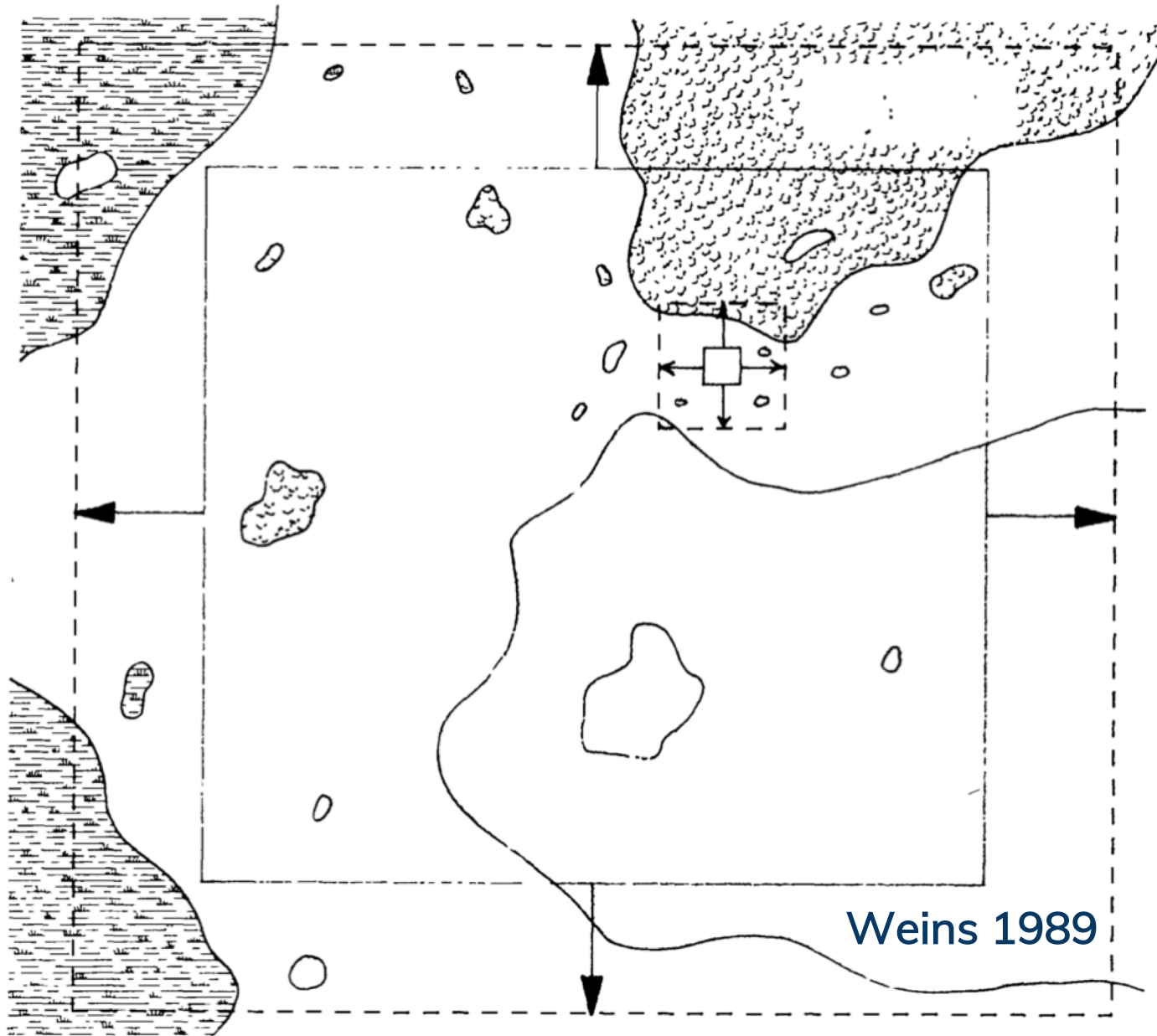


Sampling ecological diversity and process across scales using fractal triads

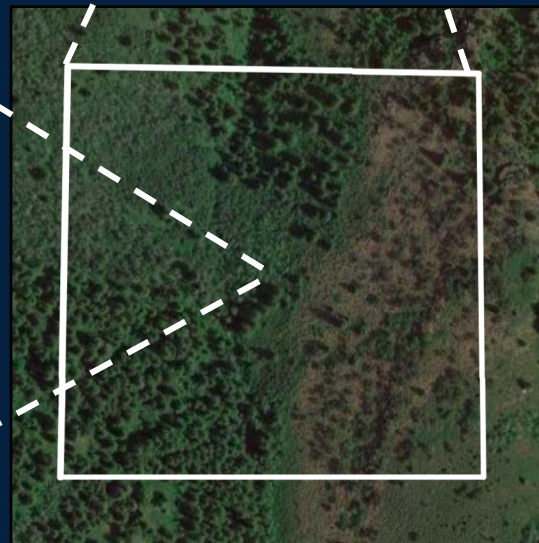
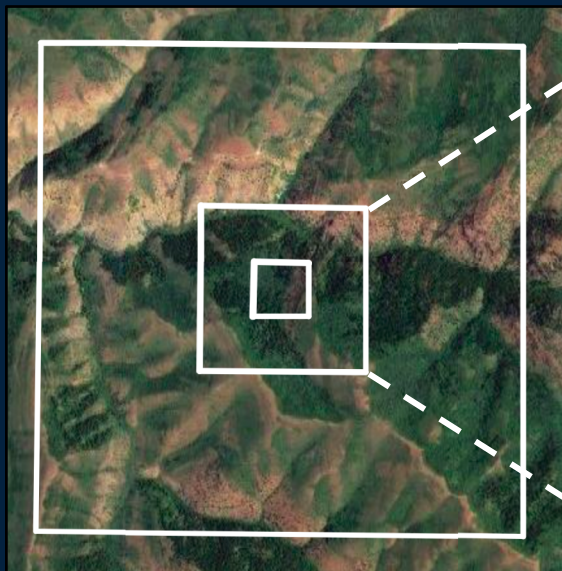


Elizabeth Simpson & William D. Pearce
April 11, 2019 | Student Research Symposium





