NUI Galway

Quiz 2 (Fisheries)

Sustainable Fisheries Management

Please answer the questions below. This should take you about 10 minutes. A calculator, pen and paper might be useful.

* 1. If there are initially 20 boats in a fishery, and the growth rate in boats is 25% per year, how many boats will there be in total after **two** years?

- ◯ About 20 boats
- ◯ About 25 boats
- ◯ About 30 boats
- ◯ About 40 boats
- ◯ Don't know

* 2. If the initial fish population size in a fishery is 1,000,000 individuals, and the annual growth rate at that population level is about 40%, approximately how many fish in total will there be after **two** years?

- ◯ About 1,000,000 fish
- ◯ About 1,200,000 fish
- ◯ About 1,400,000 fish
- ◯ About 2,000,000 fish
- ◯ About 2,600,000 fish
- ◯ Don't know

* 3. If the maximum sustainable yield is 400,000 fish per annum, and the average boat catches 10,000 fish per annum, what is the maximum number of boats the fishery can support per year?

- ◯ 4 boats
- ◯ 10 boats
- ◯ 40 boats
- ◯ 100 boats
- ◯ Don't know

* 4. Suppose that a fishery can support a maximum of 40 boats while staying within the maximum sustainable yield (MSY) limit. If there are initially 10 boats, and the number of boats doubles every 3 years, in how many years will the maximum number of boats be reached?

- ( ) In 2 years
- ( ) In 3 years
- ( ) In 4 years
- ( ) In 6 years
- ( ) In 8 years
- ( ) Don't know

* 5. If the maximum fish population growth rate of 40% is achieved when the population size is 1,000,000 individuals, which of the following statements are true?

- [ ] A population much lower than 1,000,000 will grow more slowly than 40%
- [ ] A population much lower than 1,000,000 will grow faster than 40%
- [ ] A population much higher than 1,000,000 will grow faster than 40%
- [ ] The Maximum Sustainable Yield is 400,000 fish per annum
- [ ] The Maximum Sustainable Yield is 1,000,000 fish per annum
- [ ] If the population is well below 1,000,000 fish then catching the Maximum Sustainable Yield is potentially damaging

* 6. Which of the following statements do you think would be true if fishing boats take more than the maximum sustainable yield per annum? Select all that are likely to apply.

- [ ] The fish population will begin to decline
- [ ] The fish population growth rate will begin to increase
- [ ] The boats will have to work harder to catch the same amount of fish
- [ ] The long term viability of the fishery will be in question
- [ ] The fish catch will be sustainable at that level

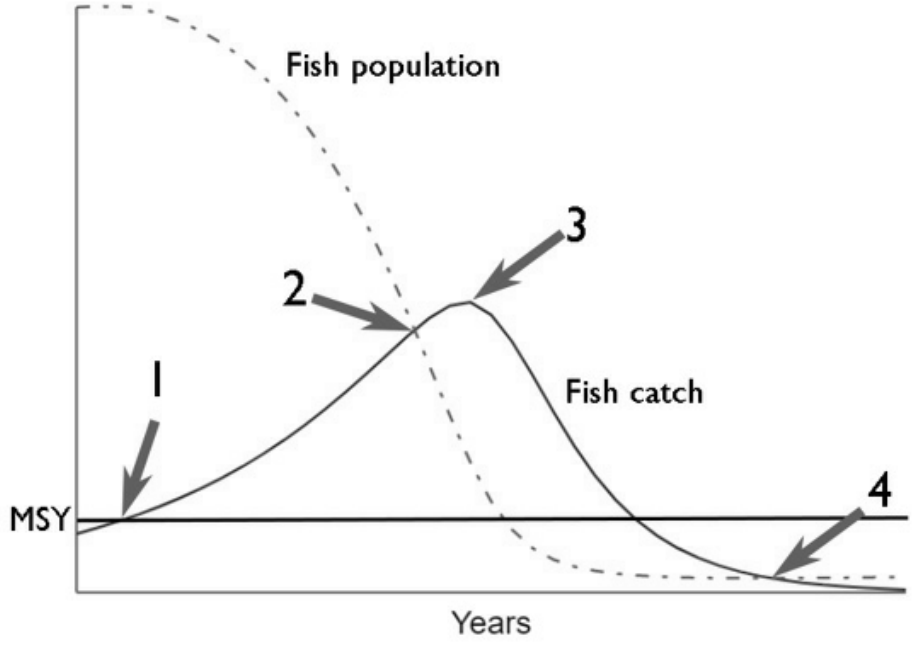
* 7. Please write a sentence or two to explain what you think the word 'sustainably' means in this sentence: 'the fishery is managed sustainably'.

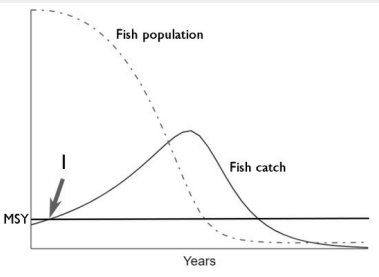
* 8. Suppose that uncontrolled growth in the total number of boats with access to a fishery will result in fishing capacity exceeding the maximum sustainable yield (MSY) limit within five years. Is the fishery sustainable if no controls are likely to be introduced?

