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

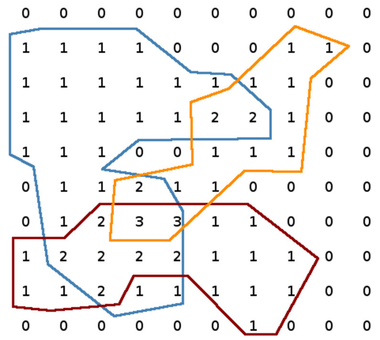
- What can clustering centroids tell us about endangerde species?

- Can we identify areas of high biodiversity by using density based clustering?

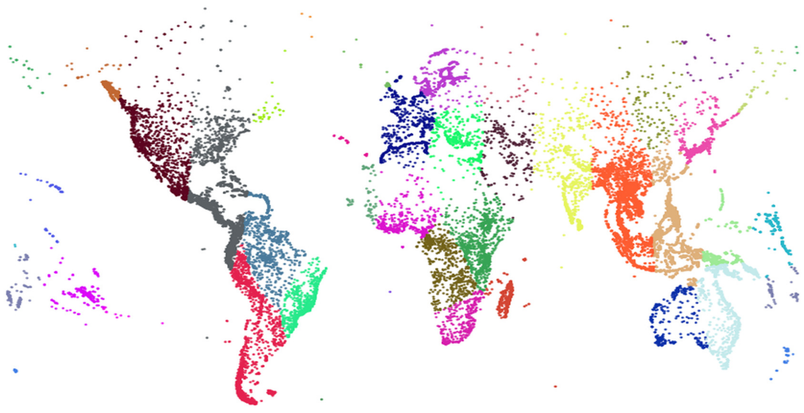
Polygon Depth

- Retain some shape information

- Make calculations easy



Clustering Centroids

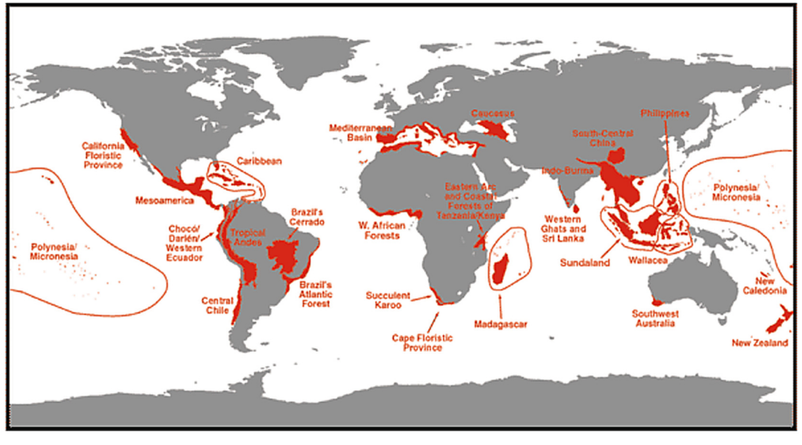


Gonzalez

- Endangered species centroid data

- k=40

Compare to known diversity hotspots according to Meyers



Density Based Clustering

DBSCAN

Clustering algorithm based on:
- Polygon depth data
- Average depth
- Proximity

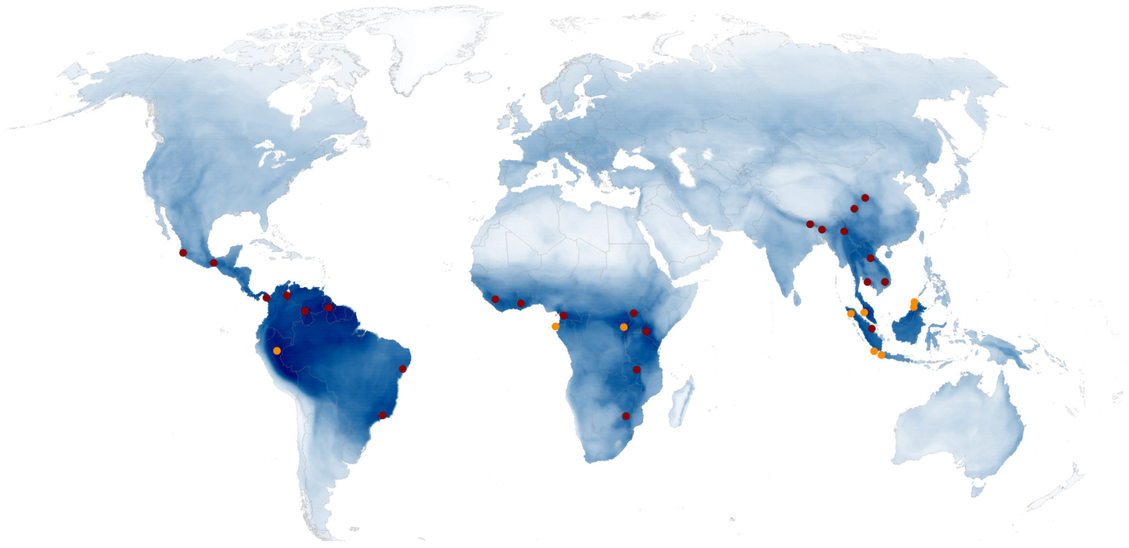
How to choose minimum average depth?

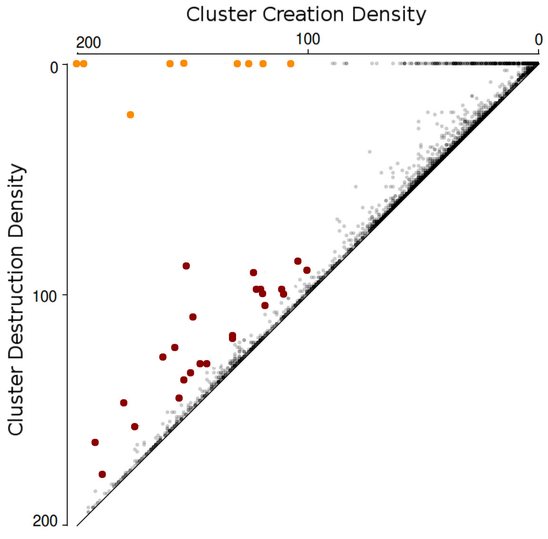
Cluster prominence

- 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





Marked high creation density with lower prominence

10 < Persistence < 100
Creation Density > 90

Prominence > 100