

Variability in reproductive synchrony of *Echinacea angustifolia* among years in a fragmented landscape

Will Reed¹ and Stuart Wagenius²

¹University of Minnesota, ²Chicago Botanic Garden

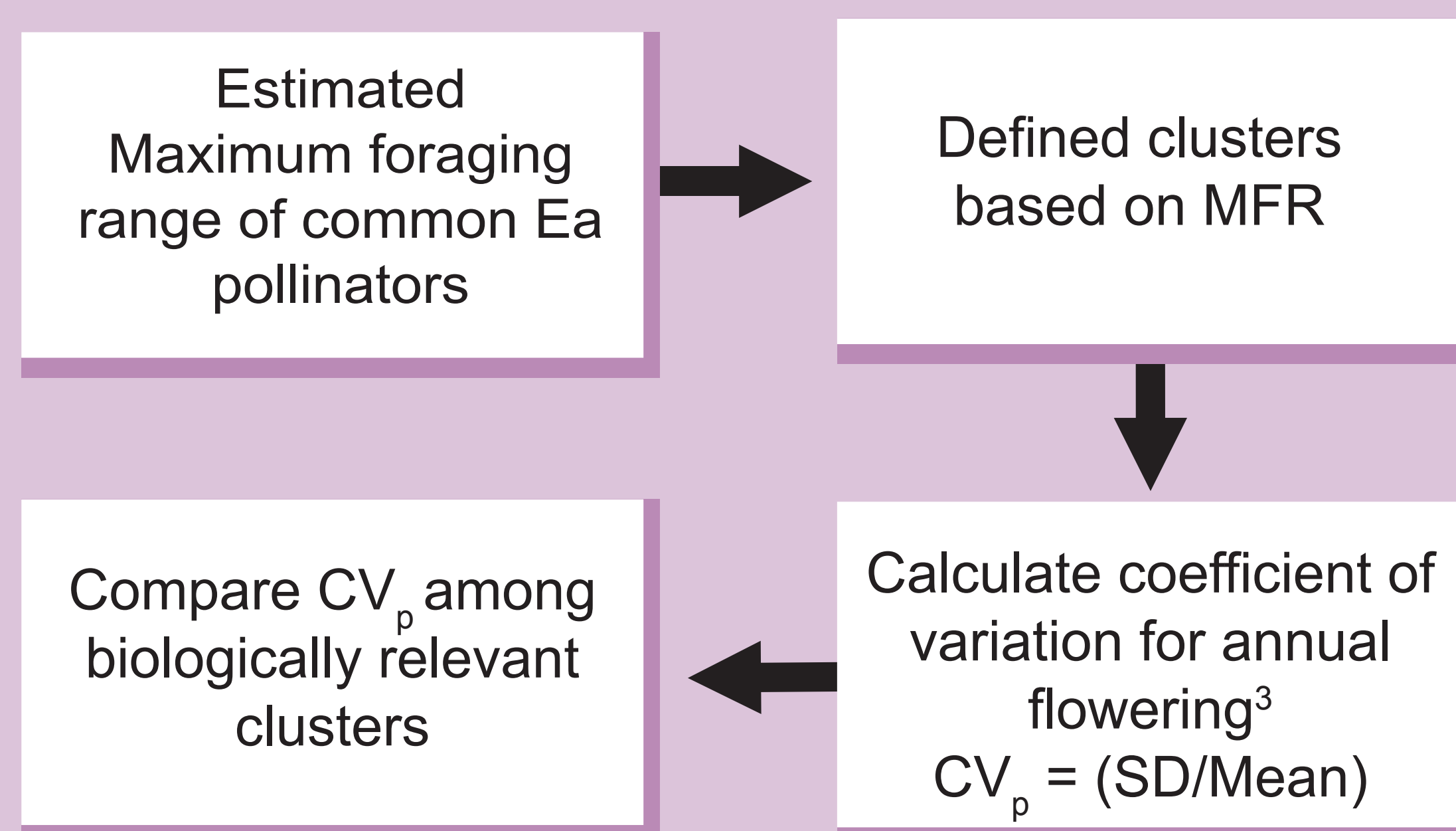


Background

How does fragmentation affect among-year flowering synchrony?

