

## 2.3 Island Biogeography

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Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_\_

Total: 9 marks

### Objective

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Build the skills to answer exam questions on **island biogeography**.

**You must be able to:**

- explain how **island size** and **distance** affect species number
- apply the theory to habitat fragments
- reason about immigration and extinction

### 1 Worked examples

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Study these first. Each one shows the method for a question type used later —follow the steps and you can do the Practice and Exam-style questions yourself.

#### ■ Island biogeography

The number of species on an island balances **immigration** (new species arriving) against **extinction** (species dying out).

#### ■ Size effect

**Larger** islands support **more** species —more habitat, larger populations (lower extinction). Small islands hold fewer species.

#### ■ Distance effect

Islands **closer** to a mainland receive **more** immigrants, so they hold more species; **far** islands receive fewer.

#### ■ Applying to habitat fragments

Fragments of habitat (from roads, farms) act like islands. **Large, connected** fragments keep more species than **small, isolated** ones —a key idea for reserve design.

### 2 Practice

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Now apply the methods above.

**2.1** Do larger islands hold more or fewer species?

[1]

**2.2** Do islands closer to the mainland receive more or fewer immigrants? [1]

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**2.3** The number of species balances immigration against what? [1]

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### 3 Exam-style questions

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**3.1** An island far from the mainland is expected to have [1]

- **A** more species (more immigration)
  - **B** fewer species (less immigration)
  - **C** no extinction
  - **D** unlimited species
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**3.2** A forest is split into one large fragment and several small ones.

(a) Which fragment will likely keep more species? [1]

(b) Explain using island biogeography. [2]

**3.3** Explain why connecting habitat fragments with wildlife corridors helps preserve species. [2]

### 4 Go further

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You are now ready for the real exam questions on this subtopic:

- work through the **2.3 Island Biogeography** lesson on the **Learn** page;
- read the **Island Biogeography** section of the AP Environmental Science handout on the **Know** page.

## Solutions

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**2.1** More species.

**2.2** More immigrants.

**2.3** Extinction.

**3.1 B** —fewer species (less immigration).

**3.2** (a) The large fragment. (b) A larger area has more habitat and larger populations (lower extinction), so it keeps more species, like a large island.

**3.3** Corridors let species move between fragments, increasing immigration and gene flow and reducing extinction —effectively making the fragments act like one larger habitat.