NATIONAL GEOGRAPHIC KIDS

NSF

Marine Missions

ACTIVITY PACKET

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LEADER'S INTRODUCTION AND OVERVIEW

Kids become scientists investigating how tides and currents move nutrients and life throughout the world, and the important and positive role kids play in protecting the ocean. Kids discover that when it comes to keeping the ocean healthy, the power to make a difference comes from knowledge and action.

THE OCEAN CONNECTION

A healthy ocean is a healthy world. The ocean is important to people because it controls our weather. It provides food for most of the world. Of course, it is also home to many animals. To some, ocean currents and saving the Earth and animals may seem like unrelated topics. It is, however, a simple chain from our homes to the sea. Eventually, nearly everything flows to the ocean. When you look at a photo of the Earth, it's easy to see that most of the world is covered in water. Many know the fact that the ocean covers 71 percent of the Earth. The surface, however, is just a small portion of the ocean. Ninety-nine percent of the Earth's living space is underwater. Beneath the surface is a dynamic world full of unique ecosystems and animals, many that never see sunlight or humans.

CURRENTS

Ocean currents flow through surrounding water like swirling, curving, or spiralling rivers. Tides, wind, and water temperature and salinity drive or create currents. From the surface to the deep and around the world, ocean water is constantly moving and creates a worldwide current. Scientists call this global scale current or constant motion the "global ocean conveyor belt." The motion starts in the Norwegian Sea and cycles around the world. It takes between about 1,000 years for this conveyor belt to complete one cycle around the planet.

Throughout the world, many ocean animals rely on currents to find food. Plankton and jellies depend on currents. With little or no ability to move through the water on their own, they go wherever the currents take them. Squid, crustaceans, sharks, whales, seabirds, and fish such as anchovies, sardines, and mackerel all take advantage of the nutrient-rich currents.

OCEAN LIFE

No matter where an animal lives, it has specific body parts to live in that environment. Some are commonly seen throughout the ocean. For example, seals and whales have blubber and flippers. Others are spectacularly unique. The barrel-eye (a deep-sea fish) has a transparent head and rotating eyes. This combination of adaptations allows it to see above it or straight ahead, without moving its head or body.

HOW WE PROTECT THE SEA

Animals cannot adjust to rapid environmental changes. Whether they live in the deep sea or along the shore, overfishing, pollution, and human encroachment in obvious and subtle ways are examples of changes that challenge all ocean animals. Every person, no matter how young or old, can help keep the ocean clean. What we do, the products or chemicals we use, and how we dispose of them have a direct impact on the ocean. When it comes to keeping our ocean healthy, the power to make a difference comes from knowledge and action. As a family or with the help of an adult, kids can make a difference, save an ocean animal, and keep the ocean healthy.

STATION 1: THE OCEAN CONNECTION

• A healthy ocean is a healthy world because most of the Earth is ocean.
• The ocean covers 71 percent of the Earth.
• The ocean controls the weather.
• The ocean provides food for most of the world.
• Ninety-nine percent of the Earth's living space is underwater.
• Beneath the surface is a dynamic world full of unique ecosystems and animals.

Activities:

1. I Love the Ocean Tide Dye Ocean
2. Healthy Ocean, Healthy World Chant

STATION 2: CURRENTS

Discover currents.

• Tides, wind, and water temperature, and salinity (salt) create and drive currents.
• Ocean water moves constantly and creates a current that circles the world.
• Currents carry nutrients and animals, as well as trash and other pollution, throughout the world.

Activities:

1. Go with the Flow
2. The Currents in the Ocean Song

STATION 3: OCEAN LIFE

Discover ocean life

• Animals live at all depths of the ocean.
• What happens at the surface affects deep-sea animals.

Activities:

1. Fish Tail
2. Ocean Depths
3. Deep-Sea Jelly Craft

STATION 4: PROTECTING THE OCEAN

Discover how to protect the sea.

• Every person, no matter how young or old, can help keep the ocean clean.
• What we do, the products or chemicals we use, and how we dispose of them all have a direct impact on the ocean.
• When it comes to keeping our ocean healthy, the power to make a difference comes from knowledge and action.

