

Exercise walk-through

2.1

Introduction to Biodiversity

AP Environmental Science

What biodiversity is

Biodiversity is the variety of life, at three levels: genetic, species, habitat.

More diversity $\Rightarrow$ more resilience. Diversity = richness $\times$ evenness.



Coral reef: high richness and evenness

Biodiversity has three levels, and the exam wants all three

genetic

diversity

variety of genes *within* one species – more variety means the population can meet **environmental stressors** ; a **population bottleneck** strips it away

species diversity

species richness
equally spread)

(how many) plus evenness (how

ecosystem diversity

variety of habitats and communities across a region

Species-rich ecosystems are more **resilient**
can fill the roles the lost ones held.

: when conditions change, varied species

Exercises 2.1-2.3

2.1 What is species richness?

[1]

2.2 What is species evenness?

[1]

2.3 Name the three levels of biodiversity.

[3]

Exercises 2.1-2.3

2.1 What is species richness? [1]

2.1

- The number of different species
-

2.2 What is species evenness? [1]

2.2

- How evenly individuals are distributed among the species
-

2.3 Name the three levels of biodiversity. [3]

2.3

- Genetic, species, and habitat/ecosystem diversity

Exercise 3.1

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

Exercise 3.1

3.1 A community with high species evenness has individuals

[1]

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A all of one species

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D in a single habitat

3.1 B

- spread fairly evenly among species

Exercise 3.2 (a)

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]

Exercise 3.2 (a)

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]

(a)

- Community Y

Exercise 3.2 (b)

3.2 Two communities each have 8 species. In community X one species makes up 90% of individuals; community Y is even.

(b) Explain your answer using richness and evenness.

[2]

Exercise 3.2 (b)

3.2 Two communities each have 8 species. In community X one species makes up 90% of individuals; community Y is even.

(b) Explain your answer using richness and evenness.

[2]

(b)

- Both have the same richness (8 species), but Y has higher evenness (no single dominant species), so Y is more diverse

Exercise 3.3

3.3 Explain why higher biodiversity makes an ecosystem more resilient.

[2]

Exercise 3.3

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

3.3

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