

How do we know?: lesson 3 of 3

Make a claim you can defend

Share ocean facts people can trust



Students at a coastal clean-up with MCP. Photo: MCP



Vote again

Look at your twelve claims sheet from lesson 1. Without looking at your first answers, vote again in a different colour.

Then we will reveal the answers.



The twelve claims: answers

1. Unsupported

A plastic bottle takes 450 years to break down.

Researchers checked 57 infographics with numbers like this and found no credible scientific source for any of them.

2. Unsupported

By 2050 there will be more plastic than fish in the sea.

A 2016 projection. Its fish figure came from a 2008 estimate that the study's own co-author later abandoned. Newer estimates of ocean life are several times higher.

3. Unsupported

Falling coconuts kill 150 people a year.

Traced to a press release from a British travel insurer. No published study gives a worldwide death toll.

4. Supported

Coral reefs cover less than 1% of the ocean floor but support about a quarter of ocean species.

A standard estimate from NOAA and other agencies. Exact reef area varies by method.

5. Supported

The ocean has absorbed more than 90% of the extra heat from global warming.

The IPCC found ocean warming accounts for about 91% of the heating of the climate system.

6. Supported

Only about 9% of plastic waste is recycled.

The OECD's global estimate for 2019.



The twelve claims: answers, continued

7. Retracted

Young fish prefer to eat microplastics rather than real food.

This came from a 2016 study in Science that was retracted in 2017 after investigators found its results were fabricated.

8. Misleading

'Reef-safe' sunscreen protects coral reefs.

There is no regulatory definition of 'reef-safe'. Harm in lab tests used much higher concentrations than those found on reefs. Heat is the main cause of mass bleaching.

9. Misleading

All sharks must keep swimming or they die.

True for some species. Others, such as bamboo sharks, pump water over their gills and can rest on the seabed.

10. Unsupported

When big sharks were overfished, rays boomed and wiped out the scallops.

A famous 2007 claim. A 2016 re-examination found the timing did not match and the chain of events lacked evidence.

11. Misleading

Mantis shrimp see more colours than any other animal.

They have 12 types of colour receptor, far more than us, but tests showed they are worse than humans at telling similar colours apart.

12. Supported

The Pasig River carries more plastic to the sea than any other river.

That is what a 2021 global model estimated. It is a model estimate, so it comes with uncertainty.



What makes a claim trustworthy?

A number with a source

Who measured it, and when?

The right size of claim

'Up to' and 'about' are honest words.

Uncertainty, stated

Say if it is an estimate or a model.

Context

Compared with what?
Where? Since when?



Make it: an ocean fact post

1. Choose an ocean topic you care about.
2. Pick two or three facts. Find a trustworthy source for each, using your notes from this module.
3. Design an infographic or social media post. Put the source under every number.
4. Add one sentence about what we don't know yet.



Check it: peer review

1. Swap with another group.
2. Use the checklist: does every number have a source? Is anything overstated?
3. Give one piece of praise and one suggestion.
4. Fix your post, then put it up for a gallery walk.



Talk about it

How many of your votes changed between lesson 1 and today?

Which claim will you correct the next time you hear it?

Why does getting the numbers right help the ocean?

Well done! You have finished the How do we know? lessons.



Photos and sources

Photos: clean-up by MCP. All illustrations drawn for this lesson by Marine Conservation Philippines.

Sources:

- Ward and Reddy, PNAS, 2020
- AAP FactCheck, 2023
- The Straight Dope, 2002. Snopes.
- NOAA
- IPCC, 2021
- OECD, 2022
- Uppsala University. Retraction Watch.
- National Academies, 2022. Smithsonian.
- Live Science
- Grubbs and others, Scientific Reports, 2016
- Thoen and others, Science, 2014
- Meijer and others, Science Advances, 2021

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/

