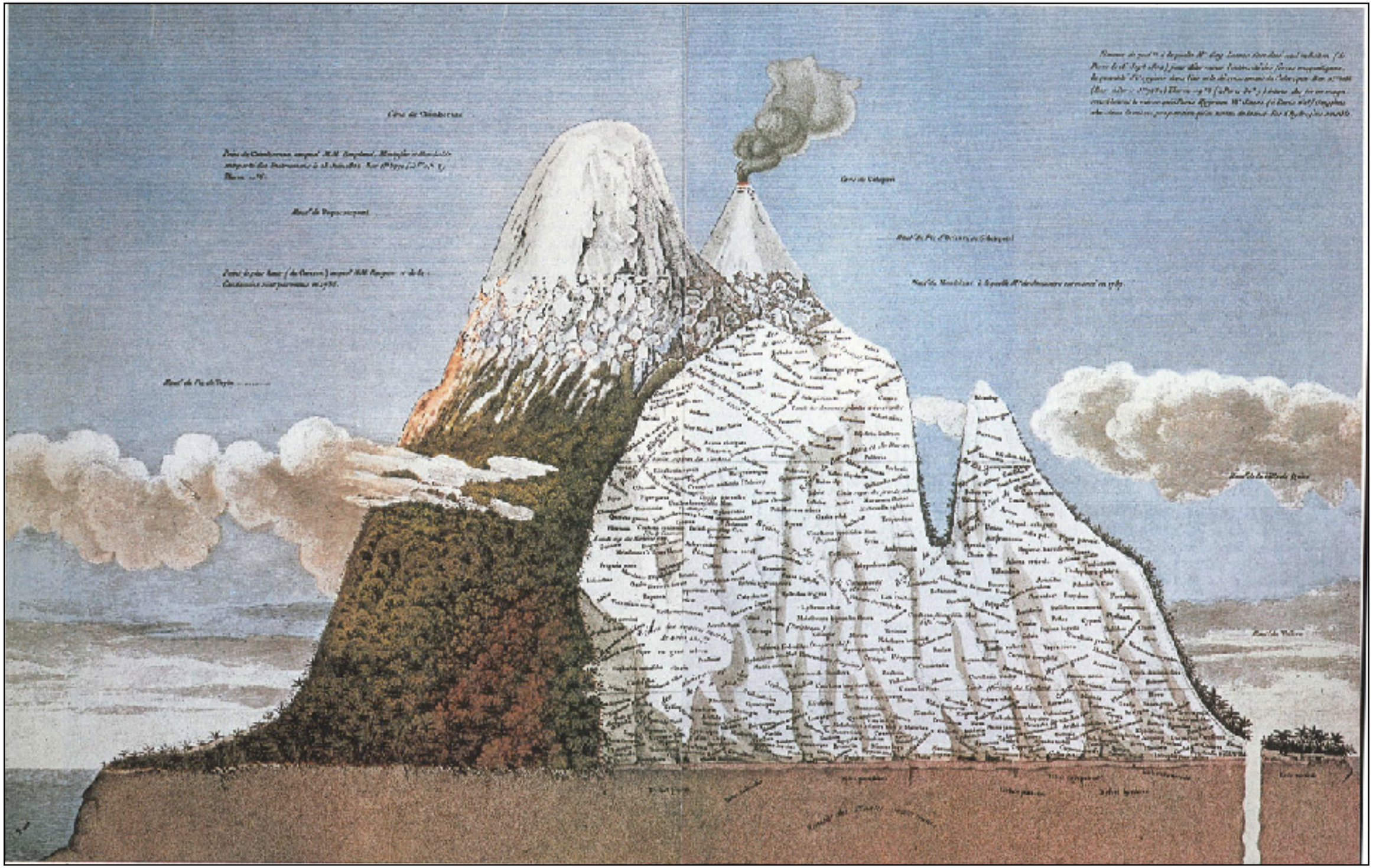
The Domain of Ecology