Activities:

1. Recycle Dance
2. I Promise to Protect the Ocean
3. Recycling Monster
4. Reusable Grocery Bag

STATION 1: THE OCEAN CONNECTION

I Love the Ocean Tide Dye Ocean Craft

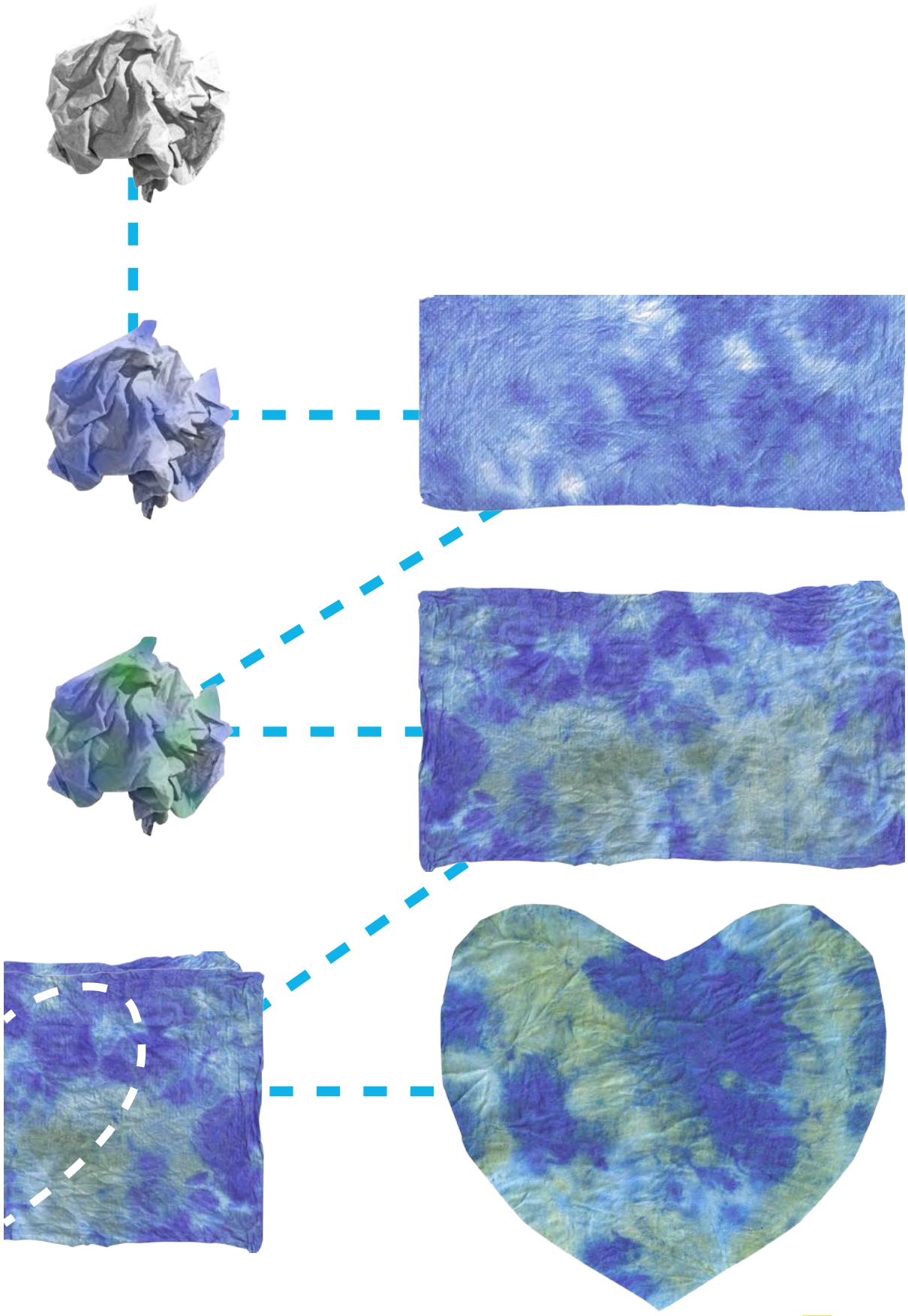
Create a unique piece of modified tie-dye art that lets the world know you love the ocean.

