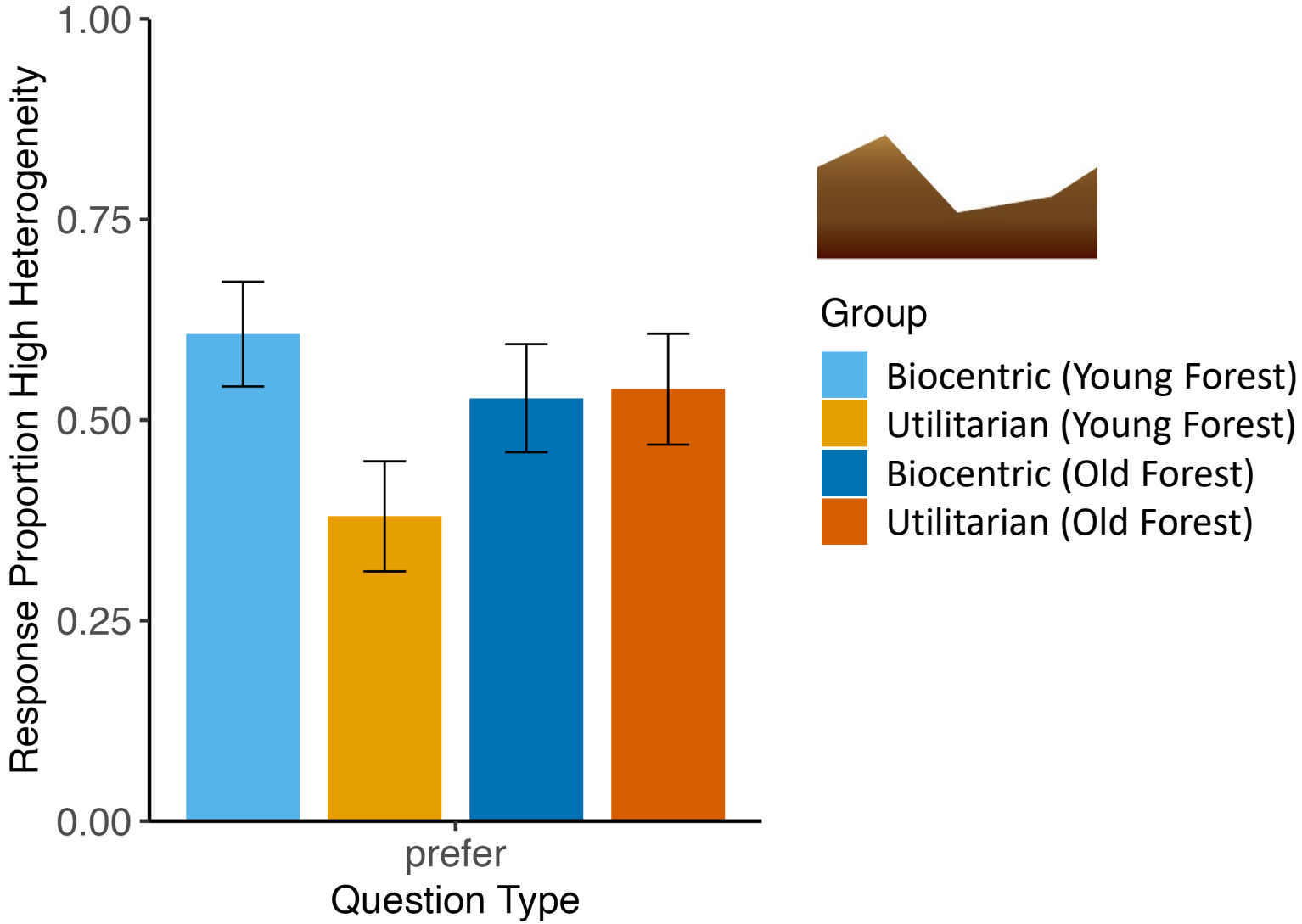
Organization of Groups

- 110 respondents, 85 of these were 25 miles of the Sacramento River.
- 58 written answers were thematically coded.
- We classified responses into either **utilitarian** or **biocentric** groups.