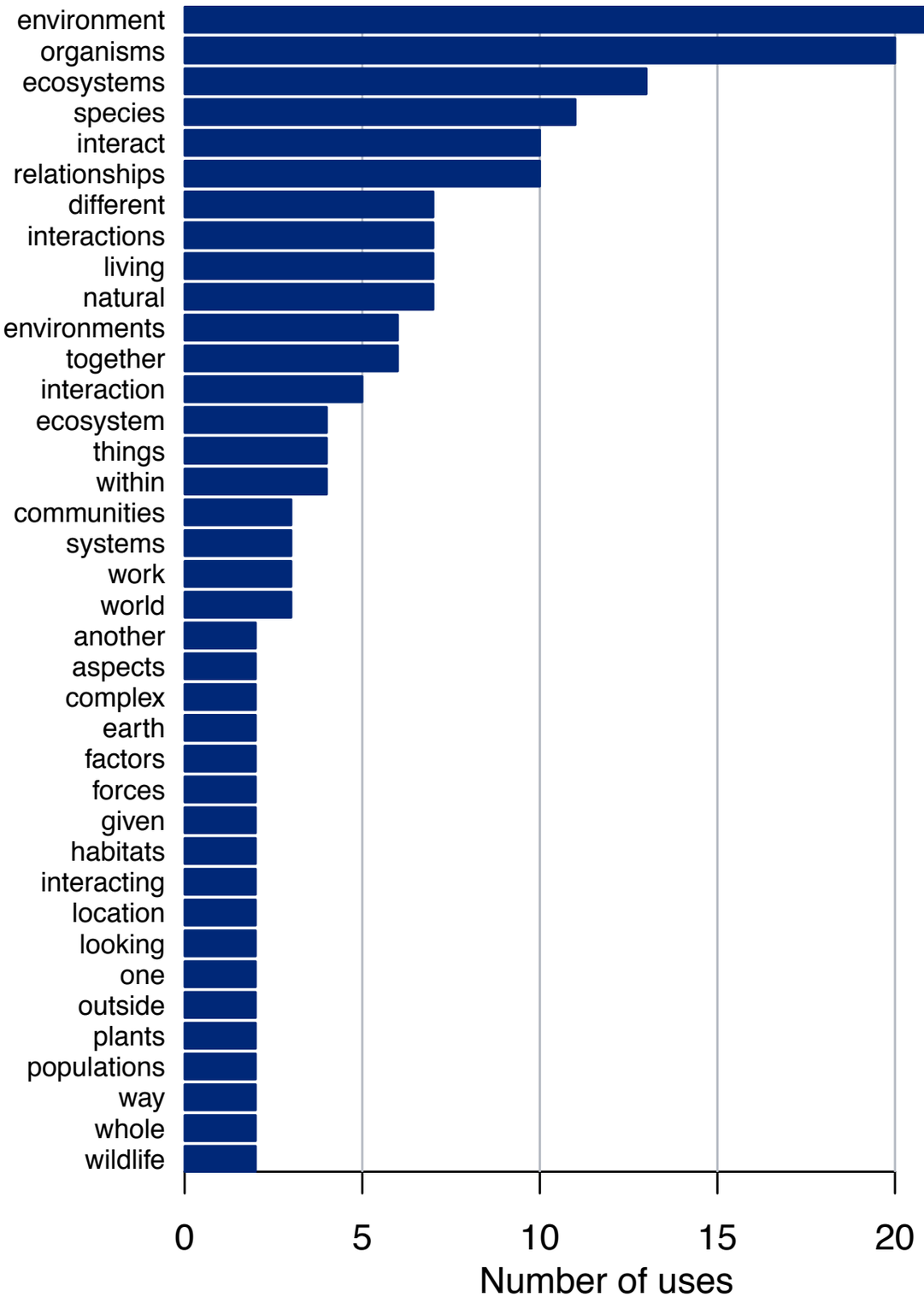
Lecture 2, BI271: Introduction to Ecology
Fall 2017

