BIOLOGY YEAR 11 - MODULE 4 - LESSON 10

Ecological Sampling — Quadrats, Transects and Mark-Recapture

Use this worksheet after reading the lesson to practise the key ideas and prove you can meet the success criteria.

Name _____

Date _____

Class _____

1. Key Ideas

In 2017, CSIRO scientists published an estimate: Australia is home to between 2.1 and 6.3 million feral cats. But cats hide. They are nocturnal, territorial, and avoid humans. No one counted every cat. Instead, scientists used cameras, statistical models, and mark-recapture methods to estimate what cannot be directly observed. This lesson teaches you the same techniques ecologists use to measure the invisible.

- Key facts and terms for Ecological Sampling — Quadrats, Transects and Mark-Recapture
- How the main ideas in Ecological Sampling — Quadrats, Transects and Mark-Recapture connect

2. Success Criteria

By the end, you should be able to:

- Key facts and terms for Ecological Sampling — Quadrats, Transects and Mark-Recapture
- Where this lesson fits in Module 4
- How the main ideas in Ecological Sampling — Quadrats, Transects and Mark-Recapture connect

3. Key Terms

Key idea
The central concept from Ecological Sampling — Quadrats, Transects and Mark-Recapture.

Evidence
Information, observations or calculations used to support an answer.

Explain
Give a reasoned answer that links cause and effect.

Apply
Use a learned idea in a new example, problem or scenario.

4. Activity: Build the Lesson Map

Use the lesson to complete the table. Keep answers brief but specific.

Prompt	Your answer
Main concept	
Important example	
Common mistake to avoid	
How this links to the next lesson	

5. Short Answer Questions

1. Q1. A national park covers 5,000 hectares. Rangers need to know how many brushtail possums live there. The possums are nocturnal, tree-dwelling, and hide in hollows during the day. Describe two methods you could use to estimate the population, and explain why you cannot simply walk through the park and count every individual.

BAND 3 3 MARKS

2. Q2. Scientists place a 1 m×1 m quadrat randomly in a grassland and count 8 kangaroo grass plants inside it. There are 200 such quadrats that could fit across the entire field. Predict whether simply multiplying 8 × 200 gives an accurate population estimate. What could go wrong with this approach?

BAND 4 3 MARKS

3. Q1. A national park covers 5,000 hectares. Rangers need to know how many brushtail possums live there. The possums are nocturnal, tree-dwelling, and hide in hollows during the day. Describe two methods you could use to estimate the population, and explain why you cannot simply walk through the park and count every individual.

BAND 5 3 MARKS

6. Extend: Apply the Idea

BAND 5/6 5 MARKS

A student gives a memorised answer about Ecological Sampling — Quadrats, Transects and Mark-Recapture but does not use evidence or reasoning.

Improve the answer by writing a stronger response that uses accurate terminology, a relevant example and a clear explanation.

7. Multiple Choice

1. What is the best first step when answering a question about Ecological Sampling — Quadrats, Transects and Mark-Recapture?

☐ A. Identify the key concept being tested

☐ B. Write every fact from memory

☐ C. Ignore the command word

☐ D. Skip examples and evidence

2. Which answer would show stronger understanding of Ecological Sampling — Quadrats, Transects and Mark-Recapture?

☐ A. An answer with accurate terms and reasoning

☐ B. A copied definition only

☐ C. A single-word response

☐ D. An answer with no example

3. What should you do if a question asks you to explain?

☐ A. Link the idea to a reason or cause

☐ B. List unrelated facts

☐ C. Only draw a diagram

☐ D. Write the shortest possible answer

8. Success Criteria Proof

Finish with evidence that you can do each success criterion.

SUCCESS CRITERION 1

Prove that you can: Key facts and terms for Ecological Sampling — Quadrats, Transects and Mark-Recapture

BAND 3 2 MARKS

SUCCESS CRITERION 2

Prove that you can: Where this lesson fits in Module 4

BAND 4 3 MARKS

SUCCESS CRITERION 3

Prove that you can: How the main ideas in Ecological Sampling — Quadrats, Transects and Mark-Recapture connect

BAND 5 4 MARKS

One thing I still need help with: