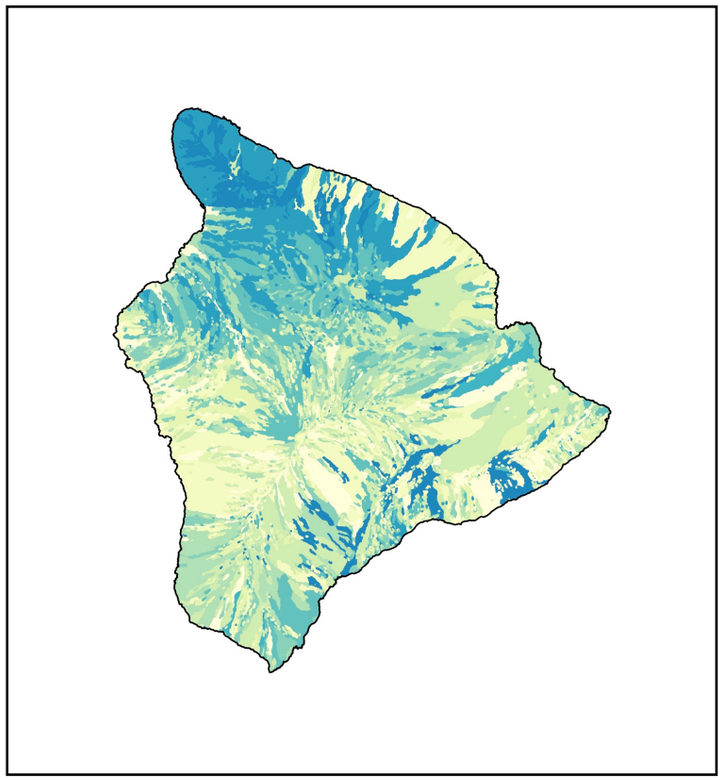
Biocollections, hierarchical models & islands

$$\int_{\theta_S} \frac{\mathbb{P}(\hat{D} \mid S, M)\mathbb{P}(S, M)}{\mathbb{P}(\hat{D})} d\theta_S$$



Andy Rominger

nature.berkeley.edu/~rominger

Island Biology • 19 July 2016

Thanks!

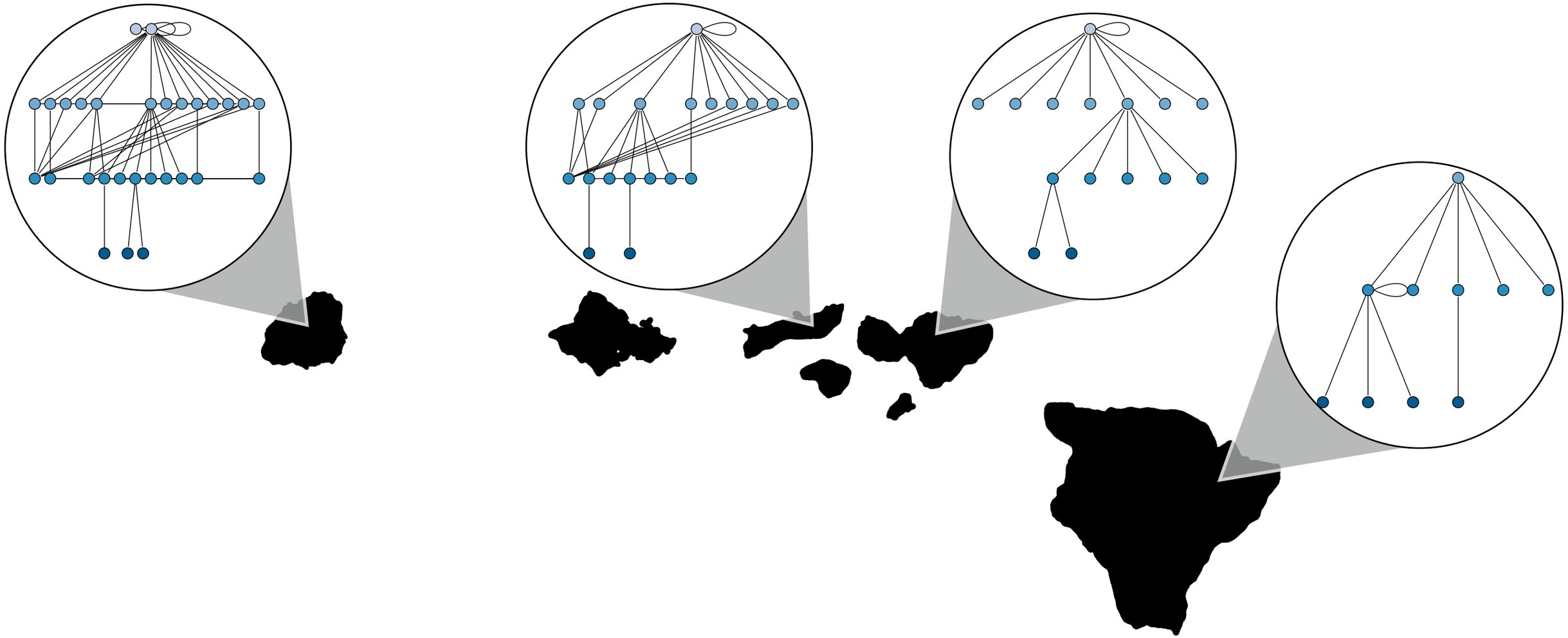
David Ackerly, Lucy Chang, Margaret Evans, Rosie Gillespie, Rob Guralnick, Jun Ying Lim, Cory Merow, Gio Rapacciuolo, Ethan White, Adam Wilson

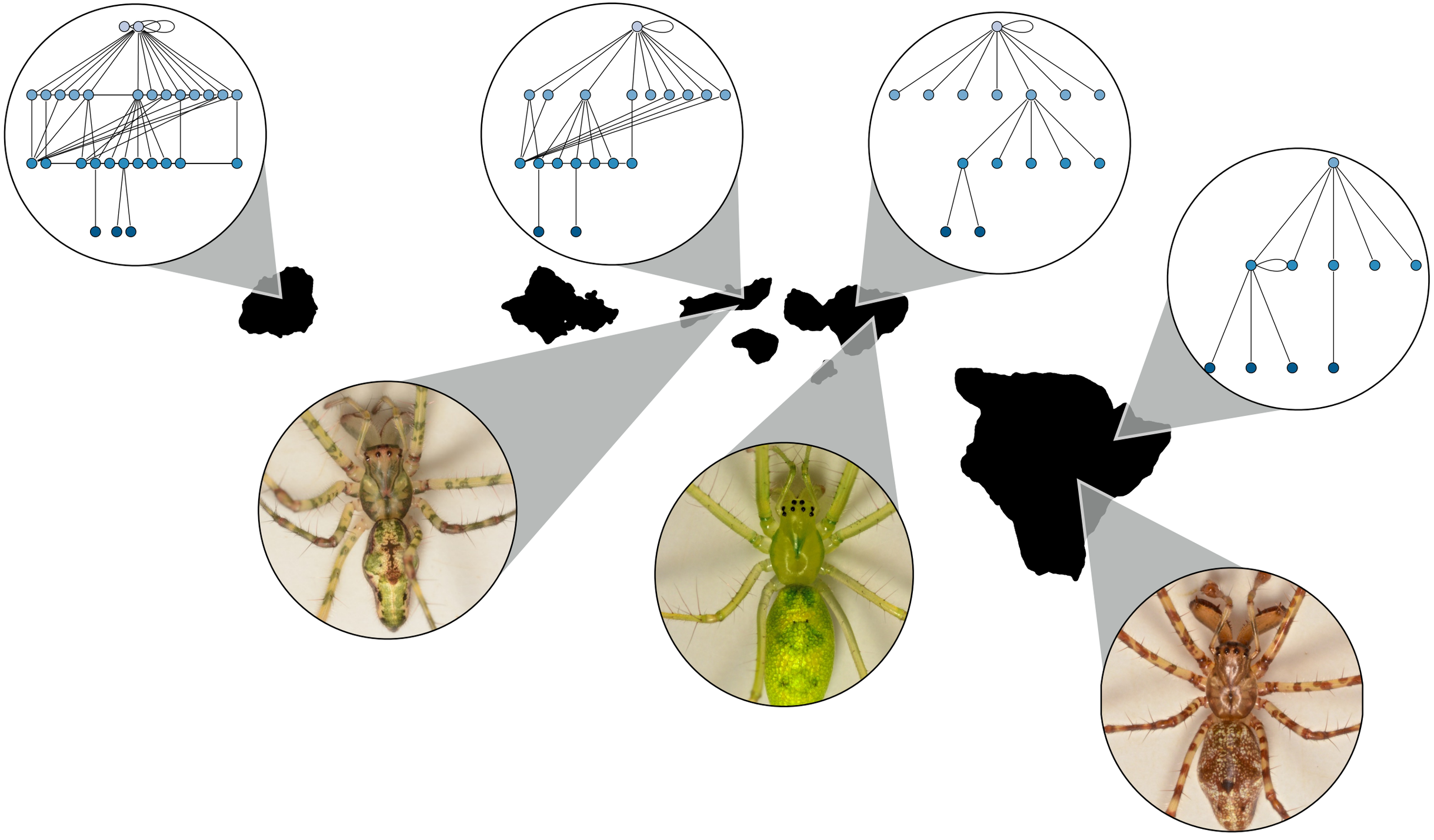
Berkeley Initiative in Global Change Biology
UNIVERSITY OF CALIFORNIA

