

Functional Roles of Migratory Waterbirds

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Questions

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 - Less constrained by breeding habitat
 - Constrained by necessity of migration!

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- Functional roles of migratory vs resident species?
- Functional equivalence of summer and winter migrants?
- Differences between habitats in functions supported?
- Anything else...?

Data: censuses

- Monitoring data
 - Single count per site
 - Summer or winter
 - Various habitats
 - Lake, beach, grassland
- Incomplete coverage
 - At least once each in summer and winter

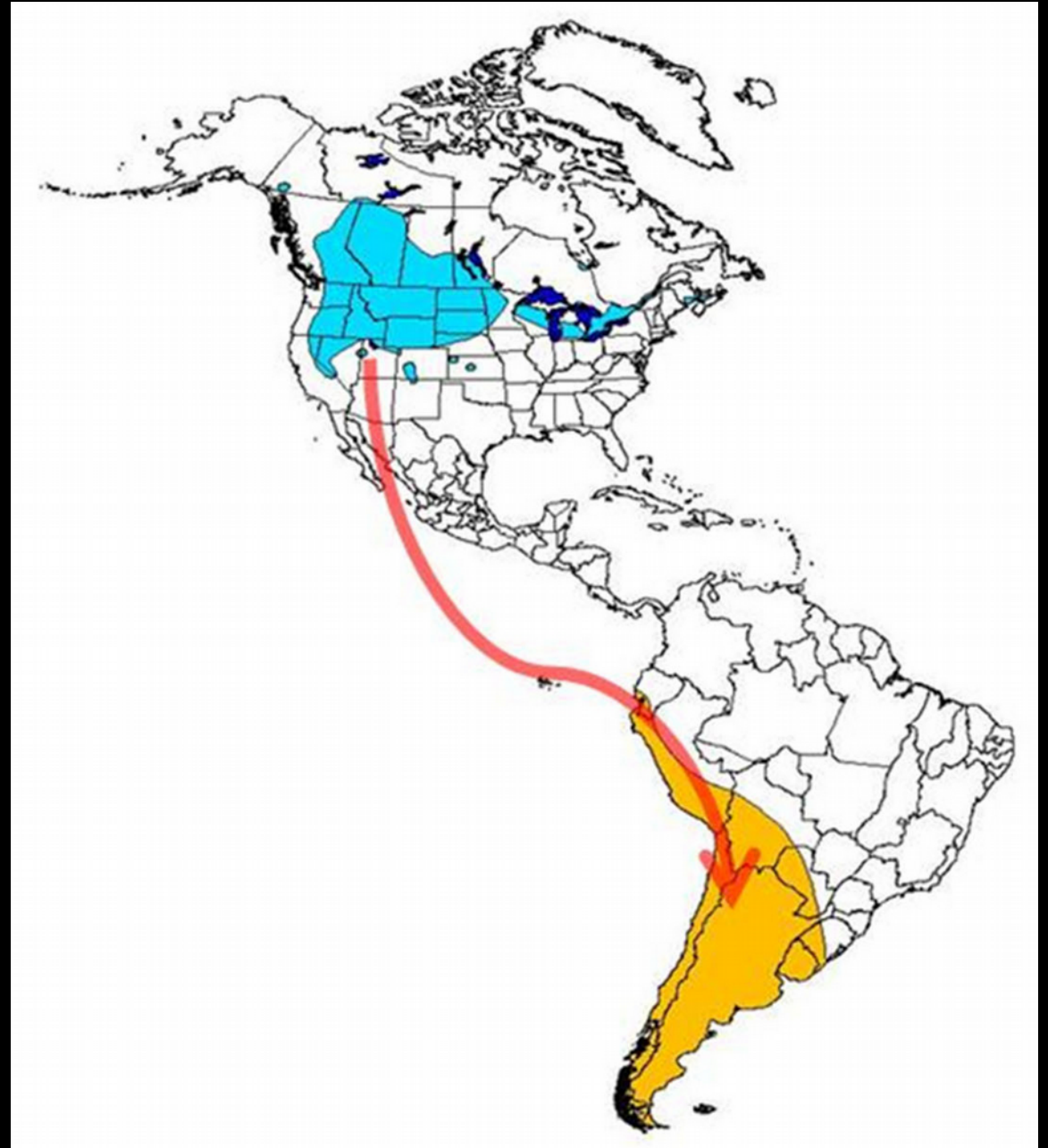


Data: traits

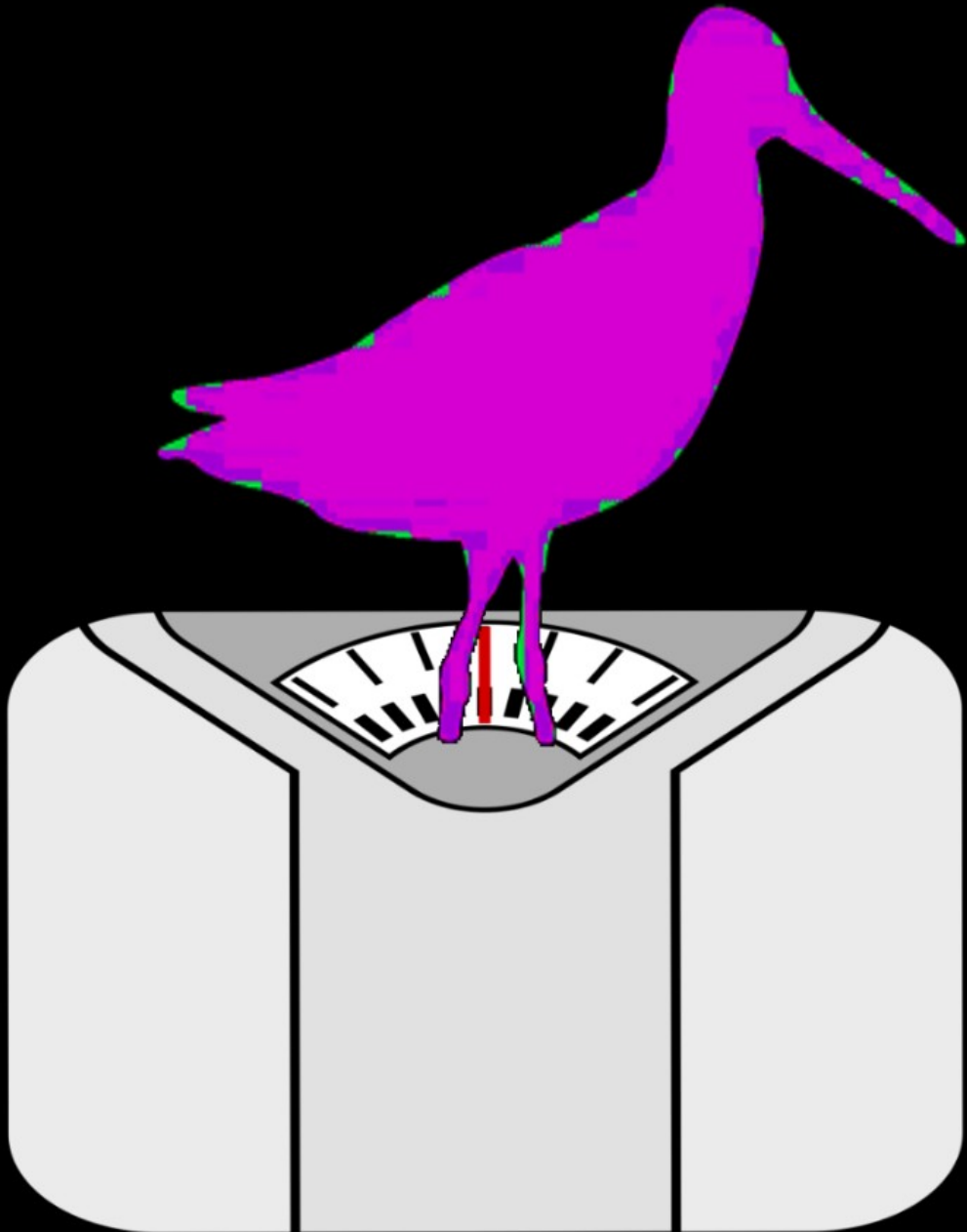
- Migration
- Morphology
- Diet
- Behaviour

Data: traits

- Migration
 - Summer,
 - winter or
 - resident?



