

Clustering Biodiversity

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Data

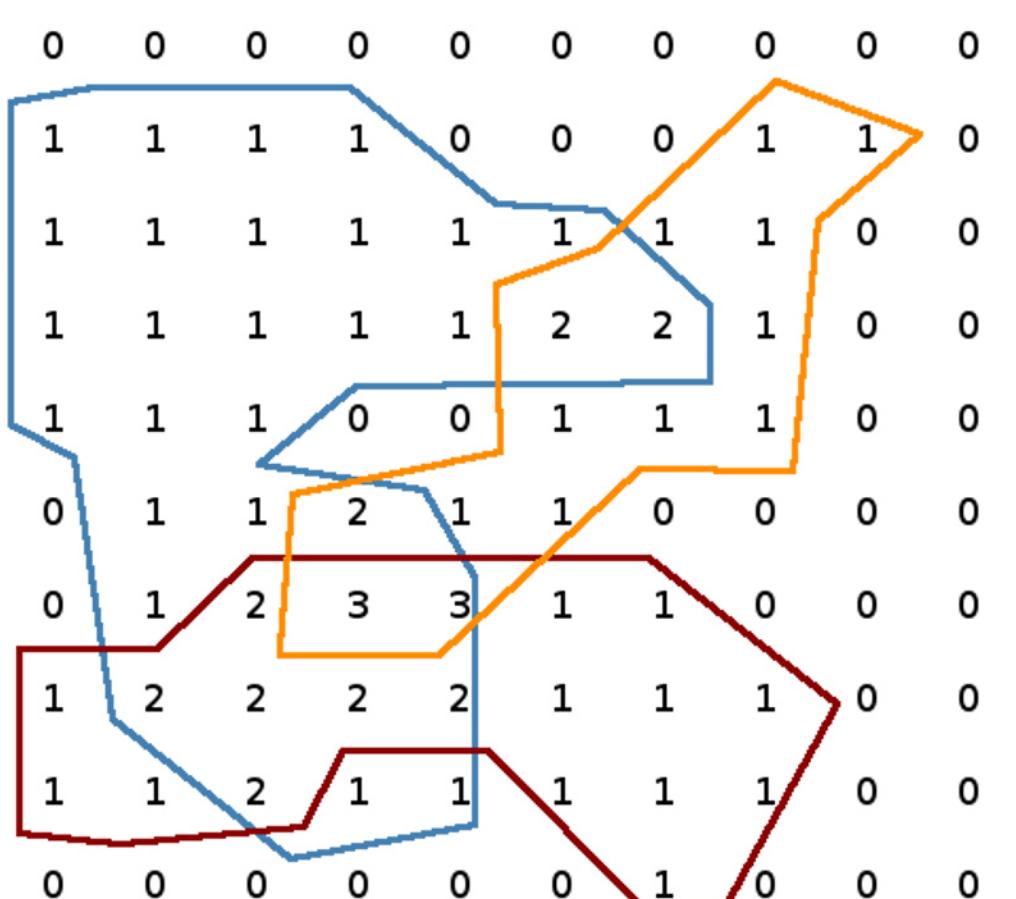
- Shapefile with polygons describing species ranges
- Retrieved from **International Union for Conservation of Nature**
- Converted to **centroids**
- Also used **polygon depth**

Problem

- What can clustering centroids tell us about endangered species?
- Can we identify areas of high biodiversity by using density based clustering?

