



What is ecology?

*LSU – Biol 4253*

# Ecology

The study of interactions between biological organisms and their environment

# Species interactions!

With other species:

- Competition
- Predator – prey
- Plant – pollinator
- Host – parasite

# Species interactions!

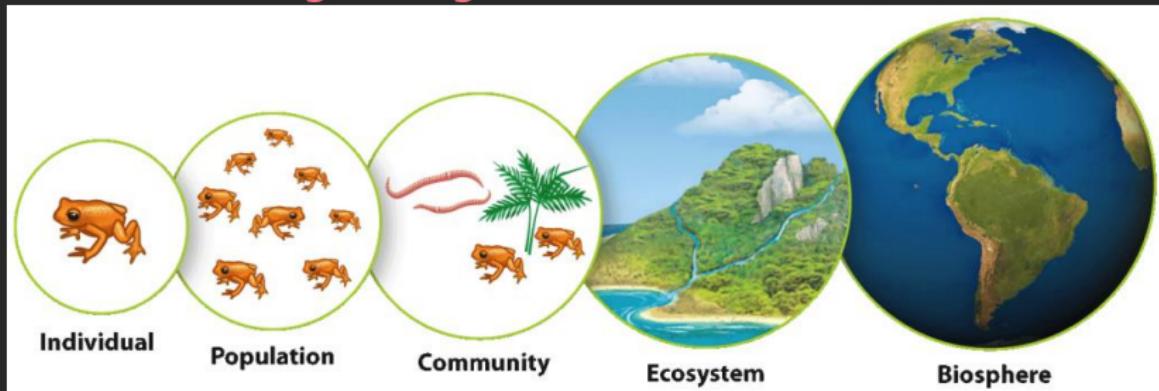
With the environment:

- Abiotic variables
- Dispersal limitation
- Ecosystem respiration
- Ecosystem engineering

What is not ecology?

Environmentalism  
Biomedicine  
Natural history  
Evolution

## Levels of biological organization



## Individual

A single individual of a species.  
e.g., a single trout in lake superior

# Population

A collection of individuals that occupy a given geographic area and interact with one another.  
e.g., trout in lake superior

# Community

A set of interacting species that occupy a given geographic area.

e.g., fish communities in lake superior

# Ecosystem

The set of interacting species (the community) and the interactions between these species and their physical environment.

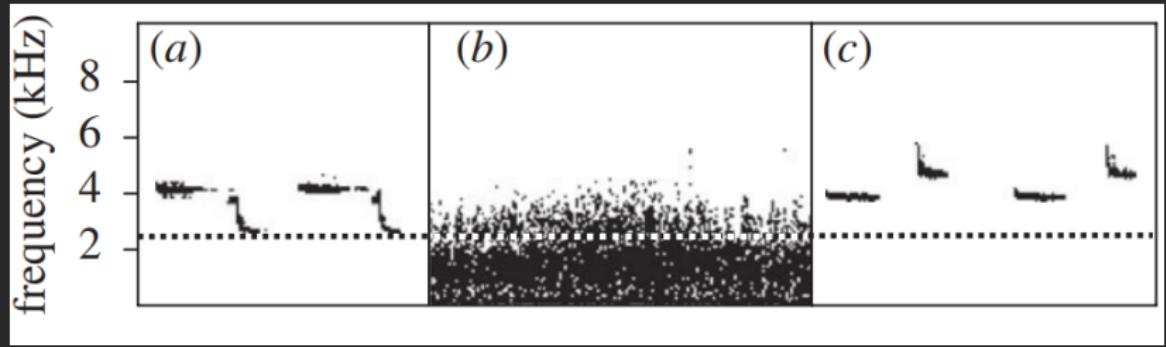
e.g., lake

# Biosphere

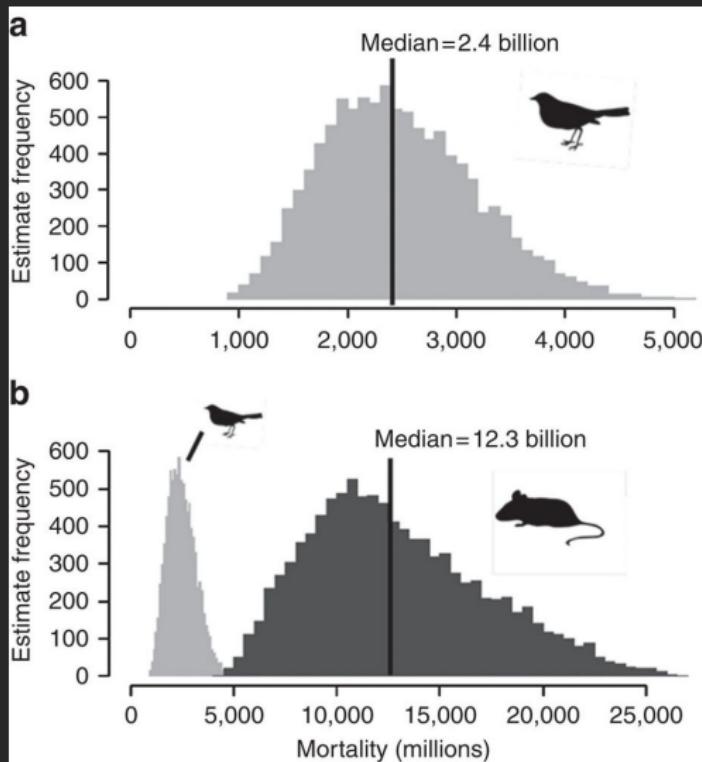
The global environment, consisting of all living things on the planet.