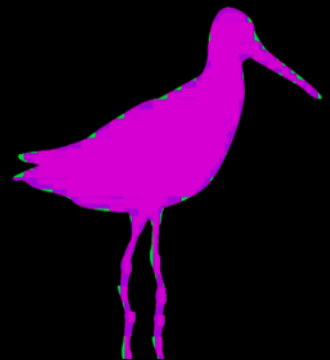
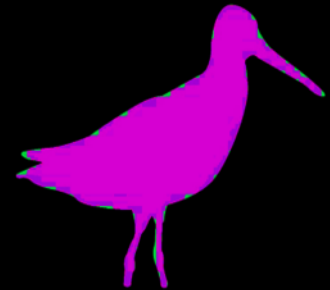
Data: traits



- Migration
- Morphology
 - Mass

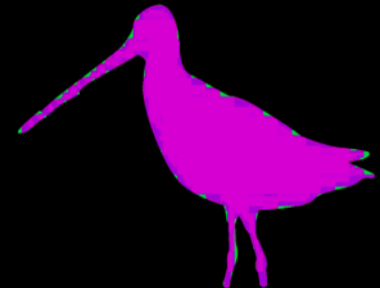
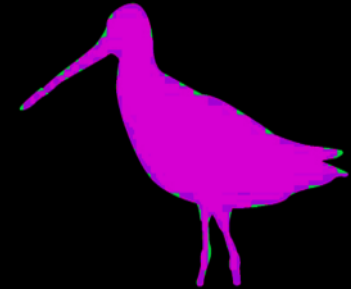
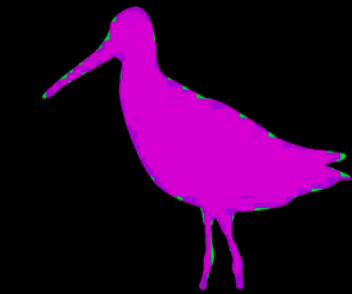
Data: traits