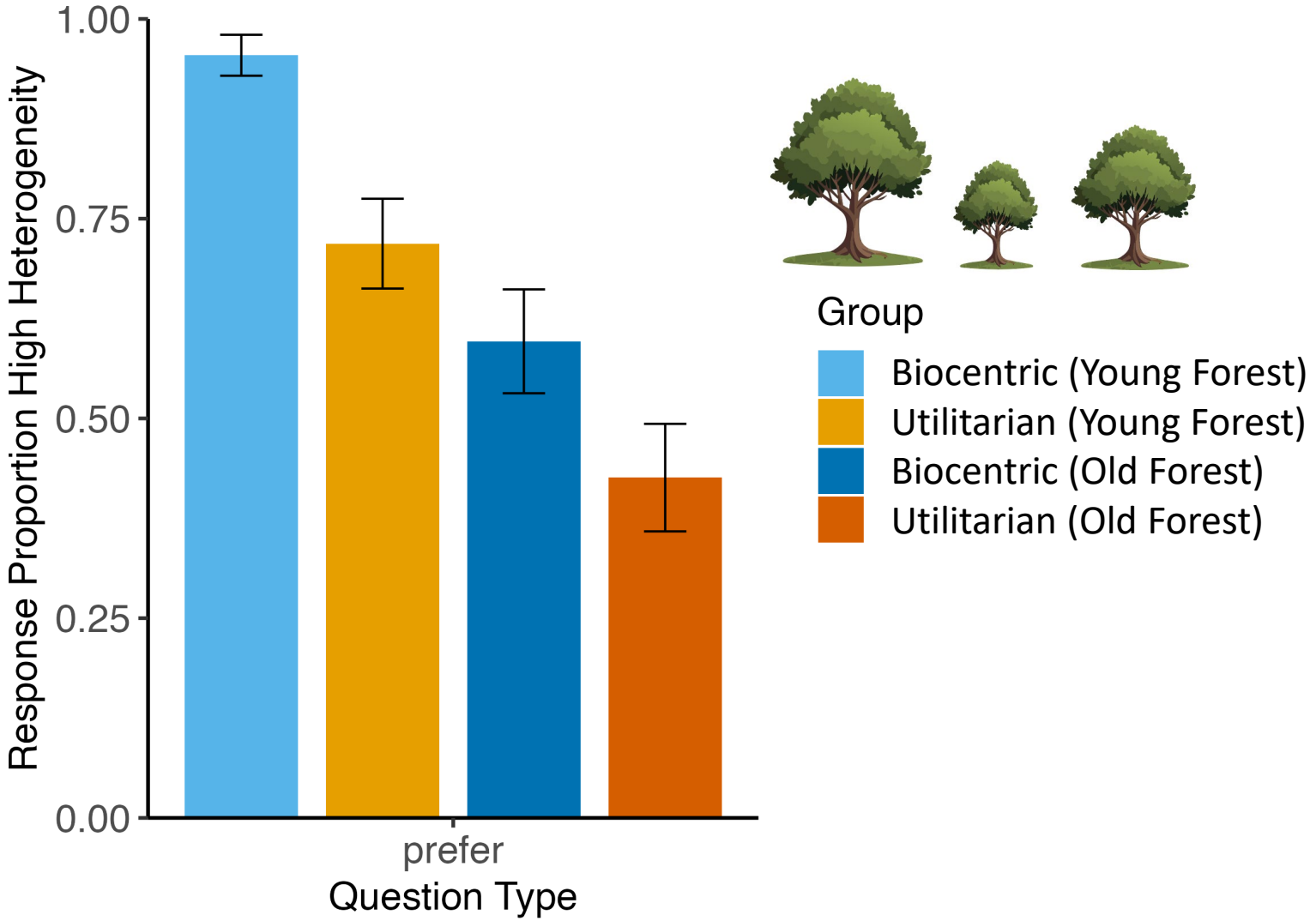
Utilitarian Prefers Flatter Terrain in Young Forests

