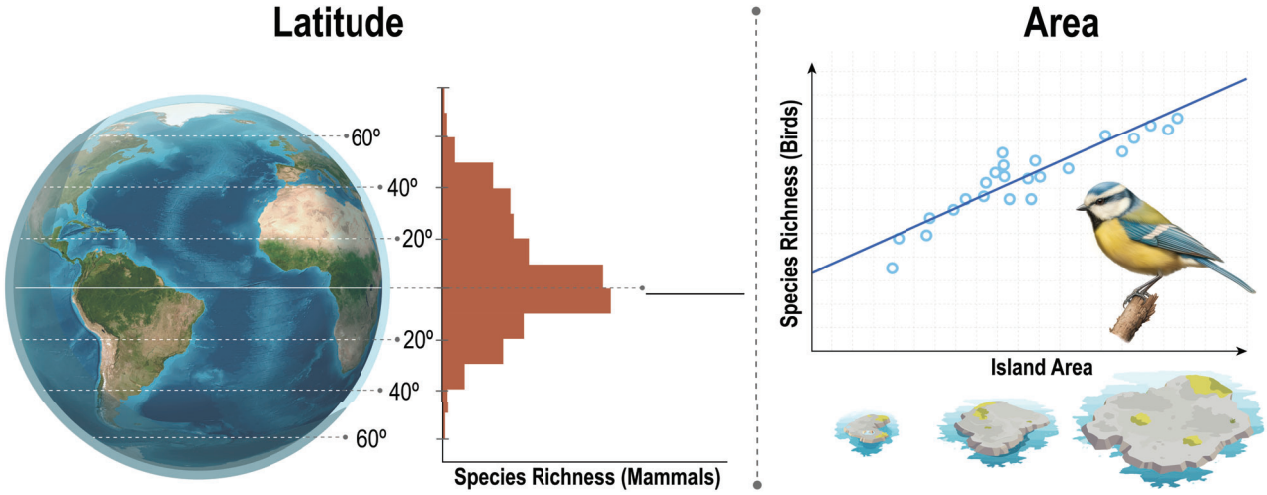
TOPIC: GEOGRAPHIC IMPACT ON COMMUNITIES

Geographic Impact on Communities

◆ Two biogeographical factors have a significant impact on a community's species _____.

1. **Latitude:** diversity typically _____ with increasing latitude further from equator.
   - _____ near equator fosters more productivity (more sunlight & precipitation).
   - Tropical communities tend to be _____ (more time for speciation).
2. **Area:** diversity typically *increases* with increasing area (_____ areas have more resources).



EXAMPLE

Which of the following statements explain why tropical communities tend to have more species diversity than communities at higher latitudes?

I. Tropical communities tend to be larger, and therefore have more habitats & resources available.
II. There are fewer predators & parasites in tropical regions, allowing more species to thrive.
III. Tropical communities have been around for longer, allowing more time for evolution & speciation to occur.
IV. Tropical regions tend to receive more precipitation & sunlight.
V. Tropical regions experience fewer disturbances.

a) I, II, & III.
b) III, IV, & V.
c) III & IV only.
d) IV & V only.

PRACTICE

Which of the following communities would likely have the highest species diversity?

a) A large island in the tropics.
b) A small island in the tropics.
c) A large island in a temperate region.
d) A small island in a temperate region.

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What is the Island Equilibrium Model?

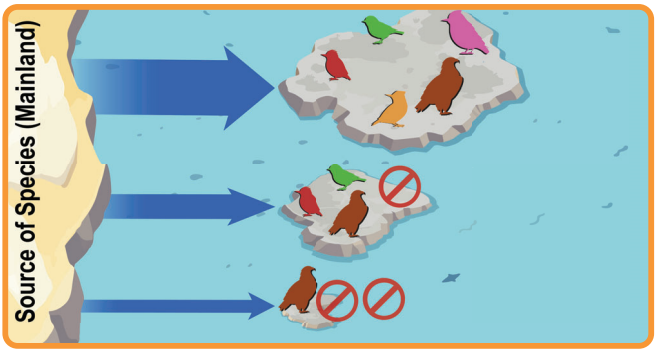
◆ **Island Equilibrium Model:** # of species on an "island" eventually reaches *equilibrium* (immigration ___ extinction).

- The # of species at this equilibrium depends on _____ factors:

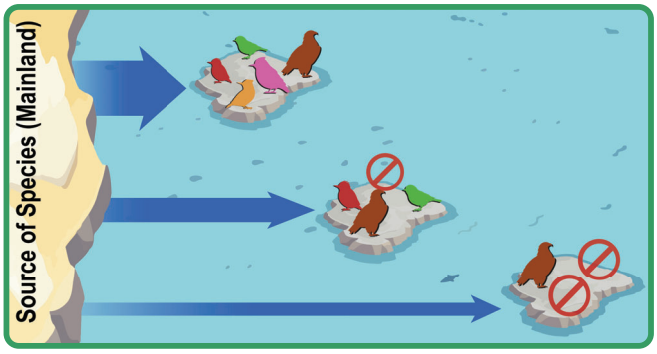
1. **Size:** the _____ the island's area.
2. **Distance:** the _____ to the mainland.