- Among-year synchrony may influence the reproductive success of individuals¹
- Fragmentation and reproductive synchrony could affect gene flow of metapopulations
- Pollinator range is one method to define 'clusters' of individuals within a metapopulation²
- Some years may be better for reproduction within clusters and between clusters

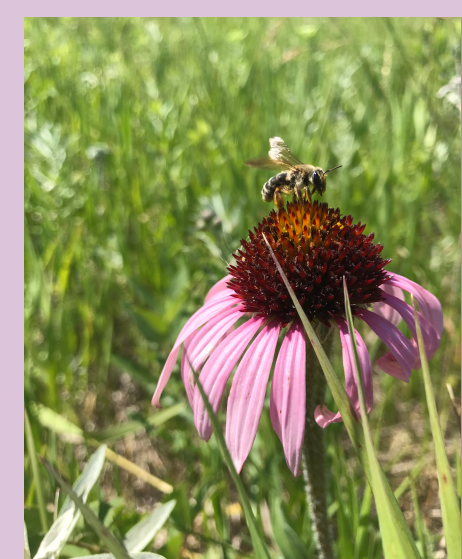
Methods



Study Species

Echinacea angustifolia

- Long-lived
- Self-incompatible
- Persists in heavily fragmented habitat



Results

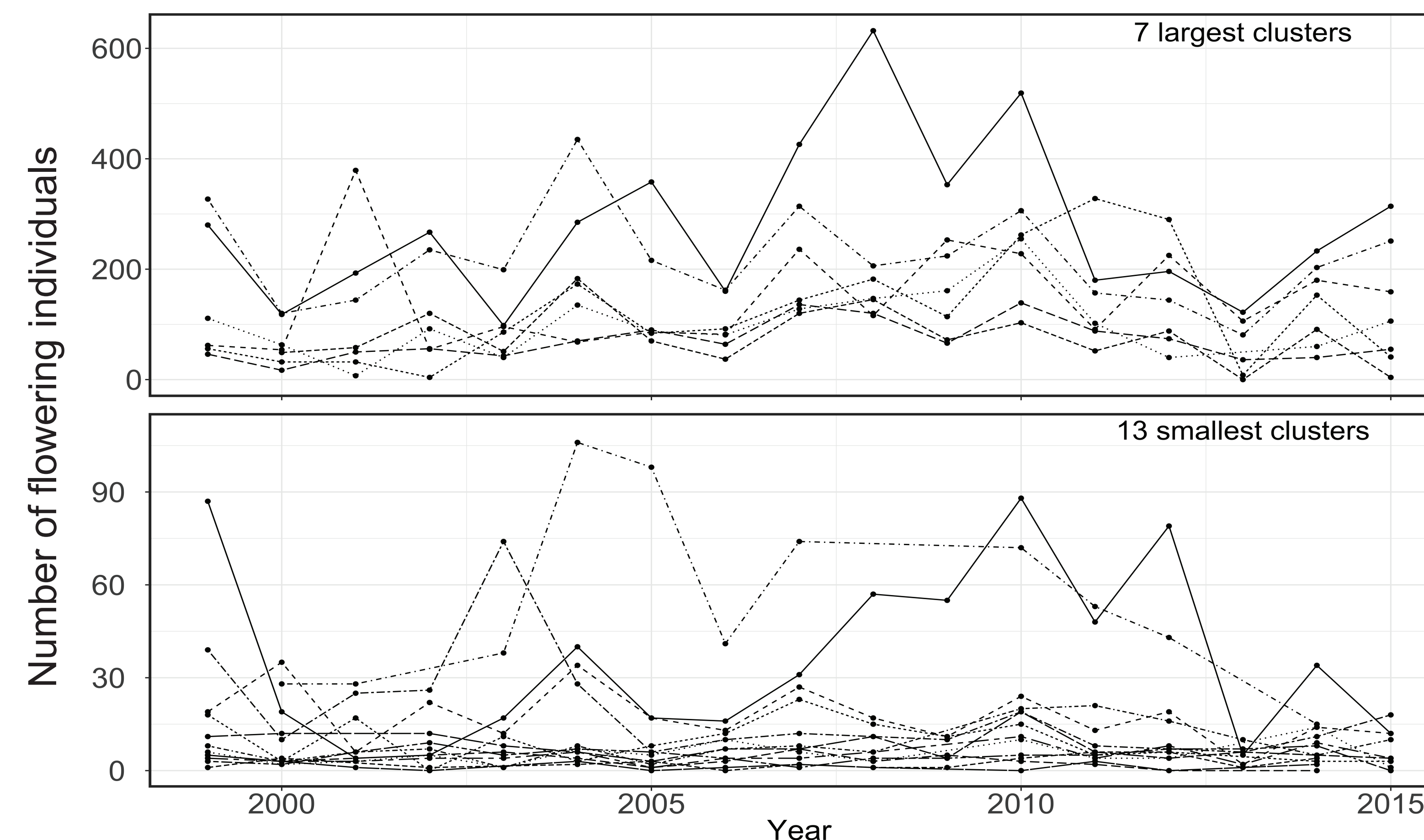


Figure 1: Variation in number of flowering plants at clusters from 1999 to 2015. The top graph shows flowering for the 7 largest clusters and the bottom shows flowering for the 13 smallest