- Migration
- Morphology
 - Mass
 - Tarsus length



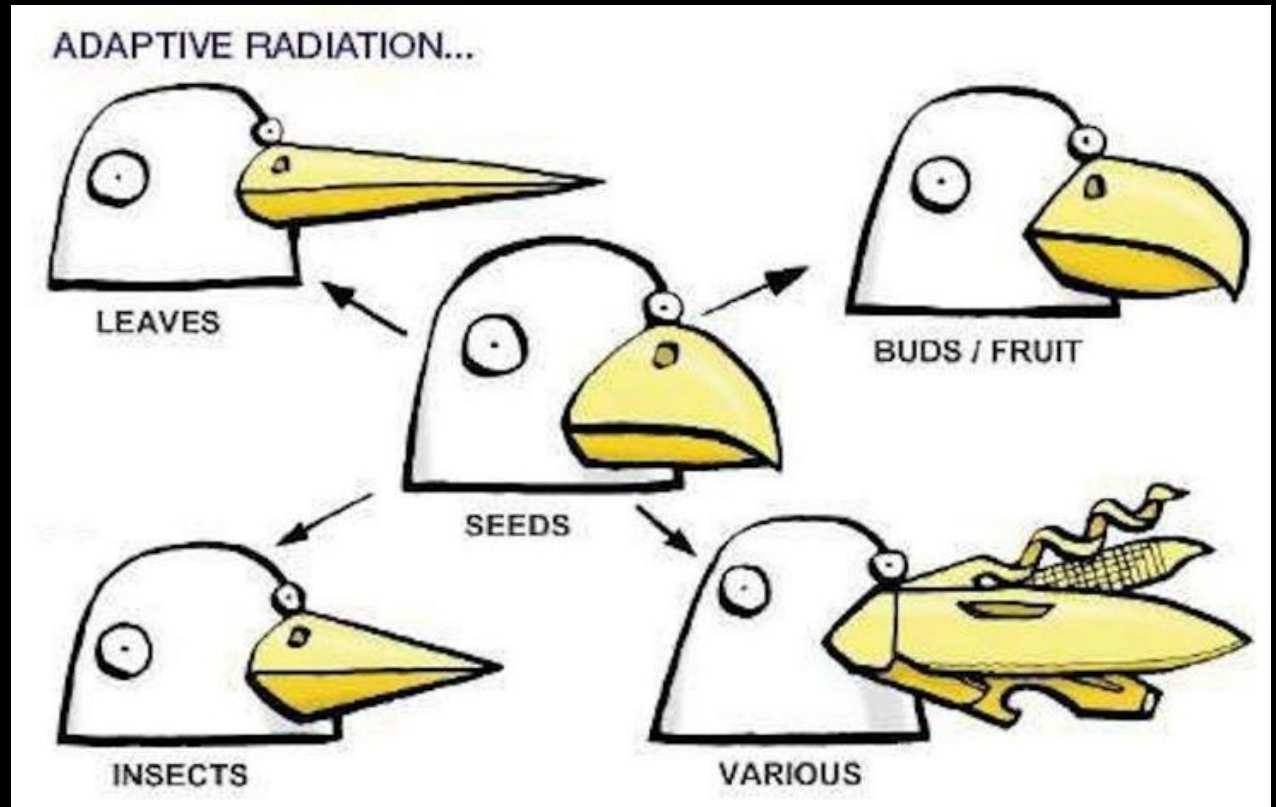
Data: traits

- Migration
- Morphology
 - Mass
 - Tarsus length
 - Bill length



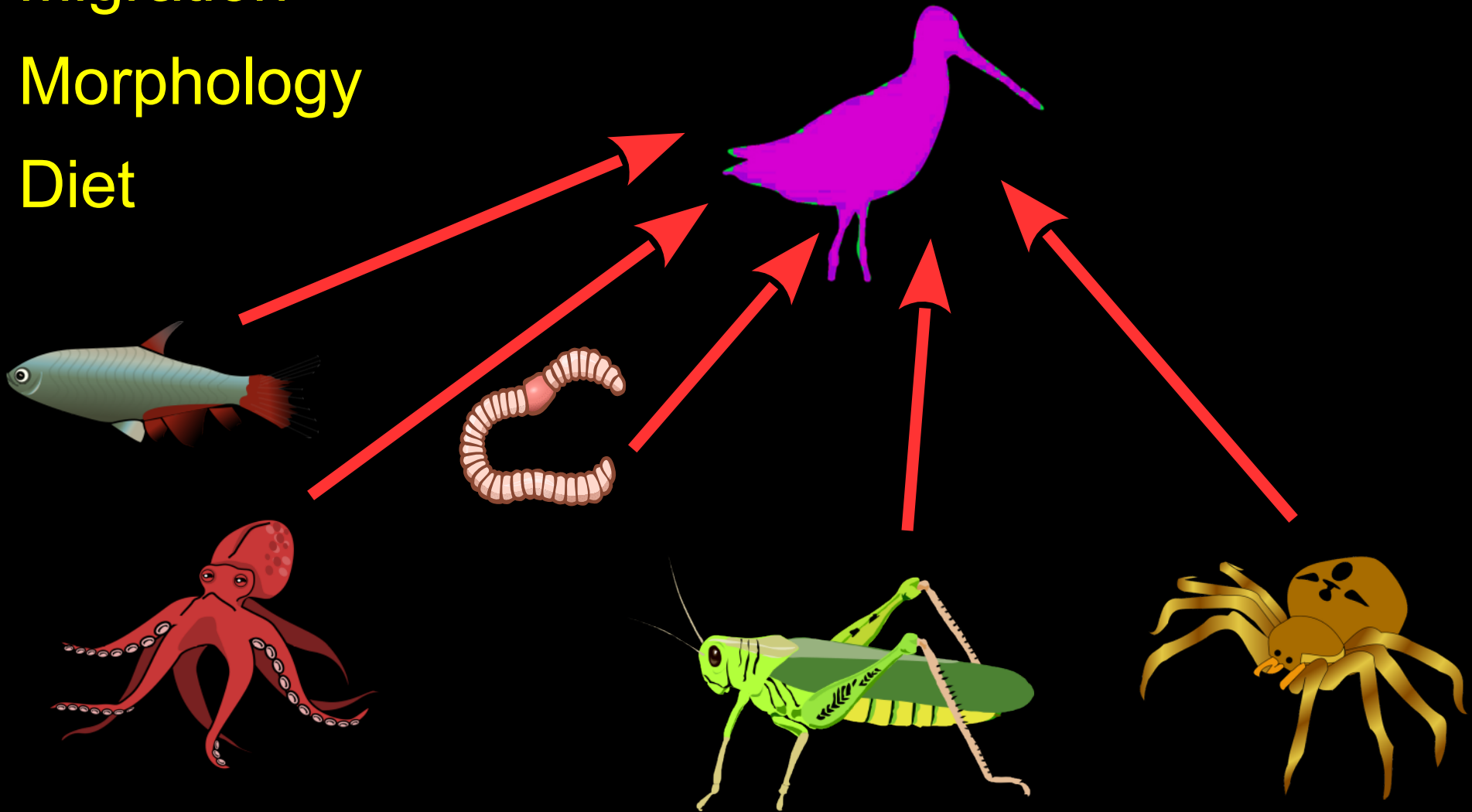
Data: traits

- Migration
- Morphology
 - Mass
 - Tarsus length
 - Bill length
 - Bill shape



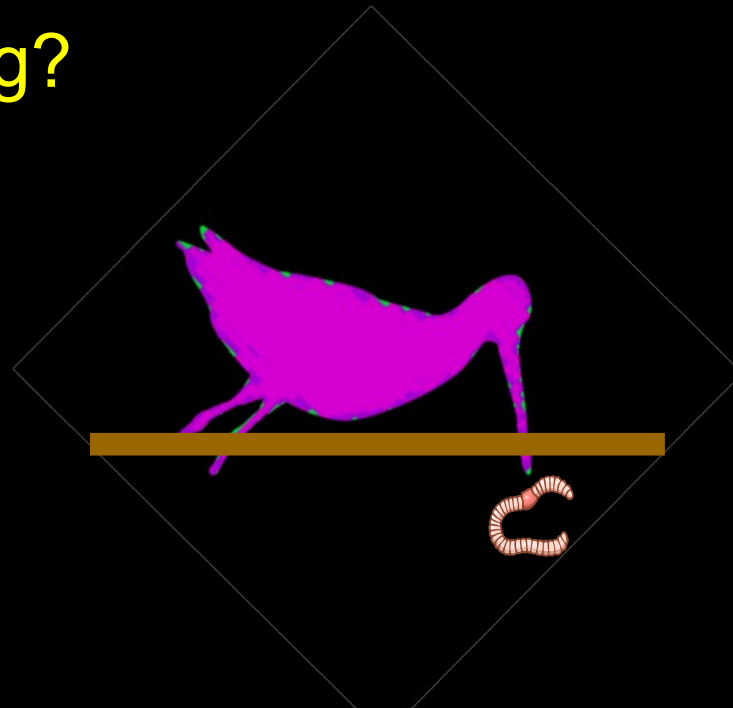
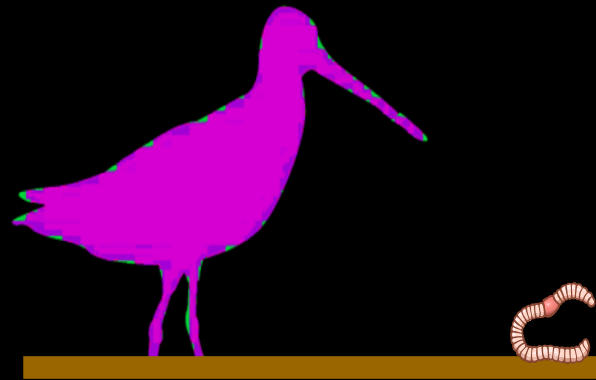
Data: traits

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- Diet



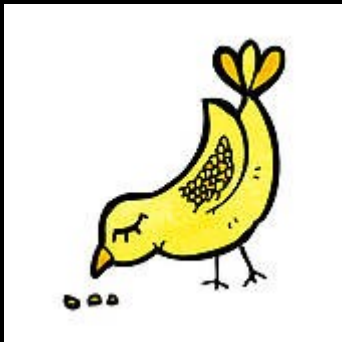
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 - Sight vs tactile foraging?



Data: traits

- Migration
- Morphology
- Diet
- Behaviour
 - Sight vs tactile foraging?
 - Pecking, stabbing, hammering, sweeping etc.....



Analytical approach (provisional)

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 - **Dimension reduction? (e.g. PCA)**
 - **Dendrogram branch length? (distance matrix)**

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 - Species and trait data
 - Species data cluster within seasons, then habitats
 - Contribution of migratory species
 - Functional data cluster within habitats – plus seasonal role?
 - Ecological filtering

Other issues

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- Phylogenetic correction?
 - Migratory species from limited subset of lineages
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- Questions applied to management?
 - Census data from single counts at single sites
 - Is it sufficient?