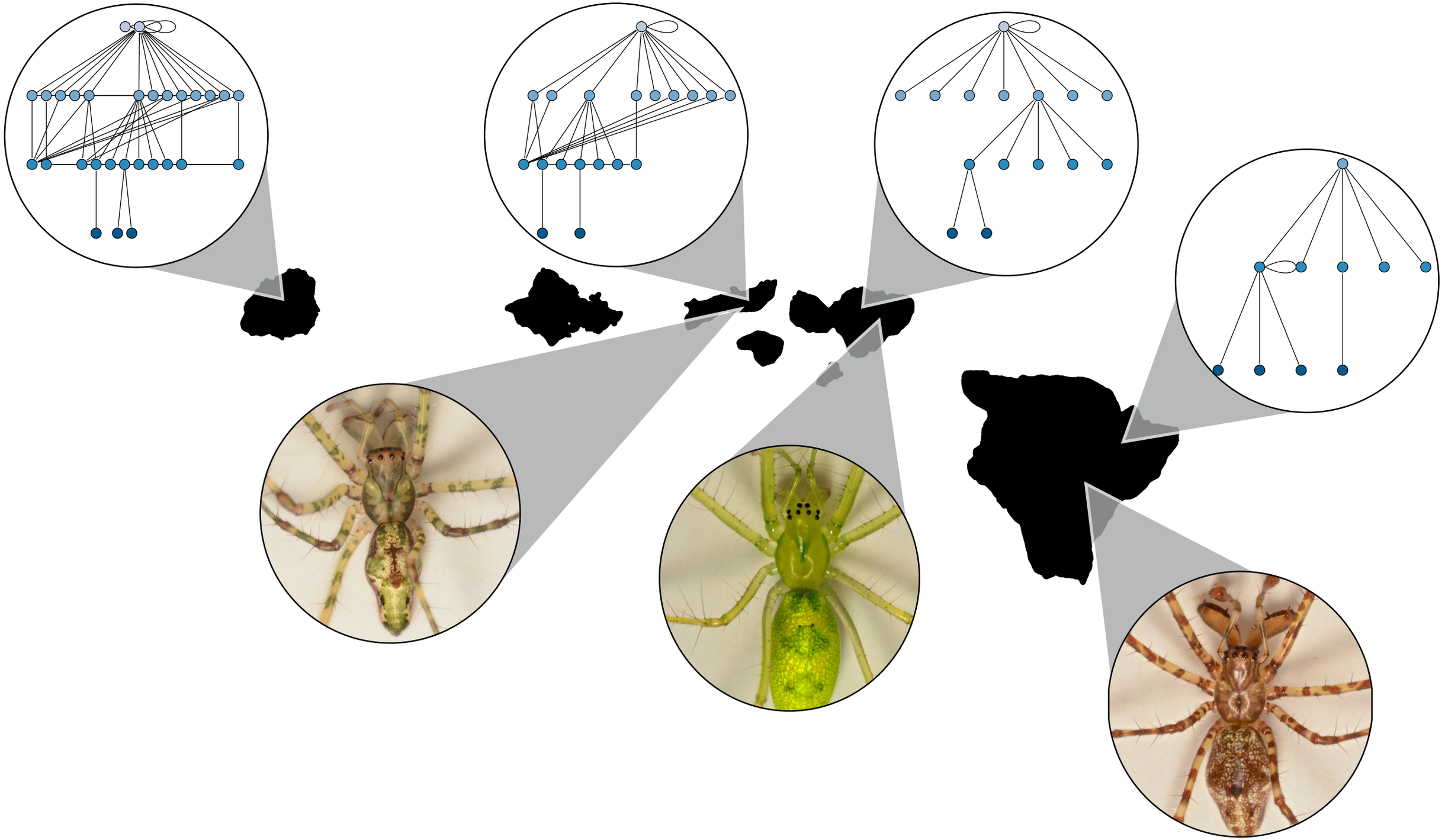
GORDON AND BETTY MOORE FOUNDATION

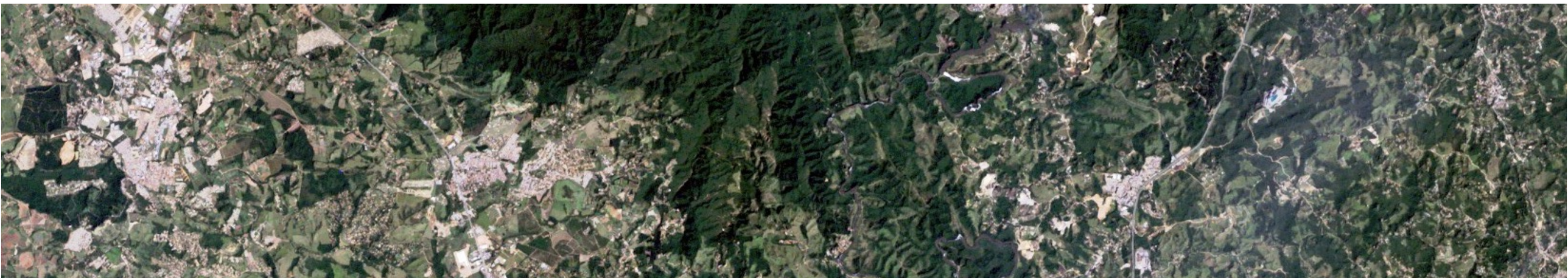
NIMBioS

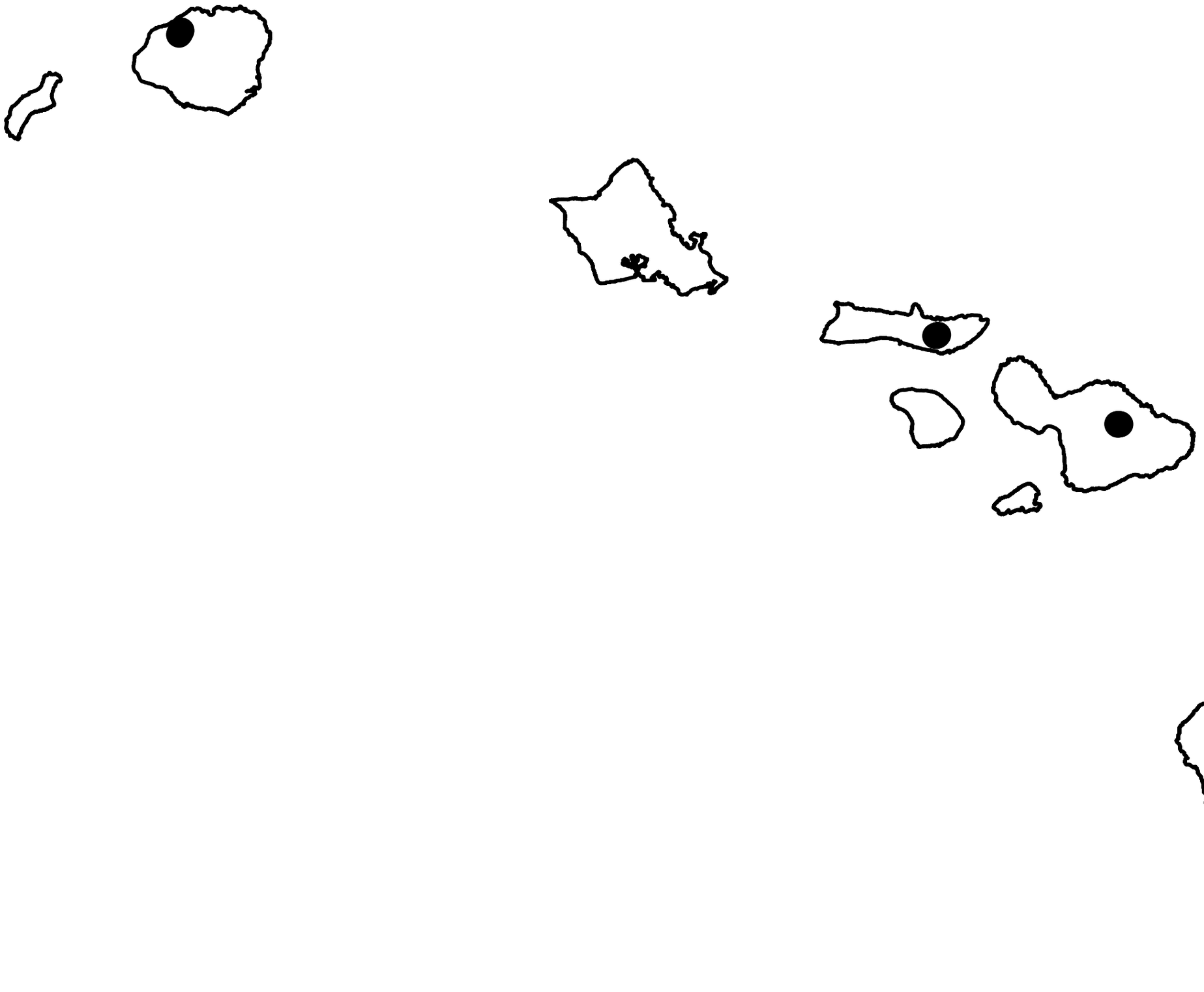
iDigBio
Integrated Digitized Biocollections