Weins 1989



Ecological processes are scale dependent

dispersal



competition/
facilitation



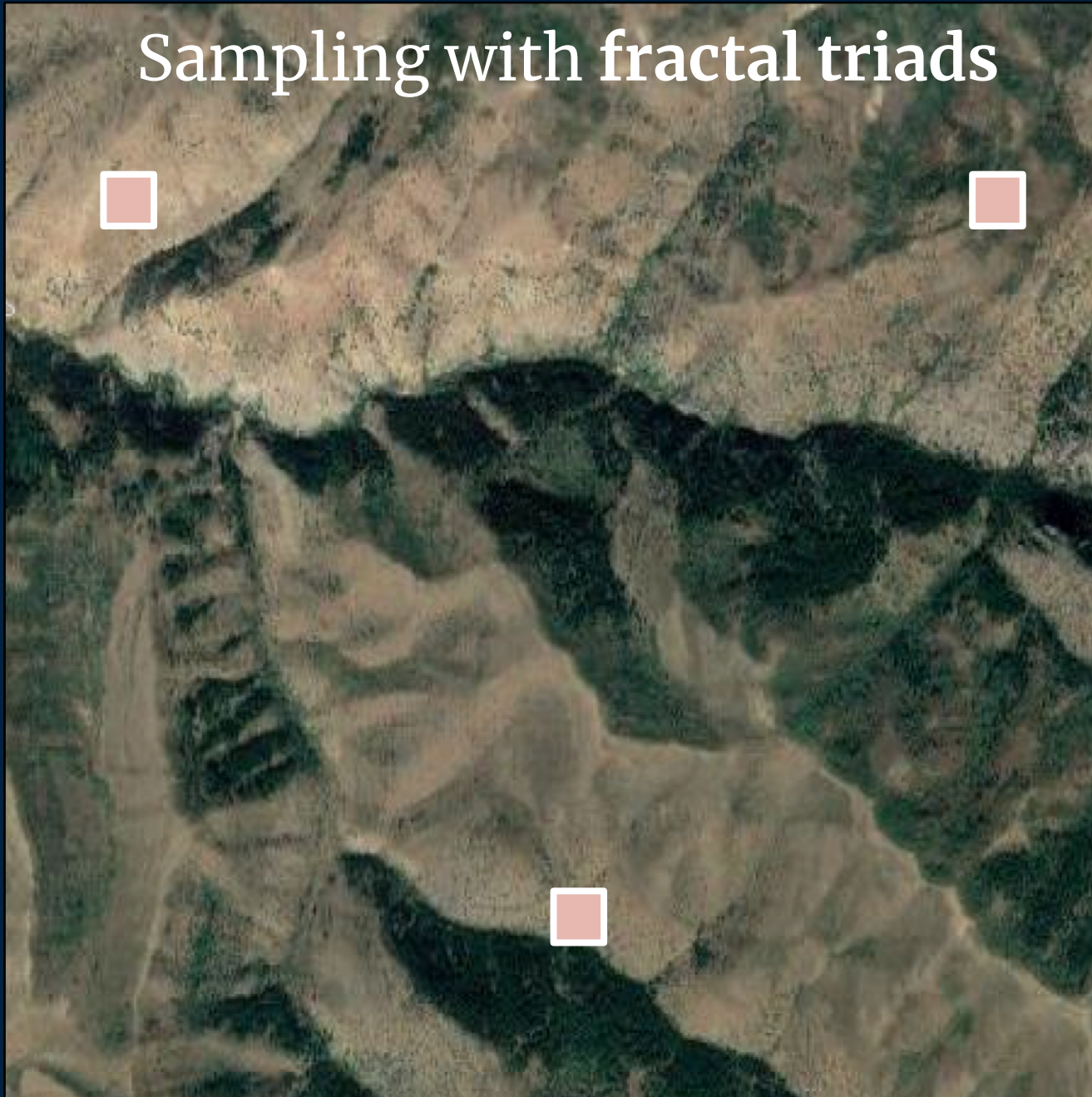
environmental filtering

Overview

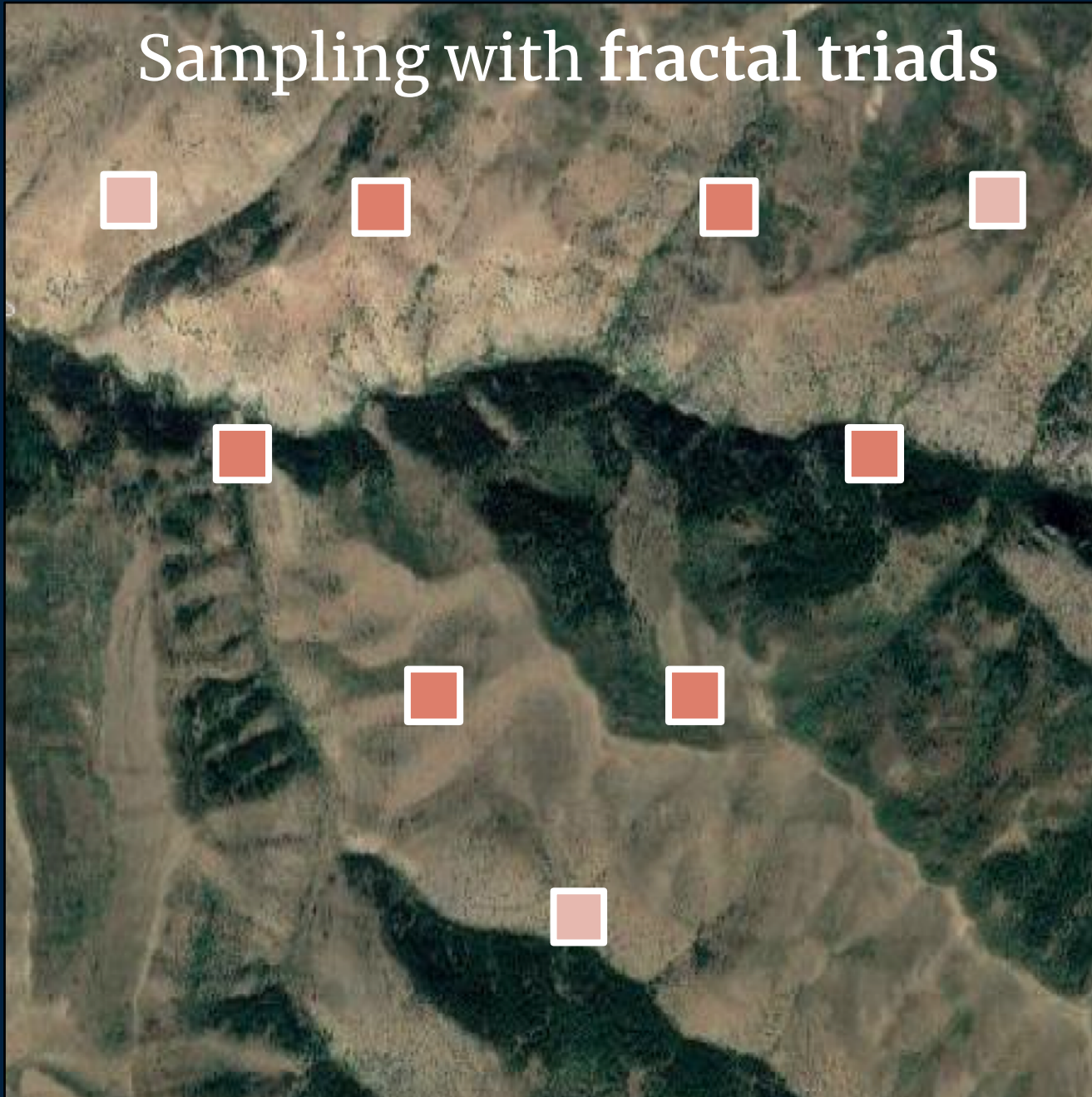


- 1) Building a fractal triad sampling scheme
- 2) Efficacy of fractal triad sampling
 - a) Diversity change across environmental gradients
 - b) Partitioning variance across scale
- 3) Summary

