

Exercise walk-through

8.6

Biodiversity

AP Biology

Biodiversity and disruptions

Biodiversity

ecosystem stronger:

- more **stability** and recovery
- free **ecosystem services** (clean water, pollination)

Invasive species

habitat loss, and climate change ripple far through food webs.



Habitat loss ripples through food webs

Biodiversity, resilience and succession

biodiversity

the variety of life at three levels – **genes, species and ecosystems**

why it matters

higher diversity generally makes a community more **re-silient** to disturbance

the mechanism

varied species can fill the roles that lost ones held

ecological succession

the ordered change in a community over time after a disturbance

primary succession

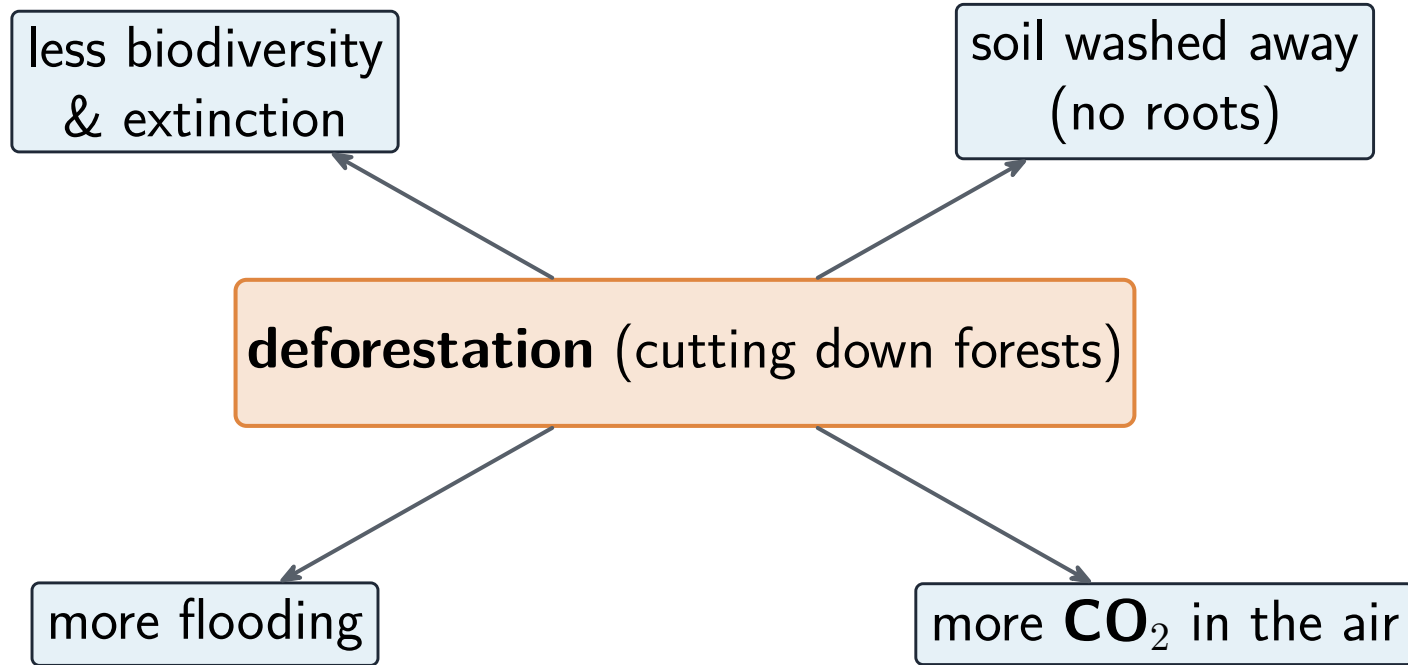
begins on **bare rock** with no soil – very slow

secondary succession

follows a disturbance that **leaves the soil**, so it is much faster

Resilience is the link between the two ideas: succession is how a community rebuilds, and diversity is what determines how well it does so.