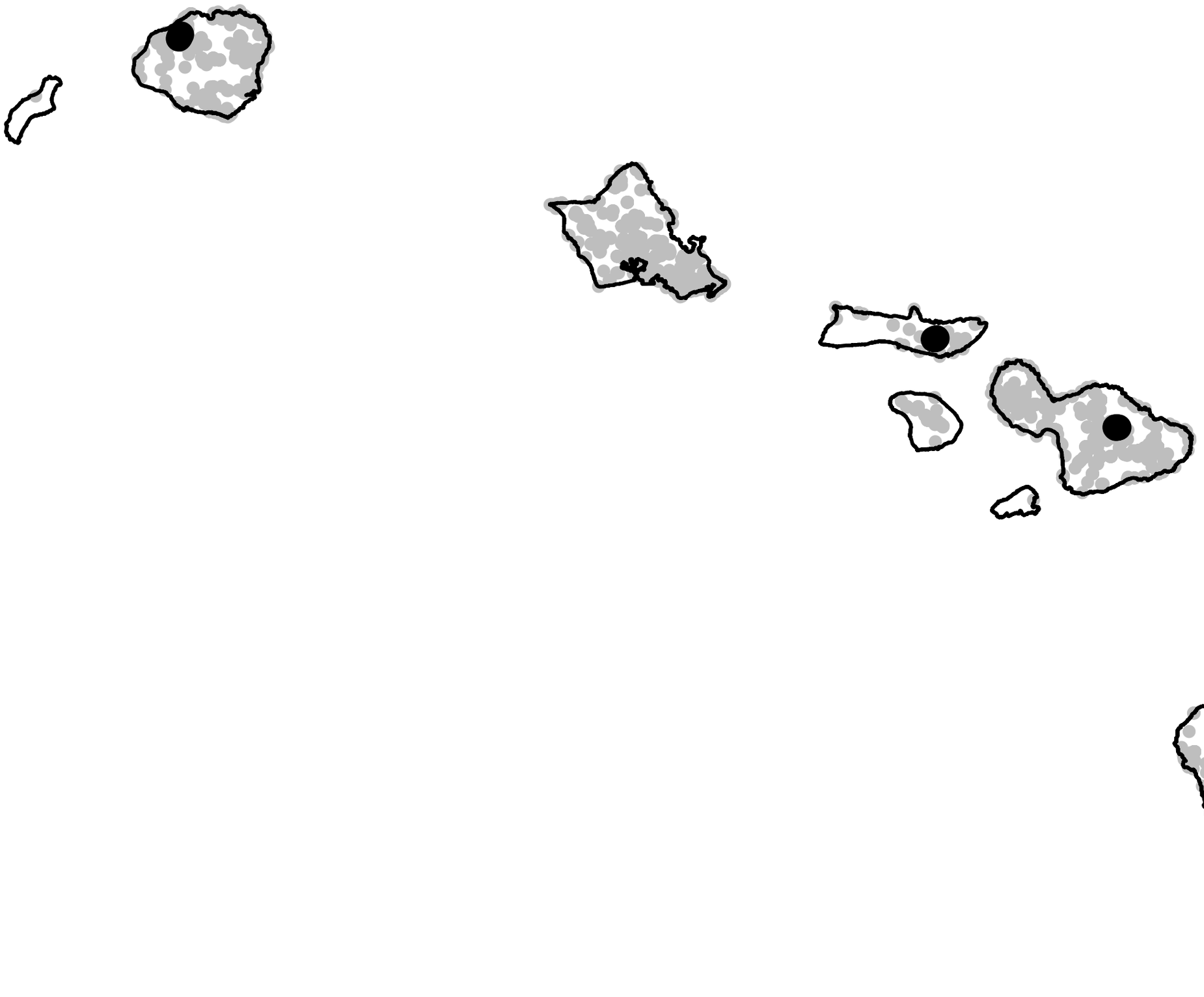






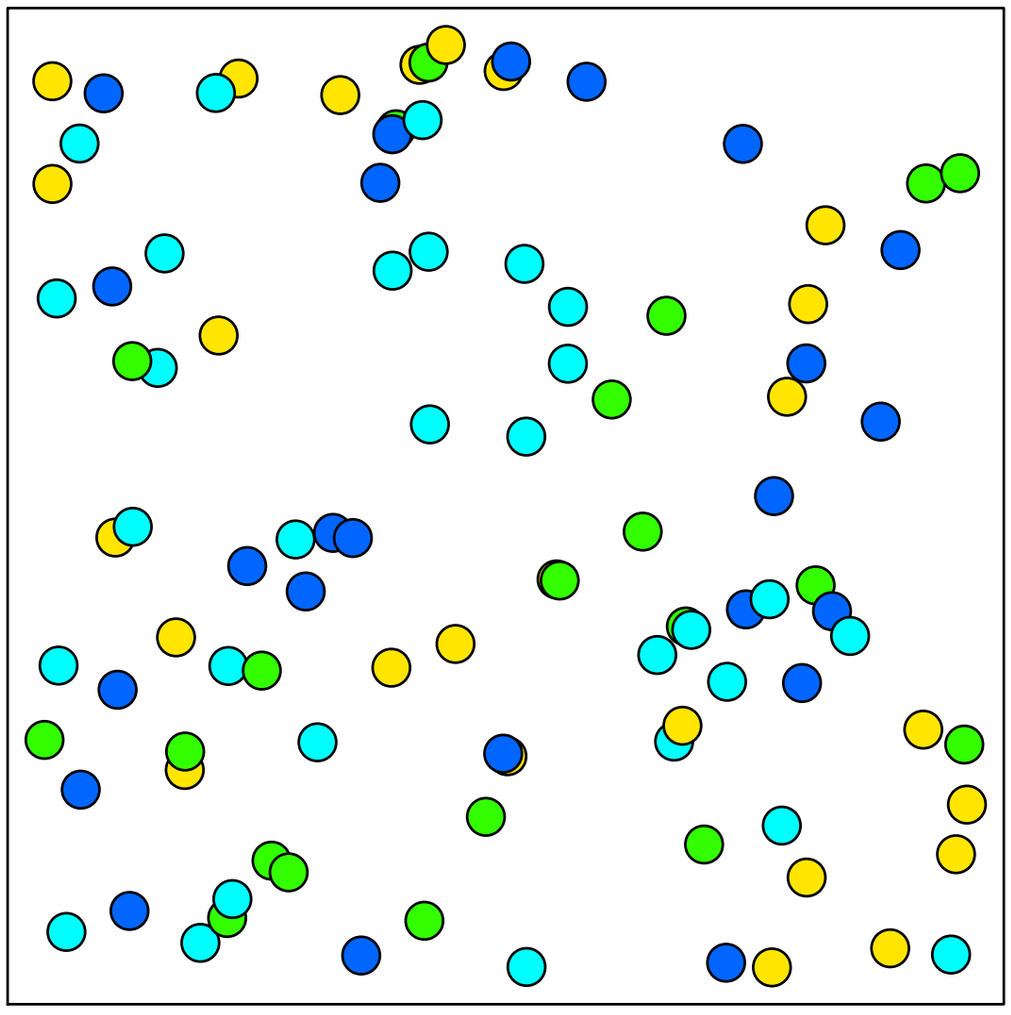






Sampling problems

Sampling problems



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