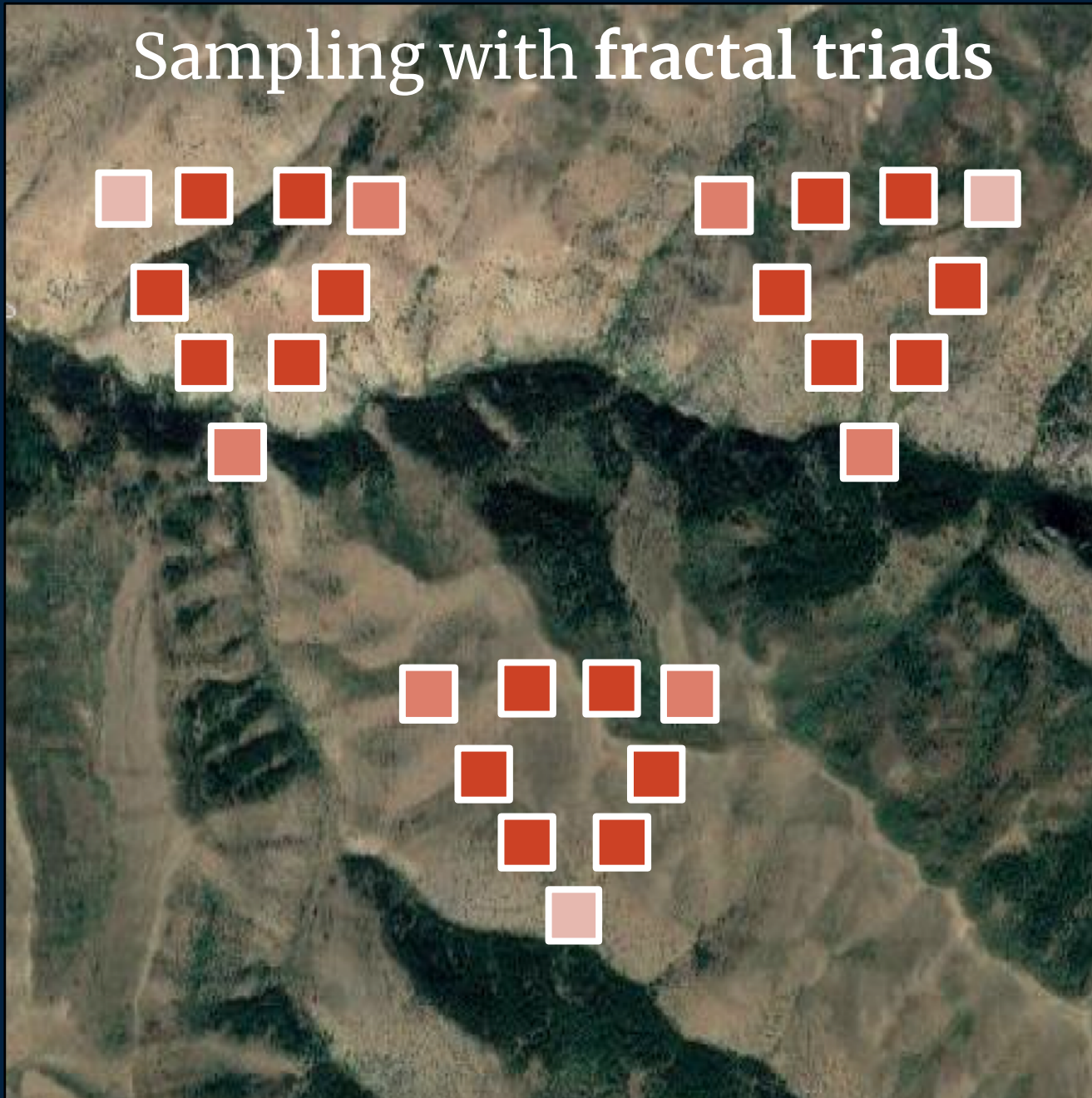
Sampling with fractal triads



Sampling with fractal triads

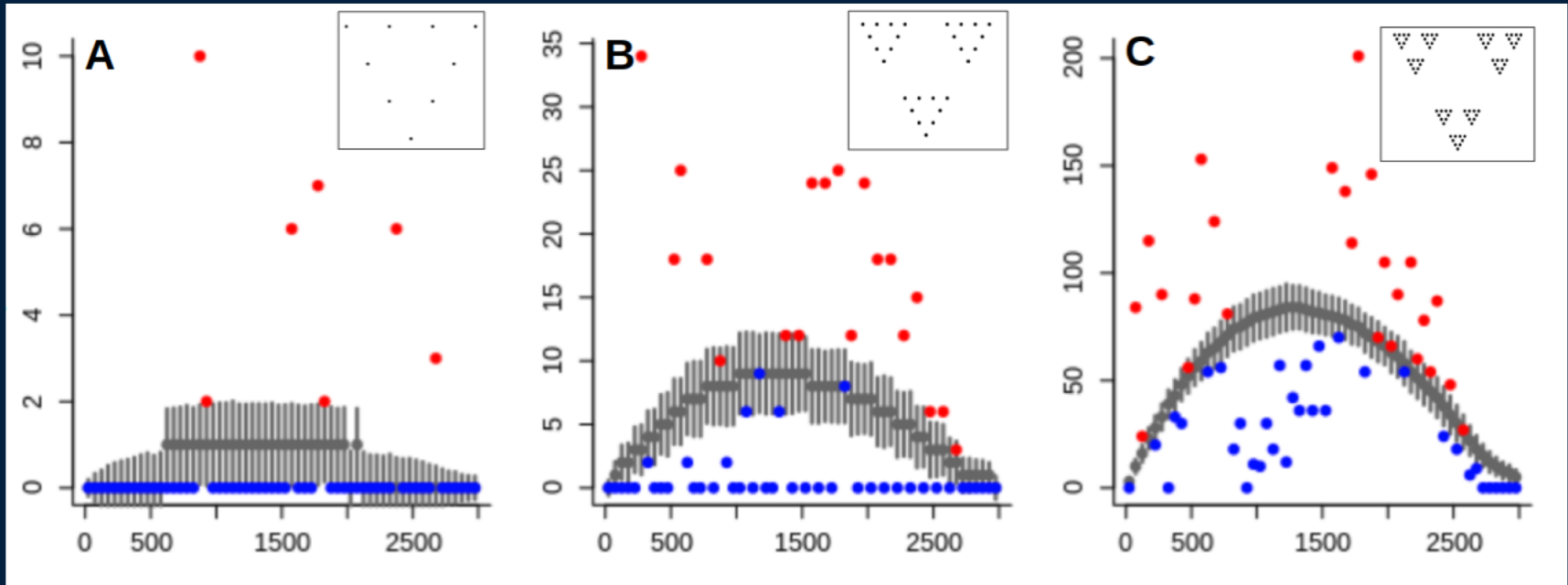


