WILDTRUST™

SMALL SCALE FISHERS

MODULE 02

SESSION PACK

SESSION PLAN: SUSTAINABLE UTILISATION (HARVESTING)

SESSION OBJECTIVES:

The aim of this session is to illustrate the concept of sustainable utilisation (harvesting) by using the worm game.

NOTES FOR FACILITATOR:

Sustainable harvesting is about a wise and balanced utilization of resources while ensuring that future generations can also benefit from them. Balancing resource consumption with ecological health is crucial, it's important to remember that natural mortality (death) and environmental changes also play significant roles in stock size and resource availability. Achieving this balance requires careful management and a holistic understanding of ecosystems and resource use.

INTRODUCTION ACTIVITY:

Give each learner a sticky note (or scrap piece of paper) and ask them to write down what they think sustainable utilization or harvesting means. Place all their sticky notes in one place, this could be on a piece of cardboard, A3 paper, a whiteboard or the rocks depending on where the lesson is being conducted and the resources at hand.

MAIN ACTIVITY: Worm Game

The aim of the worm game is for the learners to work out what would be the sustainable utilisation rate of consuming the worm into the future. (this activity does not consider any ecological factors).

1. Create a worm with 10 joined segments plus the head and 5 additional growth segments on the side.
   - Either print & cut out the worm segments using the template provided (see below)
   - **OR** create a worm using upcycled materials such as bottle tops.
2. Divide the learners into groups, give each group a worm with segments and data sheet (see below)
3. Review the worm game story guide (see below) and read section 1 of the story out loud to the learners – *A special gift from the ocean*
4. Then read section 2 of the story - *The Harvest Begins*

5. Explain to the learners that this is a special worm that their community likes to eat. They can harvest the worm per segments, and the worm can grow back one segment each day.
6. Have the learners decide how many segments to harvest on day one and then remove these from the worm and record this on the data sheet provided (see below) eg if they choose to harvest 3 segments because they are very hungry then in the first row (Monday) record 3 harvested.
7. Add one segment to the worm for the day's growth and record this on the data sheet (see example below).
8. Count out loud with the learners how many segments the worm has at the end of this first day.
9. Repeat steps 6&7 above for the balance of the week OR until the worm has no more segments.
10. Review the data sheet with the learners and determine if the rate used was sustainable or not.
11. Continue to read the story section 3 – *Greedy times* and section 4 – *troubled times*
12. Repeat the exercise until the learners work out what the sustainable harvesting rate would be.
13. Read the final sections of the story 5 – *A village meeting*, section 6 – *A new plan for the bay* and section 7 – *The bay lives again*
14. After completing the game reflect with the learners on the outcomes using the following questions to guide you:
    - What lesson did you learn?
    - Why is it important to harvest sustainably?
    - How does this story connect to real things we harvest, like fish, mussels, or plants?
    - What changes could we make to ensure sustainable harvesting in our community?

CLOSING ACTIVITY:

Refer to the original sticky notes the learners wrote during the introductory activity, ask the learners if they now have a better understanding the concept sustainable harvesting and allow them to re-wite their sticky notes if they so wish too and get them to draw a worm with 10 segments on as reminder to them. Allow them to take these home or place them up in the classroom.

The Worm Game Story Guide:

This story-based activity is designed to help learners in rural coastal areas understand the importance of sustainable harvesting.

The facilitator reads parts of the story aloud while learners participate in the hands-on game. The worms represent a natural resource that must be harvested wisely to avoid depletion.

1) A special gift from the ocean

Long ago, in the quiet fishing village of (***name of your community e.g. Enkovukeni***), just beyond the sand dunes and mangrove trees, the sea gave the people a special gift: a kind of juicy segmented sea worm that lived in the shallow waters near the shore.

This worm was not just any worm — it was full of protein, good for bait, and even made a tasty stew when cooked with wild garlic and amadumbe.

Every family in the village depended on the sea worm. They used them to feed their children, sell them at the market in ***(name of your local town e.g. Manguzi***), and trade with other villages.