- ◯ Yes
- ◯ No
- ◯ Insufficient information to decide
- ◯ Don't know

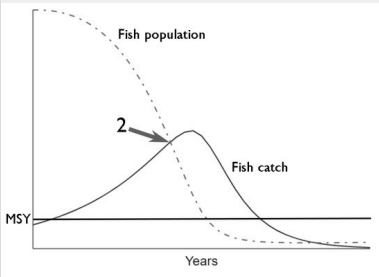
Please give reasons for your answer

* 9. The graph below shows overfishing followed by collapse of a fishery. Which arrow indicates the point in time when overfishing began? Choose ONE. (Note: the black horizontal line marked MSY shows the Maximum Sustainable Yield).

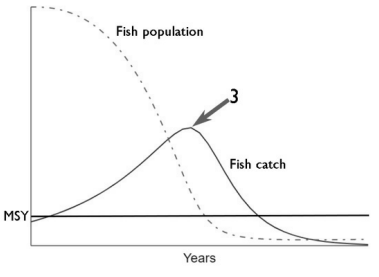




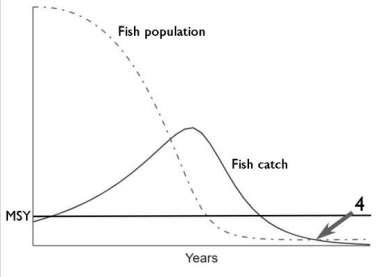
Arrow 1



Arrow 2



Arrow 3



Arrow 4

* 10. What do you think were the TWO most fundamental reasons for the collapse of the Grand Banks cod fishery in 1992?

- [ ] A lot of cod were caught by vessels targeting other species (bycatch)
- [ ] Fish were caught at a higher rate than they could reproduce
- [ ] Unpredictable factors such as weather and disease
- [ ] The massive increase in fishing fleet capacity, in terms of size and technology
- [ ] Don't know

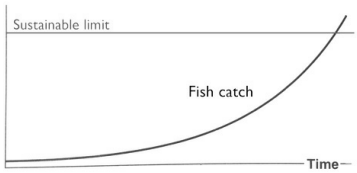
* 11. If you were in charge of restoring an over-exploited fishery to a sustainable state, which of the following measures might you employ? (Select one or more choices)

- [ ] Impose a moratorium (temporary fishing ban) if the stock was dangerously low, and monitor stock levels
- [ ] Impose a limit on the overall catch, at less than the maximum sustainable yield, and monitor stock levels
- [ ] Trust that the market will reduce the fishing activity, because the cost of fishing will naturally rise when there are fewer fish
- [ ] Create subsidies to help the fishing continue
- [ ] Use a system of quotas to divide out the overall allowable catch among fishing vessels
- [ ] Maintain current levels of fishing in order to preserve jobs and profits
- [ ] Encourage fish maturing and breeding, for example by banning small net sizes and creating marine reserves

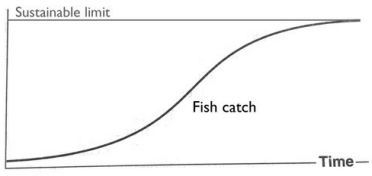
* 12. The graphs below show common patterns of growth in fish catch. The sustainable limit (green line) here means the maximum sustainable yield. If not eroded by overfishing, this will be a straight horizontal line.

Which graphs show sustainable fishing in your opinion?

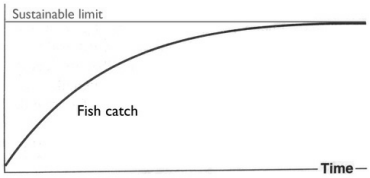
Select ONE OR MORE answers.



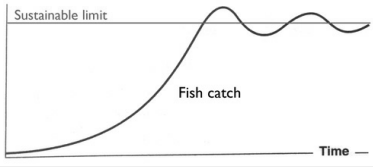
Exponential growth



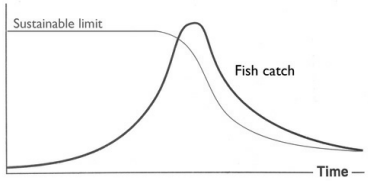
S-shaped growth



Growth towards a goal



S-shaped growth with oscillation



Overshoot and collapse

* 13. How difficult did you find this quiz?

Very easy	Easy	Manageable	Difficult	Very difficult
○	○	○	○	○

* 14. To what extent did you have to guess when answering questions on the following topics:

	I was very sure of my answer	I have some confidence in my answer	I had to guess
What sustainability means for a fishery	○	○	○
Identifying which graphs show sustainable fishing	○	○	○
Calculate expected growth of fish population and boats	○	○	○
Calculating the MSY	○	○	○
Judging whether a fishery is sustainable or not	○	○	○
Choosing policies for sustainable management	○	○	○
Deciding why the Grand Banks fishery collapsed	○	○	○
Using a graph to judge when overfishing began	○	○	○

15. Now that you have reached the end of this Sustainability Education online learning tool, if you would like to make any general comments, please do so below. Thank you for participating!