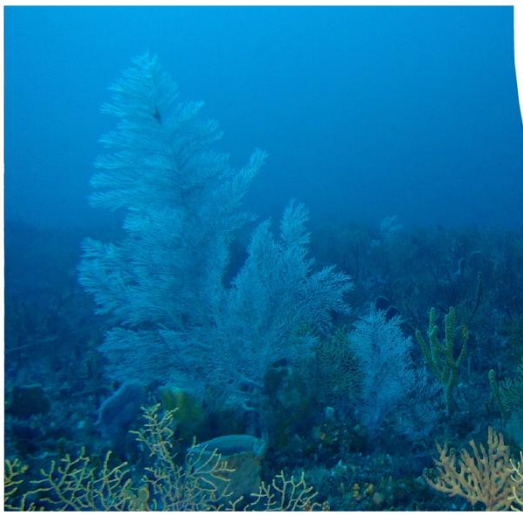
WILDTRUST™



CORAL REEFS

SESSION PACK

SESSION PACK CONTENTS PAGE – CORAL REEFS

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MATERIALS REQUIRED FOR SESSION

- 2 cups all-purpose flour
- 3/4 cup salt
- 4 teaspoons cream of tartar
- 2 cups lukewarm water
- 2 Tablespoons of vegetable oil (coconut oil works too)
- Food colouring
- Zip lock bags (or upcycle bread bags)
- Colouring pens
- Screening devise

INFORMATION PAGES: CORAL REEFS

DESCRIPTION:

Coral is an animal and there are two different types of corals in our ocean. Hard reef-building coral ‘polyps’ which attach themselves to rocks in quite shallow water, where the sun can reach them and the algae that supply the corals with food. Over time millions of individual polyps grow upon one another in colonies to create coral reefs. Soft corals do not have a hard skeleton and don’t build reefs and often look like plants although they are animals.

THREATS:

Poisons (from land and ships), dirt (blocks sunlight), boat strikes/anchors, divers, fishing lines, plastic pollution, seismic surveys, trawl nets/ ghost nets and climate change.

DEFINITIONS & FACTS:

● **Coral polyp:** a tiny cylindrical-bodied animal with a simple stomach and mouth surrounded by tentacles.
● **Coral colony:** many coral polyps of the same species interconnected through a common skeleton.
● **Coral reef:** a structure composed of the skeletons of hundreds of coral colonies, usually forming a line or a ridge on or near the water's surface.
● **Invertebrate:** an animal without a backbone.
● There are two types of corals: **hard corals** (brain, plate, elkhorn) and **soft corals** (sea fans and sea whips). Hard corals build reefs as the polyps secrete calcium carbonate (limestone) throughout their life.
● **Coral polyps** have stinging cells and use their tentacles to catch small animals in the water.
● **Corals** need warm and sunlit water, so often they grow close to the top of the water and in regions near the equator.
● **Corals** provide a safe environment for fish to breed. Without them, fish in the ocean are homeless. The reef structure provides habitat and shelter to a wide variety of marine plants and animals - estimated that a quarter of marine life lives in or around coral reefs.
● **Corals** act as water filters and carbon sinks, increasing water quality in the vicinity of the reef and maintaining high biodiversity.

Coral reefs grow in tropical zones in warm sunlit waters

SESSION PLAN: CORAL REEFS

SESSION OBJECTIVES:

Learners understand that coral reefs are made up of tiny animals called coral polyps.

INTRODUCTION ACTIVITY:

- Ask the learners if they know what a coral is or if it is a plant or an animal.
- Show the learners the Coral Reef Educational video:
  - Educational Coral Reef English - https://tinyurl.com/cvuhh343
  - Educational Coral Reef French - https://tinyurl.com/5k95jyd6
  - Educational Coral Reef IsiZulu - https://tinyurl.com/muuu9kpn
- Explain that a coral reef is like a city full of places to live, eat, and socialise and has countless residents and do the *Coral City ACTIVITY (provided below).*
- Show the learners images of coral polyps and types of coral growth forms *(see PRESENTASION provided below).*

MAIN ACTIVITY:

- Learners must build their own coral reef – using playdough; the coral reef must be colourful and full of life. This activity can be done individually or in groups. (see CRAFT below for instructions on how to make playdough)
- Once complete, let each of the learners/groups give feedback to the class.