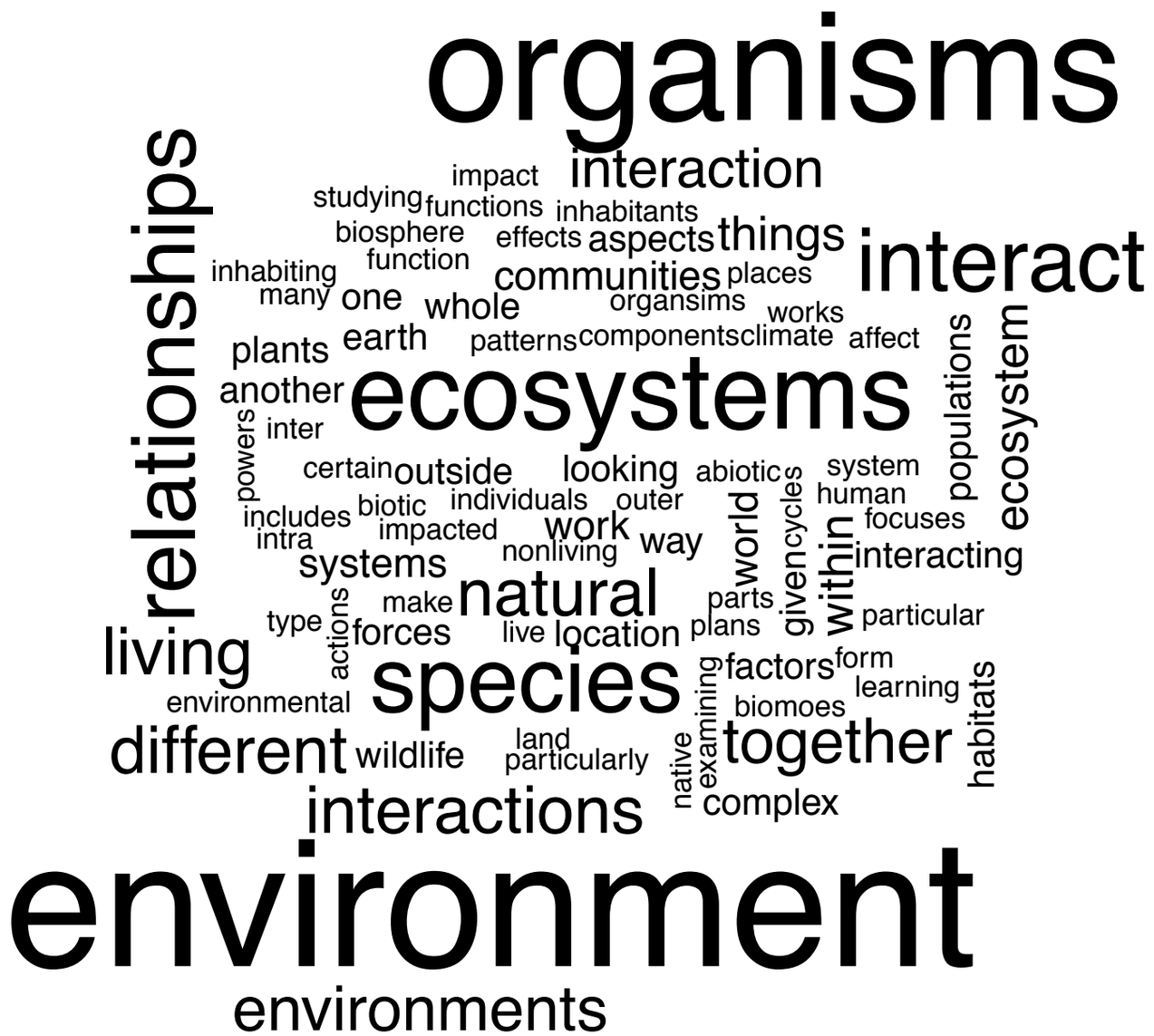
Ecology: a definition

The study of the spatial and temporal patterns of the distribution and abundance of organisms, including the causes and consequences