e.g., the planet

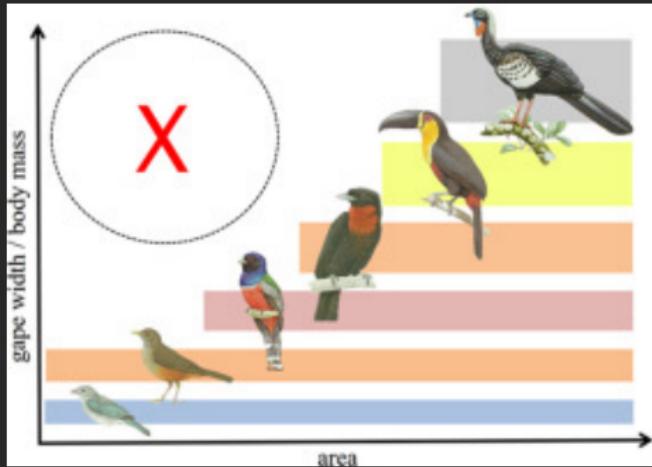
# Individual



# Population



# Community



Size reduction of the forest fragments narrows the distribution of important avian traits. Large-bodied and large-gaped birds are most affected and the loss of these species can have important implications for seed dispersal of trees with large fruits.

Bird pictures from: Ridgely, R.S., Gwynne, J.A., Tudor, G., Argel, M., 2015. *Aves do Brasil. vol. 2. Mata Atlântica do Sudeste*. Editora Horizonte.

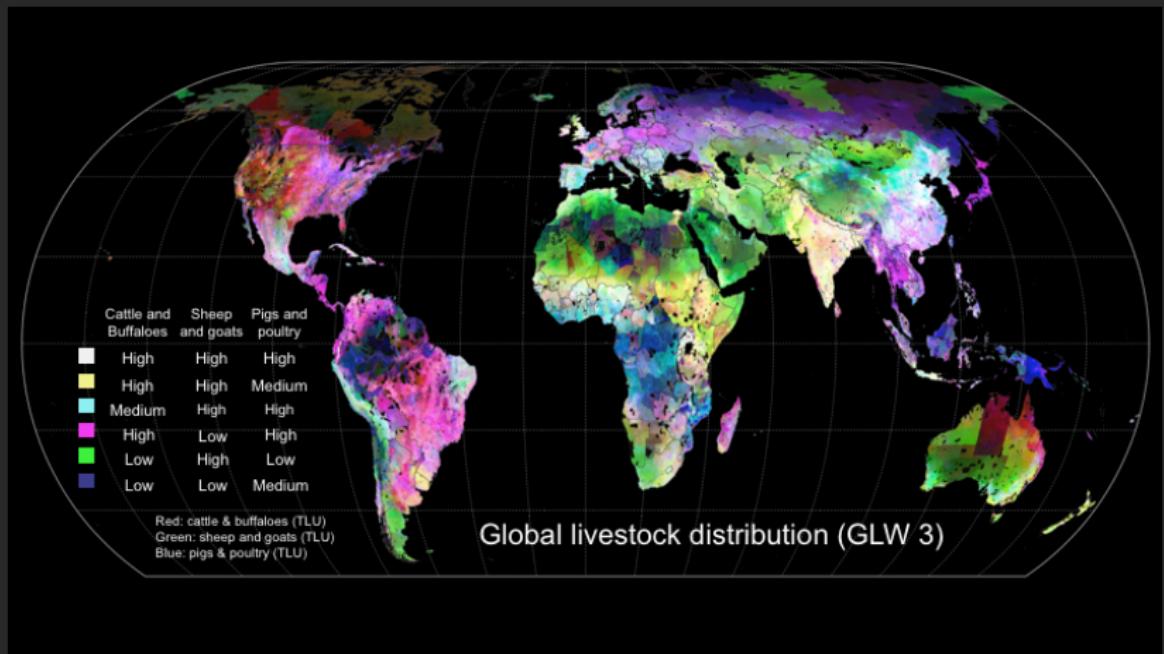
# Ecosystem



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Alexandr Trubetskoy

# Biosphere



How do we do ecology?

# Observations



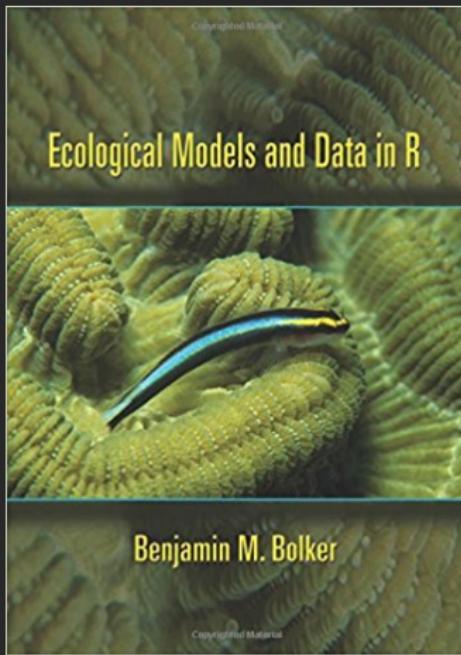
# Field experiments



# Laboratory experiments



# Ecological modeling



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Ben Bolker