Sampling with fractal triads



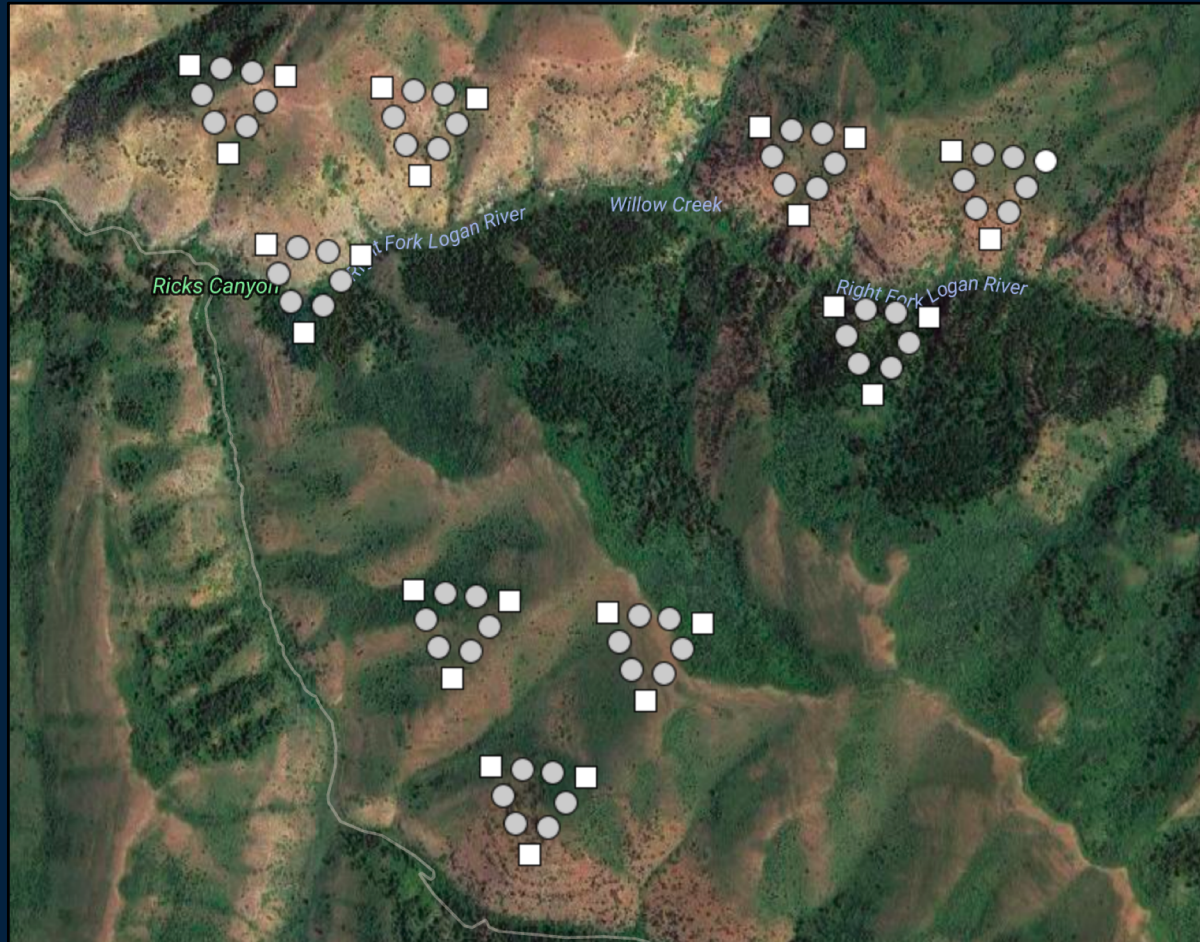
Statistical power at relevant spatial scales

