

# Biogeography. Lecture 10

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# Outline

## Basics of ecology

- Biotic ecological factors: ecological interactions

- Human-related ecological factors

- Ecological niche

- Ecosystems and biosphere



# Basics of ecology

## Biotic ecological factors: ecological interactions



# Six basic ecological interactions

	+	0	—
+	mutualism	commensalism <sup>1</sup>	exploitation <sup>2</sup>
0	...	neutralism	amensalism
—	...	...	interference <sup>3</sup>

<sup>1</sup> Includes phoresy (transportation), inquilinism (housing) and metabiosis (“sponging” like in sucker fishes)

<sup>2</sup> Includes predation, parasitism and phytophagy

<sup>3</sup> Includes competition, allelopathy and aggression



# Basics of ecology

## Human-related ecological factors



# Anthropogenic factors

- ▶ Direct

- ▶ Collecting
- ▶ Hunting
- ▶ Plowing
- ▶ Tree cutting

- ▶ Indirect

- ▶ Grazing
- ▶ Polluting
- ▶ Melioration
- ▶ Recreation



# Basics of ecology

## Ecological niche



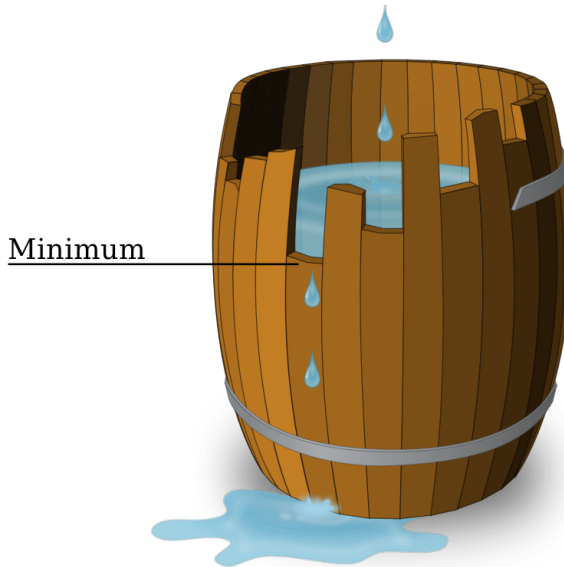
# The cloud in hyper-space of ecological factors

- ▶ Response function: euryoecious and stenoecious species
- ▶ Fundamental and realized niche
- ▶ Liebig's law of the minimum





# Liebig's barrel



# Basics of ecology

## Ecosystems and biosphere



# Features of ecosystem

- ▶ Biomass, diversity, structure (feeding network, stratification)
- ▶ Self-reproduction and self-regulation
- ▶ Biosphere is the largest ecosystem possible
- ▶ Ecosystem could be split in different ways, for example into life forms and then into populations

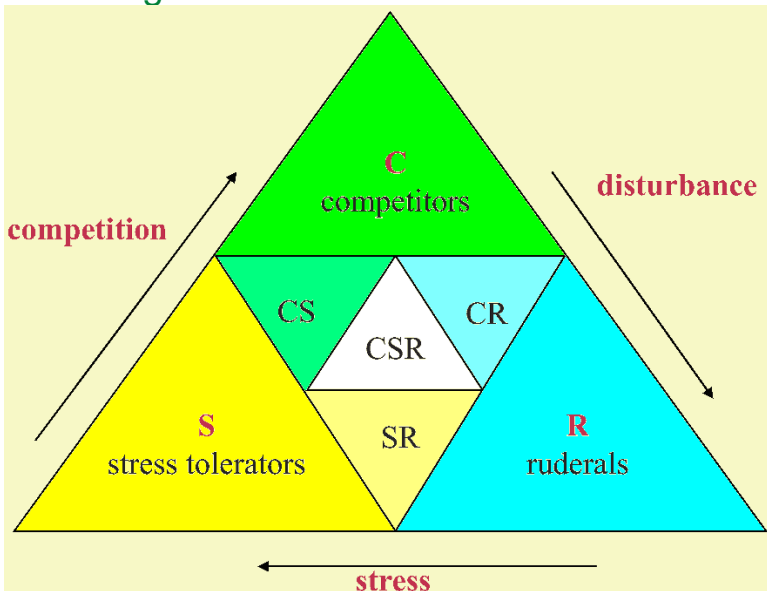


# Populations

- ▶ Plant strategies: C (competitive), S (stress tolerant) and R (ruderal, or rapid propagation).
- ▶ Survivorship curves, population growth curves, r- and K-strategy



# Grime's triangle



# Summary

- ▶ Ecosystems are self-reproduced and self-regulated units



# For Further Reading



A. Shipunov.

*Biogeography* [Electronic resource].

2014—onwards.

Mode of access:

[http://ashipunov.info/shipunov/school/biol\\_330](http://ashipunov.info/shipunov/school/biol_330)



Ecology.

<http://en.wikipedia.org/wiki/Ecology>