But the sea gave a warning***… "Only take what you need. Leave enough so the worm can grow and come back. If you take too much, it may be gone forever."***

For every segment harvested, the worm can only grow/replace 1 segment each day…

2) The Harvest Begins

You are now families in (***name of your community***). It is the first season of harvesting. Your job is to harvest the worm segments to feed your family and earn money for school uniforms, entertainment, and food.

Each player/group must decide how many segments they will harvest each day to cover all their living expenses.

3) Greedy Times

As the days went by, word spread about the juicy worm of (**name of your community**). People from nearby villages showed interest in buying and harvesting.

Even those who had never harvested before secretly started harvesting the worm. More people. More harvesting. What will happen now?

4) Trouble in the Ocean

One morning, the elders walked to the shore. They looked in the water… and their faces grew long with worry. There was hardly any worm left. The children were hungry. The traders stopped coming. They had gone quiet. They harvested too many worm segments too quickly. Now the worm cannot grow back fast enough.

5) A Village Meeting

The community gathered under the big tree. The elders asked: 'What did we do wrong? How can we protect the worm and still feed our families?'

Ask learners: - What happened when we all tried to harvest as many worm segments as we could? - Did anyone try to take fewer segments? Why? - What could we do differently next time?

6) A New Plan for the Bay

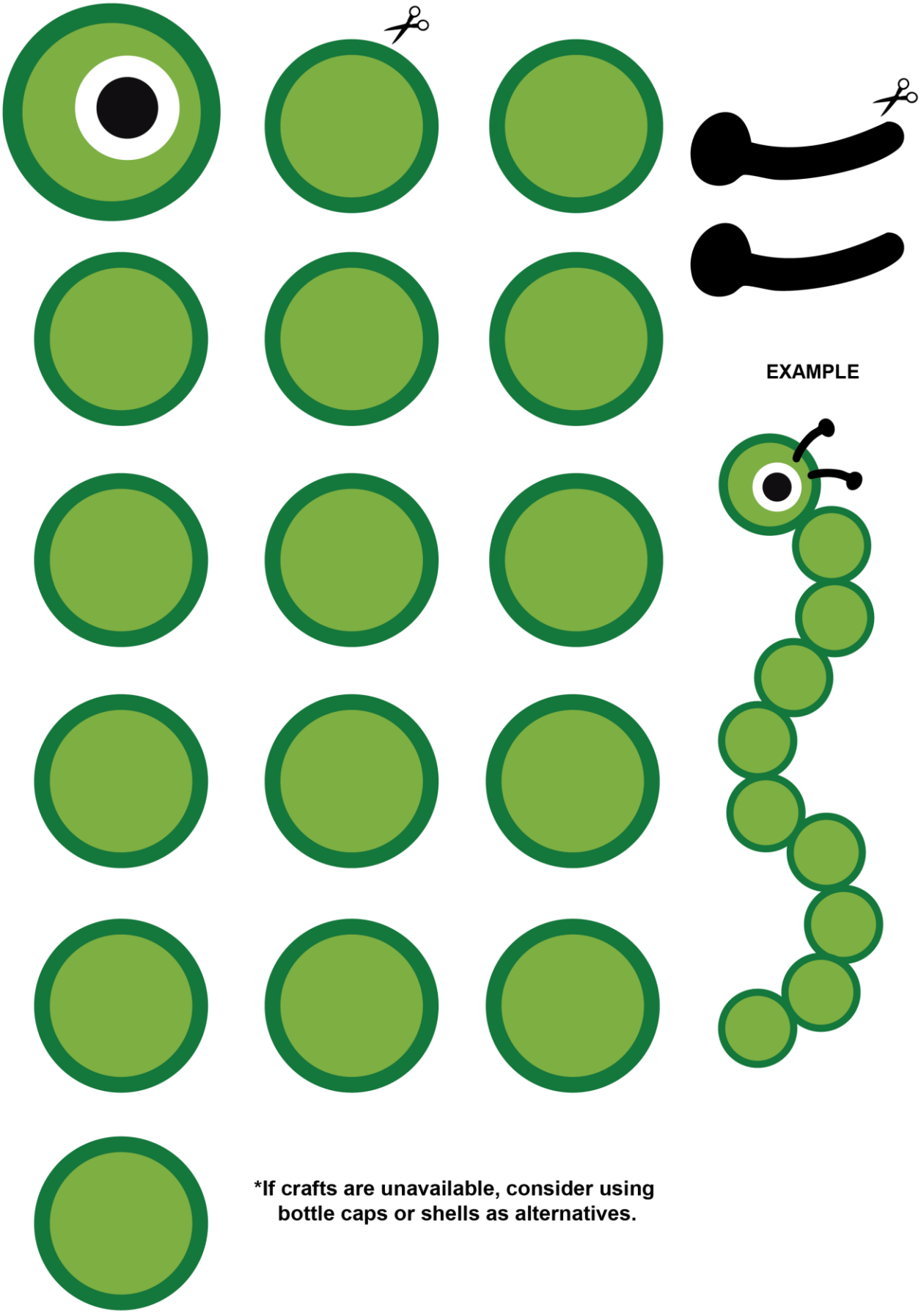
The village decided to try again. This time, they decided: only harvest **(x**) segments per family/person per day.

