WILDTRUST™

MARINE FOOD WEBS

SESSION PACK

SESSION PACK CONTENTS PAGE – MARINE FOOD WEBS

MATERIALS REQUIRED FOR SESSION

- Colouring pens
- Paper
- 15 x upcycle containers to stick labels on
- Printed copy of energy pyramid labels provided in the pack below

INFORMATION PAGES: MARINE FOOD WEBS

DESCRIPTION:

All living things require energy. That energy comes from the sun, which plants convert into food through photosynthesis.

Herbivores (plant-eating animals) eat the plants and receive energy. When the herbivore is eaten by a carnivore (an animal that eats herbivores), the energy from the herbivore is transferred to the carnivore. The energy transfer from one organism to another makes up food chains and webs.

FACTS:

All living things require food for them to grow. Food chains begin with producers or organisms that manufacture their food. Plants are the most common producers. Animals are called consumers because they do not make their food — they eat or consume other organisms.

There are usually only a few steps in a food chain (usually four at the most). This is because each time one organism eats another, some of that energy is used up and released as heat.

Example of a food chain:

FOOD WEBS:

Most organisms can eat and be eaten by many different animals. A food chain wouldn't be able to show this. Food webs show all these connections. They are more complicated but more accurate.

- **Trophic Levels** – Organisms in food webs are grouped into categories called trophic levels. Roughly speaking, these levels are divided into producers (first trophic level), consumers, and decomposers (last trophic level).

- **Producers** – Producers make up the first trophic level. Producers, also known as autotrophs, make their own food and do not depend on any other organism for nutrition. Most autotrophs use a process called photosynthesis to create food (a nutrient called glucose) from sunlight, carbon dioxide, and water. Plants are the most familiar type of autotroph, but there are many other kinds. Algae, whose larger forms are known as seaweed, are autotrophic. Phytoplankton, tiny organisms that live in the ocean, are also autotrophs.
- **Consumers** – The next trophic levels are made up of animals that eat producers. These organisms are called consumers. Consumers can be herbivores, carnivores, or omnivores.
- **Herbivore** – animal that eats plants.
- **Carnivore** – animals that eat other animals.
- **Omnivore** – animals that eat both plants and animals. Omnivores, like people, consume many types of foods. People eat plants, such as vegetables and fruit. We also eat animal and animal products, such as meat, milk, and eggs. We eat fungi, such as mushrooms. We also eat algae, in edible seaweed like nori (used to wrap sushi rolls) and sea lettuce.
- **Primary consumers** - are herbivores. Herbivores eat plants, algae, and other producers. They are at the second trophic level. In an ocean ecosystem, many types of fish and turtles are herbivores that eat algae and seagrass.
- **Secondary consumers** – eat herbivores. They are at the third trophic level. In an ocean ecosystem, an octopus is a secondary consumer because it eats mussels.
- **Tertiary consumers** – eat the secondary consumers. They are at the fourth trophic level. In an ocean ecosystem a predatory fish is the tertiary consumer because it eats octopus. There may be more levels of consumers before a chain finally reaches its top predator. Top predators, also called apex predators.
- **Apex predator** – eat other consumers. They may be at the fourth or fifth trophic level. They have no natural enemies except humans. Apex predators are self-regulating by limiting the density of their prey. In the ocean, some sharks such as tiger sharks are apex predators.
- **Plankton** – Plankton are marine drifters. Organisms carried along by tides and currents. An organism is considered plankton if it is carried by tides and currents and cannot swim well enough to move against these forces. Some planktons drift this way for their entire life cycle. Others are only classified as plankton when they are young, but they eventually grow large enough to swim against the currents. Plankton are usually microscopic.
- **Phytoplankton** – are microscopic plants, but they play a huge role in the marine food web. Like plants on land, phytoplankton perform photosynthesis to convert the sun's rays into energy to support them, and they take in carbon dioxide and produce oxygen. Because they need the sun's energy, phytoplankton are found near the water's surface.

SESSION PLAN: MARINE FOOD WEBS

SESSION OBJECTIVES:

Learners able to define what a food chain and food webs is as well as comprehend the relationship between producers' primary, secondary, and tertiary consumers.

