

2.1 Introduction to Biodiversity

Name: _____ Class: _____ Date: _____

Total: 11 marks

Objective

Build the skills to answer exam questions on **biodiversity**.

You must be able to:

- distinguish **species richness** 物种丰富度 and **evenness** 均匀度
- explain why higher biodiversity increases **resilience** 恢复力
- describe genetic, species, and habitat diversity

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.

■ Types of diversity

Biodiversity has three levels: **genetic** (variety of genes), **species** (variety of species), and **habitat/ecosystem** (variety of habitats).

■ Richness and evenness

- **Species richness** —the **number** of different species.
- **Species evenness** —how **evenly** individuals are spread among species.

A community with many species in similar numbers has high diversity.

■ Resilience

Higher biodiversity gives an ecosystem more **resilience** —it recovers better from disturbances because other species can fill lost roles.

■ A worked comparison

Community A has 10 species in equal numbers; community B has 10 species where one dominates. A has higher **evenness** and therefore higher diversity.

2 Practice

Now apply the methods above.

2.1 What is species richness? [1]

2.2 What is species evenness? [1]

2.3 Name the three levels of biodiversity. [3]

3 Exam-style questions

3.1 A community with high species evenness has individuals [1]

- **A** all of one species
 - **B** spread fairly evenly among species
 - **C** with no genetic variation
 - **D** in a single habitat
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3.2 Two communities each have 8 species. In community X one species makes up 90% of individuals; community Y is even.

(a) Which has higher diversity? [1]

(b) Explain your answer using richness and evenness. [2]

3.3 Explain why higher biodiversity makes an ecosystem more resilient. [2]

4 Go further

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

- work through the **2.1 Introduction to Biodiversity** lesson on the **Learn** page;
- read the **Introduction to Biodiversity** section of the AP Environmental Science handout on the **Know** page.

Solutions

2.1 The number of different species.

2.2 How evenly individuals are distributed among the species.

2.3 Genetic, species, and habitat/ecosystem diversity.

3.1 B —spread fairly evenly among species.

3.2 (a) Community Y. (b) Both have the same richness (8 species), but Y has higher evenness (no single dominant species), so Y is more diverse.

3.3 With more species filling more roles, if one is lost others can compensate, so the ecosystem keeps functioning and recovers from disturbance.