

Exercise walk-through

Disruptions in Ecosystems ■ 8.7

eXercise

You must be able to

- describe how **invasive species** 入侵物种, **human activity**, and **natural events** disrupt ecosystems
- explain knock-on effects through food webs
- link disruptions to changes in populations and diversity

Method — Sources of disruption

- **Invasive species** — a non-native species with no natural predators can outcompete or prey on natives.
- **Human activity** — habitat destruction, pollution, and climate change.
- **Natural events** — fires, floods, and volcanic eruptions.

Method — Knock-on effects

Because species are connected in **food webs**, removing or adding one species has **knock-on effects** on many others — a change ripples through the community.

Method — A worked example

An invasive predator with no natural enemies multiplies and eats native prey; the prey decline, and species that depended on that prey are also affected.

Method — Keystone species

Losing a **keystone species** (one with an outsized role, like a top predator) can collapse much of the community — its removal has effects far beyond its own numbers.

Practice 2.1 ■ 1 mark

Why can an invasive species spread rapidly?

Solution 2.1

Worked steps

It has no natural predators in the new area, so its population is not kept in check **B1**.

Practice 2.2 ■ 1 mark

Give one human cause of ecosystem disruption.

Solution 2.2

Method: Sources of disruption

Worked steps

Any one: habitat destruction, pollution, climate change, overharvesting **B1**.

Practice 2.3 ■ 1 mark

What is a keystone species?

Solution 2.3

Method: Keystone species

Worked steps

A species with an outsized role whose loss greatly affects the whole community **B1**.

Exam-style 3.1 ■ 1 mark

An invasive species often thrives because it

- A** has many local predators
- B** lacks natural predators in the new area
- C** cannot reproduce
- D** is a producer only

Solution 3.1

- A** has many local predators
- B** lacks natural predators in the new area 
- C** cannot reproduce
- D** is a producer only

Worked steps

B — lacks natural predators in the new area.

Exam-style 3.2 ■ 1 mark

An invasive predator is introduced to an island with defenseless native prey.

- (a) Predict the effect on the native prey population.
- (b) Explain how this could affect other species in the food web.

Solution 3.2

Method: A worked example

Worked steps

(a) The native prey population declines (may collapse) **B1**. (b) Species that ate the prey lose their food, and species the prey controlled may increase — the change ripples through the food web **M1** **A1**.

Exam-style 3.3 ■ 2 marks

Explain why removing a keystone species can disrupt an entire community.

Solution 3.3

Worked steps

A keystone species has a large effect on many others (e.g. controlling prey numbers); removing it lets some populations explode and others crash, disrupting the whole community **M1** **A1**.