

Exercise walk-through

2.7

Ecological Succession

AP Environmental Science

Ecological succession

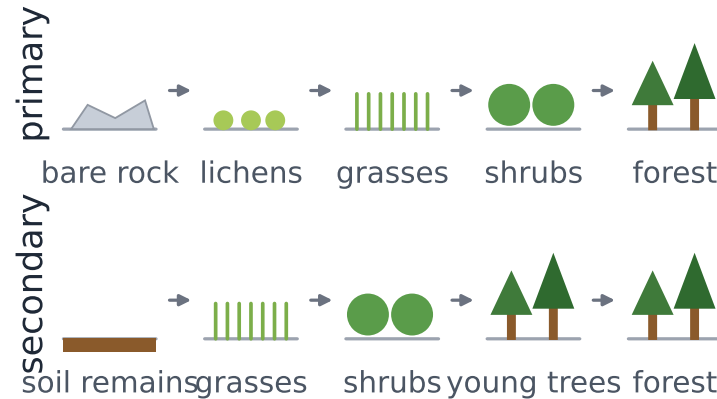
Life returns in a predictable order:
pioneer → climax.

Primary starts on bare rock;
secondary keeps the soil – far
faster.



Pioneer lichen on bare rock

Primary succession builds from bare rock; secondary



primary: bare substrate (no soil) · secondary: soil remains ⇒
faster recovery

Primary succession builds from bare rock; secondary succession regrows from surviving soil

Succession runs from bare rock to a climax community

pioneer species

first arrivals on bare rock – **lichens** and mosses, which break rock down into the first soil

primary succession

starts with **no soil at all** (new lava, retreating glacier) – very slow

secondary succession

follows a disturbance that **leaves the soil intact** – after a fire or abandoned farmland – so it is much faster

climax community

the stable end community for that climate, until the next disturbance

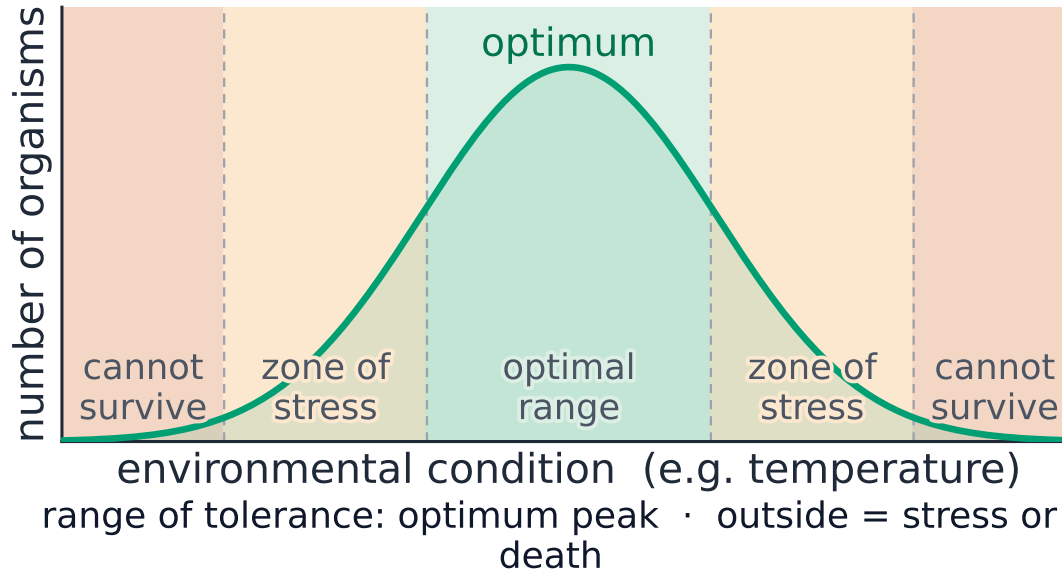
The single discriminator between the two kinds is **soil**. If soil survived the disturbance, it is secondary.

Introduction to Biodiversity



Biodiversity has three levels: genetic, species, and habitat

Ecological Tolerance, continued



Within its optimal range a species thrives; toward the limits it is stressed, then cannot survive

Exercises 2.1-2.3

2.1 What is the main difference between primary and secondary succession? [1]

2.2 What are pioneer species? [1]

2.3 What is a climax community? [1]

Exercises 2.1-2.3

2.1 What is the main difference between primary and secondary succession? [1]

2.1

- Primary starts on bare rock with no soil; secondary starts where soil already exists
-

2.2 What are pioneer species? [1]

2.2

- The first species to colonize a bare area
-

2.3 What is a climax community? [1]

2.3

- A stable, mature community that persists until disturbed

Exercise 3.1

3.1 Succession that begins on bare rock with no soil is

[1]

☐

A primary succession

B secondary succession

C a climax community

D eutrophication

Exercise 3.1

3.1 Succession that begins on bare rock with no soil is

[1]

☐

- A** primary succession
- B** secondary succession
- C** a climax community
- D** eutrophication

3.1 A

- primary succession

Exercise 3.2 (a)

3.2 A farm field is abandoned and slowly becomes a forest.

(a) State whether this is primary or secondary succession, with a reason.

[2]

Exercise 3.2 (a)

3.2 A farm field is abandoned and slowly becomes a forest.

(a) State whether this is primary or secondary succession, with a reason.

[2]

(a)

- Secondary – the soil already exists (the field was farmed)

Exercise 3.2 (b)

3.2 A farm field is abandoned and slowly becomes a forest.

(b) Order the stages: shrubs, grasses, mature forest, weeds.

[2]

Exercise 3.2 (b)

3.2 A farm field is abandoned and slowly becomes a forest.

(b) Order the stages: shrubs, grasses, mature forest, weeds.

[2]

(b)

- weeds
- grasses
- shrubs
- mature forest

Exercise 3.3

3.3 Explain why secondary succession is faster than primary succession.

[2]

Exercise 3.3

3.3 Explain why secondary succession is faster than primary succession. [2]

3.3

- Secondary succession already has soil (and often seeds/roots), so plants can establish immediately, while primary succession must first form soil from bare rock, which takes a long time