They would share fairly and leave enough behind so the worm could grow strong. Play 2–3 more rounds with the new rule. See if the worm can grow back.

7) The Bay Lives Again

Thanks to their wisdom and teamwork, the sea worm grew strong and big enough to accommodate the village. The bay sparkled with life. The fish returned. The children laughed and played by the shore, and the people of (**name of the community)** had learned an important lesson: “Nature gives, but we must take with care. What we protect today feeds us tomorrow.”

THE WORM GAME (CUT OUT)



EXAMPLE

***If crafts are unavailable, consider using bottle caps or shells as alternatives.**

Activity - Blank utilisation data sheets for use

Day	Harvest (-)	Remaining	Growth (+)	Total (remaining + growth)
				10 (worm starts with 10 segments excluding the head)
Mon				
Tues				
Wed				
Thur				
Fri				
Sat				
Sun				

Day	Harvest (-)	Remaining	Growth (+)	Total (remaining + growth)
				10 (worm starts with 10 segments excluding the head)
Mon				
Tues				
Wed				
Thur				
Fri				
Sat				
Sun				

The tables below show examples of unsustainable and sustainable harvesting rates please note these are merely examples for you the facilitator – when you do the activity with the learners you let them decide on the harvest rate.

Example 1: Unsustainable utilisation rate that results in no segments before the end of the week

Day	**Harvest (-)**	**Remaining**	**Growth (+)**	**Total (remaining + growth)**
				10 (worm starts with 10 segments excluding the head)
Mon	**3**	**7**	**1**	**8**
Tues	**3**	**5**	**1**	**6**
Wed	**3**	**3**	**1**	**4**
Thur	**3**	**1**	**1**	**2**
Fri	**2**	**0**	**1**	**1**
Sat	**1**	**0**	**0**	**0**
Sun				

Example 2: Unsustainable utilisation rate – not sustainable into the future weeks

Day	Harvest (-)	Remaining	Growth (+)	Total (remaining + growth)
				10 (worm starts with 10 segments excluding the head)
Mon	**2**	**8**	**1**	**9**
Tues	**2**	**7**	**1**	**8**
Wed	**2**	**6**	**1**	**7**
Thur	**2**	**5**	**1**	**6**
Fri	**2**	**4**	**1**	**5**
Sat	**2**	**3**	**1**	**4**
Sun	**2**	**2**	**1**	**3**

Example 3: Sustainable utilisation rate

Day	Harvest (-)	Remaining	Growth (+)	Total (remaining + growth)
				10 (worm starts with 10 segments excluding the head)
Mon	**1**	**9**	**1**	**10**
Tues	**1**	**9**	**1**	**10**
Wed	**1**	**9**	**1**	**10**
Thur	**1**	**9**	**1**	**10**
Fri	**1**	**9**	**1**	**10**
Sat	**1**	**9**	**1**	**10**
Sun	**1**	**9**	**1**	**10**

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