WILDTRUST™

SMALL SCALE FISHERS

MODULE 05

SESSION PACK

SESSION PLAN: COOPERATIVE RESOURCES USE AND STEWARDSHIP

SESSION OBJECTIVES:

The aim of this session is for the learners to understand the need for cooperative use and stewardship over finite resources

NOTES FOR THE FACILITATOR:

The commons dilemma, also known as the "tragedy of the commons," describes a situation where individuals, acting in their own self-interest, deplete a shared resource, even though its overuse harms everyone in the long run. This occurs because individuals lack a personal incentive to conserve the resource, leading to its overexploitation and potential collapse.

The term "tragedy of the commons" was popularized by ecologist Garrett Hardin in 1968. He illustrated it with the example of shared grazing land — the “commons.” Each herder gains more by adding animals to the pasture, but if every herder does this, the grass is depleted and the system collapses. **The key issue is that the cost of overuse is shared by all, while the benefit of overuse is gained by the individual.**

This dilemma can apply to many modern issues, too, like:

- Overfishing
- Air and water pollution
- Climate change
- Overuse of public welfare systems

Solving the commons dilemma typically requires:

- Regulation (e.g., laws or limits)
- Privatization (assigning ownership)
- Community management (rules enforced by the users themselves)
- Technological solutions (e.g., efficiency improvements)

INTRODUCTION ACTIVITY:

Have the leaners watch What is sustainable fishing; My dad is a fisherman https://tinyurl.com/57ccfyfz

MAIN ACTIVITY: Commons Dilemma Lake Fishing Game

In this simulation activity, learners have an opportunity to demonstrate their response as consumers of a resource in the commons: beans in a bowl representing fish in the lake. Each fisherman wants to maximize his income and must work out strategies to achieve this. At the same time, other fishermen are also fishing from the same lake. After several rounds of the game, learners discuss how best to maintain the population of fish in the lake and go onto consider the strain placed upon the world's natural resources by an increasing population.

Learner outcomes:

- Demonstrate how an increased population places a strain on natural resources.
- Describe the outcomes of a self-interest strategy vs. a cooperative strategy for managing renewable resources.
- Explain the importance of stewardship.

Materials:

- Bowls of water for each group of 4 learners
- Beans which represent fish
- 5 pictures of fish found in the lake
- Paper and colouring pencils
- 1 spoon per person
- Tokens (anything you have lots of this could be stones, paperclips etc.) these will represent points earned by fisherman.

Engage:

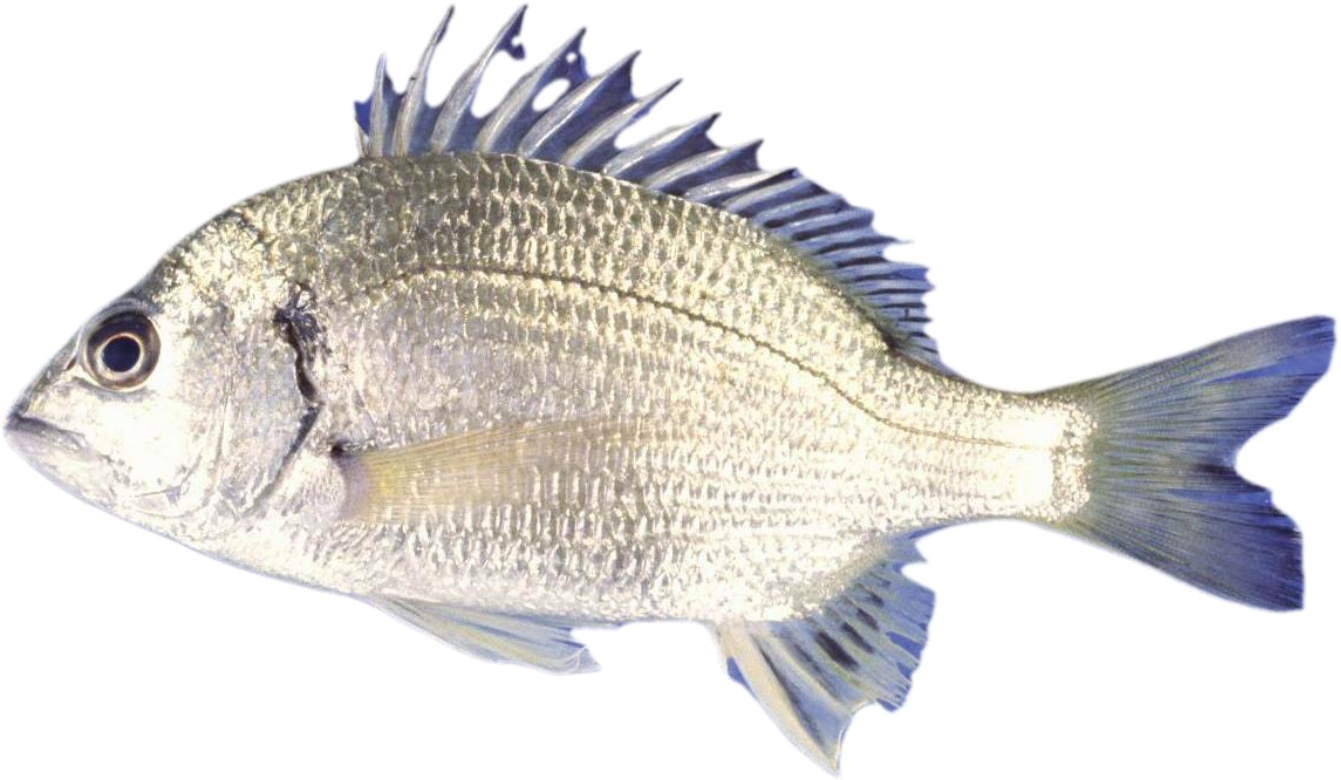
Divide the students into about 4 groups. Have one learner from each group to come to you. Show each learner one picture of a fish found in the lake. The learner then returns to their group and describes the fish to their group who then attempts to draw it: shape, size, name etc.