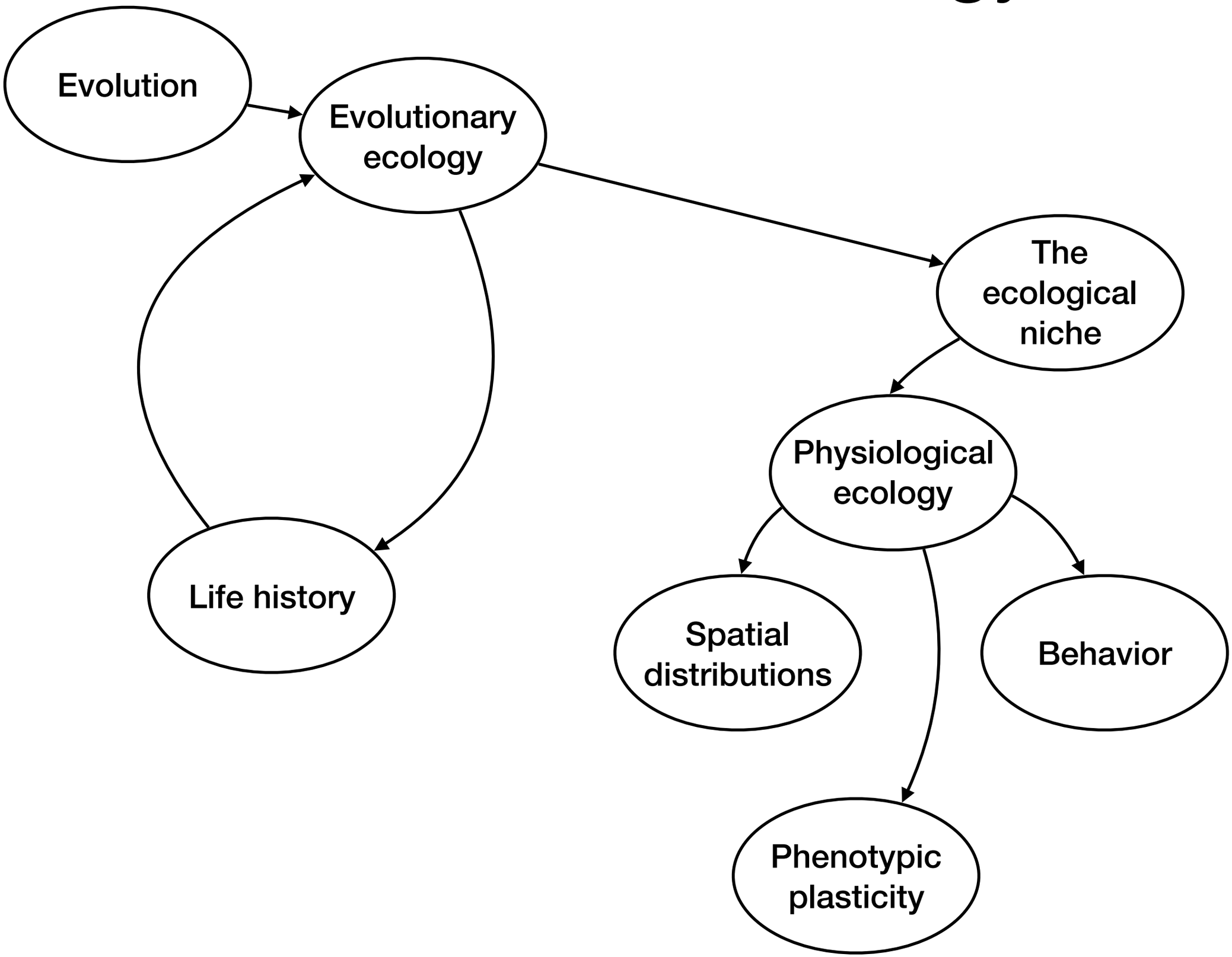
Sheiner and Willig, *The Theory of Ecology*, 2013

