

Reef scientists: lesson 2 of 3

Measuring coral cover

How scientists measure what covers the seabed



An MCP diver surveying along a tape. Photo: MCP



What is on the seabed?

Reef surveys record what lies on the seabed. In this lesson we use five simple categories.



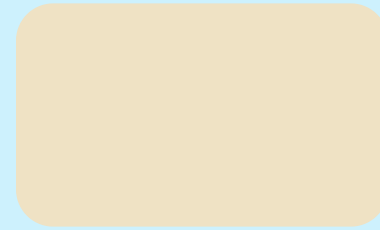
Live hard coral
the reef builders



Soft coral
no stony skeleton



Algae
seaweeds and turf



Sand
loose sediment



Rubble
broken dead coral



Why coral cover matters

22%

average live hard coral cover on Philippine reefs in the national survey

0 of 166

stations surveyed were in excellent condition

Live coral cover is one of the most used signs of reef health. Tracking it over time shows whether a reef is recovering or declining.

How we know: Licuanan and others, Philippine Journal of Science, 2017



The point count method

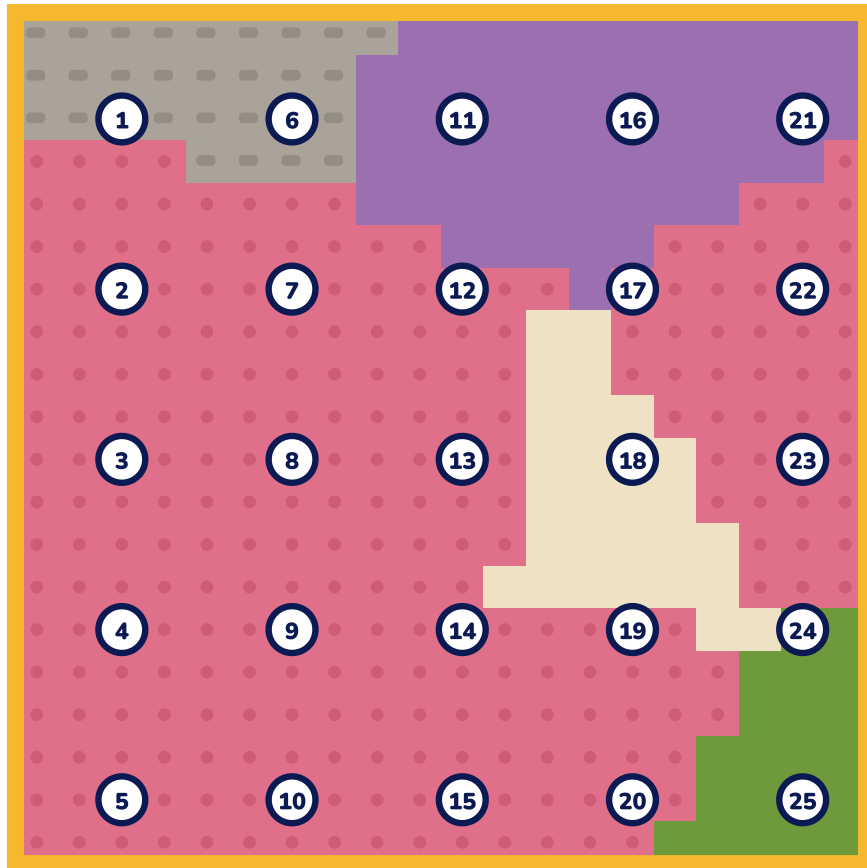
1. Each photo-quadrat has 25 numbered points.
2. For each point, write down what lies directly under it: H, S, A, D or R.
3. Count how many points fall on each category.
4. Percent cover = $\text{points} \div 25 \times 100$. So 10 points of live coral is 40% cover.

