

2.3 Island Biogeography

Name: _____ Class: _____ Date: _____

Total: 9 marks

KEY WORDS migration 迁徙 • island biogeography 岛屿生物地理学

Objective

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

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

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]

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

3 Exam-style questions

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]

Solutions

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.