Ecology: what you said





Unit 1: Autecology

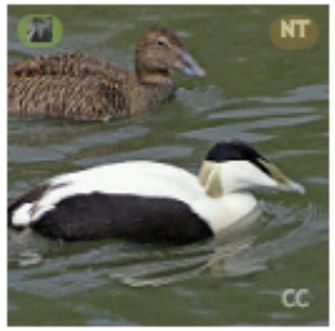


Top observed species in Maine on iNaturalist.com

Eastern White Pine
(*Pinus strobus*)

Herring Gull
(*Larus argentatus*)

Canadian bunchberry
(*Cornus canadensis*)

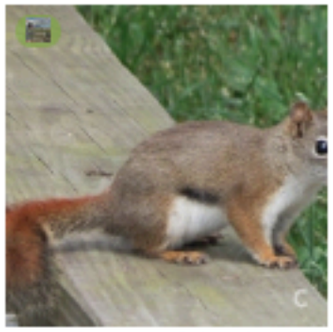


Common Eider
(*Somateria mollissima*)

Green Shore Crab
(*Carcinus maenas*)

Sheep Laurel
(*Kalmia angustifolia*)

northern red oak
(*Quercus rubra*)



American Red Squirrel
(*Tamiasciurus hudsonicus*)

Common Periwinkle
(*Littorina littorea*)

Mallard
(*Anas platyrhynchos*)

red maple
(*Acer rubrum*)

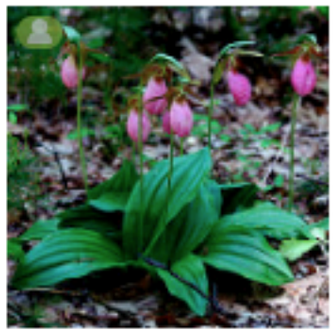
Common Loon
(*Gavia immer*)

Monarch
(*Danaus plexippus*)

Bald Eagle
(*Haliaeetus leucocephalus*)

Black-capped Chickadee
(*Poecile atricapillus*)

Purple Pitcher Plant
(*Sarracenia purpurea*)



pink lady's slipper
(*Cypripedium acaule*)

Common Garter Snake
(*Thamnophis sirtalis*)

Rugosa Rose
(*Rosa rugosa*)

Eastern Red-backed Salamander
(*Plethodon cinereus*)

northern whitecedar
(*Thuja occidentalis*)

Paper Birch
(*Betula papyrifera*)

American Robin
(*Turdus migratorius*)

Eastern Hemlock
(*Tsuga canadensis*)

Black Guillemot
(*Cepphus grylle*)

Red Clover
(*Trifolium pratense*)

common bracken
(*Pteridium aquilinum*)

Knotted Wrack
(*Ascophyllum nodosum*)