- Large trees in older forests make terrain differences hard to see



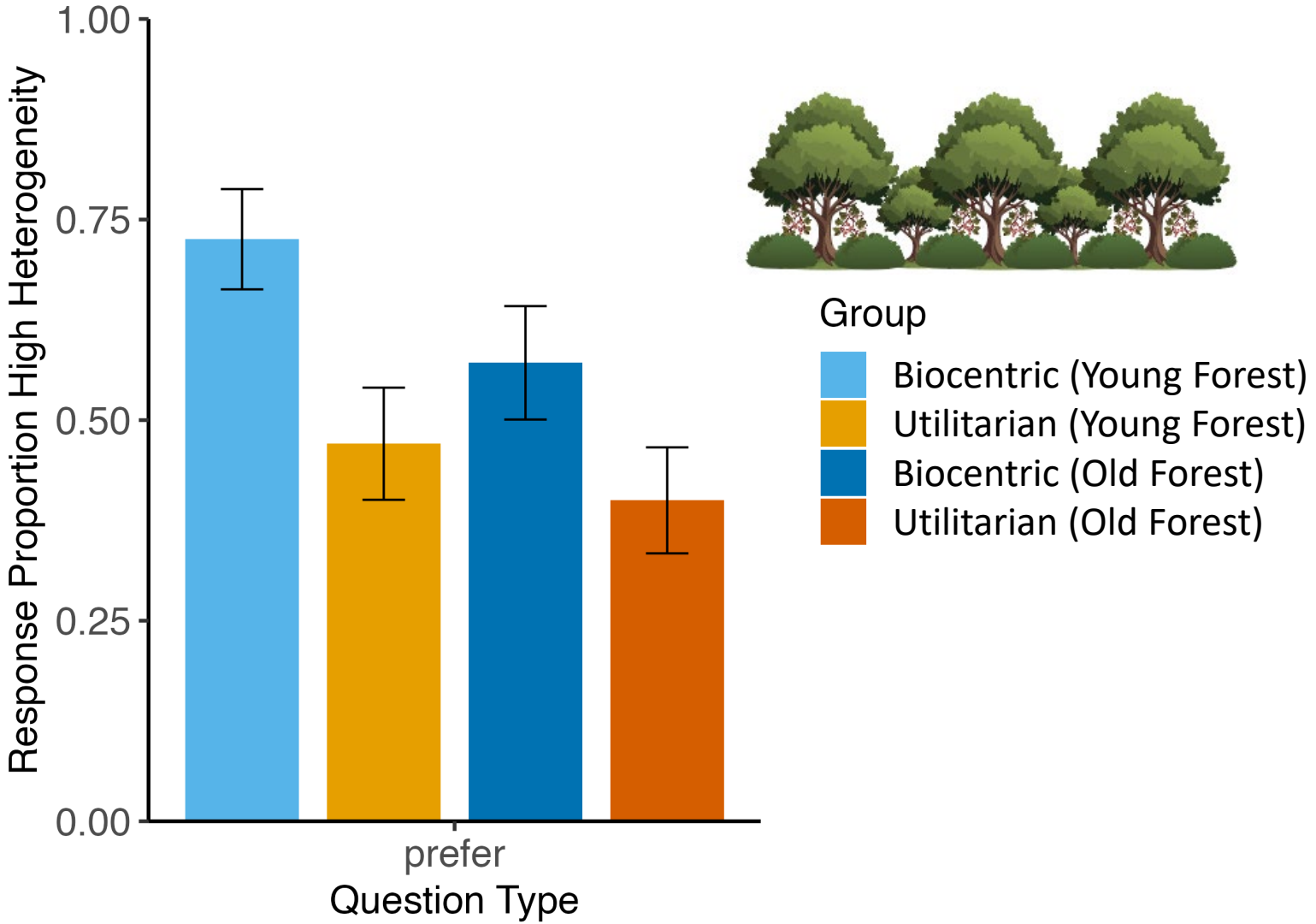
Biocentric Prefers More Variability in Tree Size

- Larger trees easier to see in young restored forests.
- Variability in tree size masked in older forests.