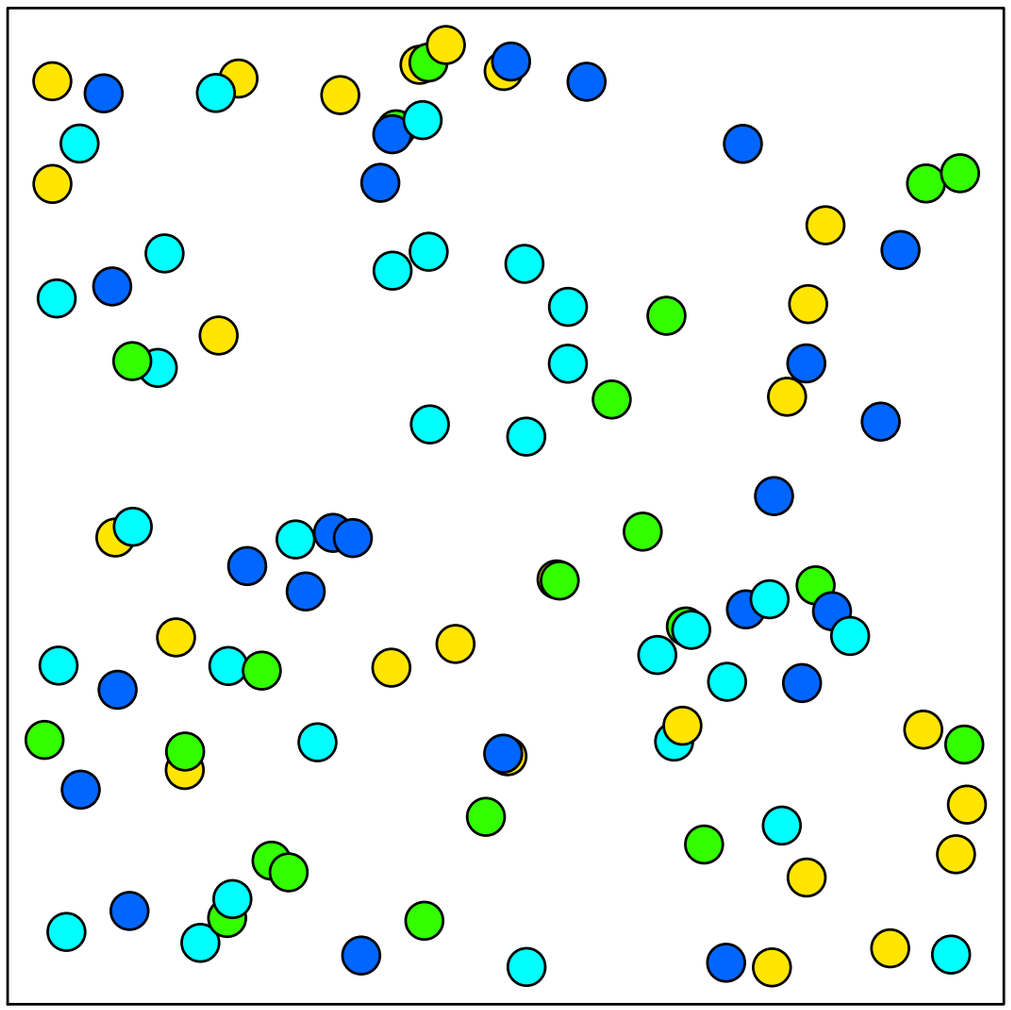
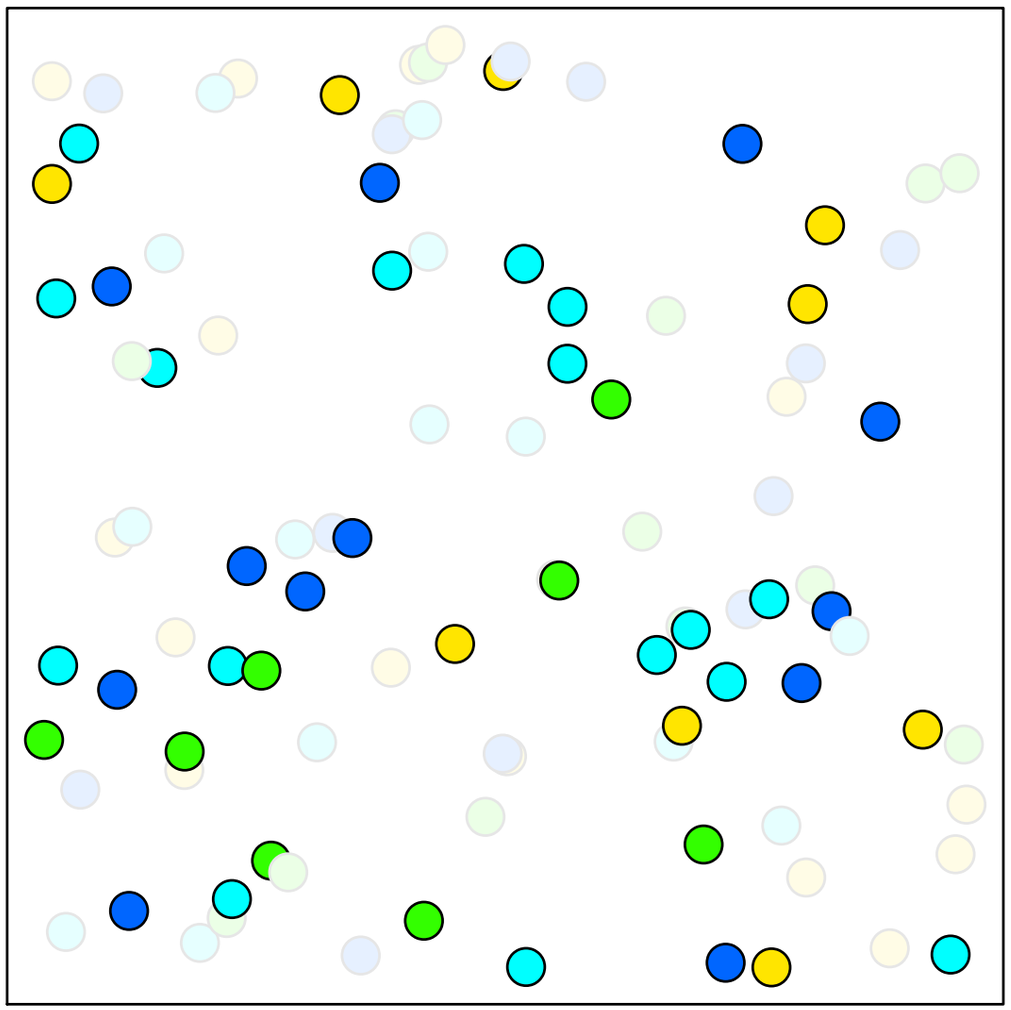
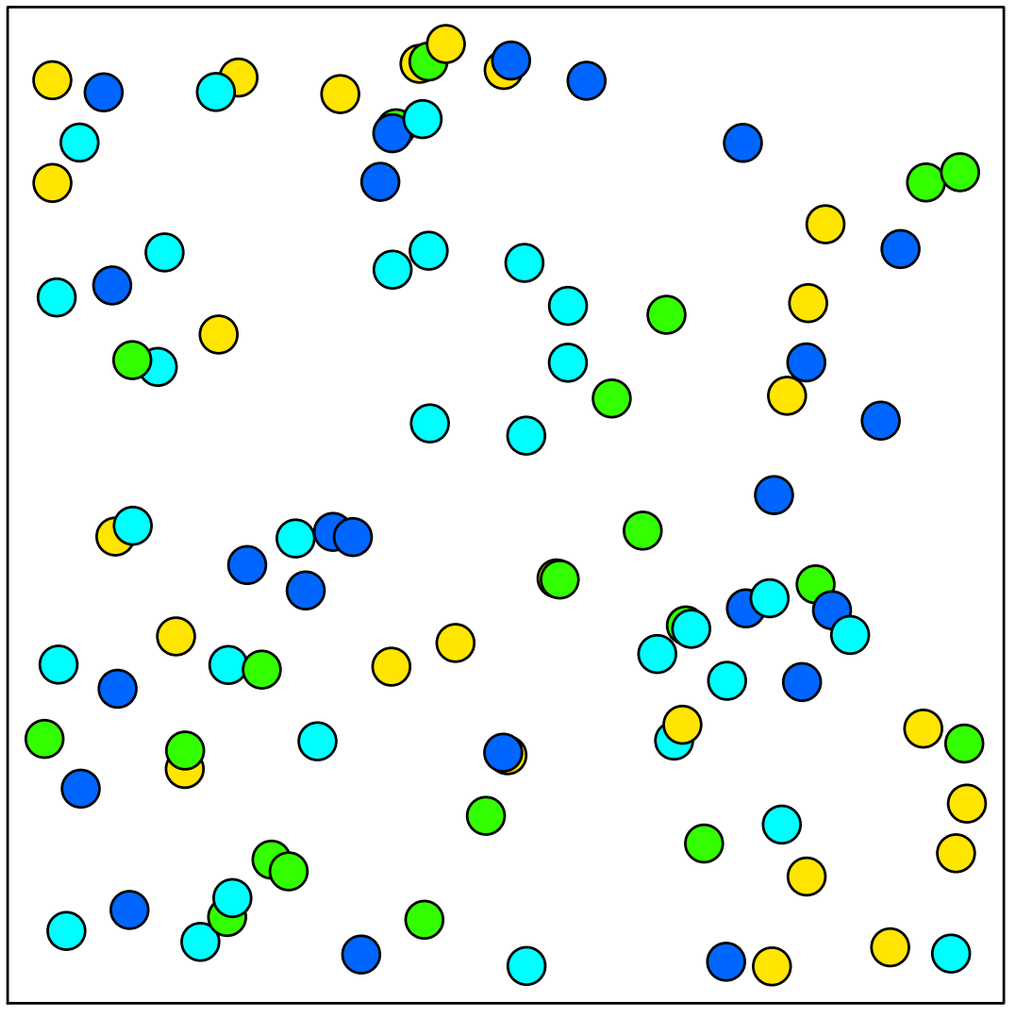
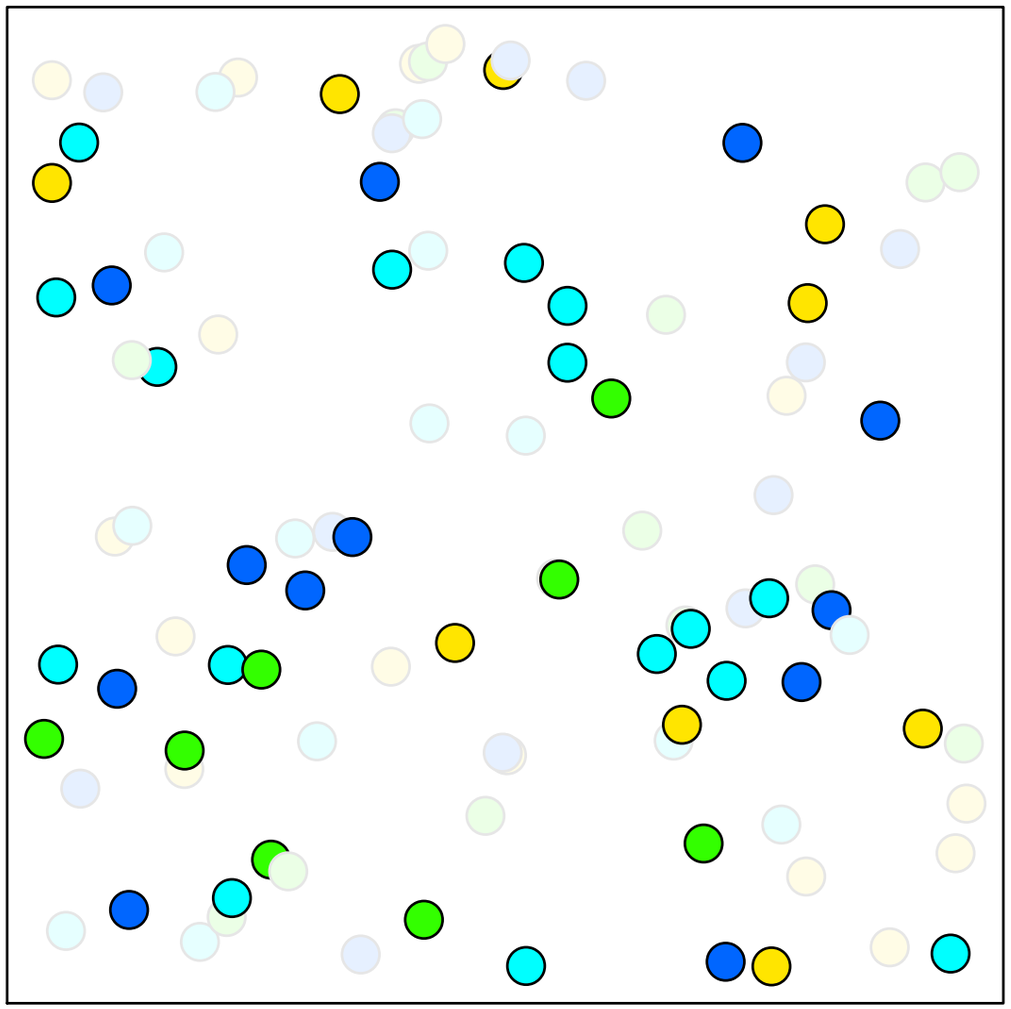