The domain of ecology

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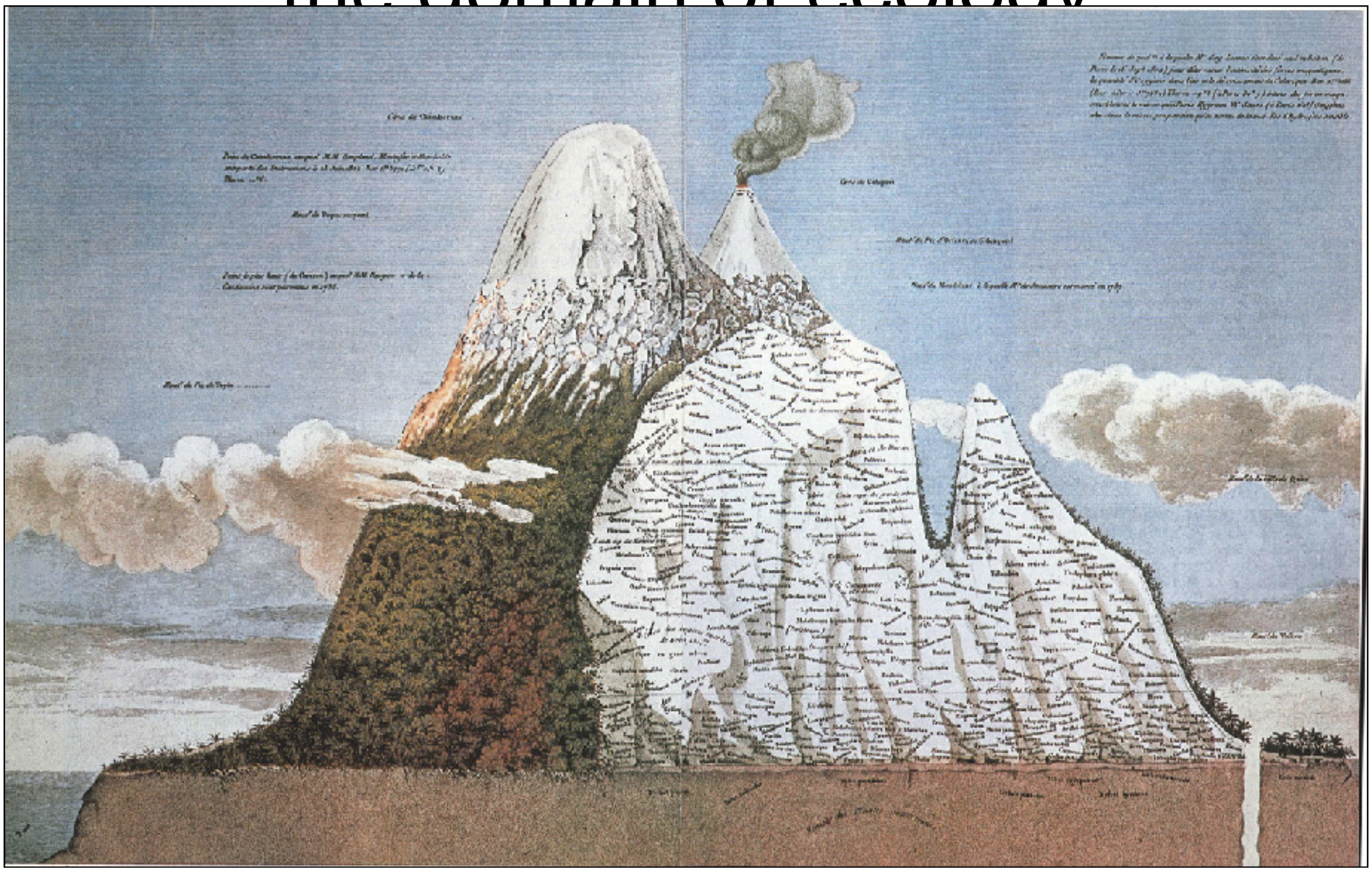
The fundamental principles within the domain of ecology

The fundamental principles within the domain of ecology

1. Organisms are distributed in space and time in a heterogeneous manner

The fundamental principles within the domain of ecology



Bodleian Library, Oxford

The fundamental principles within the domain of ecology

1. Organisms are distributed in space and time in a heterogeneous manner
2. Organisms interact with their abiotic and biotic environments
3. Variation in the characteristics of organisms results in heterogeneity of ecological patterns and processes
4. The distributions of organisms and their interactions depend on contingencies