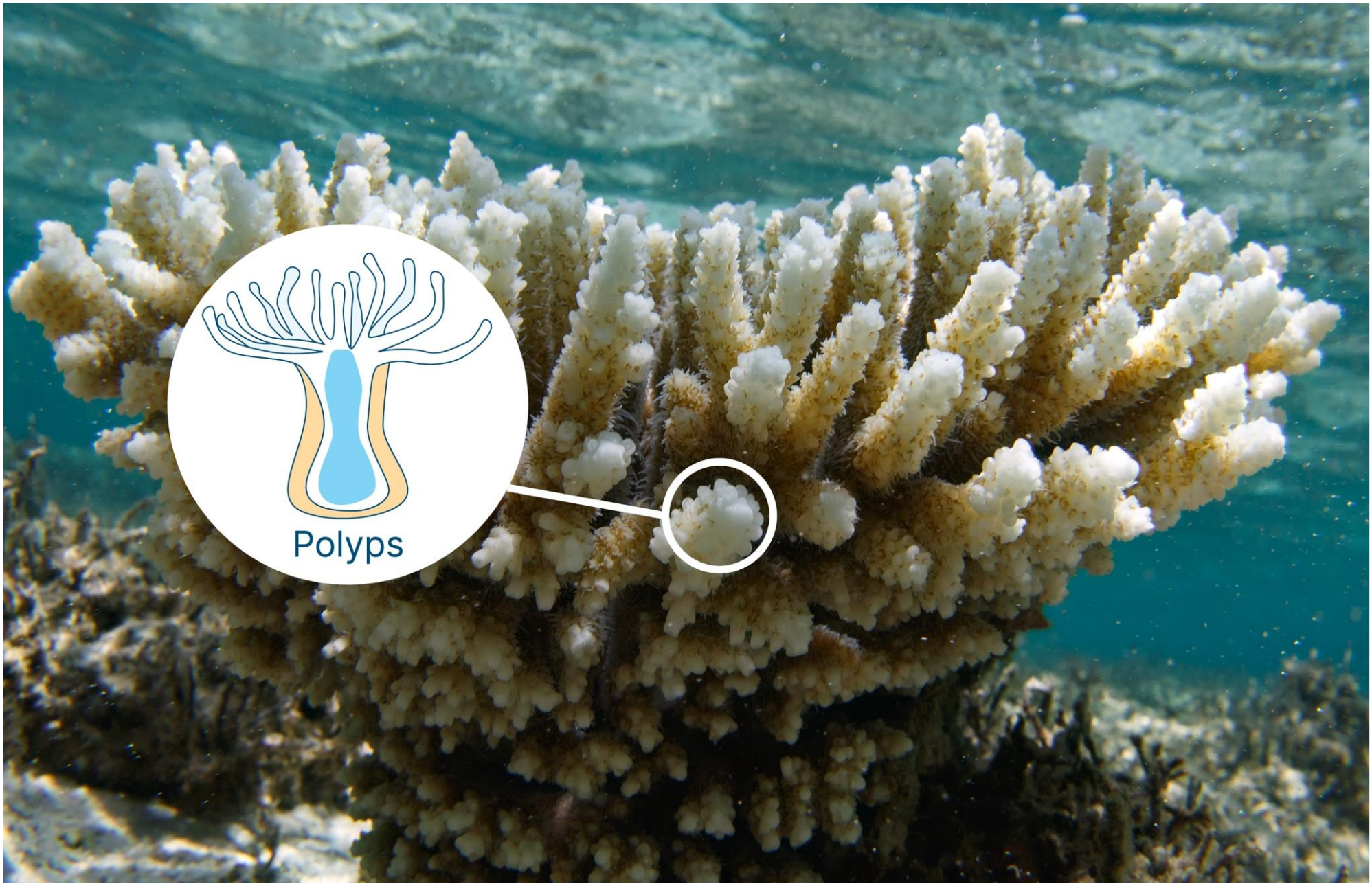
CLOSING EXERCISE:

Learners are to colour their coral sheet to take home *(see EXERCISE provided below)*

FOLLOW UP SUGGESTIONS:

Have the learners watch the ***CORALAX*** - https://tinyurl.com/4scheh27

PRESENTATION: IMAGES OF CORAL POLYPS



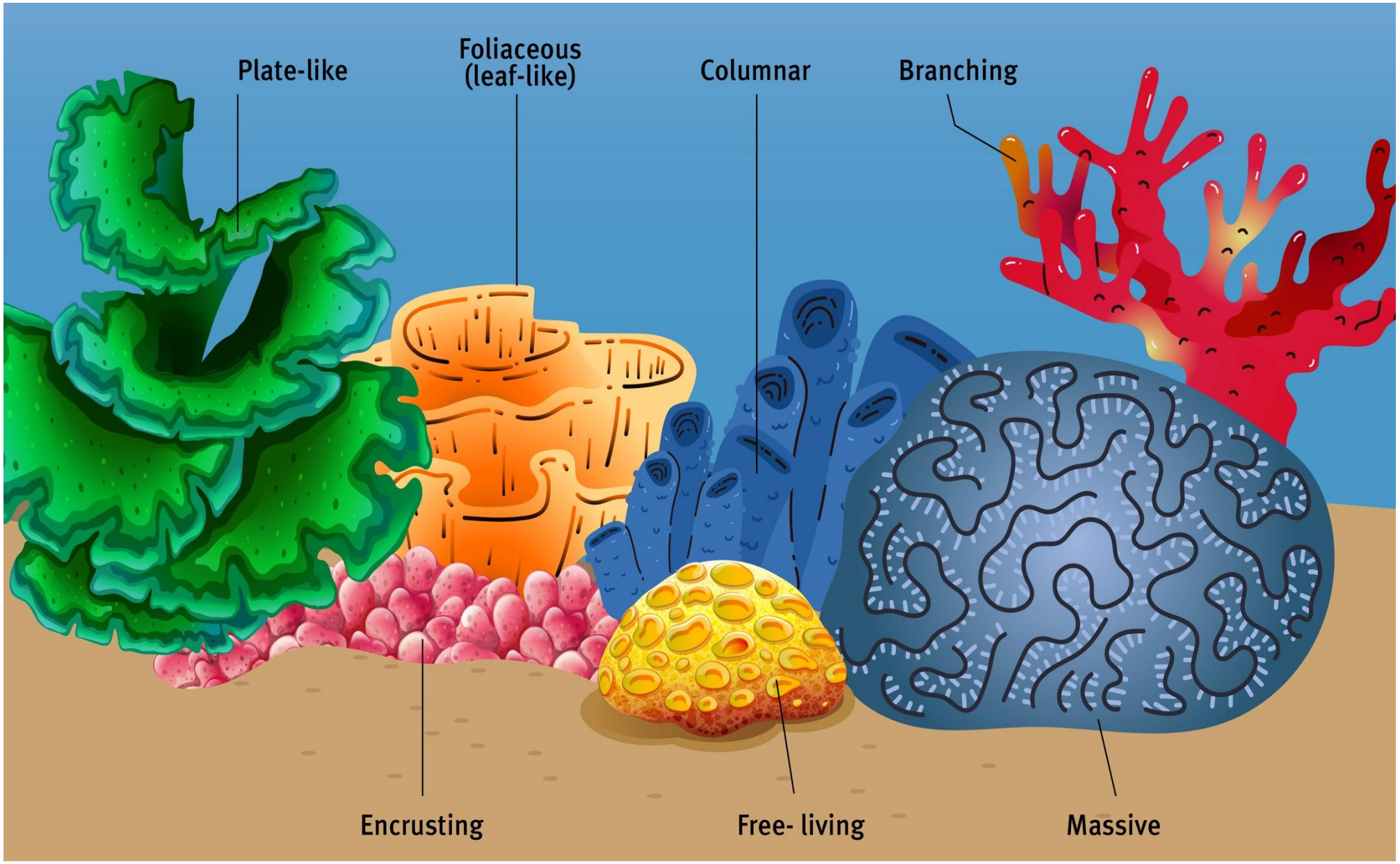


Plate-like
Foliaceous (leaf-like)
Columnar
Branching
Encrusting
Free- living
Massive

ACTIVITY: CORAL CITY

BACKGROUND

Comparing coral reefs to a city is a great way to help learners understand the complexity and vibrancy of life within a reef ecosystem. This approach not only helps make the concept of coral reefs more tangible but also fosters engagement, encouraging learners to draw parallels and contrasts based on their own knowledge and experiences. Overall, this analogy not only aids in understanding the intricate life of coral reefs but also highlights the importance of conserving these vital ecosystems, just as we consider urban sustainability in city planning. Below are some examples read through these to assist you in guiding the learners to think critically and provide examples such as these and others in a discussion. See activity instructions below.

Diversity of Residents: Just as cities are home to a diverse population of people from various backgrounds and professions, coral reefs host a wide variety of marine life—fish, crustaceans, molluscs, and more—each with its role in the ecosystem. Cities have permanent residents as well as visitors. The coral reefs are also home to permanent residents such as seahorses as well as visitors passing through such as turtles and sharks.

Shelter and Habitat: In a city, people live in different types of homes (apartments, houses, etc.), while coral reefs provide various forms of shelter like crevices and coral structures where marine animals can take refuge. New apartments in cities or space in a coral reef can be hard to find, animals rarely move out unless evicted by a bigger tenant or they pass away.

