



Measuring coral cover

Lesson plan: measure percent cover with the point count method on practice photo-quadrats, compare two sites, then try a schoolyard transect



Ages	13 to 18 (grades 8 to 12)
Time	60 minutes, plus 20 minutes outside if you run the schoolyard transect
Group	Up to 35 students, in pairs
Where	Classroom, plus the schoolyard for the extension
You need	The slides, one photo-quadrat worksheet per student, a 10 m tape for the schoolyard transect

What students learn

- The categories scientists use to describe the seabed, and why live coral cover matters.
- How to measure percent cover with the point count method.
- How to compare two sites fairly, and why replication matters.
- How to apply the same method outdoors.

Before the lesson

1. Print one **photo-quadrat worksheet** per student. Colour printing matters here.
2. For the extension, a 10 m tape measure or a marked string, and a clipboard per group.

The lesson

- 1 **What is on the seabed? 8 minutes, slides 1 to 3.** Introduce the five categories and the national survey result.
- 2 **Point count 20 minutes, slides 4 to 6.** Model the first few points together, then pairs complete all four quadrats.
- 3 **Compare the sites 15 minutes, slides 7 and 8.** Pairs work out averages and draw a bar chart. Discuss whether two quadrats are enough.
- 4 **Schoolyard transect optional, slide 9.** Run it now or as a follow-up lesson.
- 5 **Wrap up 5 minutes, slide 10.** Discuss one or two questions.

Answers and what to listen for

Answer key (points out of 25): Protected site, quadrat 1: H 17, S 3, A 2, D 1, R 2; Protected site, quadrat 2: H 18, S 1, A 1, D 5, R 0; Fished site, quadrat 1: H 5, S 4, A 5, D 4, R 7; Fished site, quadrat 2: H 3, S 2, A 8, D 3, R 9.

Average live hard coral cover: protected site 70%, fished site 16%. Students may differ by a point or two where a point sits on a boundary, which is itself a good discussion about observer error.

Making it easier or harder

- **Younger groups:** count live hard coral only, and do two quadrats.
- **Older groups:** calculate the standard deviation for each site using the whole class's counts, and discuss whether the difference is larger than the variation.
- **Real data:** the Reef data lab module uses MCP's own survey records.

Safety and good practice

- For the schoolyard transect, keep away from roads and supervise tape handling.

Curriculum links

- **Science:** sampling, percent cover, ecosystems and human impact (GCSE and IGCSE ecology).
- **Maths:** percentages, means, bar charts.
- **Philippine senior high school:** General Science and research skills.
- **Ocean Literacy Principle 5:** the ocean supports a great diversity of life and ecosystems.

The teacher reading has the science behind every slide, with links to the sources.

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