INTRODUCTION ACTIVITY:

- Ask the learners the following questions:
  - Where do we get our energy from?
  - Why do we eat?
  - What do animals eat? – ask the learners to name some animals they know and what they eat – encourage the pupils to name marine animals if they can.
  - What do plants eat? (explain the process of photosynthesis – *see information sheet*)

MAIN ACTIVITY:

- Show the learners a basic marine food chain – *(see information sheet for diagram**).***
- Explain the concepts of primary producers, consumers, etc – *(see Information sheet).*
- Carry out the energy pyramid activity with the learners – *(see ACTVITY provided below).*

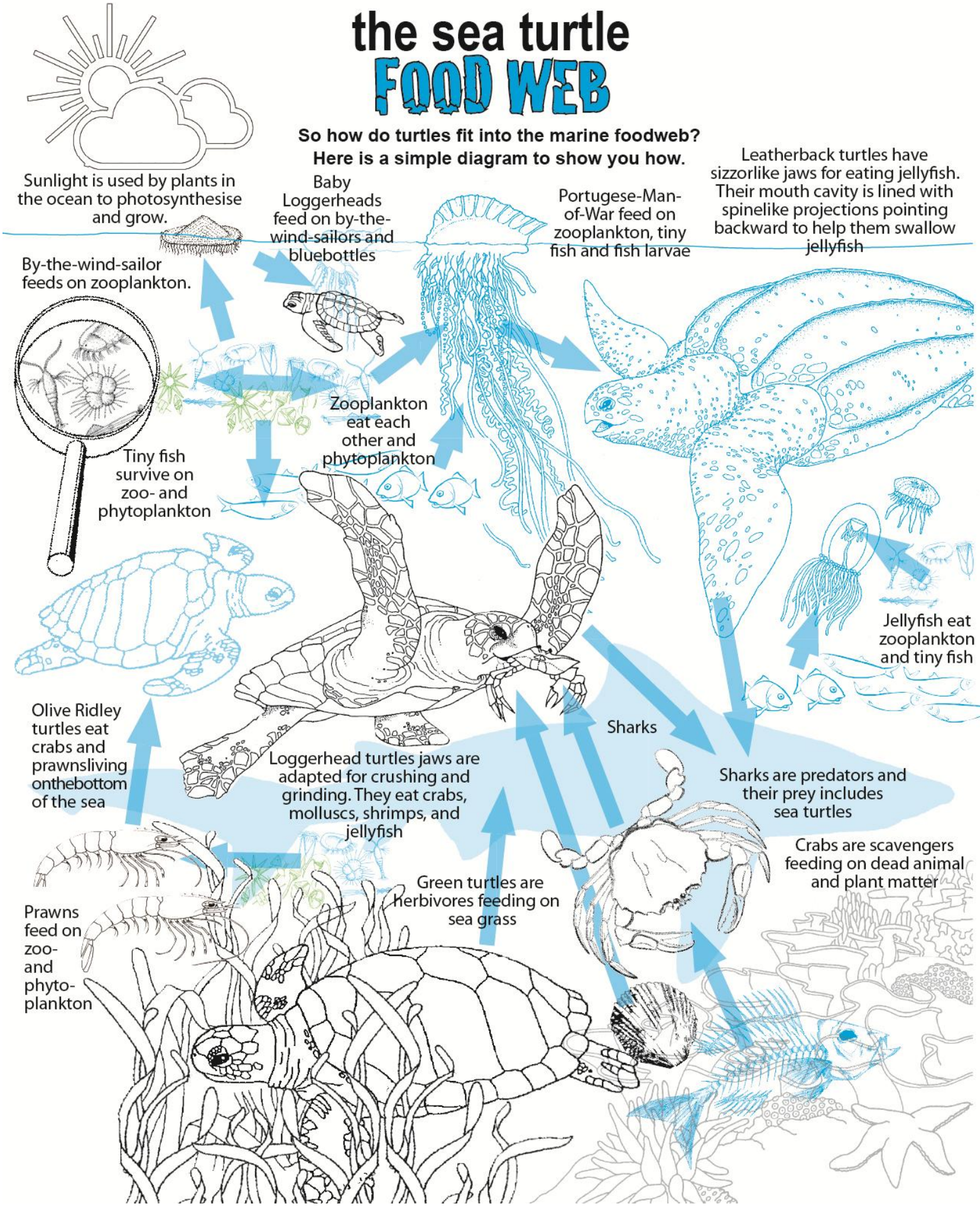
CLOSING ACTIVITY:

- Show the learners the marine food web poster of the sea turtle food web *(see POSTER provided below)* as an example.
- Ask the learners to think of some of the animals they have learned about in the sessions and make a food chain or web poster of their own *(depending on their age)* that includes some of these animals.

FOLLOW UP SUGGESTIONS:

- Ask the learners to research what kind of marine organisms' humans consume and how consumption impacts the population of marine organisms in the food web.