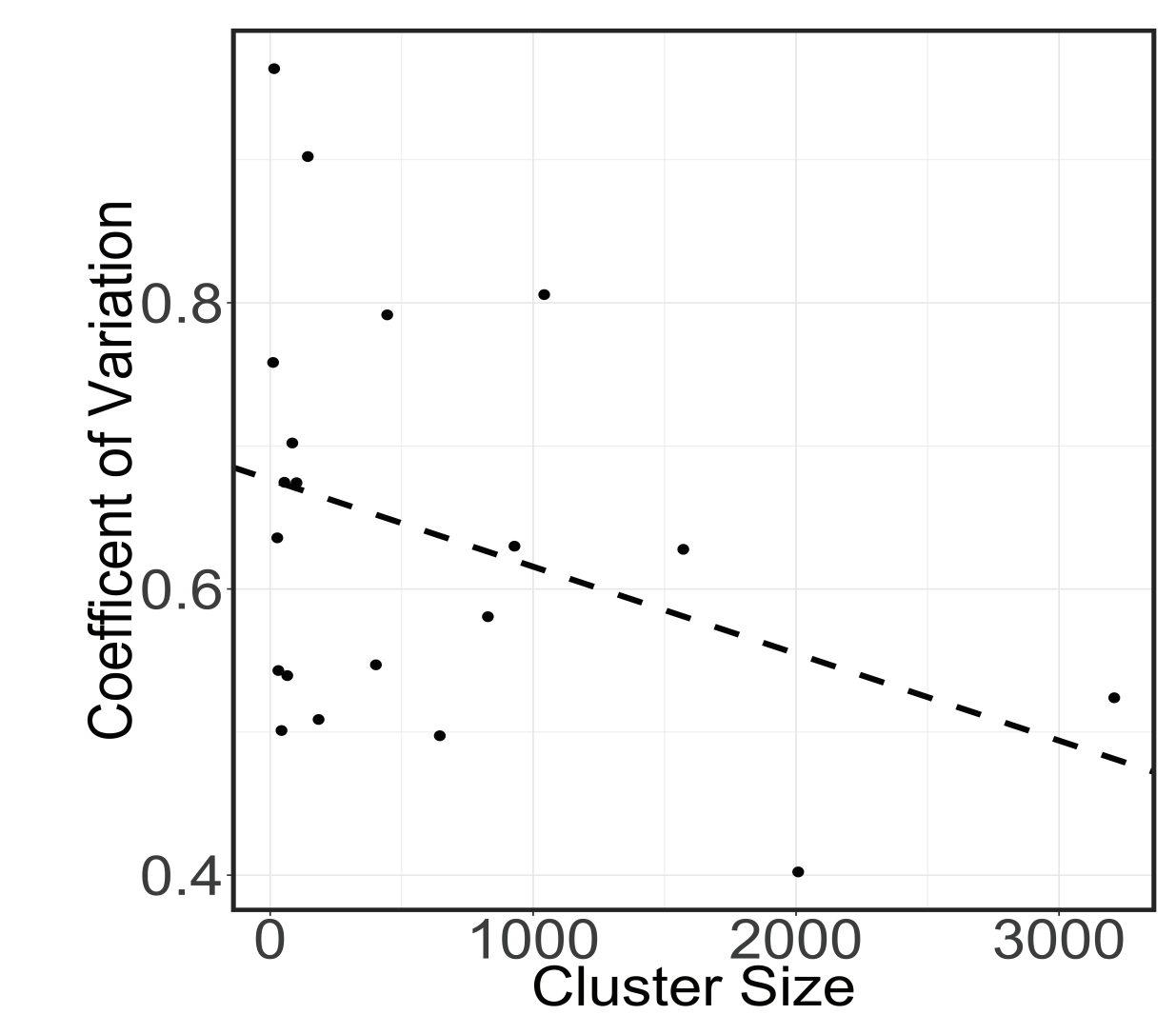


Figure 2: Coefficient of variation for clusters vs. the estimated number of individuals in each cluster. Cluster size is not a strong predictor of among-year synchrony ($p = 0.132$)