You'll Need:
Finger paint: blue and green (child-safe, non-toxic, washable)
A sheet of thick paper towel: white
Shallow containers for paint
Copy of "A healthy ocean is a healthy world" page
Glue (child-safe)

Make a tie-dye world map with paper towels and paint.
Step 1: Have an adult pour green and blue finger paint into separate shallow containers.
Step 2: Wad up a sheet of paper towel. Dip and roll paper towel in blue paint.
Step 3: Unfold and re-wad paper towel. Dip in blue paint again.
Step 4: Gently rinse paper towel. Squeeze out excess water and paint.
Step 5: Repeat Step 2 with green paint.
Step 6: Rinse. Squeeze out excess water and paint. Gently flatten.
Allow time to dry.
Step 7: Have an adult cut the tie-dye painting into a heart shape.
Step 8: Finish craft. Glue the heart onto the "A healthy ocean is a healthy world" page.

Note: This can be a messy craft. Kids will get paint on hands, possibly clothes, and craft area. Kids will need access to soap and water to wash hands afterward.

I Love the Ocean Tide Dye Ocean Craft



{paste heart here}

A healthy ocean is a healthy world!

STATION 1: THE OCEAN CONNECTION

Healthy Ocean, Healthy World Chant

Get fired up about creating a healthy ocean and a healthy world!

LEADER:
When I say healthy, you say ocean!
When I say healthy, you say world!

(LEADER)	(KIDS)
Healthy	Ocean
Healthy	World
Healthy	Ocean
Healthy	World

(ALL) Goooo Earth!

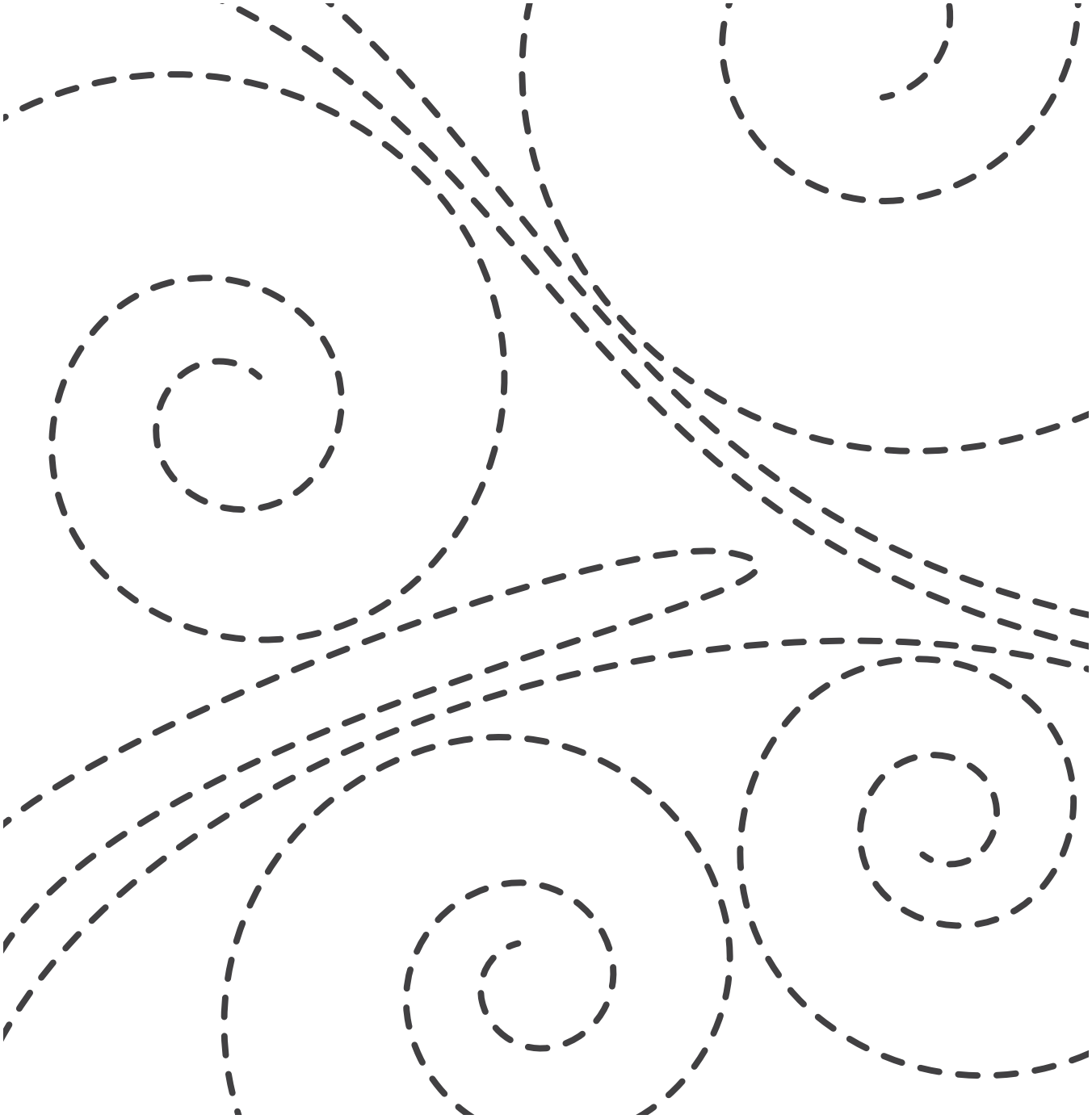
(REPEAT)