POSTER: MARINE FOOD WEB



ACTIVITY: ENERGY PYRAMID

Resources required:

- Tin cans or other recycled objects such as yogurt tubs or cooldrink bottles.
- Labels of marine organisms in the food chain – see printable labels below

Build an Energy Pyramid set:

Using a set of recycled cans and printed labels build a pyramid that will represent the transfer of energy in a food chain.

How to lead the activity

Step 1 – Hand out the labelled containers to the learners.

Step 2 – Have the learners with the primary producers, place their container on the floor (level ground) next to each other.

Step 3 – Have the learners with next trophic layer i.e., the consumers place their cans on top of

the primary producers, first primary consumers, secondary consumers, and tertiary consumers, until a pyramid is formed.

Step 4 – Once the learners have placed all the containers, explain again what primary producers, primary consumers are, and tertiary consumers are by asking questions.

Step 5 – Then continue with additional questions like what would happen if we removed the Apex predator? Remove the shark, does anything happen? Ask the pupils if they think this is good thing for the ocean? What will happen if we don't have sharks to regulate the populations below them?

Step 6 – Finally wipe out a layer and have a discussion.

LABEL SHEET 01

JELLY FISH

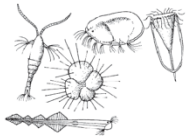
SECONDARY CONSUMERS

PORTUGUESE MAN OF WAR

SECONDARY CONSUMERS

BY THE WIND SAILORS

SECONDARY CONSUMERS



ZOOPLANKTON

PRIMARY CONSUMERS

TINY FISH

PRIMARY CONSUMERS

TINY FISH

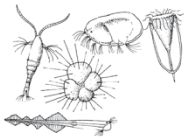
PRIMARY CONSUMERS

PHYTOPLANKTON

PRODUCERS

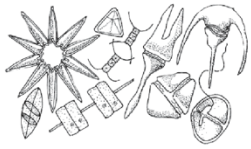
SEA GRASS

PRODUCERS



ZOOPLANKTON

PRIMARY CONSUMERS



PHYTOPLANKTON

PRODUCERS

PHYTOPLANKTON

PRODUCERS

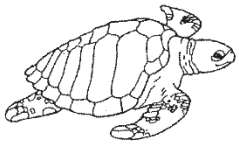
SEAWEED

PRODUCERS

LABEL SHEET 02

LEATHER BACK TURTLES

TERTIARY CONSUMERS



LOGGERHEAD TURTLES

TERTIARY CONSUMERS

SHARKS

APEX PREDATORS

ANNEXURE 1

Associated session plan breakdown for relevant reading and colouring in pages for “Harry the hammerhead” volume one – iSimangaliso community

Session Title	Harry the Hammerhead Shark Spreads the good news (volume 1) reading page numbers	Colouring in page numbers
Intro to oceans session (pre survey)		None
Harry the Hammerhead session	Read pages 1-32	None
What makes iSimangaliso special session	Read pages 1-5	1, 2 & 3
Coelacanth session	Read pages 6-7	4
Turtle hatchling session	Read pages 8-11	5 & 6
Coral Reefs session	Read pages 12-15	7 & 8
Marine food webs session	**Read pages 16-23**	**9, 10, 1 & 12**
Shark session	Read pages 24-27	13 & 14
Whale session	Read pages 28-29	15
Benefits of MPA's session (post survey)	Read pages 30-31	16

Associated session plan breakdown for relevant reading and colouring in pages for “Harry the hammerhead” volume one –uThukela community

Session Title	Harry the Hammerhead Shark Spreads the good news (volume 1) reading page numbers	Colouring in page numbers
Intro to oceans session (pre survey)		None
Harry the Hammerhead session	Read pages 1-32	1, 2 & 3
Coelacanth session	Read pages 1-7	4 & 5
Sea Turtle session	Read pages 8-11	6
Coral Reefs session	Read pages 12-15	7
What makes uThukela special session	Read pages 16-19	8 & 9
Marine food webs session	**Read pages 20-23**	**10, 11 & 12**
Shark session	Read pages 24-27	13 & 14
Whale session	Read pages 28-29	15
Benefits of MPA's session (post survey)	Read pages 30-32	16

ANNEXURE 2

Session plan - Curriculum and Assessment Policy Statement alignment

WILDTRUST Session plan	Section	Grade	Subject	Strand	Topic	Content & Concepts
Marine food web session	Intermediate phase	Grade 4	Natural Science & Technology	Live & living	Energy & Energy transfer	Energy for life, Energy from the sun
	Intermediate phase	Grade 5	Natural Science & Technology	Live & living	Food chains	Food and feeding
	Intermediate phase	Grade 6	Natural Science & Technology	Live & living	Ecosystems & Food webs	Food webs