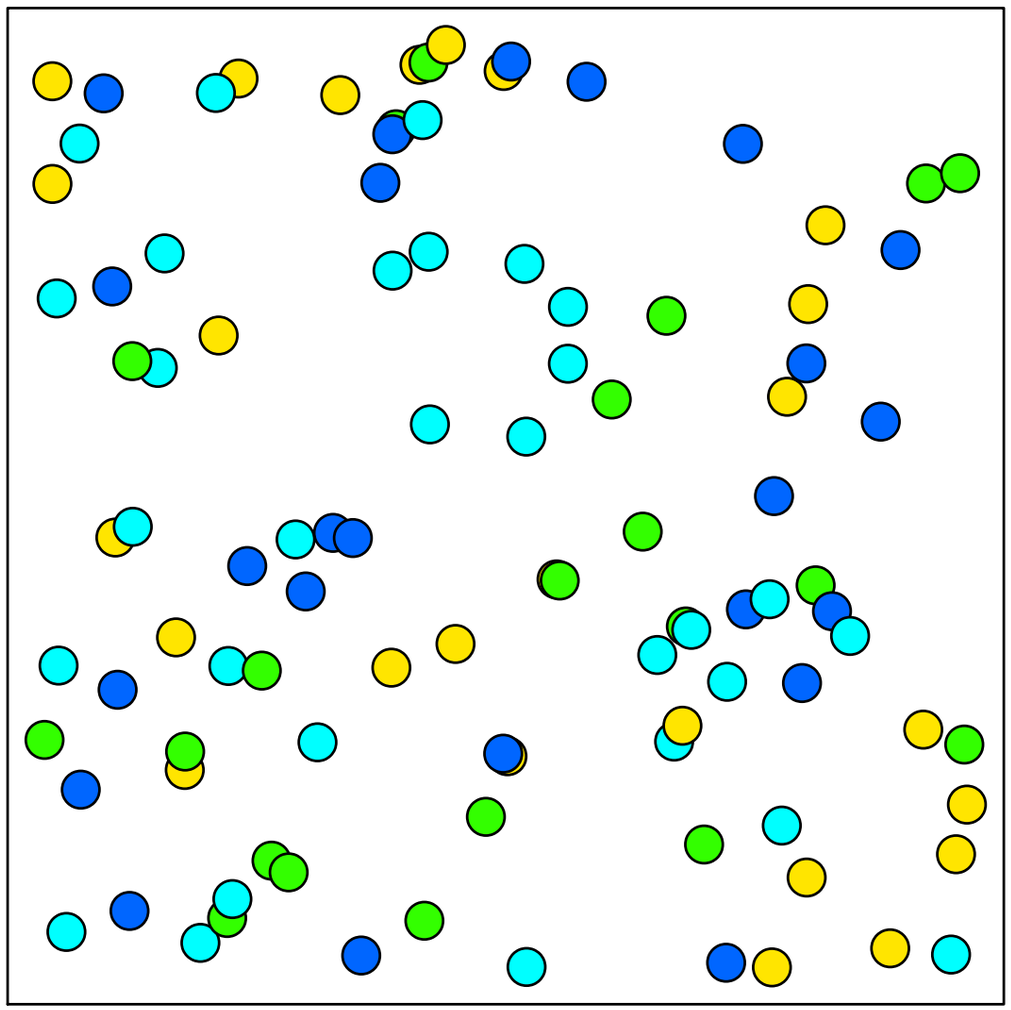
Hierarchical models



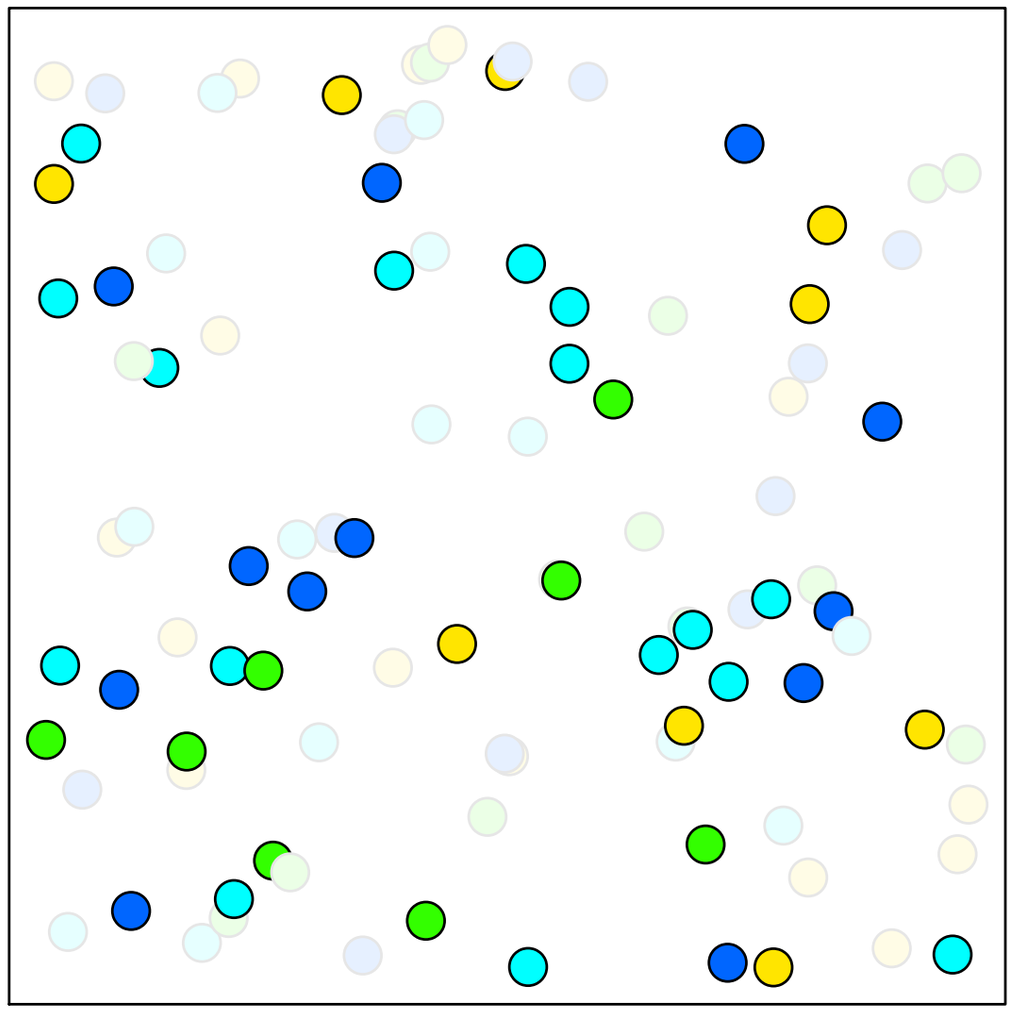


Hierarchical models

latent data



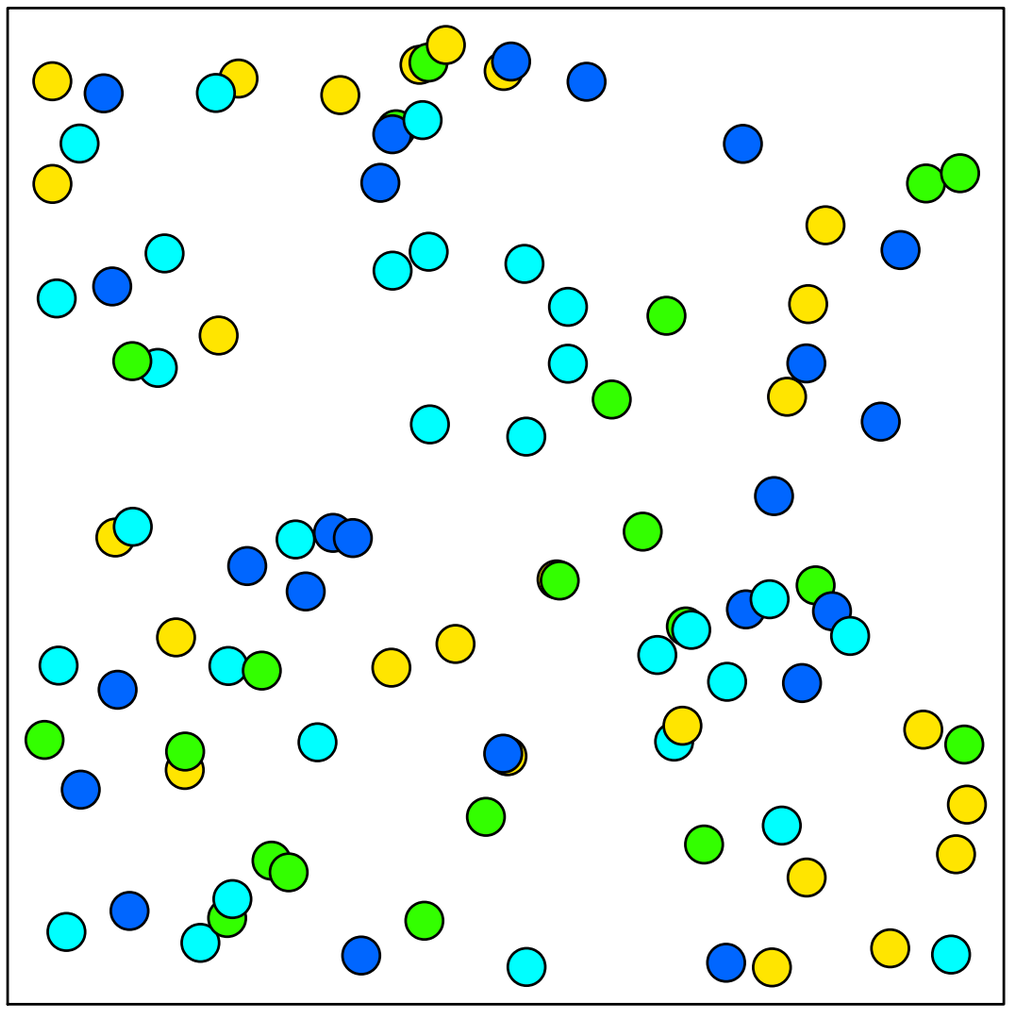
real data

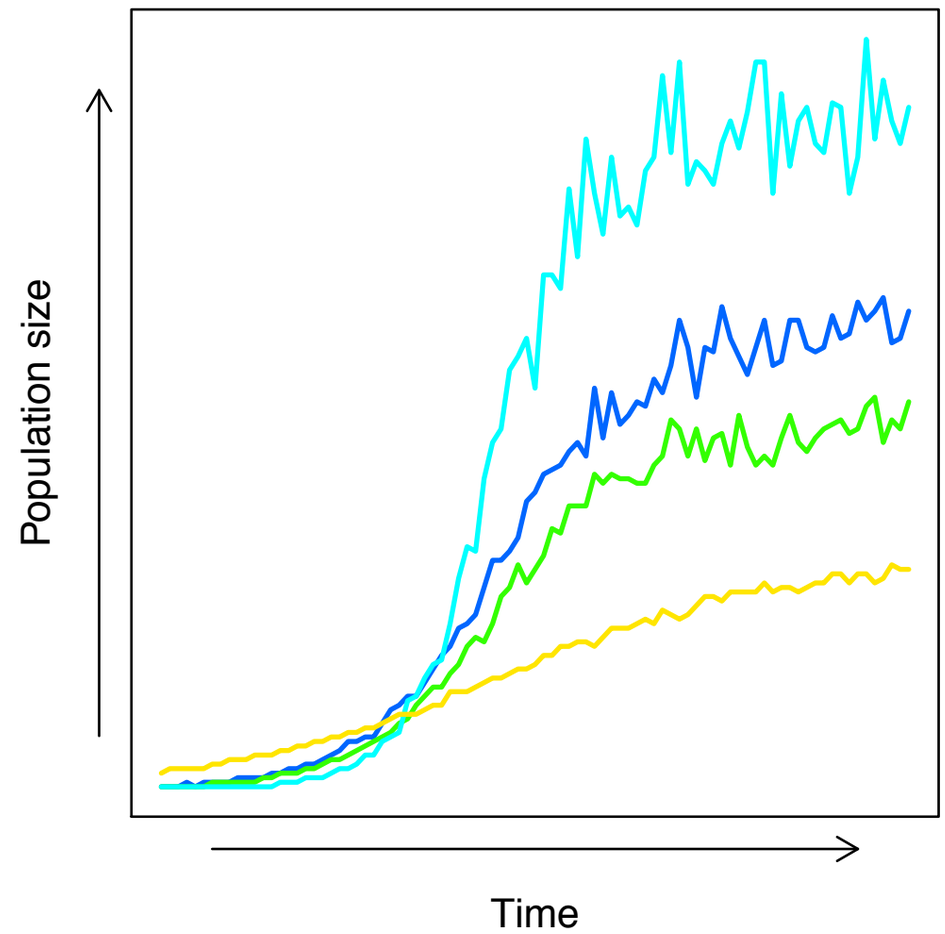


$$\mathbb{P}(\text{real data} \mid \text{sampling}, \text{latent data})$$

Hierarchical models

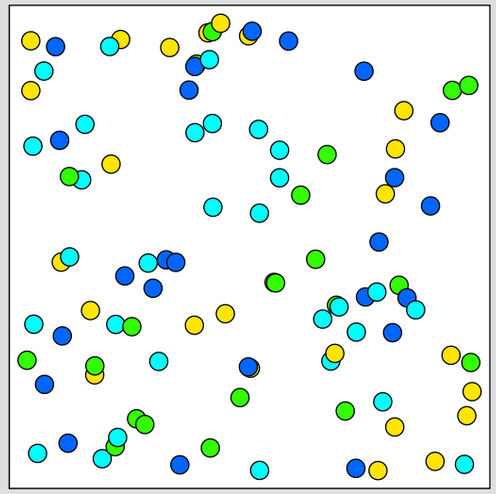
latent data





$$\mathbb{P}(\text{latent data}|\text{model})$$

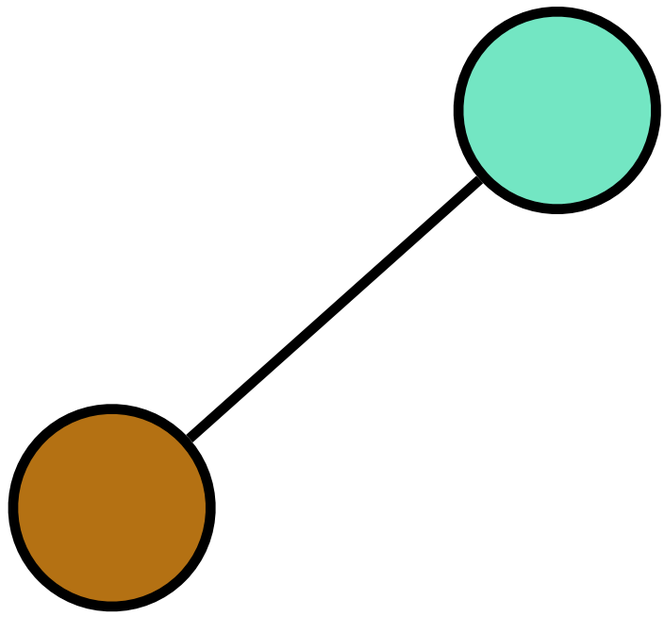
Hierarchical models



$$\mathbb{P}(\text{model} \mid \text{real data}) = \int_{\theta_S} \frac{\mathbb{P}(\text{real data} \mid \text{sampling, latent data})\mathbb{P}(\text{latent data}|\text{model})\mathbb{P}(\text{sampling, model})}{\mathbb{P}(\text{real data})} d\theta_S$$

Use case: Networks

HDIM6643; laupLSAG_10
beating Melicope 65 sec.
09:25–10:08; 2015-oct-1
B. Cote coll.



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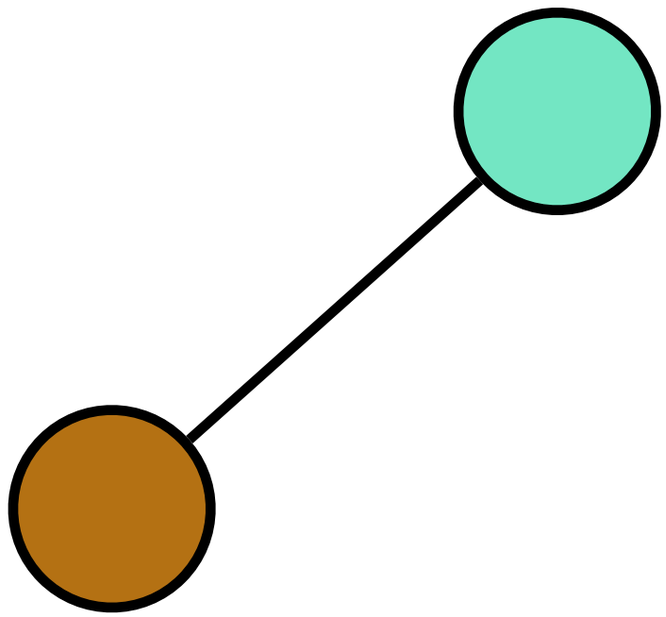