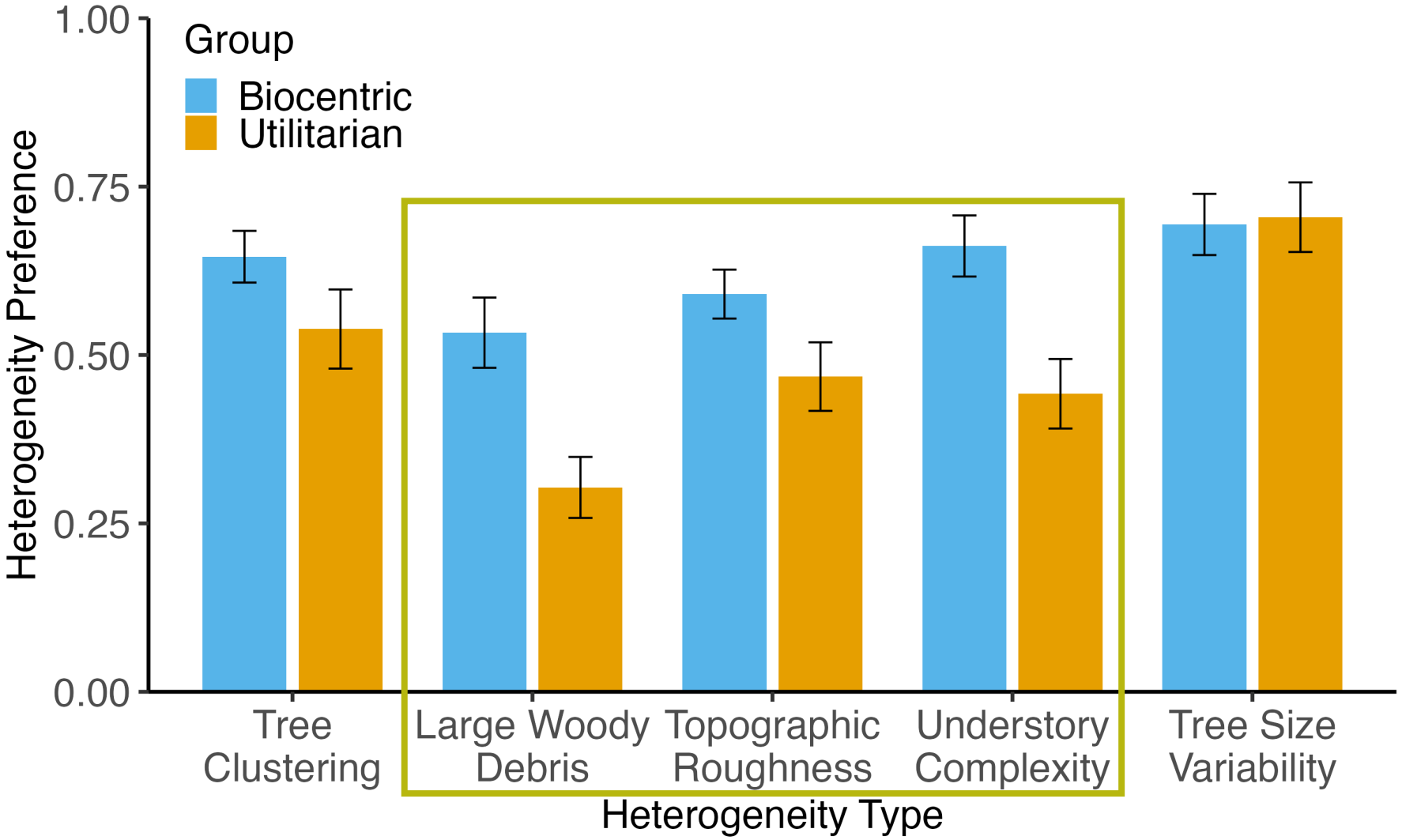


Biocentric Prefers Higher Understory Complexity

- Utilitarian group prefers intermediate understory complexity



Design your own landscape results



Written rationale

Utilitarian
Fishing quality
Hunting quality
Ease of movement
Environmental aethetics

Shared
Ecosystem health

Biocentric
Visual complexity
Recreation
Comfort
Large trees

Implications for Restoration

- Variable tree sizes in young restored sites are preferred
- Topographic roughness, understory complexity, and large woody debris are divisive between stakeholders.
- Utilitarian prefer intermediate heterogeneity while biocentric prefer high.

Acknowledgements

- Northern California Botanists
- California Native Plant Society
- Andrew Dunne
- James Armas
- Holl Restoration Ecology Lab