The fundamental principles within the domain of ecology

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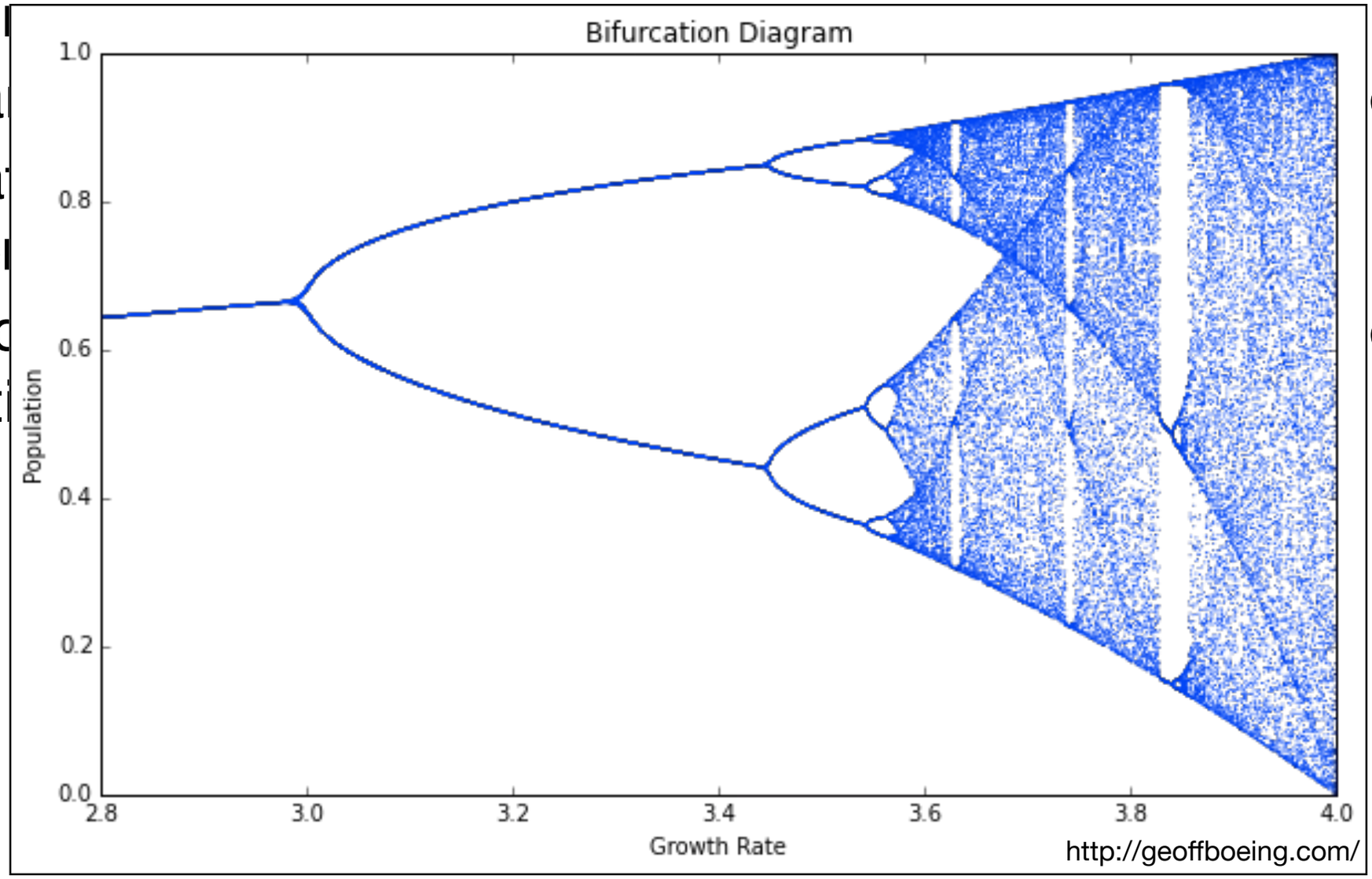


