

\*Assigned readings, 8<sup>th</sup> Edition pp. 1214-1216, Review Chapter 54  
7<sup>th</sup> Edition pp. 1175-1180, 1209-1224

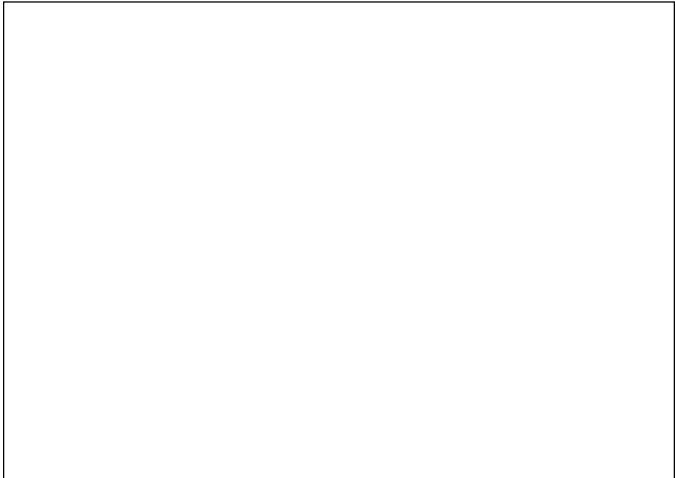
**Island Biogeography**

*Outline of Lecture 8*

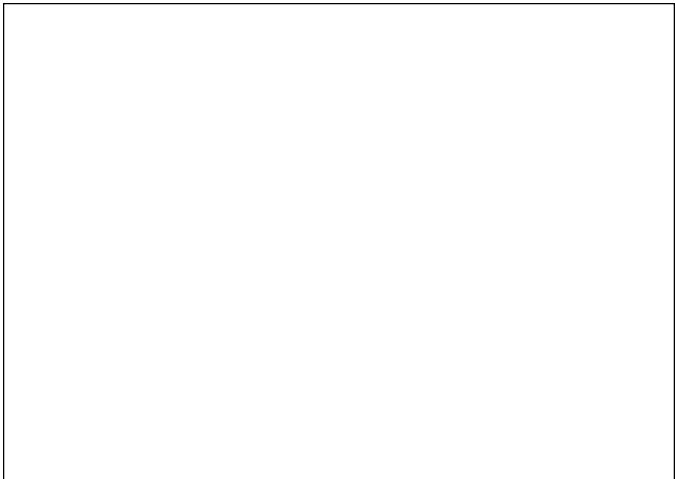
- A. What is island biogeography?**
- B. Factors that determines number of species on islands**
- C. Characteristics related to the island size, distance, etc.**
- D. Conservation issues**
- E. Exotic species introductions**
- F. Generalization about species richness**



- A. Factors that determine the number of species that eventually inhabit an island.
  - 1. The rate at which new species immigrate to the island from the mainland.
  - 2. The rate at which species become extinct on the island.
  
- Mainland: the place that serves as the origin of colonizing species.



- B. Immigration and extinction are also effected by:
    - 1. Size of island
    - 2. Distance from mainland
- 
- log of number of species
- log of area
- log of distance



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**Island Biogeography**

- C. Characteristics related to the island size, distance, etc.
  1. Small islands have lower immigration of new species and higher extinction rates.
  2. An island closer to the mainland will have a higher immigration rate.
  3. Immigration and extinction rates are also affected by the number of species already present on the island.



As number of species on an island increases, immigration of species decreases, and there are more species to become extinct.

Rate of immigration of new species or extinction of existing species on the island

Number of species on island

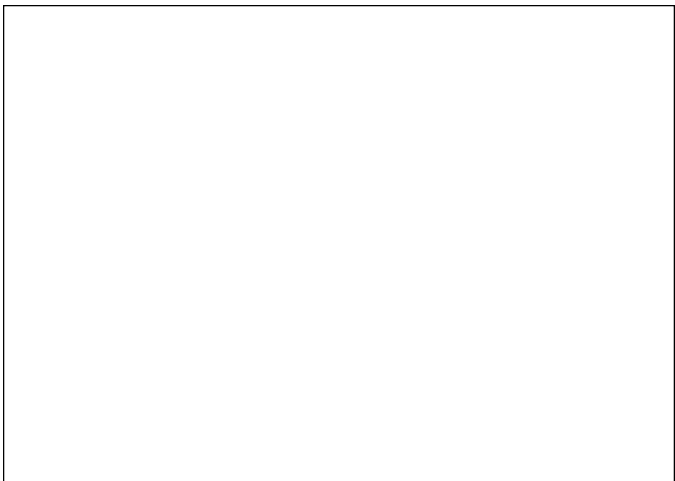


"Island" size

distance (from "mainland")

*Axis labeled as in above cell*

4. Exact species composition may vary, and speciation over long time periods can also affect composition and equilibrium.



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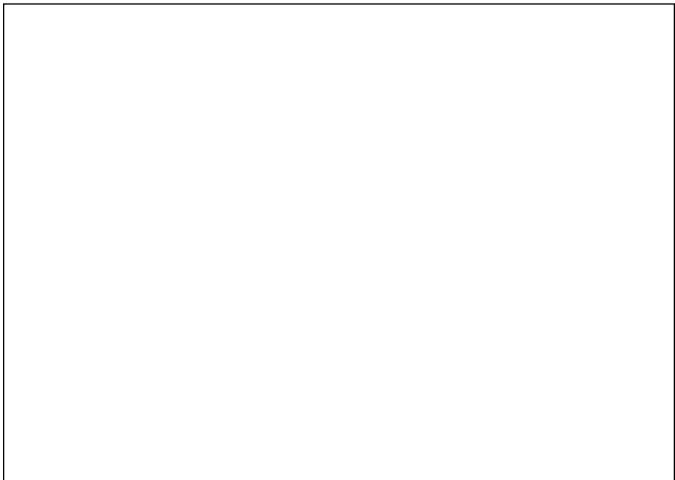
**Island Biogeography**

- D. Conservation issues related to this theory
1. Communities can change from being continuous large natural communities to “islands” surrounded by unsuitable areas.
  2. Corridors can be added between island communities and determination of appropriate size of “island” (to reduce edge effort) relative to minimum critical size of habitat are alternatives.



3. Other implications of model (for study group discussion)?

E. Exotic species introductions (cane toad, Opuntia cactus, mongoose) may effect equilibrium.



F. Generalizations about species richness

<b>Factor</b>	<b>High richness</b>	<b>Low richness</b>
Latitude	Tropics	Arctic, ?Temperate
Elevation	Lowlands	Highlands
Precipitation	Wet	Dry
Isolation	Mainlands	Islands