Deforestation lowers biodiversity and causes erosion

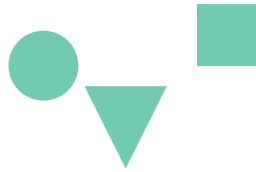


Deforestation lowers biodiversity and causes erosion, flooding, and higher CO₂

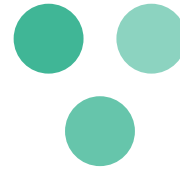
Biodiversity



ecosystem
diversity



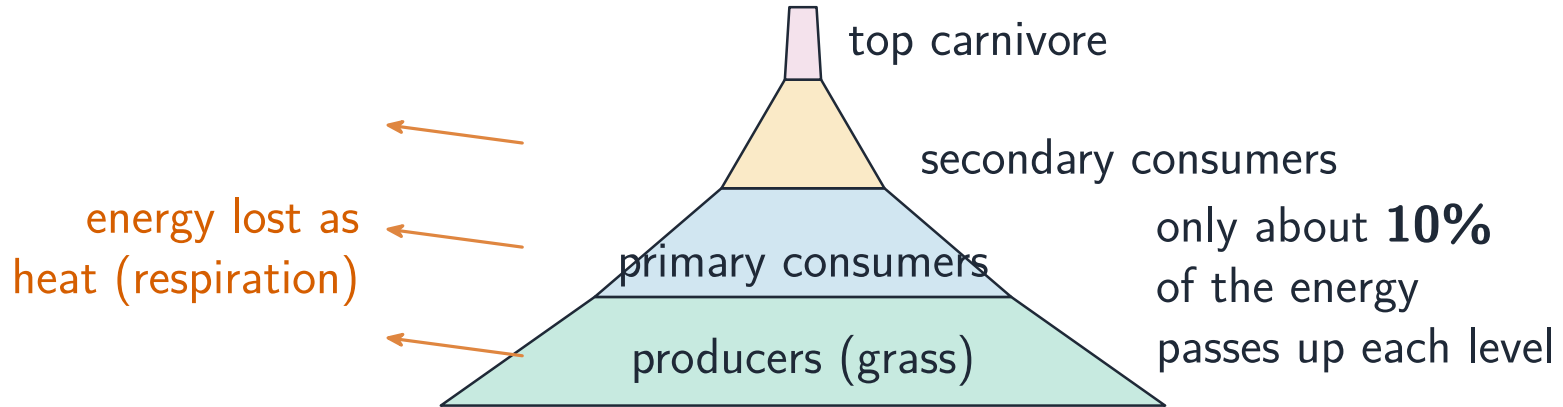
species
diversity



genetic diversity
(within a species)

Biodiversity at three levels: genetic, species, and habitat

Energy Flow Through Ecosystems



Only about 10% of the energy passes to the next trophic level

Exercises 2.1-2.3

2.1 Why is a high-biodiversity ecosystem more resilient? [1]

2.2 Give one ecosystem service provided by diverse ecosystems. [1]

2.3 State one threat to biodiversity. [1]

Exercises 2.1-2.3

2.1 Why is a high-biodiversity ecosystem more resilient? [1]

2.1

- More species fill more roles, so it can recover better from disturbances
-

2.2 Give one ecosystem service provided by diverse ecosystems. [1]

2.2

- Any one: clean water, pollination, climate regulation, food
-

2.3 State one threat to biodiversity. [1]

2.3

- Any one: habitat loss, pollution, invasive species, overharvesting, climate change

Exercise 3.1

3.1 An ecosystem with high biodiversity is generally

[1]

☐

A less stable

B more resilient to disturbance

C unable to recover

D identical to a monoculture

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3.1 B

- more resilient to disturbance

Exercise 3.2 (a)

3.2 A disease removes one species from an ecosystem.

(a) Explain why a diverse ecosystem is more likely to keep functioning.

[2]

Exercise 3.2 (a)

3.2 A disease removes one species from an ecosystem.

(a) Explain why a diverse ecosystem is more likely to keep functioning. [2]

(a)

- In a diverse ecosystem, other species can fill the lost species' role, so the ecosystem keeps functioning

Exercise 3.2 (b)

3.2 A disease removes one species from an ecosystem.

(b) State one human activity that reduces biodiversity.

[1]

Exercise 3.2 (b)

3.2 A disease removes one species from an ecosystem.

(b) State one human activity that reduces biodiversity.

[1]

(b)

- Any one: habitat destruction, pollution, overharvesting

Exercise 3.3

3.3 Explain how the loss of biodiversity could reduce the ecosystem services humans rely on. [2]

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3.3

- Many services (pollination, water purification, food) depend on particular species; losing them removes those functions, reducing the services people rely on