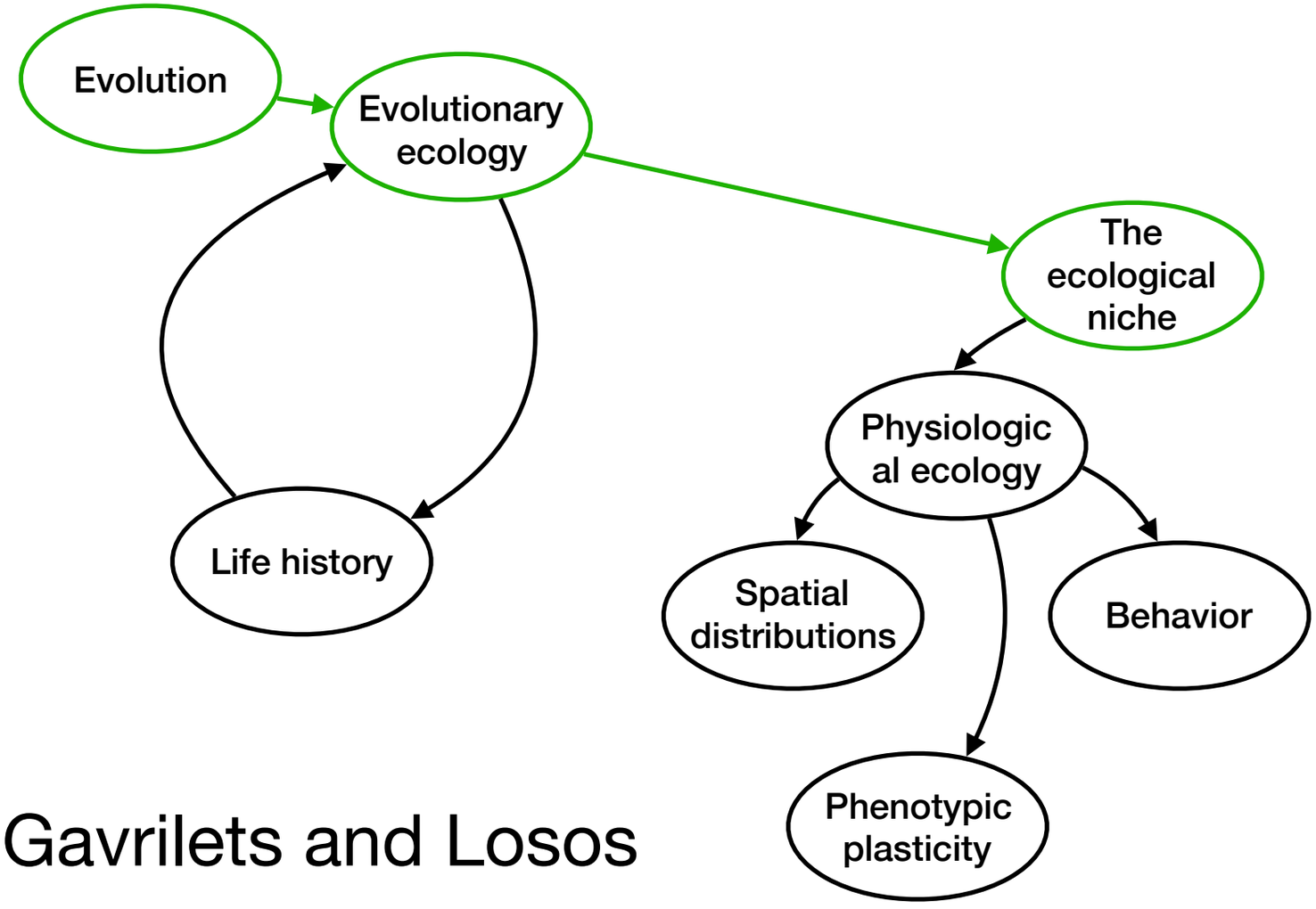
The fundamental principles within the domain of ecology

1. Organisms are distributed in space and time in a heterogeneous manner
2. Organisms interact with their abiotic and biotic environments
3. Variation in the characteristics of organisms results in heterogeneity of ecological patterns and processes
4. The distributions of organisms and their interactions depend on contingencies
5. Environmental conditions are perceived by organisms are heterogeneous in space and time
6. Resources as perceived by organisms are finite and heterogeneous in space and time
7. Birth and death rates are a consequence of interactions with the abiotic and biotic environment
8. The ecological properties of species are the result of evolution

Next week

Topics

1. Evolution
2. Evolutionary ecology
3. The ecological niche



Reading

1. CBH: ch. 6
2. Review in *Science* by Gavrilets and Losos

Assignment

1. Paper critique 1 (Wednesday)