

8.5 Community Ecology

Name: _____ Class: _____ Date: _____

Total: 9 marks

KEY WORDS community 群落 • predation 捕食 • competition 竞争 • symbiosis 共生

Objective

Build the skills to answer exam questions on **community ecology** — species interactions.

You must be able to:

- describe **competition** 竞争, **predation** 捕食, and **symbiosis** 共生 (mutualism, commensalism, parasitism)
- give the $+/-$ effect on each partner
- identify an interaction from a description

1 Worked examples

Study these first. Each one shows the method for a question type used later — follow the steps and you can do the Practice and Exam-style questions yourself.

■ The main interactions

- **Competition** $(-/-)$ — both species are harmed as they use the same limited resource.
- **Predation** $(+/-)$ — the predator benefits, the prey is harmed.
- **Mutualism** $(+/+)$ — both benefit.
- **Commensalism** $(+/0)$ — one benefits, the other is unaffected.
- **Parasitism** $(+/-)$ — the parasite benefits, the host is harmed.

■ Reading effects

Assign a $+$, $-$, or 0 to each partner. For example, a bee and a flower: bee gets nectar ($+$), flower gets pollinated ($+$) → **mutualism**.

■ A worked identification

A tick feeding on a dog: tick benefits ($+$), dog harmed ($-$) → **parasitism**.

■ Competitive exclusion

Two species competing for exactly the same niche cannot coexist indefinitely — one outcompetes the other (competitive exclusion).

2 Practice

Now apply the methods above.

2.1 State the effect (+/−) on each partner in predation. [1]

2.2 Name the interaction where both species benefit. [1]

2.3 Classify a tick feeding on a dog. [1]

3 Exam-style questions

3.1 An interaction that benefits one species and harms the other is [1]

- **A** mutualism
 - **B** commensalism
 - **C** parasitism
 - **D** competition
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3.2 A bird eats insects stirred up by a grazing buffalo; the buffalo is unaffected.

(a) Name the interaction. [1]

(b) State the effect on each partner. [2]

3.3 Explain why two species competing for exactly the same resources cannot coexist indefinitely. [2]

Solutions

2.1 Predator +, prey −.

2.2 Mutualism.

2.3 Parasitism.

3.1 C — parasitism (or predation) benefits one and harms the other.

3.2 (a) Commensalism. (b) The bird benefits (+); the buffalo is unaffected (0).

3.3 One species will use the shared resource slightly more efficiently and outcompete the other, which declines or is excluded (competitive exclusion).