

The fishing game: beware of overfishing

A game showing how fish stocks should be managed sustainably

This game shows pupils the dangers of overfishing and how fish stocks must be managed sustainably for successful future fishing.



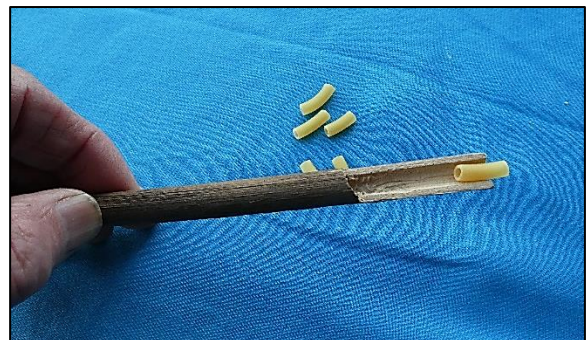
Cod caught in a fishing net.

U.S. National Oceanic and Atmospheric Administration
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1. Give each pair or small group of pupils a 'Fishing Game' sheet, 20 pasta 'fish', a metal or bamboo spatula 'fishing net' and a small bowl for their 'catch'. They should write their 'Company name' and their 'Target species', (that is the name of the species to be fished) at the top of the sheet, put the pasta 'fish' on the table and get ready to 'fish' for them using the spatula 'net'. *It is best to do this on a cloth as, on a hard surface, it is too tempting to push the fish on to the spatula with a finger!*
2. After you say 'go' give them 15 seconds to catch as many pasta 'fish' as they can, putting their 'catch into their bowl.
3. Ask them to write in the sheet for the first year of fishing, how many fish were caught, how many remained in the 'sea', the income from the number of fish caught and the balance at the end of the first year (1 piece of pasta = 1 fish = 1 Euro/Pound/Dollar).
4. Each 'fish' remaining at the end of the year reproduces to produce a second fish, so the correct number of new 'fish' should be added to the table in the second year column.
5. Then, for the second year, after you say 'go', give them 15 seconds to catch as many pasta 'fish' as they can.
6. They then complete the sheet for the end of the second year.
7. Before the start of the third year, all the remaining fish reproduce again and each group has a choice. For 5 Euros/ Pounds/ Dollars they can trade in their spatula 'net' for a teaspoon 'net'. If they choose to buy a new 'net', remember to add the cost in expenses. It is possible to decide to stop fishing before the time is up, if stocks are decreasing too fast.
Note: After another year, they may decide to go back to their original spatula 'net'. They can sell their tea spoon 'net' for 3 Euros/ Pounds/ Dollars. If they later decide that the tea spoon 'net' fishing is sustainable, they can always buy one for 5 Euros/ Pounds/ Dollars.
8. Then the third year runs, and the figures are recorded but now 30 seconds are allowed for fishing.
9. At the start of the fourth year, the remaining fish reproduce again.
10. Then the fourth year runs and is recorded.
11. Finally the fifth year runs and the figures are recorded.
12. The winning group is the one that is able to continue fishing and has made the most profit. Many groups will have over-fished and there are no more of that species of fish in the sea.



Bowl, pasta 'fish', spatula and teaspoon. (Chris King).



Sustainable fishing – with a bamboo spatula. (Peter Kennett).

The Fishing Game sheet

Shipowner (company name):

Target species (name of species to be fished):

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Note: 1 piece of pasta = 1 fish = 1 Euro/Pound/Dollar

Year	1 st year	2 nd year	3 rd year	4 th year	5 th year	Final balance
Time spent fishing	15 seconds	15 seconds	30 seconds	30 seconds	30 seconds	
No. of fish at the start of that year (initial population)	20	The remaining fish will reproduce double their number	The remaining fish will reproduce double their number They can buy a new net' (tea spoon)	The remaining fish will reproduce double their number		
No. of fish caught						
No. of fish remaining (in the sea)						
Income (Euros/ Pounds/ Dollars)						
Expenses (Euros/ Pounds/ Dollars)						
Balance (income minus expenses in Euros/ Pounds/ Dollars)						

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The back up

Title: The fishing game: beware of overfishing.

Subtitle: A game showing how fish stocks should be managed sustainably and make a profit.

Topic: A game to be played in pairs or groups to find the group who can manage their fish stocks sustainably.

Age range of pupils: 10 years upwards

Time needed to complete activity: 30 minutes

Pupil learning outcomes: Pupils can:

- use the example of fishing to explain what 'sustainable' means;
- use their skills to win the game;
- learn how best to manage the resources by playing the game several times.

Context:

'There are plenty more fish in the sea' is a commonly-used phrase, but is it still true today? Many studies have shown that, when there is overfishing, the stocks of fish can 'crash', which is not only a problem for the fish, but also for the men and women who fish for them. However, when fishing is managed sustainably it can continue in the long term.

Note that the game needs to be played several times so the groups learn about overfishing before they play it competitively.

Following up the activity:

Discuss how this 'model' of fishing and fish stocks compares with the hunting of other animals.

Underlying principles:

- If too many of one type of animal is removed from an environment, its numbers can 'crash'; when this happens, not only is hunting/ fishing no longer viable, but the animal can become extinct.
- The loss of one species disrupts the whole ecosystem.

- Managed hunting and fishing allows enough animals/ fish to survive and reproduce successfully, thus maintaining the stocks.

Thinking skill development:

To be successful in this game, pupils have to use construction to see the pattern in the data they are collecting, and then manage this pattern to be successful. Translating this experience to the 'real world' needs bridging skills.

Resource list:

Per group:

- a 'Fishing Game' sheet for each pair or group of pupils plus a pen or pencil
- 20 pasta 'fish', a metal or especially made bamboo spatula 'net', a small bowl for their catch, a teaspoon 'net', a cloth for the table

The teacher:

- a bag of pasta to allow the groups to have extra 'fish' when the fish 'reproduce'

Useful links:

Read more about sustainable fishing at:

<https://www.msc.org/what-we-are-doing/our-approach/what-is-sustainable-fishing> and http://wwf.panda.org/our_work/oceans/solutions/sustainable_fisheries/.

Source: Adapted by the Earthlearningidea Team from a game originally produced by the Marine and Environmental Sciences Centre (MARE), Coimbra, Portugal. Helpful advice was received from Professor R. Shankar, Mangalore University, India.

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