Infrastructure Development: Cities often have infrastructure developments that facilitate movement, like roads and bridges. Coral reefs have natural structures, such as coral mounds and formations, that create pathways and habitats for various species, allowing for the flow of nutrients and movement of animals and often the same route is used on a regular basis by residents of the reef.

Food Sources: Cities have markets and restaurants that provide food for residents, similarly, coral reefs support a myriad of life forms that rely on the reef’s resources for sustenance, like algae, plankton, and smaller fish.

Interactions and Relationships: Just as people in a city interact, cooperate, and sometimes compete with one another, the organisms in a coral reef engage in relationships that include symbiosis, competition, and predation. Just like people have jobs in a city, so do organisms on the reef e.g. wrasse fish and shrimp provide 'cleaning services' to animals that need it.

Community Engagement: In cities, community organizations and social events help bring people together. Similarly, coral reefs contain symbiotic relationships, like clownfish living among anemones, showcasing mutual benefits, much like community ties in urban settings.

Dynamic Environment: Cities are constantly changing with new buildings, businesses, and residents coming and going. Coral reefs also experience constant change with living organisms growing, dying, and competing for space and resources. Coral reefs like all large cities are busy 24 hours a day with some animals active and feeding at night and others during daylight hours. Like many cities the coral reef also has a ‘rush hour’ the busiest times of day are just before and just after sunrise and sunset as day and night feeders switch places.

Impact of Environment: Cities face challenges like pollution and urban development that affect human life. Coral reefs are also affected by environmental issues, such as climate change and ocean acidification.

Lifespan and Growth: Human cities grow and change primarily through planning and construction, whereas coral reefs grow organically through biological processes, taking years or even decades to form substantial structures.