STATION 2: CURRENTS

Go with the Flow

An ocean current swirls through the water. Use your finger to follow the currents below. Color the currents your favorite colors.

Optional:
Take it outside! (With a parent's permission) use sidewalk chalk to draw giant ocean currents on the sidewalk.



STATION 2: CURRENTS

The Currents in the Ocean

(to the tune of "The Wheels on the Bus")

The currents in the ocean swirl around. (SPIN AROUND)
Swirl around, (SPIN AROUND)
Swirl around. (SPIN AROUND)
The currents in the ocean swirl around,
All through the ocean. (SPIN AROUND)

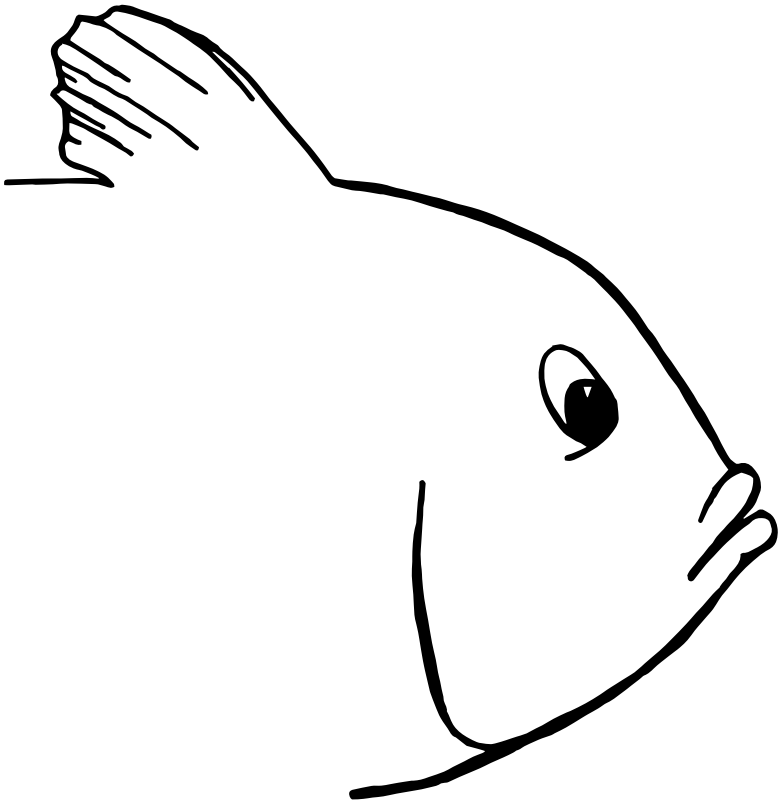
The currents in the ocean whirl around.
Whirl around,
Whirl around.
The currents in the ocean whirl around,
All through the ocean.