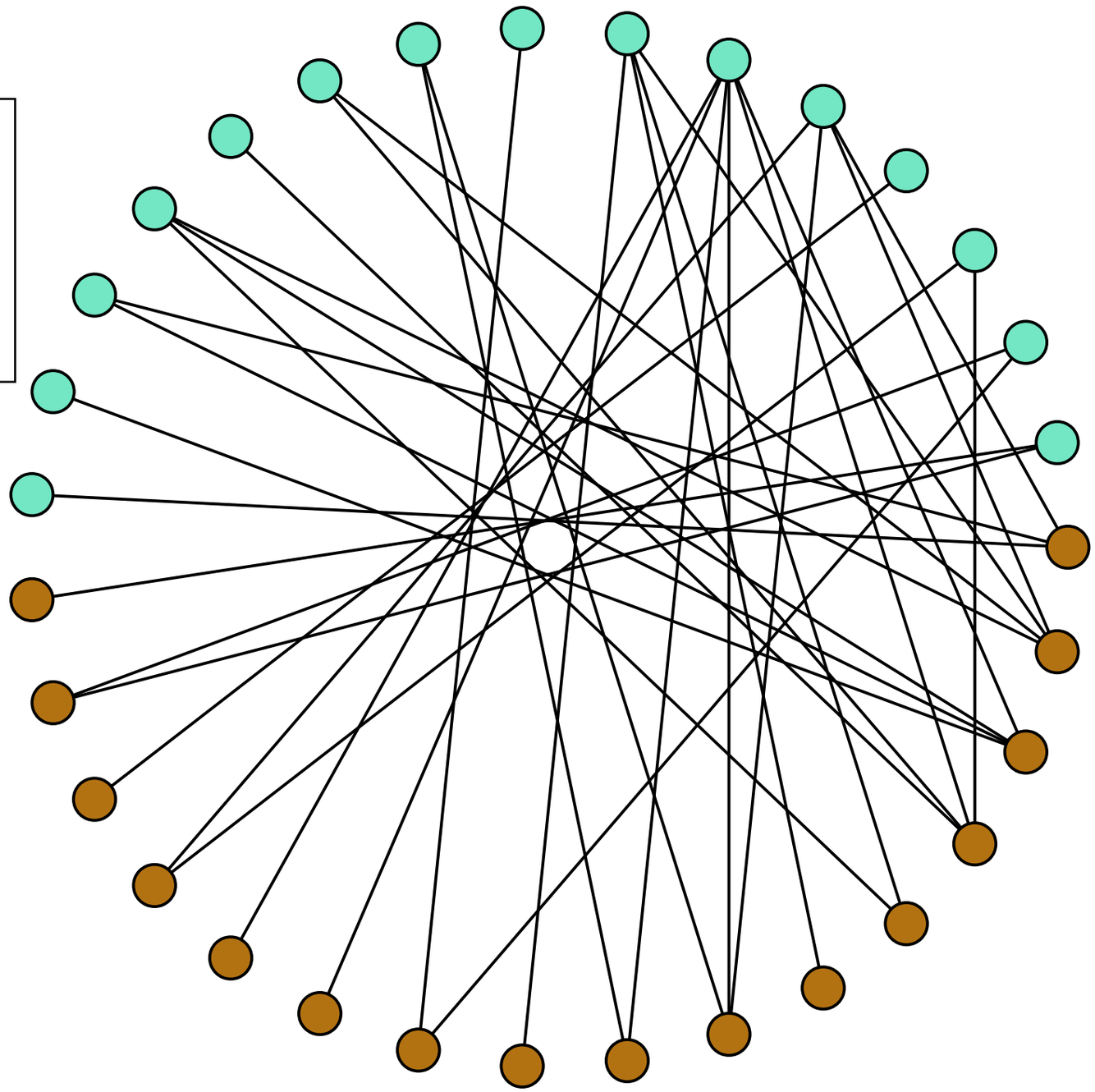

Rominger et al (2015) *Global Ecology & Biogeography*

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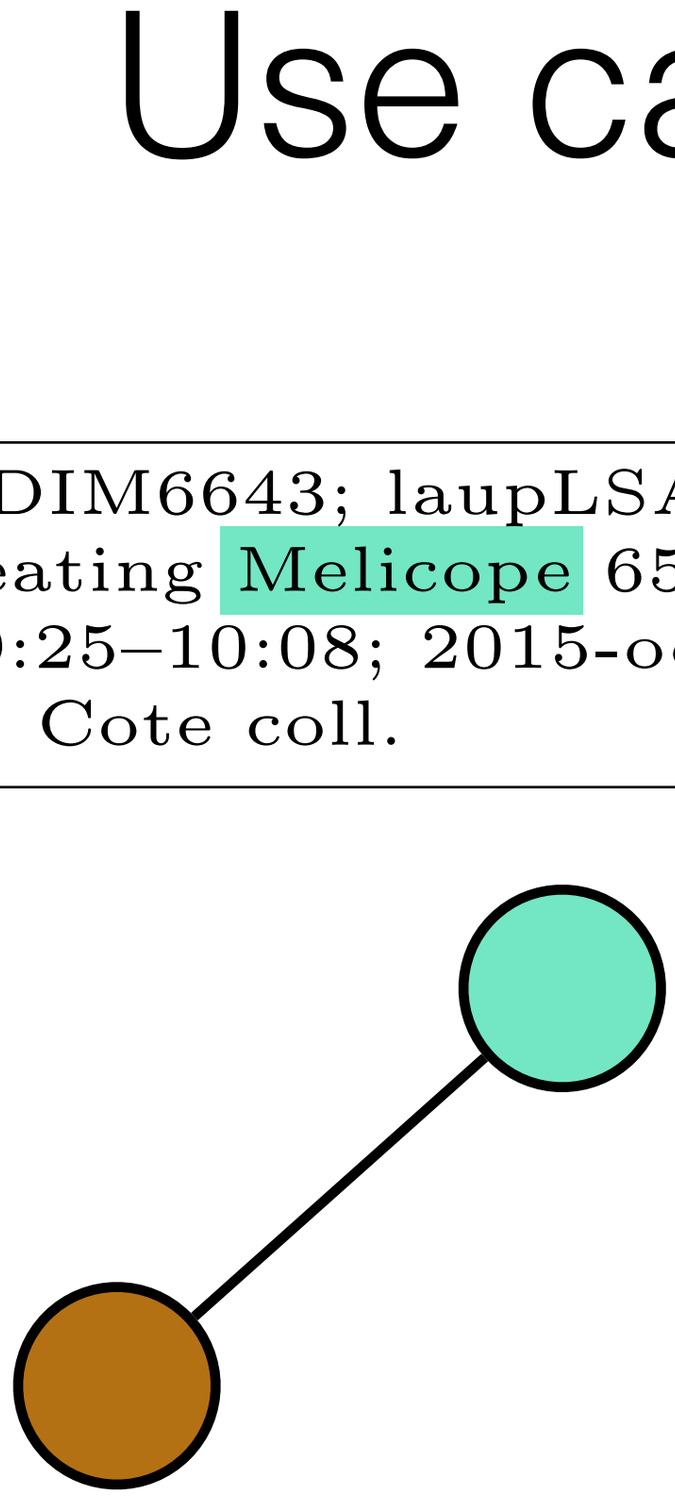

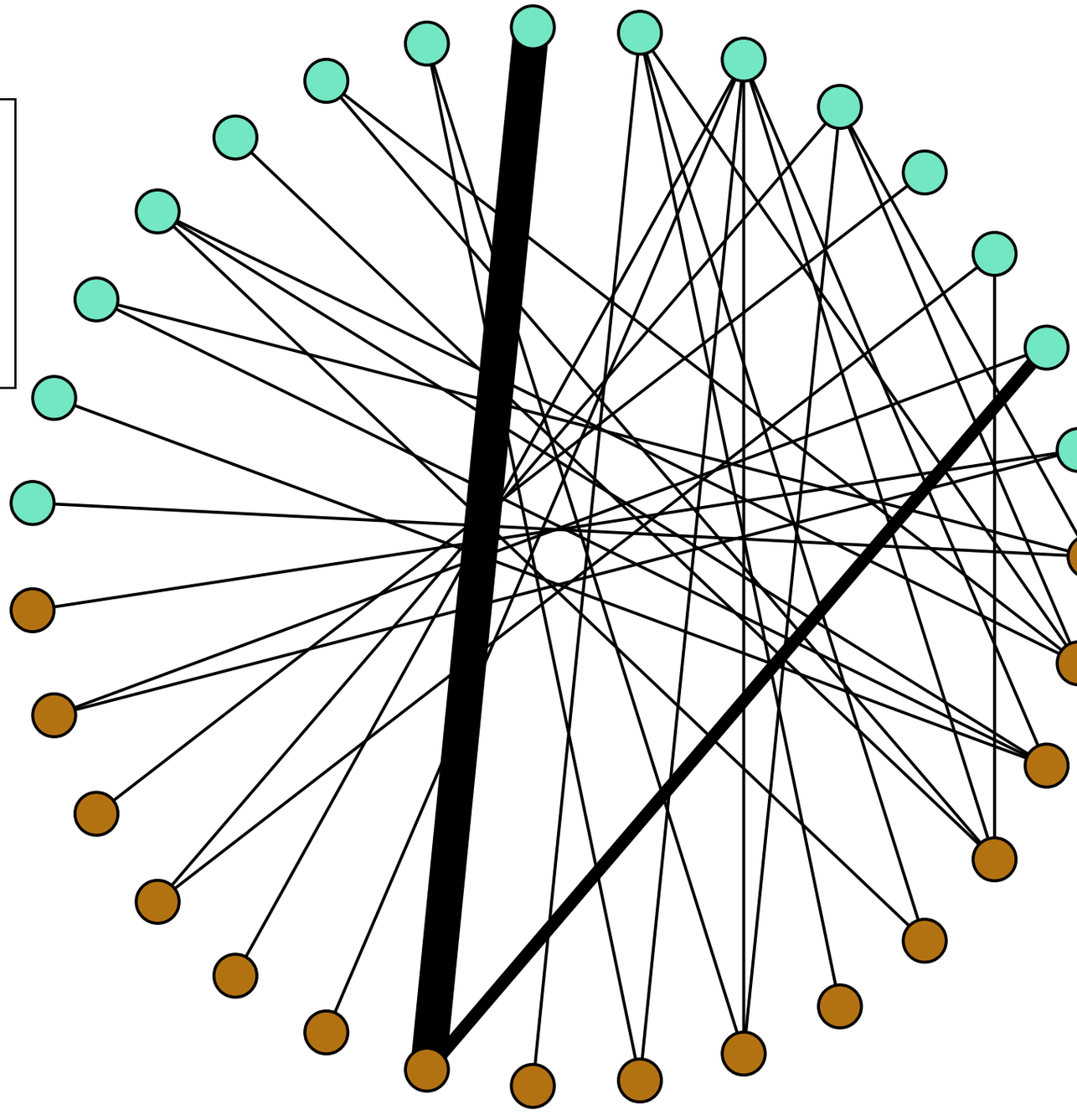

Rominger et al (2015) *Global Ecology & Biogeography*

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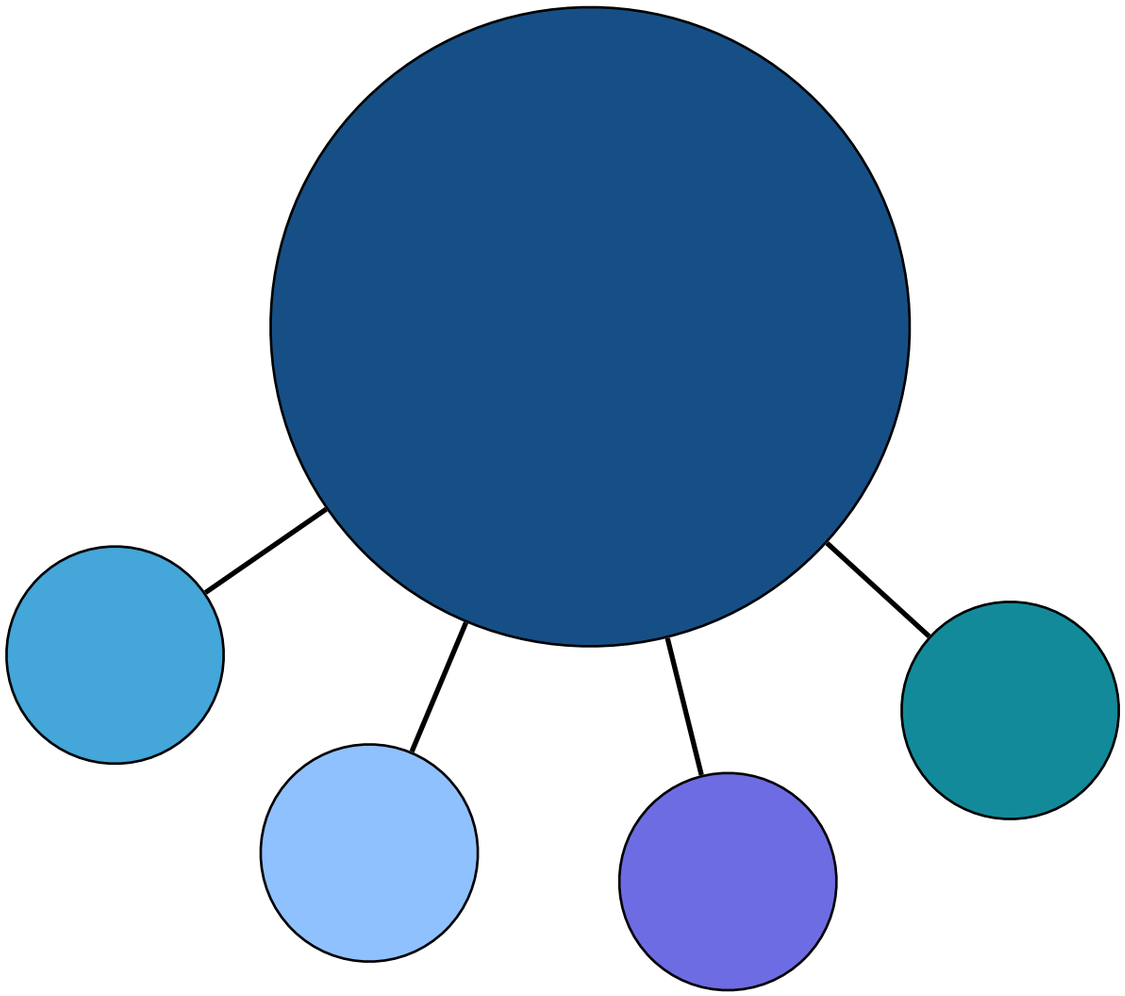
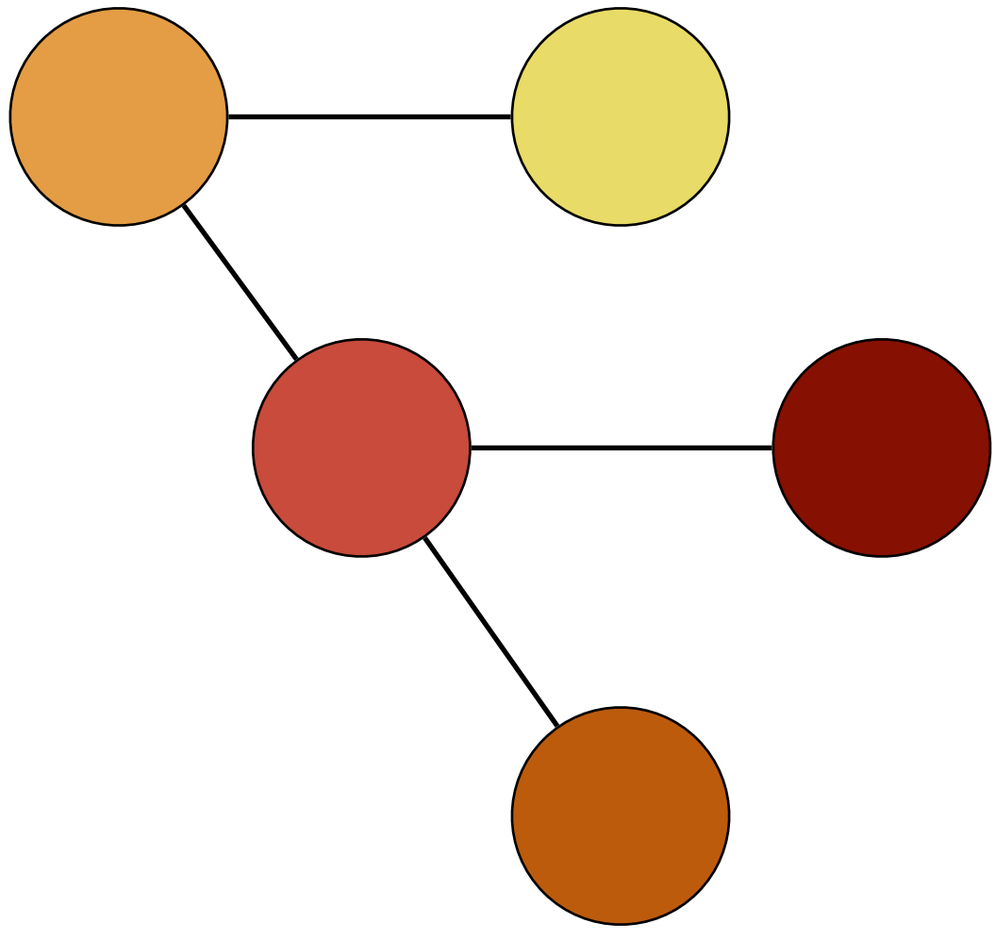
HDIM6643; laupLSAG_10
beating Melicope 65 sec.
09:25–10:08; 2015-oct-1
B. Cote coll.