Top tip

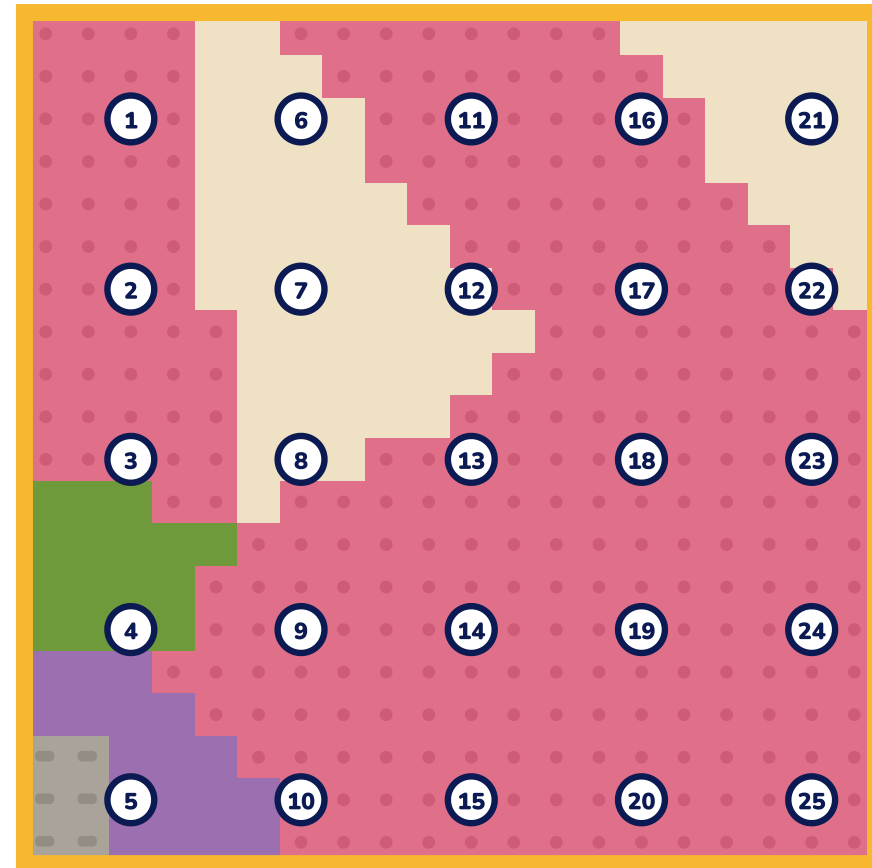
Look only at the centre of each point, even if something more interesting is right next to it.



