

Fish, fishers and no-take zones:
lesson 1 of 3

The fishing game

What happens when
everyone fishes the same
sea?



Fish for sale at a Philippine market. Photo: MCP



Fish feed the world

62.4%

of the world's assessed fish stocks are fished within sustainable limits

37.6%

are overfished: caught faster than they can breed

Fishing feeds millions of families in the Philippines. The question is how to keep fish for next year, and the year after.

How we know: FAO, The State of World Fisheries and Aquaculture, 2026



How the game works

1. Your group is four fishing families sharing one sea. The sea starts with 24 fish.
2. Each season, every family secretly writes how many fish it will catch: 0 to 4.
3. Every family needs 1 fish a season to eat. Each extra fish can be sold for 1 point.
4. After fishing, every 2 fish left in the sea produce 1 new fish. The sea can never hold more than 24.
5. Play 8 seasons. The family with the most points wins, if the sea still has fish.

You need

24 beans, buttons or paper fish per group
A bowl for the sea
The record sheet



Game A: no talking

Play the first game in silence. Families can't agree anything with each other.

If there aren't enough fish for everyone's catch, share out what is left as evenly as you can.



Game B: talk it over

Reset the sea to 24 fish. This time, families can talk before each season and agree rules.

You could agree a limit on each family's catch, take turns, or anything else you think will work.



Game C: a no-take zone

Reset. Put 8 of the 24 fish in a separate cup: the reserve. Nobody may fish there.

Each season the reserve fish breed too, but the reserve can only hold 8. Any extra fish swim out into the open sea.

Play 8 seasons again. What happens to the open sea this time?



What happened?

In game A, how many seasons did the sea last?

What rules did you agree in game B? Did everyone stick to them?

How did the reserve change game C?

What is the most fish you could catch every season, forever?

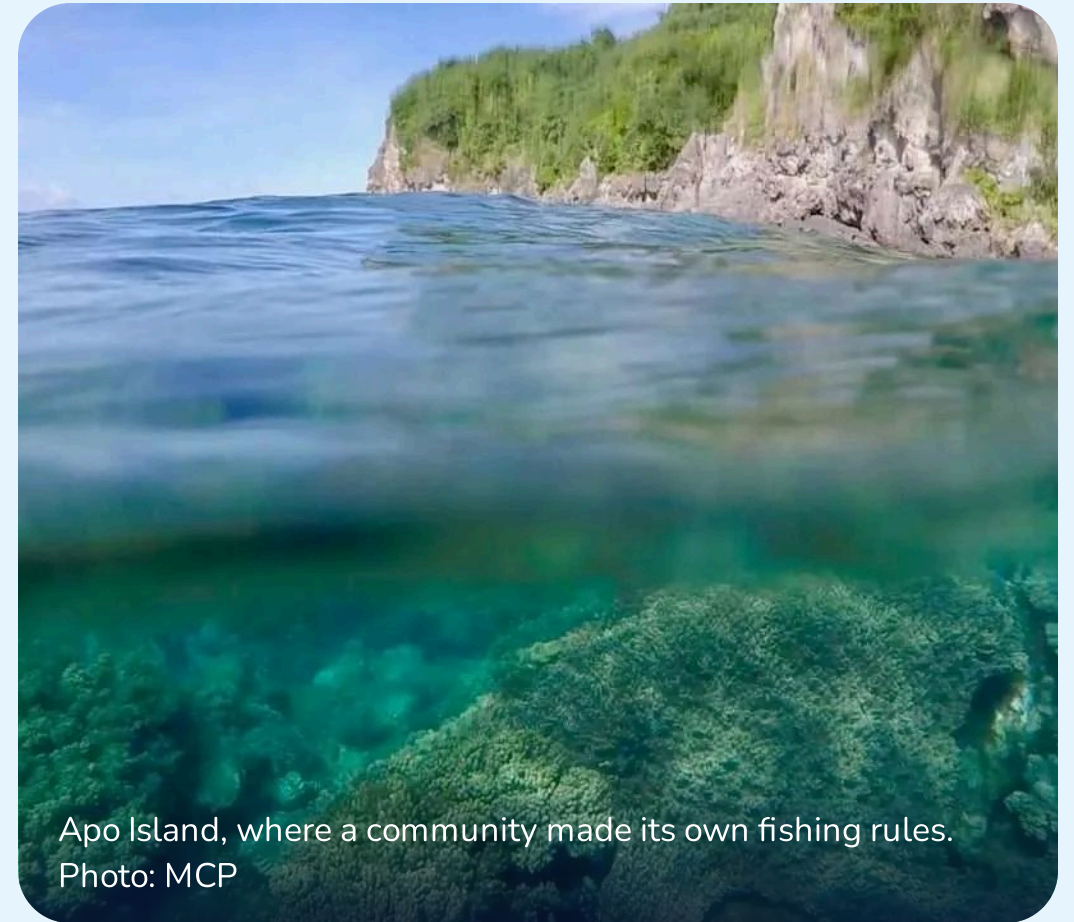


The tragedy of the commons

In 1968 the ecologist Garrett Hardin argued that when a resource is shared by everyone, each person gains by taking a bit more, until the resource runs out. He called this the tragedy of the commons.

But the economist Elinor Ostrom showed that real communities often manage shared resources well, when they make, watch over and enforce their own rules. She won the Nobel Prize for it in 2009.

Which of these two ideas matched what happened in your game?



Apo Island, where a community made its own fishing rules.
Photo: MCP



Big fish matter most

342

species of ocean fish
studied

79%

of them: bigger mothers
produce disproportionately
more eggs

37

two-kilo cod would match
the eggs of one 30-kilo cod

Catching the biggest fish first, as fishers often do, removes the fish that matter most for next year's catch.

How we know: Barneche and others, Science, 2018



Destructive fishing

Some methods damage the whole reef, not just the fish that are caught. Blast and poison fishing are illegal in the Philippines.



Dynamite fishing

Blasts kill everything nearby and smash coral into rubble.



Cyanide fishing

Poison stuns fish for the aquarium trade and kills coral.



Fine-mesh nets

Catch young fish before they can breed.



Talk about it

Why do fishers sometimes keep fishing even when they know fish are getting scarce?

What rules could a real fishing village agree?

Who should make and enforce those rules?

Next time: the Apo Island story



Photos and sources

Photos: fish market and Apo Island by MCP. All illustrations drawn for this lesson by Marine Conservation Philippines.

Sources:

- FAO (2026). The State of World Fisheries and Aquaculture.
- The Nobel Prize (2009). Elinor Ostrom, economic sciences.
- Hardin, G. (1968). The tragedy of the commons. Science.
- Barneche, D.R. and others (2018). Science.

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