The currents in the ocean twirl around.
Twirl around,
Twirl around.
The currents in the ocean Twirl around,
All through the ocean.

STATION 3: OCEAN LIFE

Fish Tail

Finish the fish. Can you draw a tail, a fin, and scales for this fish? Then color your picture!

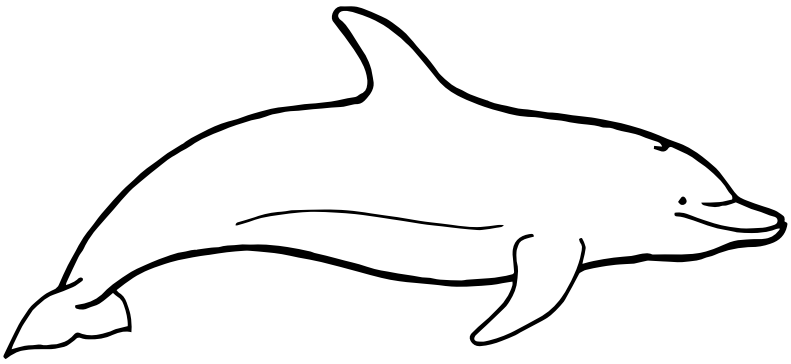


STATION 3: OCEAN LIFE

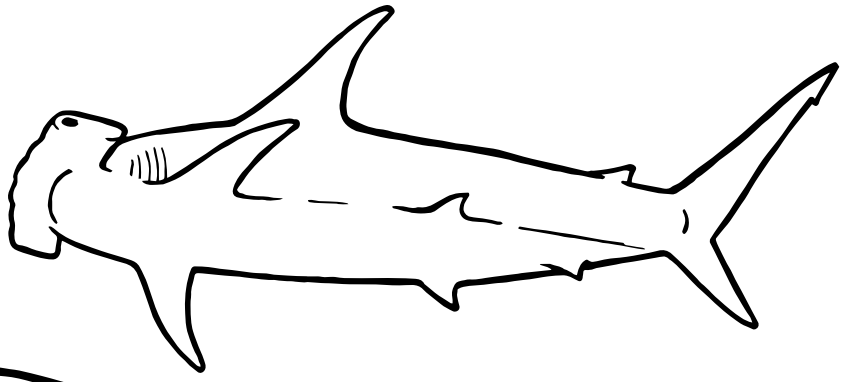
Ocean Depths

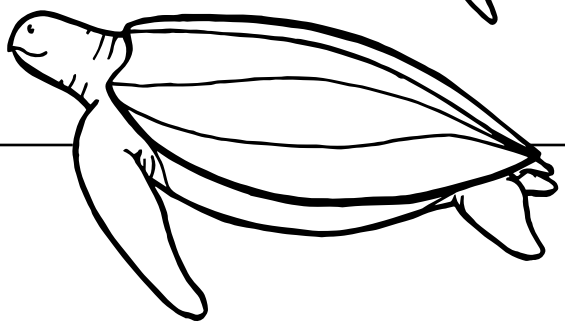
The deeper you dive in the ocean, the darker it becomes until the ocean is completely dark. Color the animals. Then color the water the marked colors to create an ocean scene.