Practice: a protected site



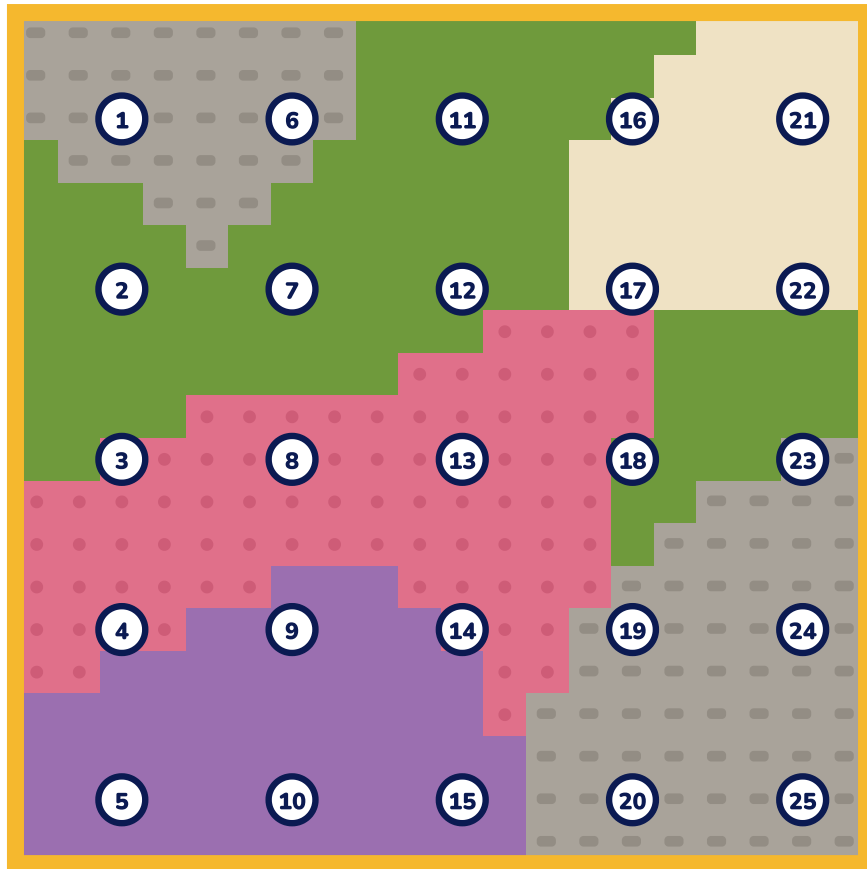
Protected site, quadrat 1



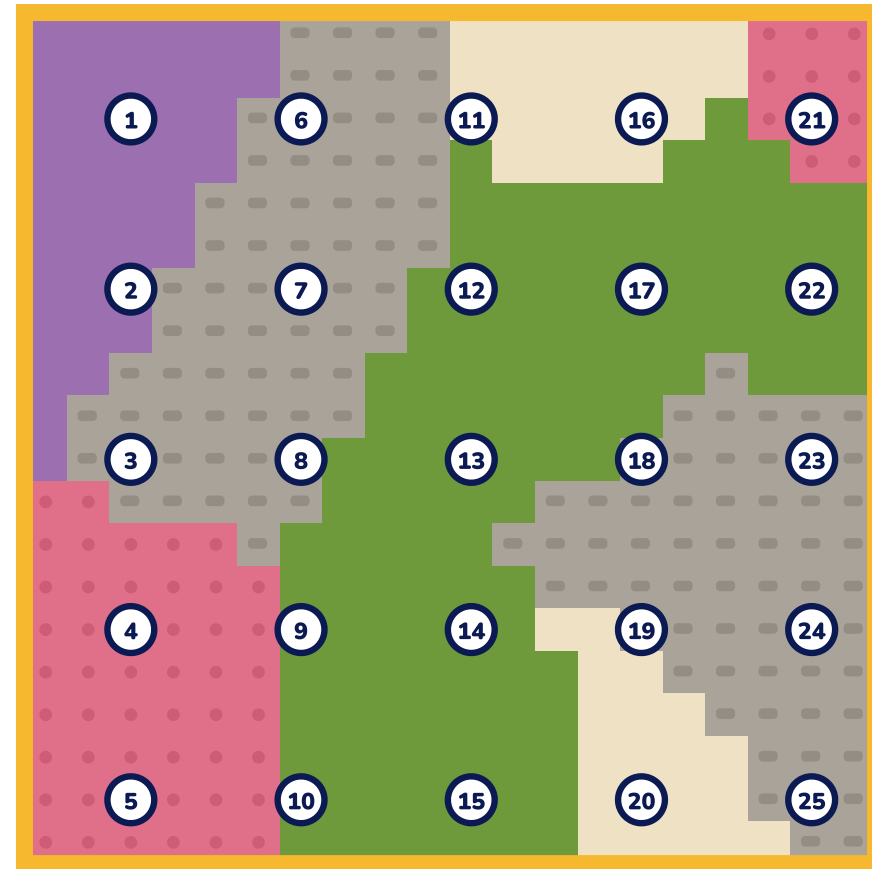
Protected site, quadrat 2



Practice: a fished site



Fished site, quadrat 1



Fished site, quadrat 2



Compare the two sites

Work out the average for each site from its two quadrats. Then draw a bar chart for all five categories.



average live hard coral cover, protected site



average live hard coral cover, fished site

Is the difference big enough to be sure? What else might explain it, apart from protection?



Is the difference real?

Two quadrats per site is a very small sample. Real surveys use many quadrats or points along many transects, and repeat them over time.

Scientists also compare sites that are alike in depth, exposure and reef type, so protection is the main difference between them.

- More replicates: less chance of a fluke result
- Matched sites: a fairer comparison
- Repeat surveys: show change over time



MCP divers surveying. Photo: MCP



Try it outside: a schoolyard transect

1. Lay a 10 m tape across a mix of surfaces, such as grass, soil, concrete and leaf litter.
2. Every 50 cm, record what lies directly under the tape. That gives 21 points.
3. Work out percent cover for each surface type.
4. Compare two places, such as a shady and a sunny area.



Talk about it

Why do scientists use points rather than guessing percent cover by eye?

What might explain more algae and rubble at the fished site?

How many quadrats would convince you there is a real difference?

Next time: counting fish and measuring diversity



Photos and sources

Photos: survey divers by MCP, Negros Oriental. Quadrat drawings are practice data made for this lesson. All illustrations drawn for this lesson by Marine Conservation Philippines.

Sources:

- Licuanan, A.M. and others (2017). Philippine Journal of Science.
- Marine Conservation Philippines. Marine Monitoring.

Full links are in the teacher reading. Free to use and share for education. Made by Marine Conservation Philippines. More free lessons: marineconservationphilippines.org/resources/teachers-resources/