Comparisons



Distance between plots (km)

Sampling changes in diversity across environment at Right Hand Fork



Diversity Metrics

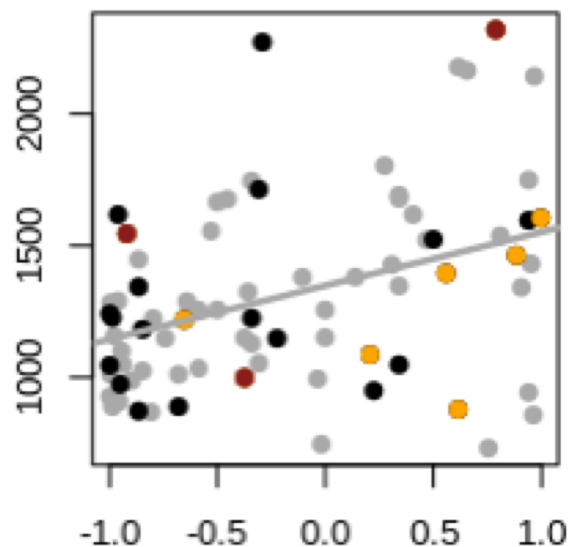
Taxonomic
species presence &
abundance

Phylogenetic
evolutionary history &
relatedness

Environmental gradients

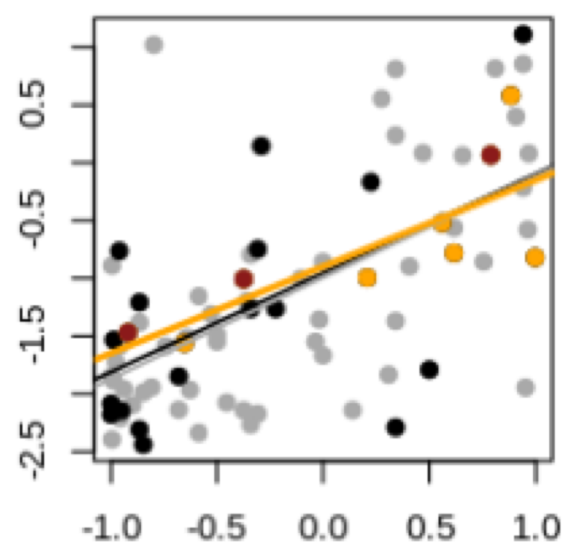


Faith's PD