Location: Cities are found in just about every corner of earth, but coral reefs require special conditions to grow and survive, they need warm salt waters (Ave temp 20-30 degrees Celsius) and generally found near the equator (middle of the earth) as here the earth receives the most sunlight and has nice warm waters.

CORAL CITY STORY

Coral is fascinating because it is an animal, not a plant or a rock. Coral consists of tiny animals called coral polyps, which have a simple structure featuring a mouth and stomach. These polyps are known for their aggressive predatory nature, equipped with tentacles that can be venomous.

Coral reefs, often referred to as the "cities" of the underwater world, are built upon the skeletal remains of these polyps. Over time, many coral polyps live together, forming large colonies and shaping the complex and vibrant structures we recognize as coral reefs. These reefs are incredibly diverse ecosystems, home to a wide variety of marine life, including fish and invertebrates.

In a coral reef, every nook and cranny offers shelter to various creatures, some of which share spaces at different times of the day. This bustling environment is akin to a busy city, with spaces for living, feeding, and socializing, making coral reefs one of the most complex and competitive habitats on Earth. The structural foundation of the reef, created by the growth of these coral

polyps, provides essential food and shelter for countless marine species, greatly contributing to the overall biodiversity of our oceans.

CORAL CITY ACTIVITY

1) Ask the learners to think about the idea of a city – write their answers on a large piece of paper. Keep this up for the duration of the session and add ideas as they evolve. Ask questions such as what is a city? What happens in a city? Who lives in a city? Where do residents live? Who might visit a city? What is necessary to make a city?

2) Read out loud to the learners the Coral City Story (above)

3) Use the background information provided in the activity to lead a discussion that draws on the parallels between the learners' answers about cities provided in step 1 and coral reefs. E.g. If the learners speak about the tall buildings or colours of a city then you can bring up the array of colour found on coral reefs and show pictures. You could also point out the 'buildings' of coral reefs are actually alive and emphasize the incredible diversity of plant and animal life found in a reef.

4) Show the learners a map that indicates the locations of coral reefs in the world (see INFORMATION pages above) and ask the learners to make any observations they can about the location of coral reefs. Then prompt them with some questions like where are coral reefs found? Why? Which one is found closest to your city? Has anyone seen a coral reef? Why are

there no coral reefs in the polar regions? Use the background information to help the learners understand that coral reefs are only found in warm salt waters generally near the equator.

CRAFT: CORAL REEF PLAYDOUGH

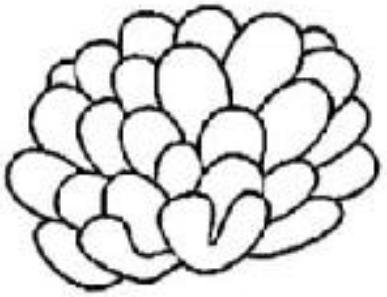
- 2 cups all-purpose flour
- 3/4 cup salt
- 4 teaspoons cream of tartar
- 2 cups lukewarm water
- 2 tablespoons vegetable oil (coconut oil works too)
- Food colouring (your choice)
- Zip-lock bags (or upcycle bread bags)
- Wax paper