Polygon Depth

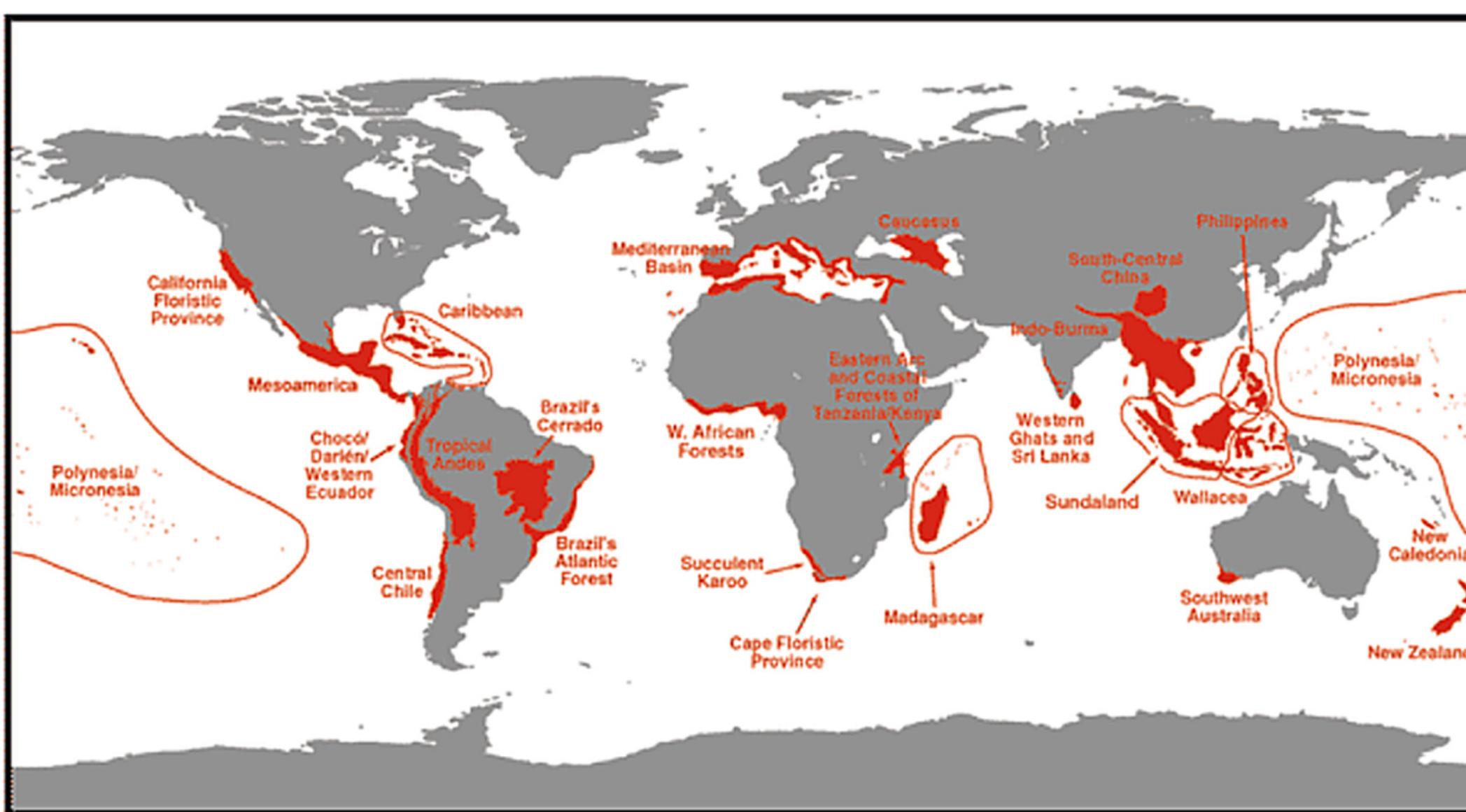
- Retain some shape information
- Make calculations easy