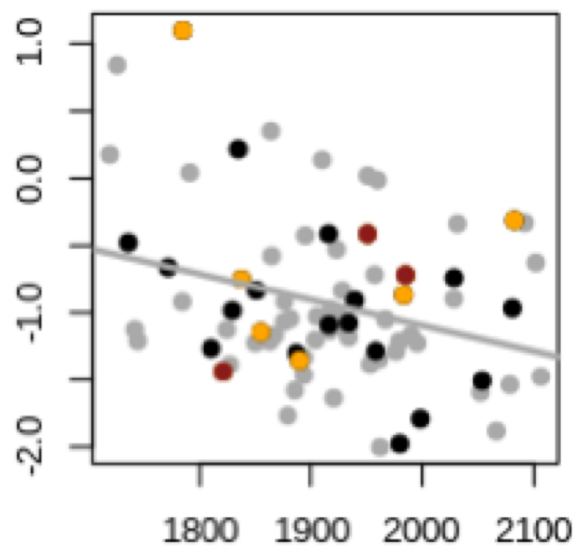
Aspect, $S = -1$, $N = 1$

SES_{MNTD}



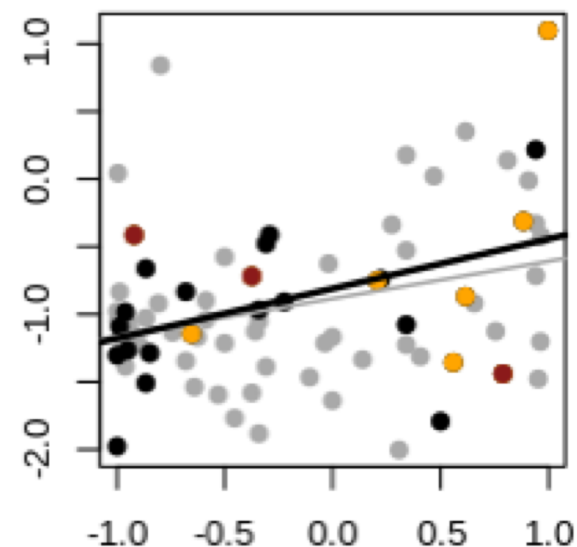
Aspect, $S = -1$, $N = 1$

SES_{MPD}



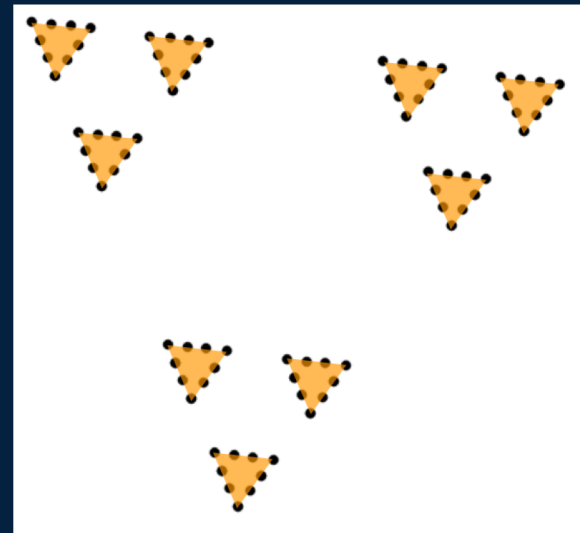
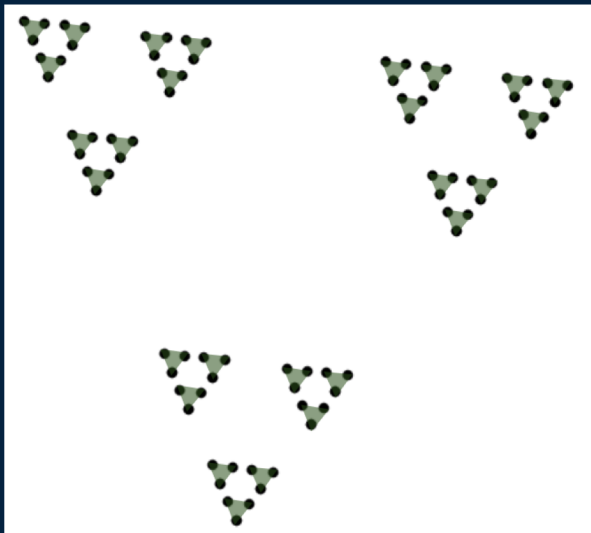
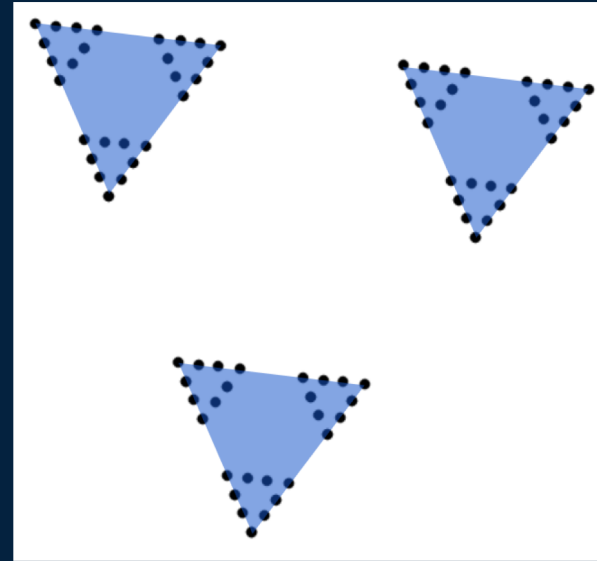
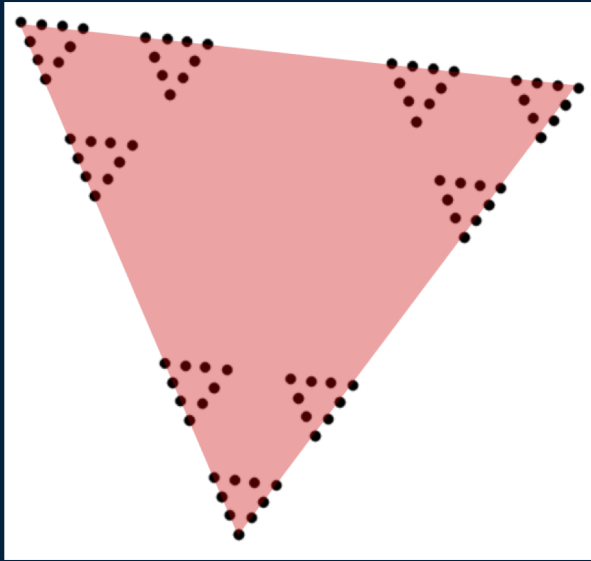
Elevation (meters)

