

Exercise walk-through

2.5

Natural Disruptions to Ecosystems

AP Environmental Science

Disruptions and adaptation

Disruptions: periodic, episodic (wildfire), random. Adaptation by natural selection: structural, physiological, behavioral.

When the environment changes, selection can favour a different trait.



Episodic disruption: wildfire resets succession

Natural disruption comes on three schedules

periodic

regular cycles – seasons, tides

episodic

occasional and irregular – fires, floods, volcanic eruptions

random

no pattern at all – a meteor strike

A single natural event can rival or exceed a human-made one, and over geological time the climate and sea level have shifted for reasons that had nothing to do with us.

Adaptations

An **adaptation** is an inherited trait that improves survival and reproduction in an environment.

Adaptations arise through **natural selection** – incremental genetic change accumulating over generations, not within a single lifetime.

Exercises 2.1-2.3

2.1 Give two examples of natural disruptions.

[2]

2.2 Classify seasonal flooding (periodic, episodic, or random).

[1]

2.3 State one beneficial effect of a wildfire.

[1]

Exercises 2.1-2.3

2.1 Give two examples of natural disruptions. [2]

2.1

- Any two: fire, flood, volcanic eruption, drought, storm
-

2.2 Classify seasonal flooding (periodic, episodic, or random). [1]

2.2

- Periodic
-

2.3 State one beneficial effect of a wildfire. [1]

2.3

- Any one: clears dead material, releases nutrients, triggers germination

Exercise 3.1

3.1 A volcanic eruption is an example of a

[1]

☐

A periodic disruption

B random disruption

C human disruption

D gradual change

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A periodic disruption

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3.1 B

- a random disruption

Exercise 3.2 (a)

3.2 A forest experiences a wildfire.

(a) State one harmful and one beneficial effect.

[2]

Exercise 3.2 (a)

3.2 A forest experiences a wildfire.

(a) State one harmful and one beneficial effect.

[2]

(a)

- Harmful: kills plants/animals; beneficial: releases nutrients / clears the canopy

Exercise 3.2 (b)

3.2 A forest experiences a wildfire.

(b) Explain why some ecosystems depend on periodic fire.

[2]

Exercise 3.2 (b)

3.2 A forest experiences a wildfire.

(b) Explain why some ecosystems depend on periodic fire.

[2]

(b)

- Some plants need fire to release seeds or clear competitors, and periodic fire recycles nutrients, so those ecosystems are adapted to it

Exercise 3.3

3.3 Explain how an ecosystem recovers after a natural disruption.

[2]

Exercise 3.3

3.3 Explain how an ecosystem recovers after a natural disruption. [2]

3.3

- Through ecological succession – pioneer species recolonize, and the community rebuilds over time; high biodiversity speeds this recovery