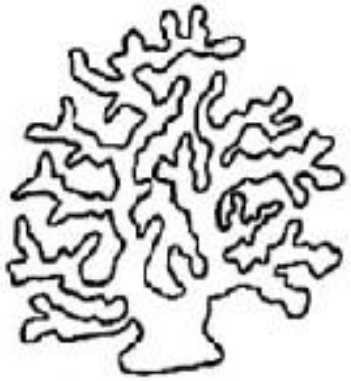
INSTRUCTIONS

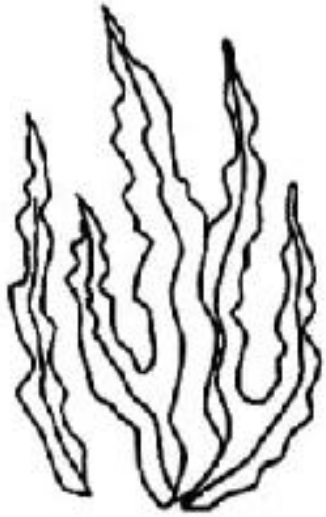
Stir together the flour, salt, and cream of tartar in a large pot. Next add the water and oil. If you're only making one colour, add in the colour now as well. Cook over medium heat, stirring constantly. Continue stirring until the dough has thickened and begins to form into a ball. Remove from heat and then place on wax paper. Allow to cool slightly and then knead until smooth. If you're adding colours after, divide the dough into balls (for how many colours you want) and then add the dough into the bags. Start with about 5 drops of colour and add more to brighten it. Knead the dough, while inside the bag so it doesn't stain your hands. Once it's all mixed together you're ready to PLAY. Store the play dough inside the bags once done to keep soft. Keeps for up to 3 months.