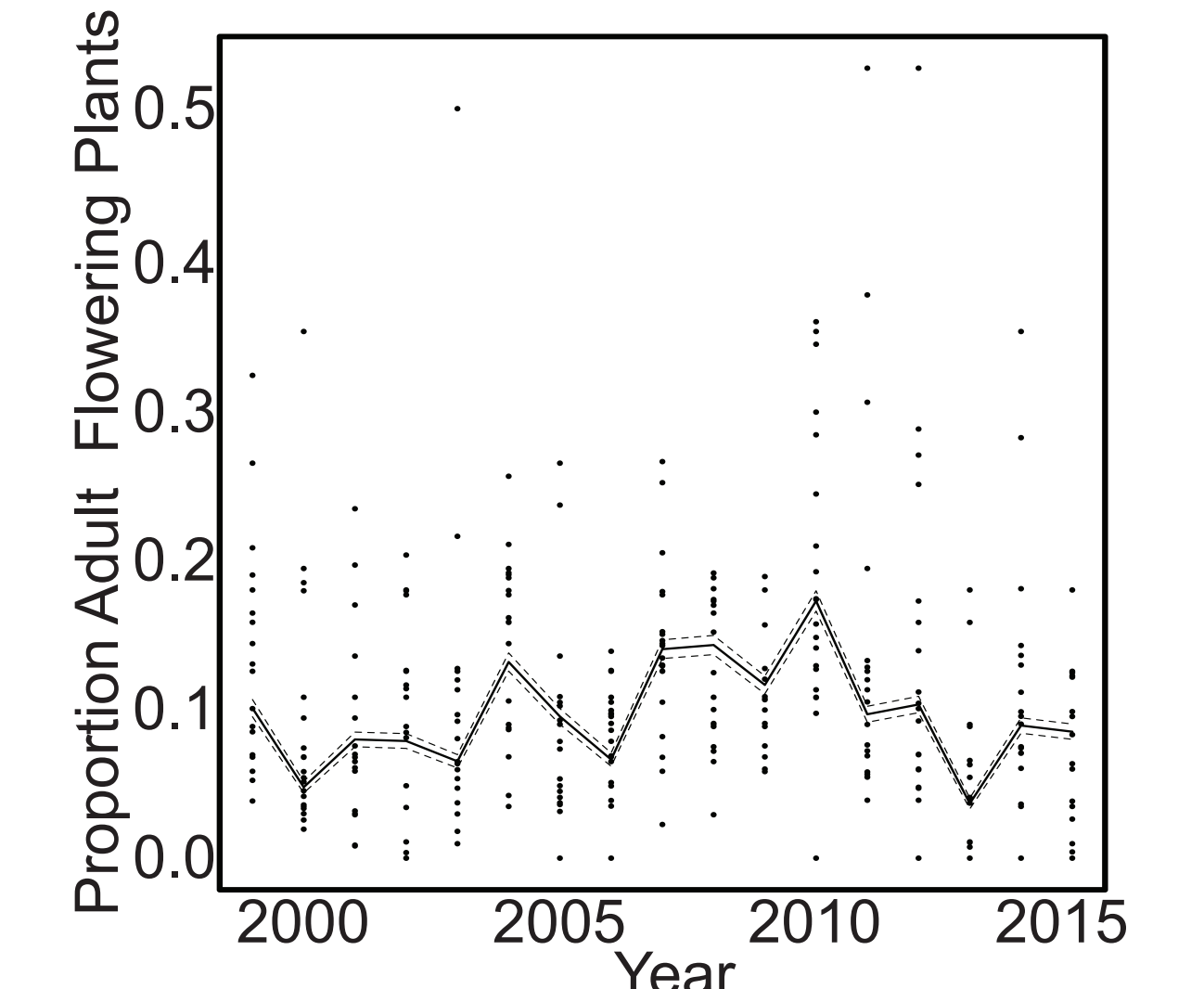


Figure 3: Proportion of flowering for each year and each cluster. Predicted values with 95% confidence intervals for overall mean annual proportion of plant flowering based on glm ($p < 0.001$).

Conclusions

- Biologically relevant 'clusters' defined by the foraging range of common *Echinacea* pollinators show a high degree of variation in among-year flowering
- While there is higher variation in among-year flowering in larger clusters, individuals may be more synchronous at large clusters due to a greater number of flowering individuals
- Some years are better for reproduction as a result of higher a higher number of flowering individuals in the metapopulation

Acknowledgments

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References

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