CHALLENGE

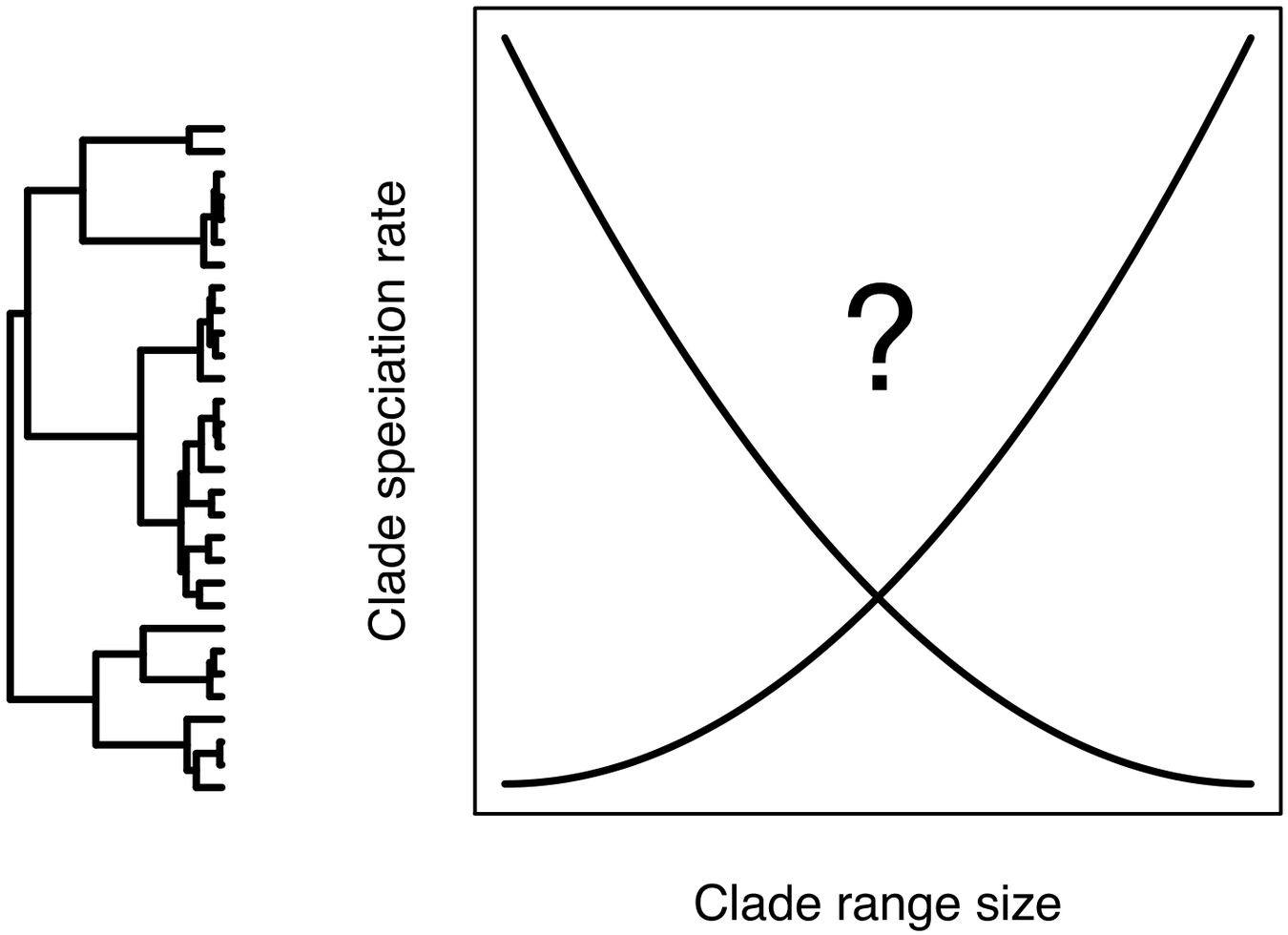
Use case: Macro eco-evo

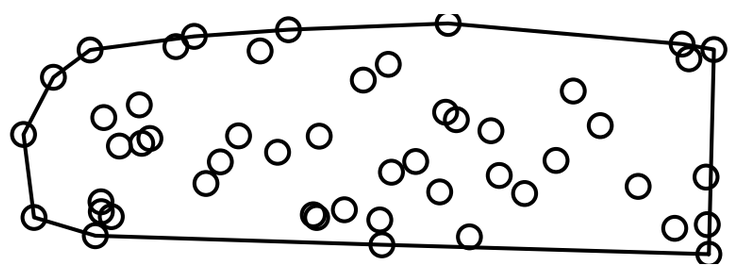
Do widespread species distributions promote or inhibit diversification?





Use case: Macro eco-evo





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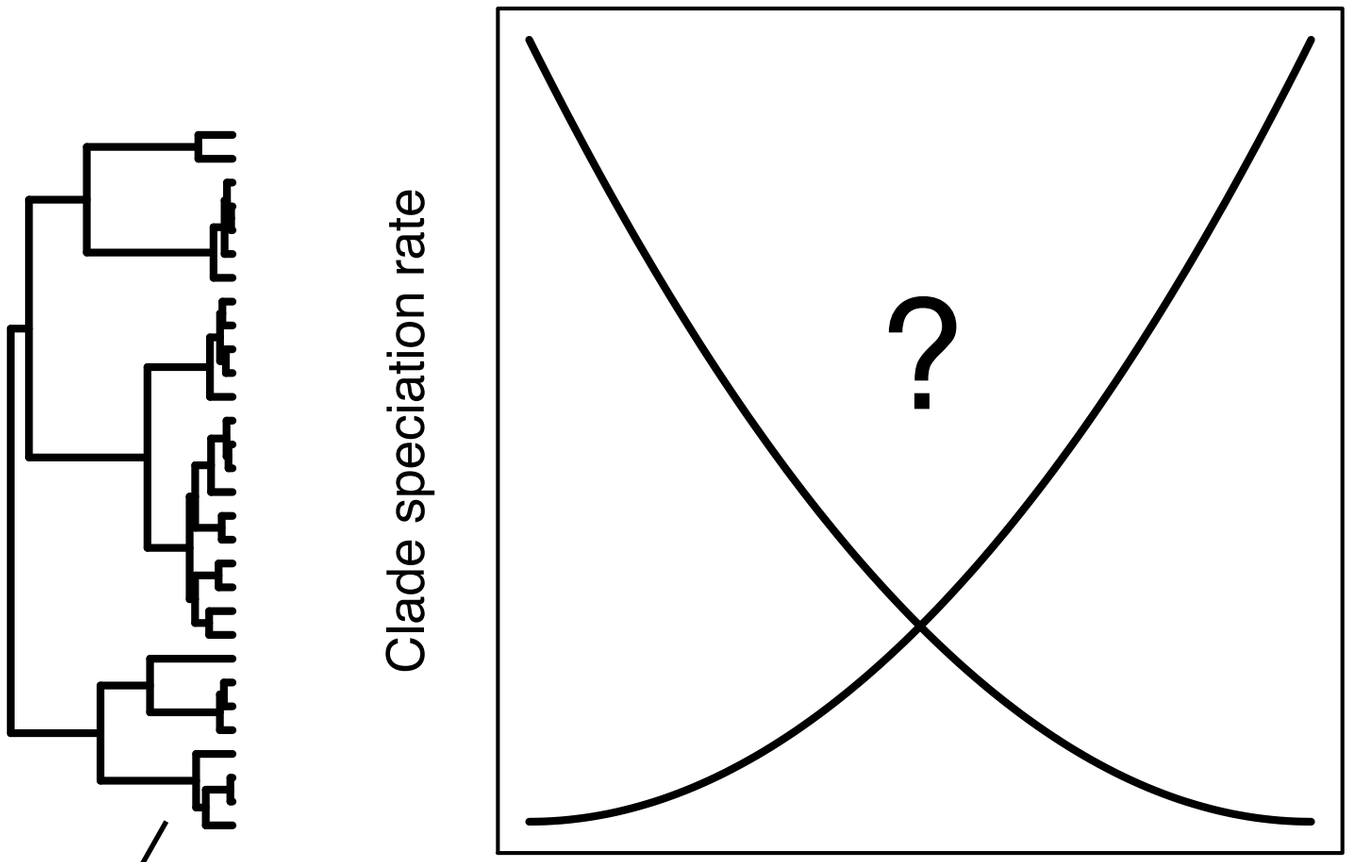
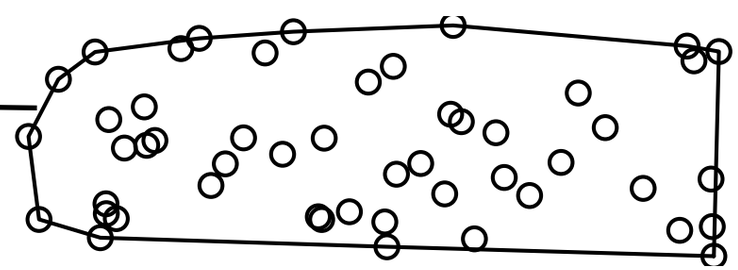
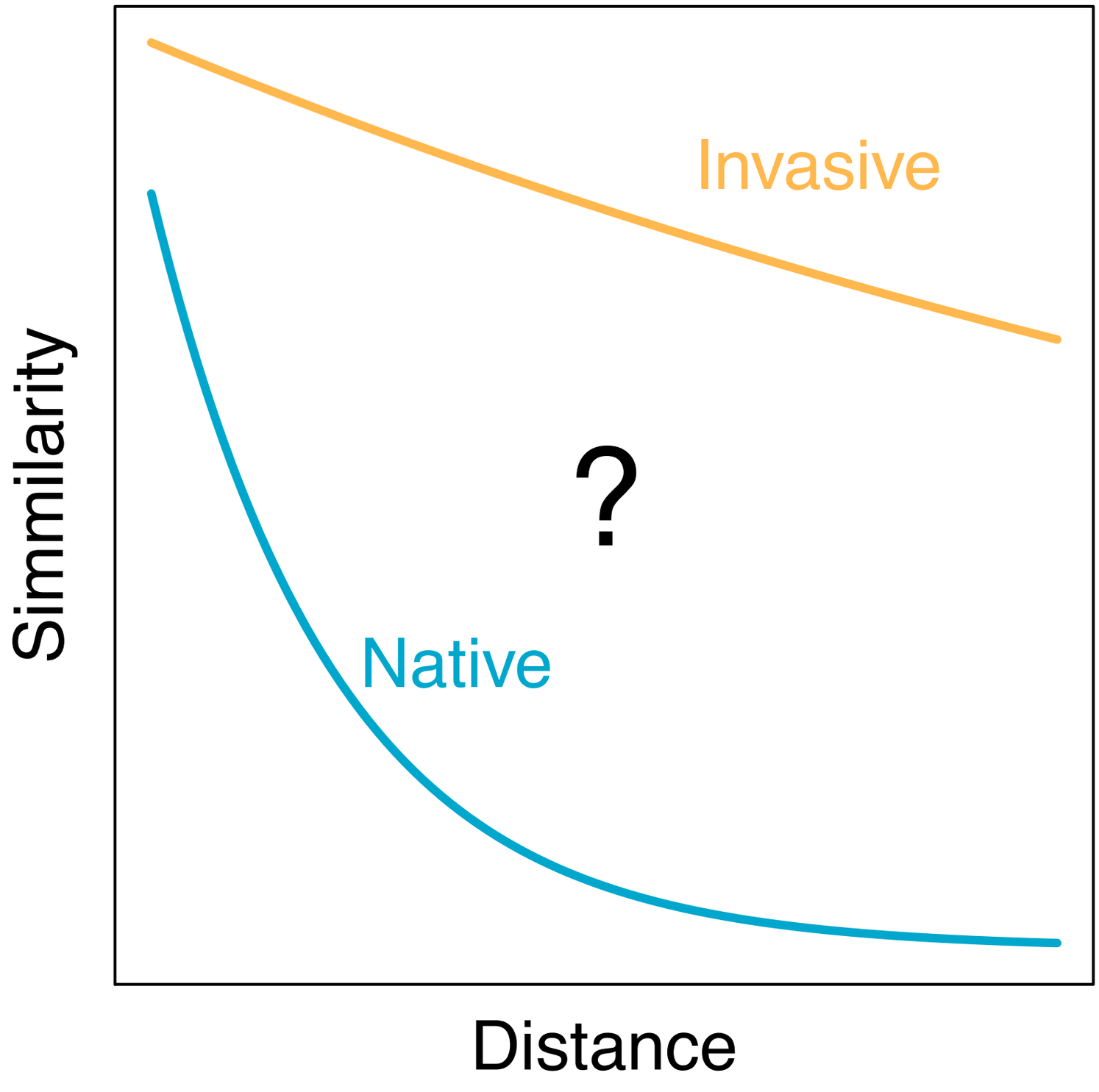