} The _____ species present at equilibrium.

1. Island Size



2. Island Distance from "Mainland"

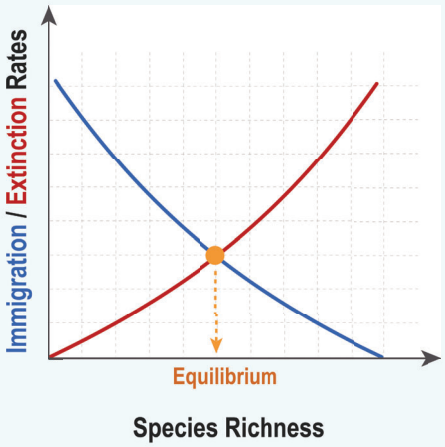


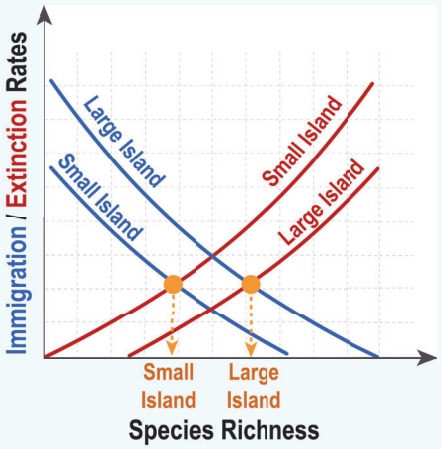
Immigration Local Extinction

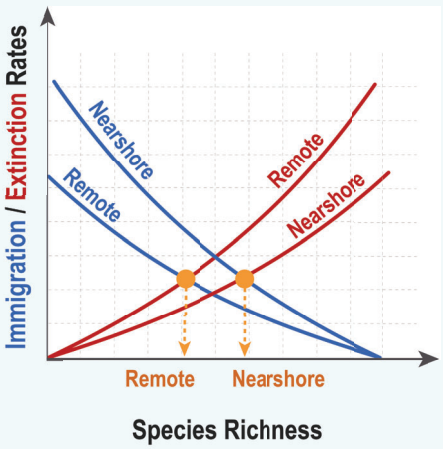
NOTE: this model applies to any isolated patch of habitat (e.g. oceanic islands, lakes, mountain peaks, caves, etc.).

EXAMPLE

According to the figures below, which of the following options likely has the highest extinction rate?







a) An island that is small and near the mainland.

b) An island that is small and far from the mainland.

c) An island that is large and near the mainland.

d) An island that is large and far from the mainland.

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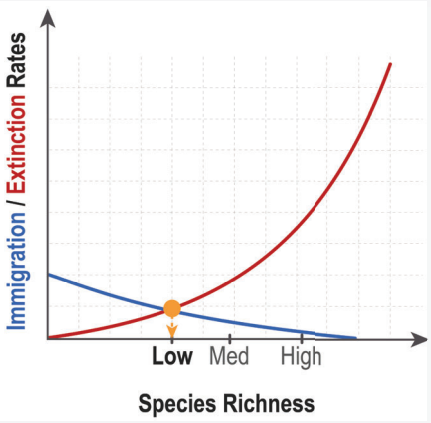
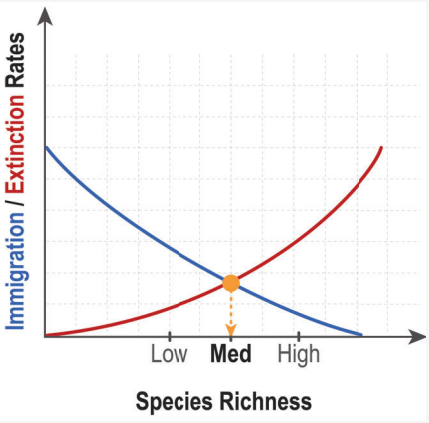
PRACTICE

Which of the following graphs best corresponds with a small island that is distant from the mainland?

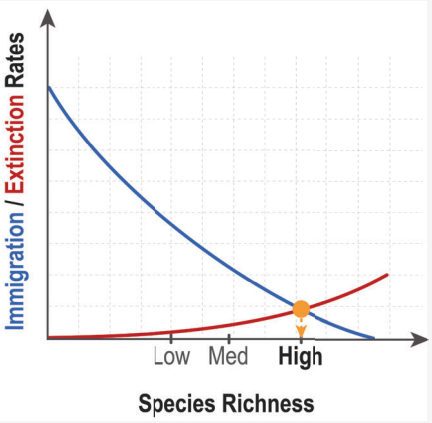
a) Graph #1



b) Graph #2



c) Graph #3



PRACTICE

Which of the following statements correctly describes the graph below?

a) Point A represents a large island close to the mainland.

b) Point D represents a large island close to the mainland.

c) Point B represents an island with higher species diversity than point C.

d) Point D represents an island with higher extinction rate than point A.