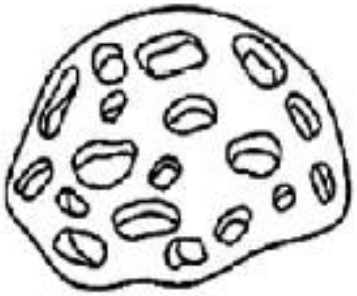
EXERCISE: CORAL COLOURING

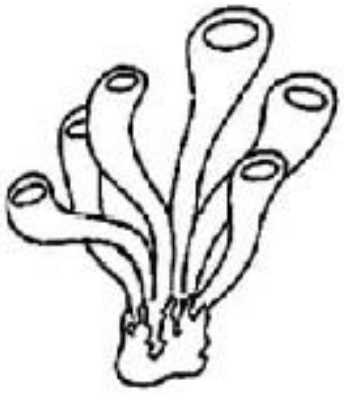
CORALS











EZEMVELO KZN WILDLIFE

CORAL REEFS

Vibrate with life and colour

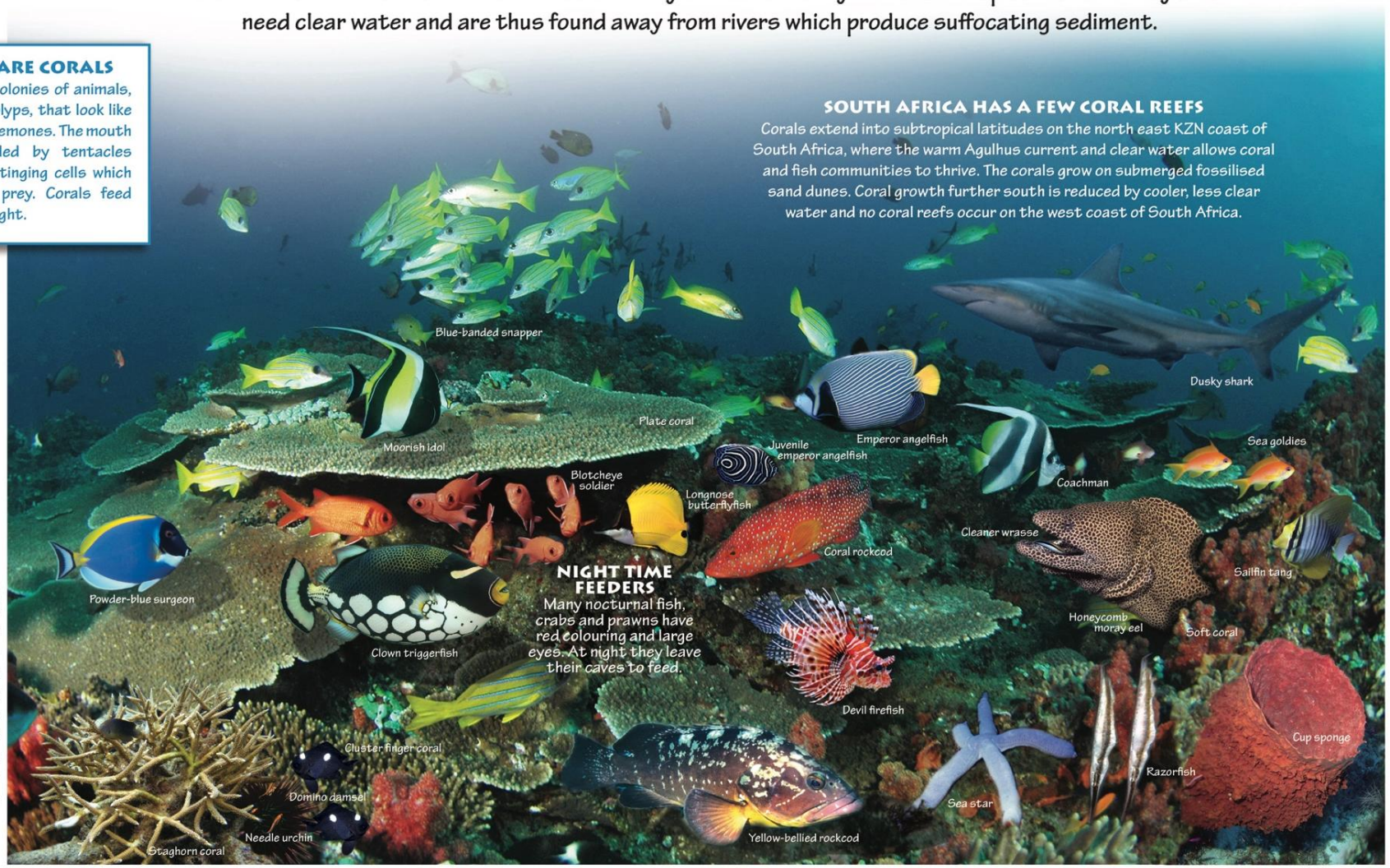
Coral reefs are the rainforests of the ocean. They are found mainly in shallow tropical waters. They also need clear water and are thus found away from rivers which produce suffocating sediment.

WHAT ARE CORALS

Corals are colonies of animals, known as polyps, that look like small sea anemones. The mouth is surrounded by tentacles that have stinging cells which catch tiny prey. Corals feed mostly at night.

SOUTH AFRICA HAS A FEW CORAL REEFS

Corals extend into subtropical latitudes on the north east KZN coast of South Africa, where the warm Agulhus current and clear water allows coral and fish communities to thrive. The corals grow on submerged fossilised sand dunes. Coral growth further south is reduced by cooler, less clear water and no coral reefs occur on the west coast of South Africa.



LIFE ON THE REEF

Animals compete for space, food and mates while avoiding predators. A few eat phytoplankton and algae, but many, including corals are predators. Many fish defend their territories using their bright colours like flags.

CLEANING STATION

The cleaner wrasse, coachman and cleaner shrimp clean large fish without being eaten.

CLOSE ATIONSHIPS

Some animals e together for utual benefit: anemone fish shelter in nemones and mino damsels ssociate with black urchins.

Corals are a natural wonder, swarming with marine life. The first traces of corals date back 500 million years. Today reefs cover 600 000 square kilometres of the ocean floor.

Coral reefs are built by colonies of coral polyps supported by limestone skeletons. Life on the reef depends on the survival of these minute polyps.

Adapted from Coastcare Fact File
Photographs: Dennis King

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
Coral reefs session	Intermediate phase	Grade 4	Natural Science & Technology	Live & living	Habitats of animals	Different habitats & need for a habitat
	Intermediate phase	Grade 4	Natural Science & Technology	Live & living	Structure of animal shelters	Animal shelters
	Intermediate phase	Grade 6	Natural Science & Technology	Live & living	Ecosystems & Food webs	Different ecosystems & living and non-living things in ecosystems