

Biogeography. Lecture 8

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Outline

Questions and answers

Basics of ecology

Ways of life

Ecological factors

Biotic ecological factors: ecological interactions



Outline

Questions and answers

Basics of ecology

- Ways of life

- Ecological factors

- Biotic ecological factors: ecological interactions



Results of Exam 1: statistic summary

Summary:

Min.	1st Qu.	Median	Mean	3rd Qu.	Max.	NA' s
43.00	49.00	54.00	55.64	61.00	67.00	11

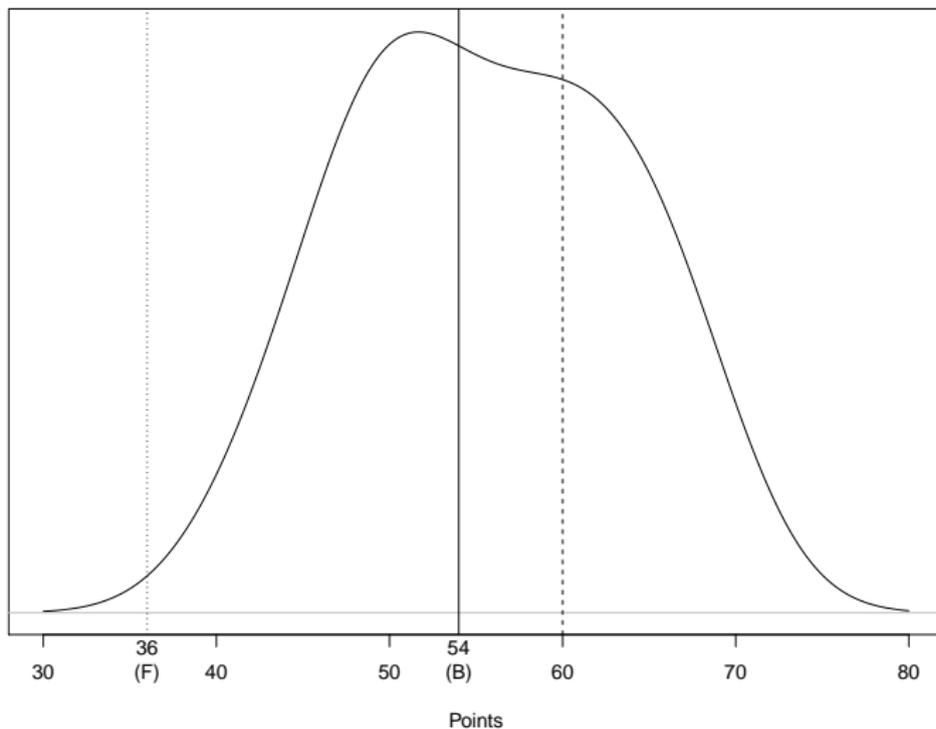
Grades:

F	D	C	B	max
36	42	48	54	60



Results of Exam 1: the curve

Density estimation for Exam 1 (Biol 154)



18. Dominant in Paleogene were:
- A. Birds and mammals
 - B. Birds and reptiles
 - C. Reptiles and mammals



Basics of ecology

Ways of life



Ways of life

▶ How to obtain energy?

1. From sun light: **phototrophy**
2. From chemical reactions with inorganic matter (“rocks”):
lithotrophy
3. From breaking organic molecules into inorganic (typically, carbon dioxide and water): **organotrophy**

▶ How to obtain building blocks?

1. From assimilation of carbon dioxide: **autotrophy**
2. From other living beings: **heterotrophy**



Six life styles

	Phototrophs	Lithotrophs	Organotrophs
Autotrophs	Plants	Bacteria	Bacteria
Heterotrophs	Bacteria	Bacteria	Animals



Basics of ecology

Ecological factors



Ecological factors

- ▶ Everything what is surrounding organism
- ▶ Types of ecological factors:
 - ▶ Abiotic
 - ▶ Biotic
 - ▶ Anthropogenic



Abiotic: classification A

- ▶ Resources
- ▶ Conditions



Abiotic: classification B

- ▶ General (seasonal)
 - ▶ Temperature
 - ▶ Solar radiation
 - ▶ Content of environment (humidity etc.)
- ▶ Particular
 - ▶ Environment pressure (atmosphere pressure, gravitation etc.)
 - ▶ Environment movement (wind, currents)
 - ▶ Relief



Basics of ecology

Biotic ecological factors: ecological interactions



Two-species model

- ▶ Species I and species II may influence each other differently
- ▶ For example, species I may facilitate the increase the number of species II individuals (+ interaction)
- ▶ At the same time, species II could be neutral to species I (0 interaction)



Six basic ecological interactions

	+	0	-
+	mutualism	commensalism ¹	exploitation ²
0	...	neutralism	amensalism
-	interference ³

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

² Includes predation, parasitism and phytophagy

³ Includes competition, allelopathy and aggression



Summary

- ▶ Ecology studies relation between organisms and environment



For Further Reading



A. Shipunov.

Biogeography [Electronic resource].

2014—onwards.

Mode of access:

http://ashipunov.info/shipunov/school/biol_330



Ecology.

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

