The relative importance of biotic and abiotic factors as drivers of alien bird species richness patterns

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What drives the richness of alien bird species?

- **Climate?** (mean and variance of temperature and precipitation)
- **Humans?** (population density, human land uses)
- **Landscape patterns?** (land cover types area, richness and diversity)
- **Biodiversity of native species?** (taxonomic, functional and phylogenetic diversity)

Do the drivers change across space?

Comparisons across three US states: New York (NY), Pennsylvania (PA) and Massachusetts (MA)

Do the drivers change across time?

Comparing the 1980s with the 2000s

Biodiversity of native species was systematically most strongly correlated with alien species richness

Land cover and **climate** produced significant but weaker models

This pattern **persisted across states over time**

pseudo-R²	PA 1980s	PA 2000s	NY 1980s	NY 2000s	MA 1980s	MA 2000s
Biotic	**0.53**	**0.55**	**0.41**	**0.44**	**0.63**	**0.49**
Land+Human	0.08	0.08	0.07	0.10	0.11	0.12
Climate	0.05	0.04	0.08	0.06	0.02	0.08

We ran Generalized Least squares (GLS) models that account for spatial autocorrelation
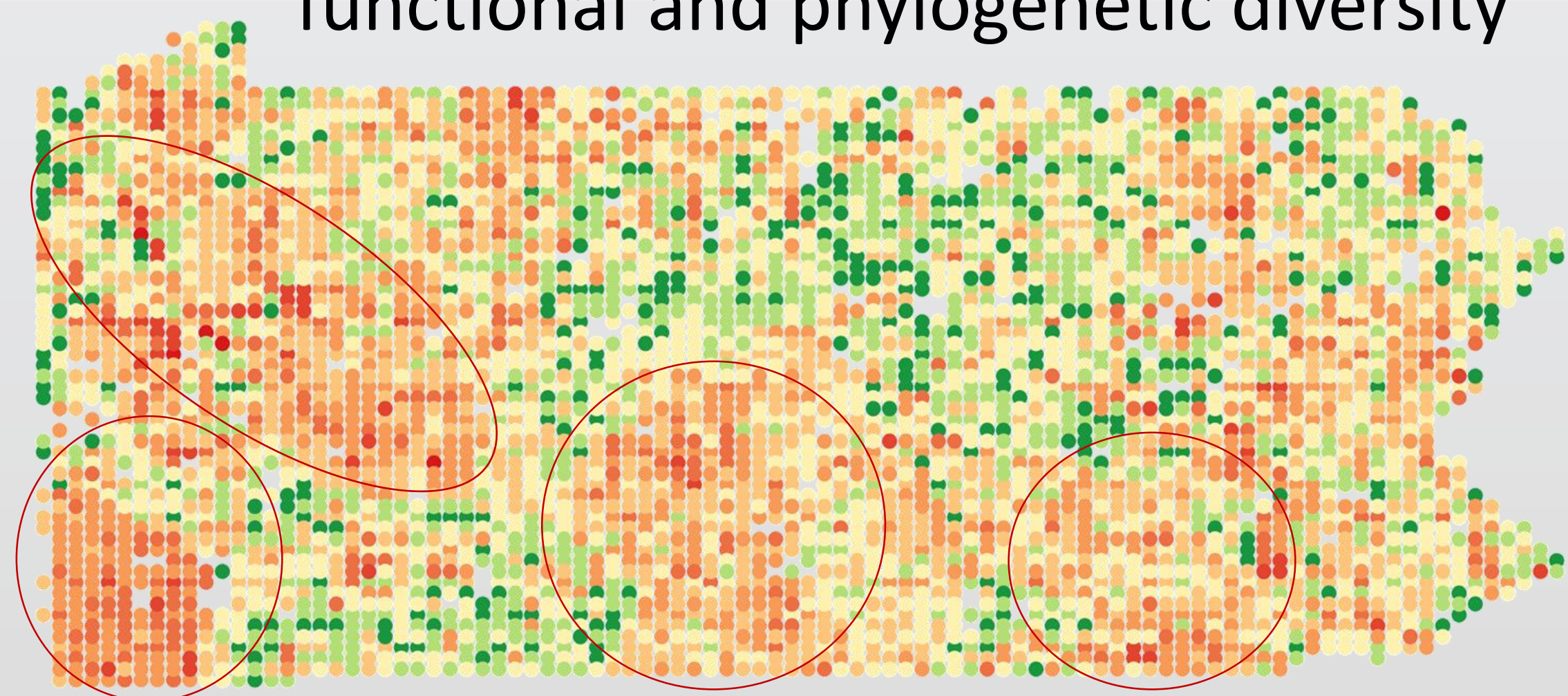Table shows each model's Nagelkerke's pseudo-R²

Native species biotic metrics with the strongest correlation to alien species richness in Pennsylvania

Phylogenetic Diversity

Functional Richness

Species Richness

Areas with higher taxonomic, functional and phylogenetic diversity

Areas with higher alien species richness

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