Spotted Grunter

Dusky Kob

Natal Stumpnose

Perch or River Bream



Explore:

Show all the learners all the fish pictures. Ask them the learners to tell you the name of each fish. Ask who has seen any of these fish. Where? in the lake/ market/ restaurant? Ask who has ever been fishing? What was it like? Where did you fish? Ask the learners who owns the lake? Who owns the fish in the lake? Establish that such lakes are Commons.

Explain:

Tell the learners that they are going to play the role of fishermen fishing in the lake. Explain that each group of 4 people will have one bowl of water and 16 beans to represent fish. The biggest population the lake can support is 16 fish. They will each have a spoon to represent a fishing net.

- They must try to harvest as many fish as possible from the lake.
- There will be 4 x 20 second trials to catch fish. They will be told when to start and when to stop.
- For every 4 fish they catch, they will get one point.
- The more fish they harvest the more points they will receive.
- When the game begins, each round they may harvest all the fish, some of the fish or none of the fish.

Activity:

- Place 16 beans in each bowl of water.
- Sit 4 learners around each bowl.
- Give each learner a spoon.
- Tell the learners to start fishing.
- Time 20 seconds and shout "stop".
- Give a token to each learner for every 4 fish caught.
- Replace the fish in the bowl, 1 for each remaining fish to a maximum of 16. E.g. If there are 4 fish left, 4 more will be added. For each new trial, the total number of fish in the river cannot be more than the carrying capacity of 16.
- Repeat the game 3 more times.
- Ask the learners what increases population in an area. (roads, natural disasters in another area etc.)
- Tell the learners that the population along the lake has now increased.
- Join groups together so that now 8 learners sit around one bowl.
- Ask the learners how many fish the carrying capacity of the lake is? (still 16).
- Keep all other factors constant and repeat the 4 x 20 seconds fishing game.

Evaluate:

- What were the maximum number of points achieved by any individual?
- How did they achieve this?
- Did any set of fishermen find a way to increase their points? How?
- Why were fish only replaced if some remained in the lake? (Simulates natural conditions, if all fish are harvested, no additional fish will be born.)
- What happens when members of a group do not think of a cooperative strategy?
- What was the best strategy for harvesting from these commons? (8 from each trial / 50%)
- Stewardship of a resource is demonstrated when we use a cooperative strategy that shows concern for a resource. What other resources need our stewardship?
- How will continued population growth affect our stewardship of the Earth's resources?
- What other factors may have changed the number of fish in the lake? (pollution, weather, poaching etc)

CLOSING ACTIVITY:

Learners write a letter to the community explain what stewardship and why it’s important.

Curriculum and Assessment Policy Statement Alignment

SSF Modules				Module - CAPS Alignments							
Module	**Topic**	**Objective**	**Activity**	**Section**	**Grade**	**Subject**	**Strand**	**Topic**	**Content & Concepts**	**Tasks**	**Term**
1	Rocky shores ecosystem interactions	The aim of this session is to demonstrate the relationship between living and non-living organisms in the rocky shore ecosystem as well as a basic food web and the relationship between harvesters and the ecosystem.	Rock pool activity	Senior Phase	Grade 7	Social Sciences	Geography	Natural resources and conservation in South Africa	Natural resources: on earth – including water, air, forests, soil, animal and marine life- Use and abuse of selected examples	Matching, Making connections bettwen causes and effects	4
2	Sustainable utilization (harvesting)	The aim of this session is to illustrate the concept of sustainable utilization (harvesting) by using the worm model.	Worm model	Senior Phase	Grade 7	Social Sciences	Geography	Natural resources and conservation in South Africa	Natural resources: Use and abuse of selected examples	Writing, short answers Making connections bettwen causes and effects	4
3	Stock limits	Learners are exposed to what stock control is and how and why bag limits are determined as well as an appreciation for the fact that some elements cannot be controlled in the process.	Bean game	Senior Phase	Grade 7	Social Sciences	Geography	Natural resources and conservation in South Africa	Management of resources: Concept of conservation – including reasons for conservation as well as Conservation areas (including marine reserves)	Answering questions, Working with data (graphs and tables)	4
4	Mussel biology	The aim of this session is for the learners to understand the mussels biology and life cycle and to appreciate that they are slow growing and require time and resources to reproduce in order to replenish stocks.	Mussel story and game	Senior Phase	Grade 7	Natural Science	Live & Living	Biodiversity	Basic differences in processes such as movement, nutrition and reproduction, distinguishes plants from animals		1
				Senior Phase	Grade 7	Natural Science	Live & Living	Variation	individuals of the same species can reproduce to make more individuals of the same species		1
				Senior Phase	Grade 7	Natural Science	Live & Living	The biosphere	*Living things need energy, gases, water, soil (rocks) and favourable tempratures. *Living things are suited to the environment in which they live		1
5	Cooperative resources use and stewardship	The aim of this session is for the learners to understand the need for cooperative use and stewardship over finite resources	Commons dilemma lake fishing game	Senior Phase	Grade 7	Social Sciences	Geography	Natural resources and conservation in South Africa	Management of resources: Concept of conservation – including reasons for conservation as well as Conservation areas (including marine reserves)	Itentifying and discussing issues, evaluating ideas and actions writing paragraphs	4