Clustering Centroids



Compare to known diversity hotspots according to Meyers



Gonzalez

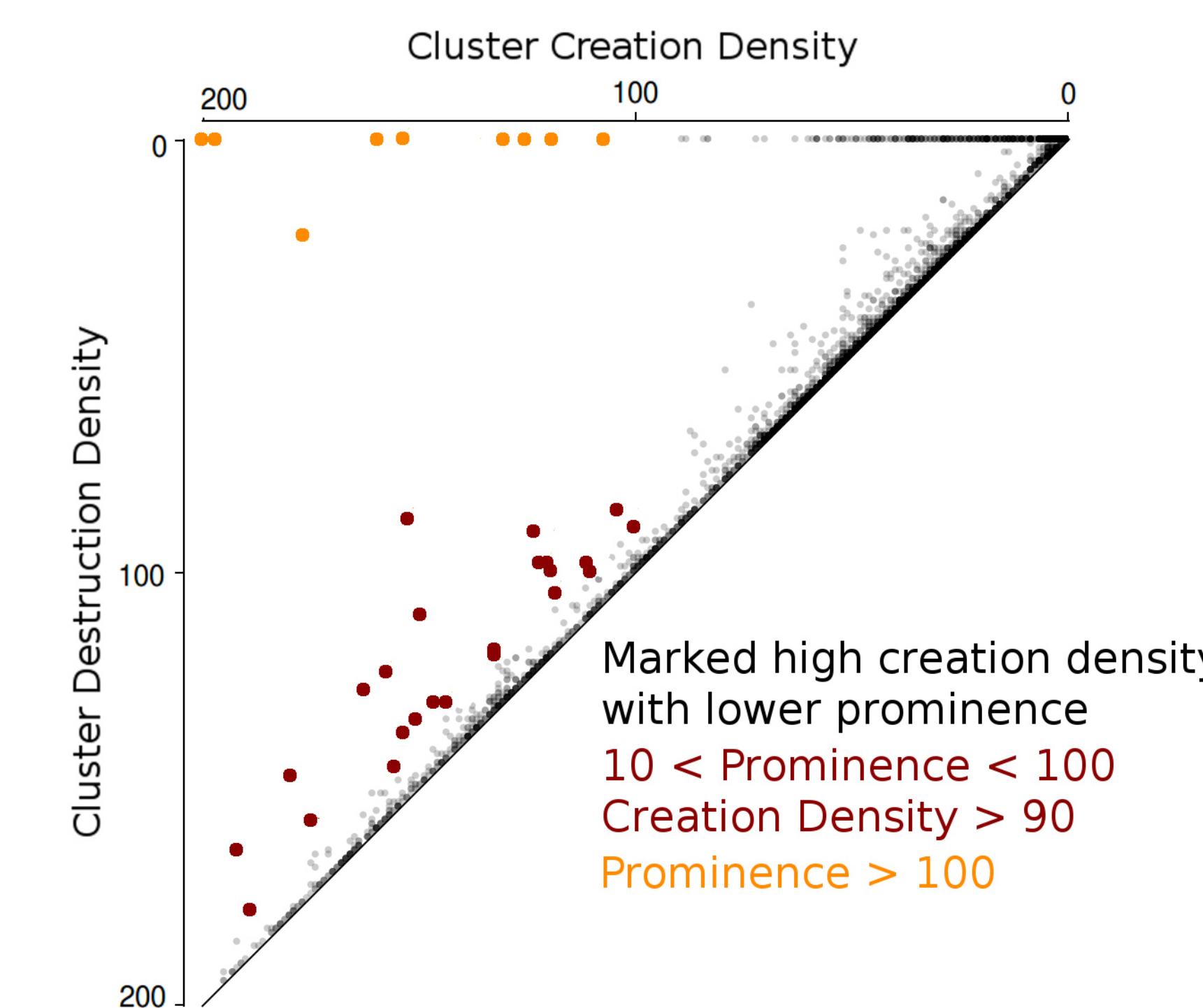
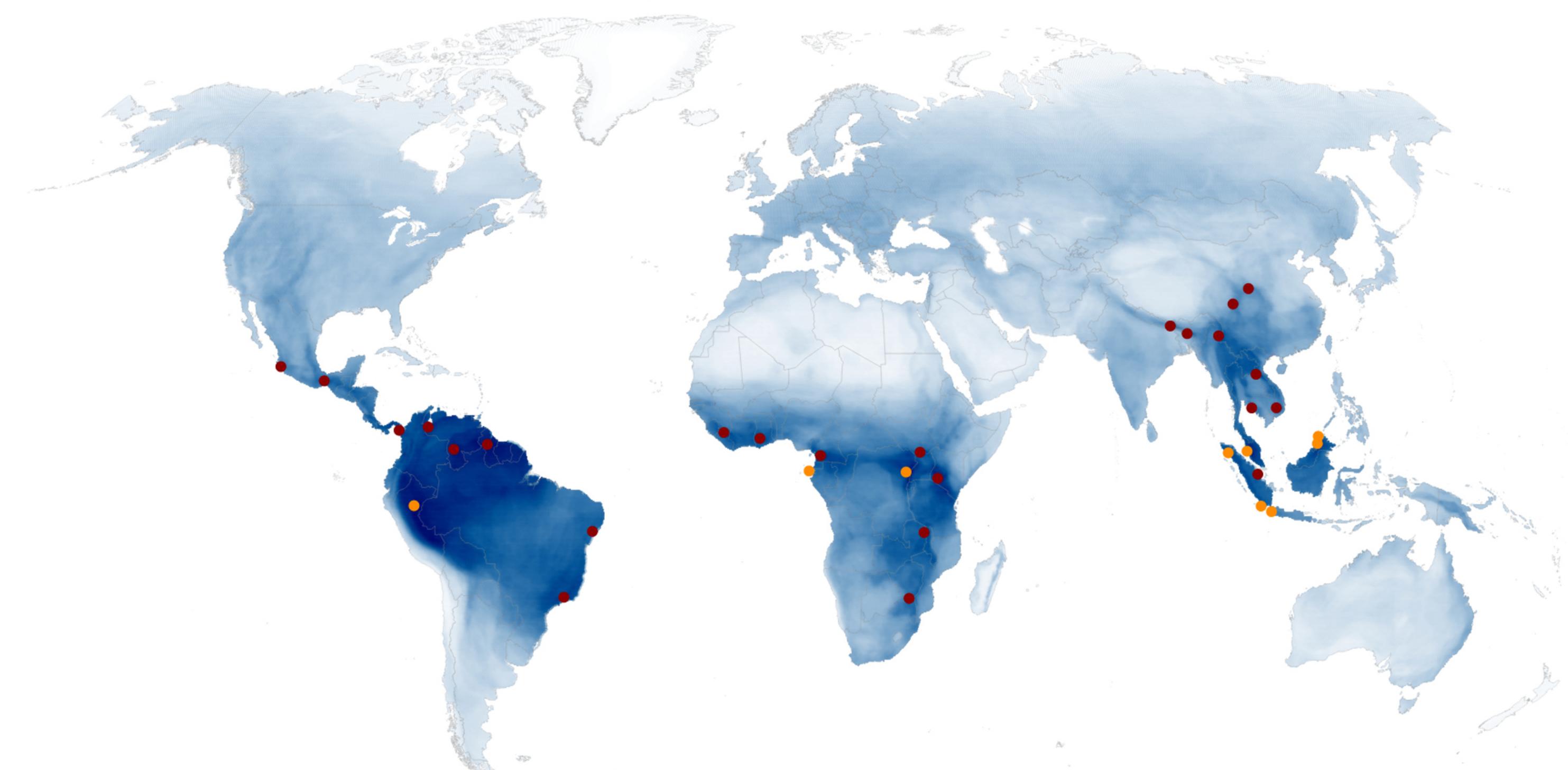
- Endangered species centroid data
- $k=40$

Density Based Clustering

Cluster prominence

- Run DBSCAN from high density to low density
- Find the peak point when a cluster forms.
- Peak density measured by *Cluster Creation Density*
- Peak prominence measured by distance from diagonal

Example Dataset: Mammals



Conclusion

- Clustering polygon centroids of endangered species can provide meaningful divisions
- Density based clustering can be used to find peak areas of biodiversity and their prominence