CHALLENGE



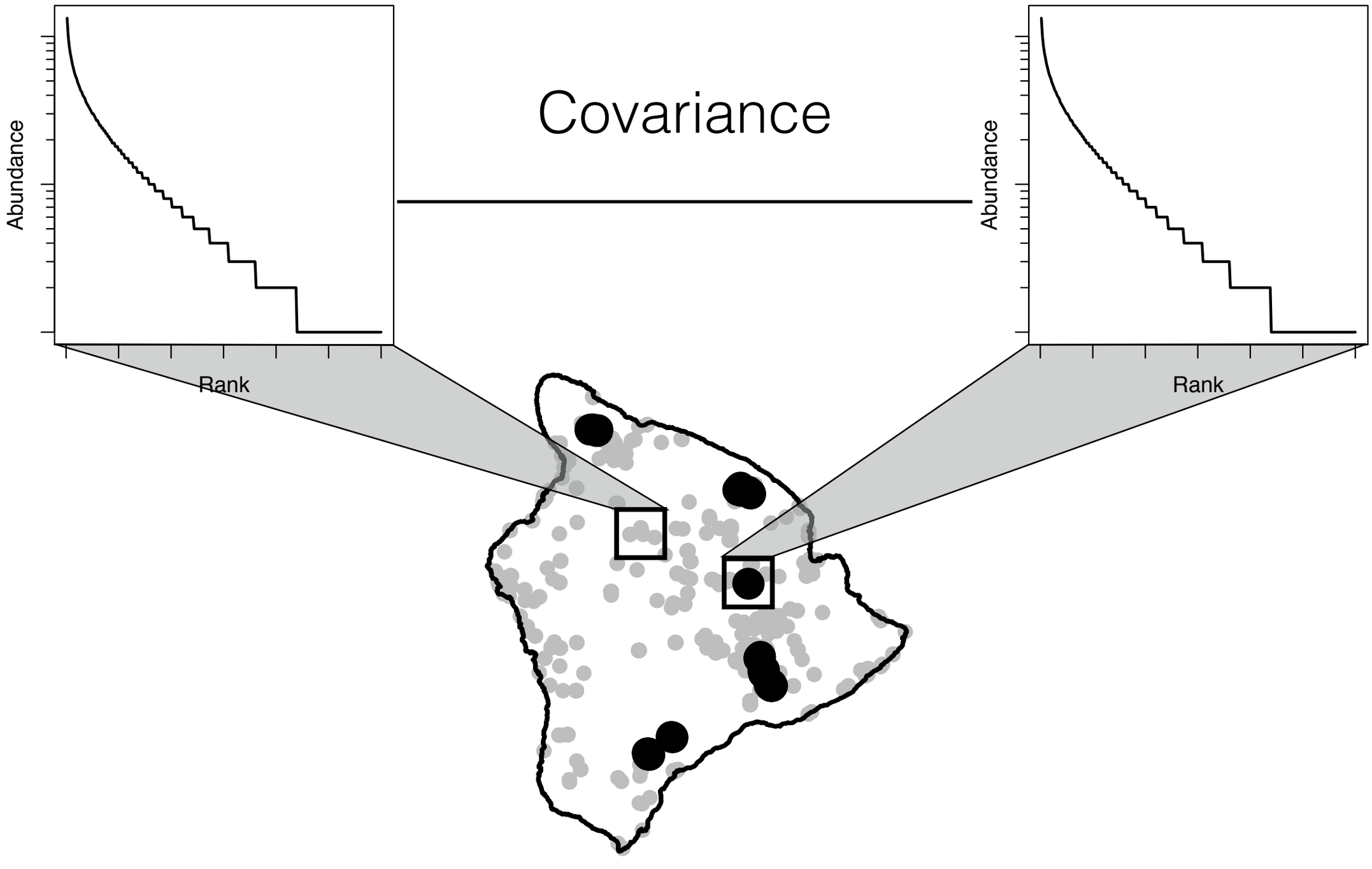
Use case: Invasion β



Use case: Invasion β

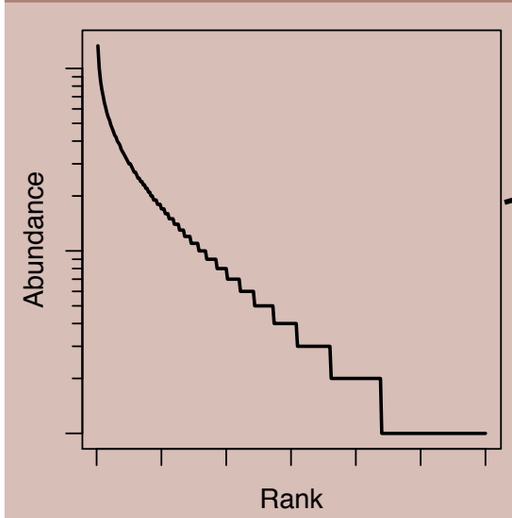
CHALLENGE

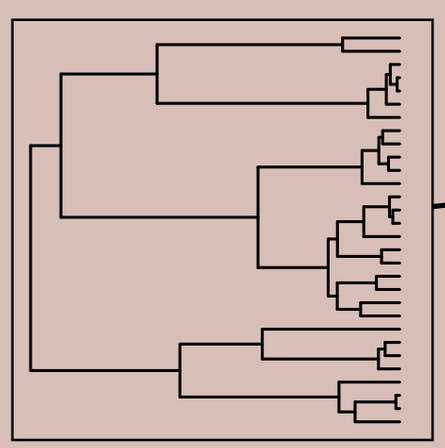
Use case: Invasion β



Digitization

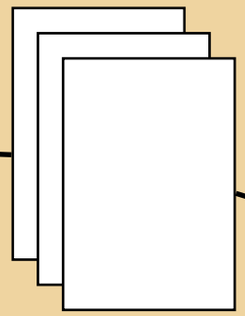
Published studies



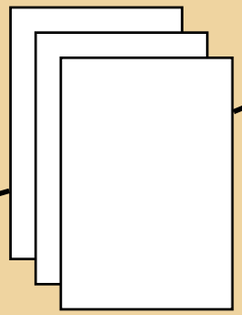


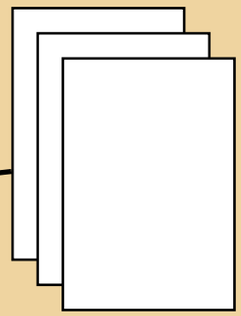
Databases/API

e.g. iDigBio



e.g. Dryad





e.g. TreeBase

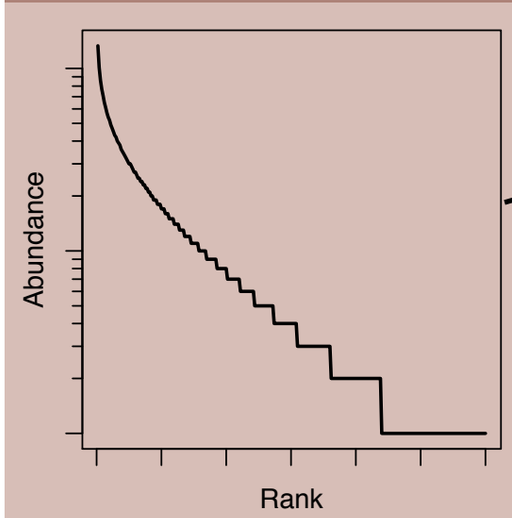
R packages

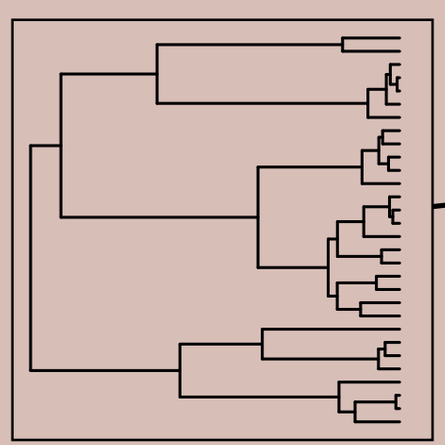
e.g. `ridigbio`

Query

Digitization

Published studies





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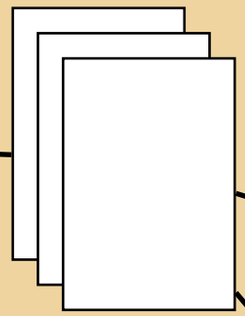

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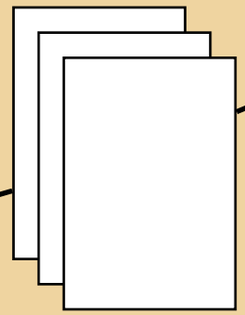

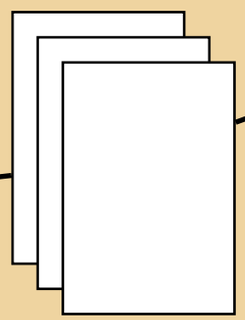

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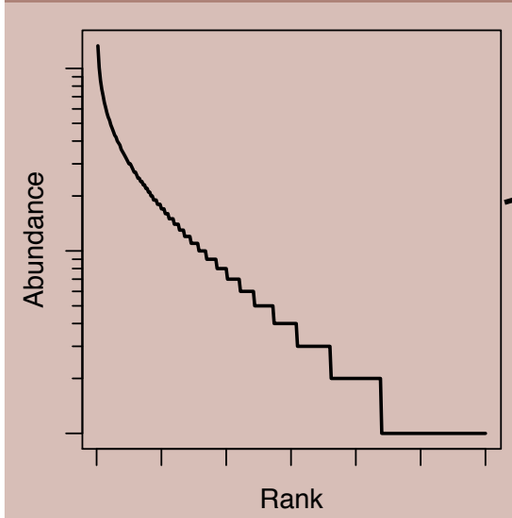

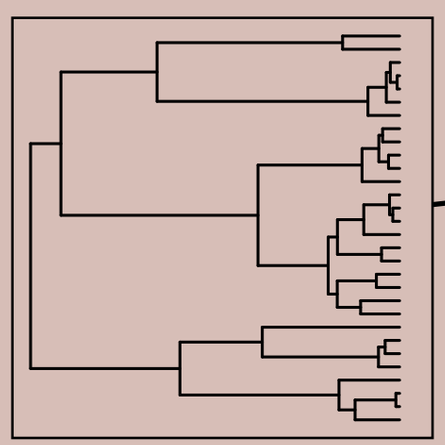

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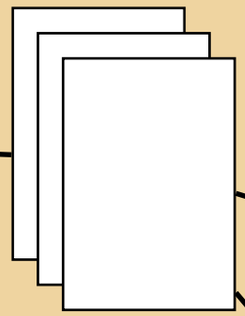

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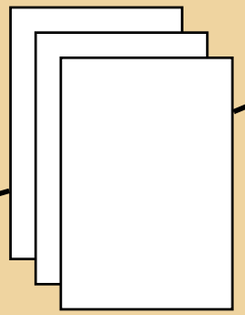

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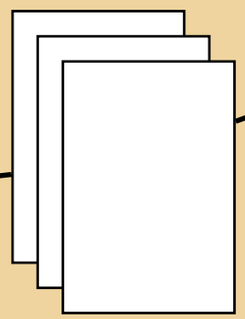

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