

Theory of Island Biogeography

- Since Darwin's visit to the Galapagos scientists have been using islands as microcosms to study evolutionary problems.
- Several ecologists empirically observed that the number of species occurring on an island was related to the size of the island and the distance it was from colonization sources.

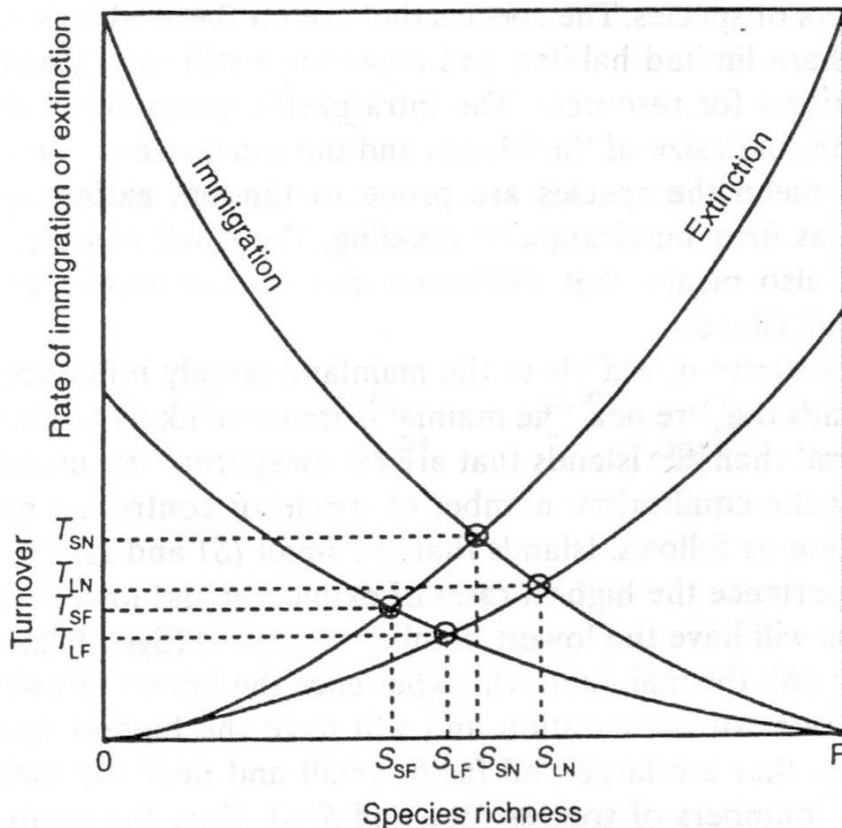
Island species Richness depends on:

Island size (area) affects _____ rate.

Island isolation (distance) affects _____ rate.

Colonization and extinction are _____.

Species richness reflects an _____ between colonization and extinction.



Fill in the blanks and be sure you can illustrate and explain the outcomes from this model of the Theory of Island Biogeography

Are habitat patches 'islands'?

- Similarities:
 - Small units of land separated from similar by _____
 - Similar relationships between patch size and bird species diversity have been documented
- Differences:
 - How much of a barrier does the intervening land represent
 - Isolated from what? Where is the 'source' population?
 - Time: how long has the patch been isolated?

Edge revisited

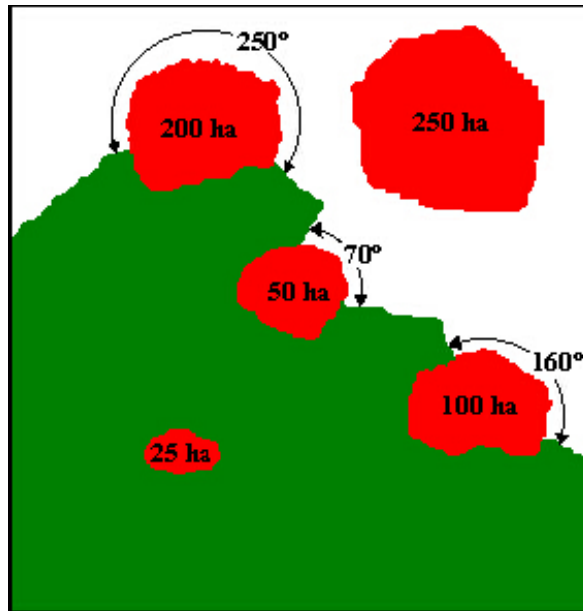
- Positive effects of edge
 - Leopold's "Laws"
 - Is more edge always better?
- Negative effects of edge
 - Smaller 'islands' have more edge per unit area than larger 'islands'
 - 'edge effects'
 - Predation, external effects

Nature reserves as islands

- Diamond (1975) proposed that preserves were functionally islands in a sea of human dominated land use.
- Proposed 6 principles derived from patterns of bird distributions observed on New Guinea
 1. Large preserve holds _____
 2. Single large preferable to several small totaling same area
 3. If small reserves; they should be grouped closely
 4. Arrange in _____
 5. _____ connection to aid dispersal
 6. Make circular to reduce edge effects
- Led to SLOSS controversy

SLOSS stands for: _____

Effective size of patches



MUM: Multiple use module

MUM: clusters of buffered cores