SES_{MPD}



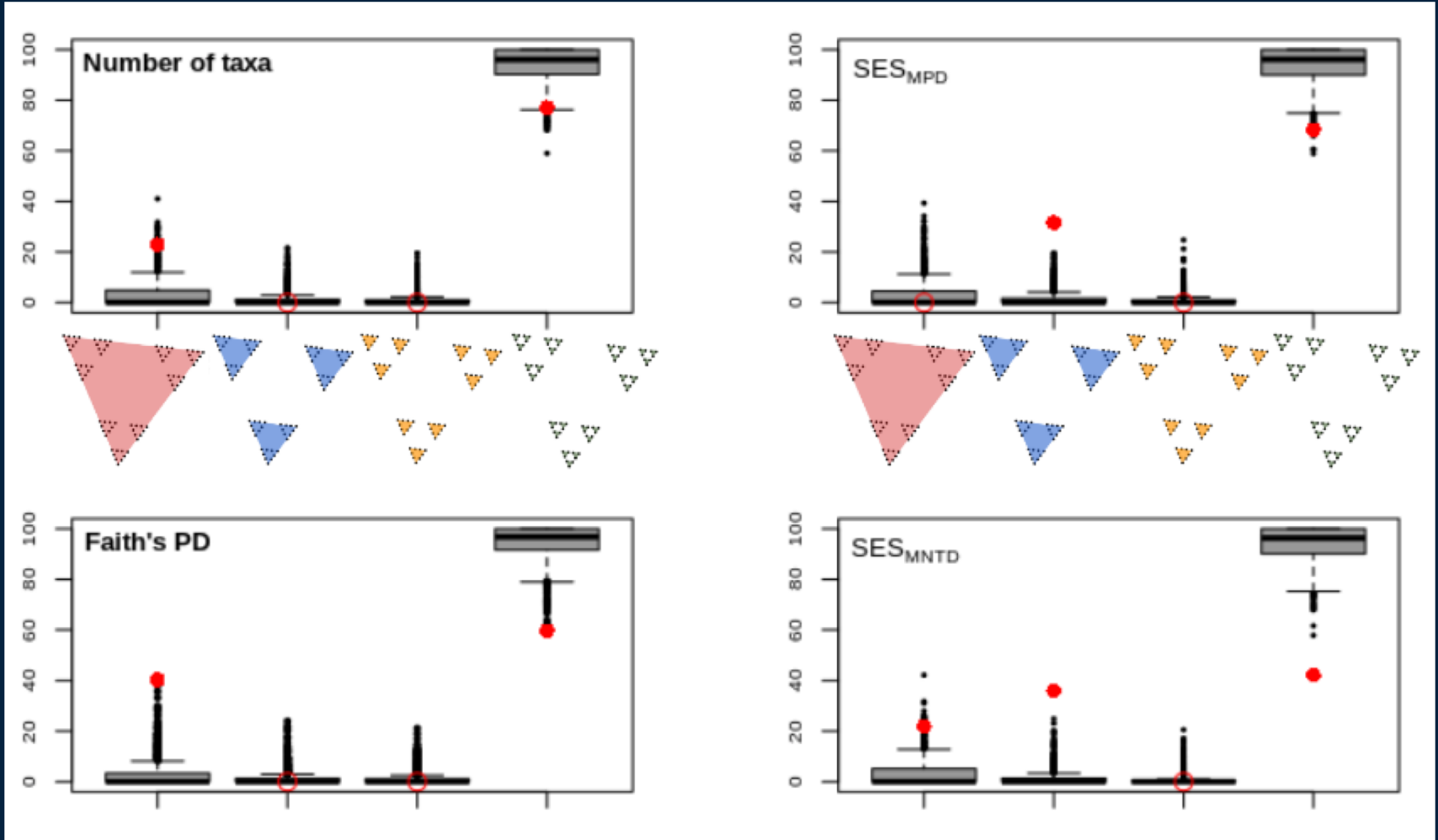
Aspect, $S = -1$, $N = 1$

Partitioning variance across scales



Different scales capture variance for different metrics

Percent of variance



Triad level

Summary



Summary



Summary



Summary



Acknowledgements

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Waring, Paul Wolf

Thank you!



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