light blue

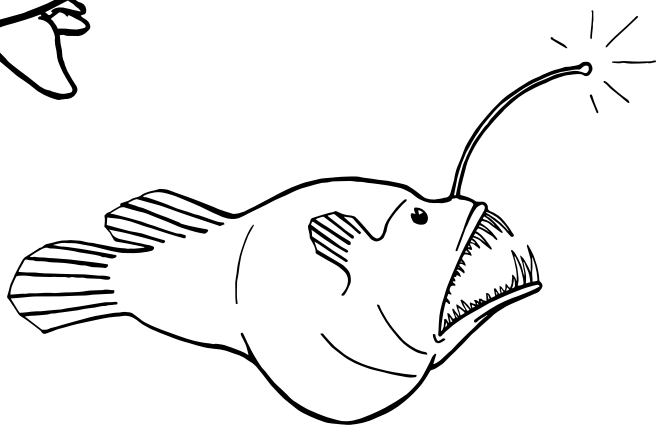


dark blue





black



STATION 3: OCEAN LIFE

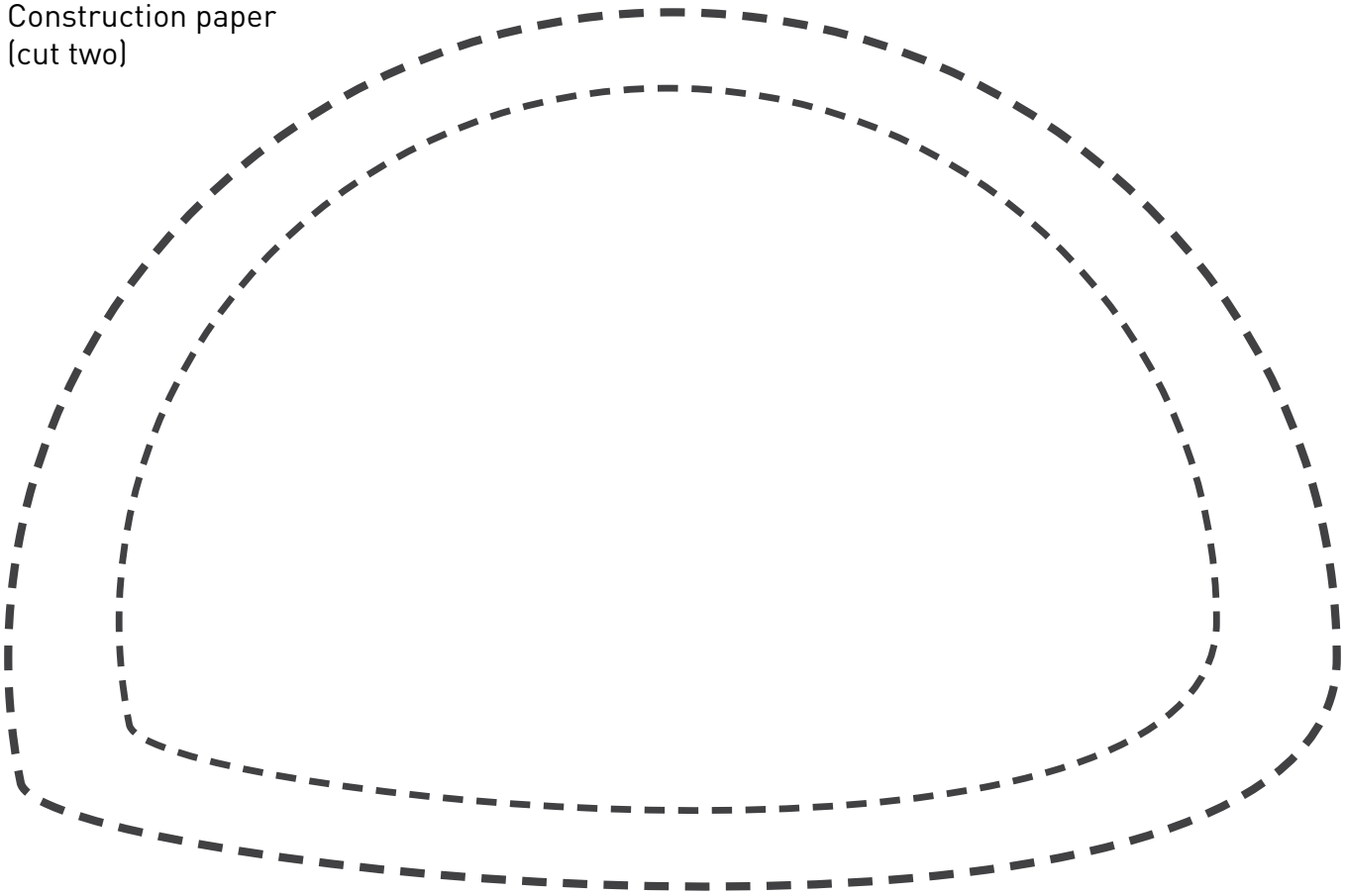
Deep-Sea Jelly Craft

Create a beautiful jelly.

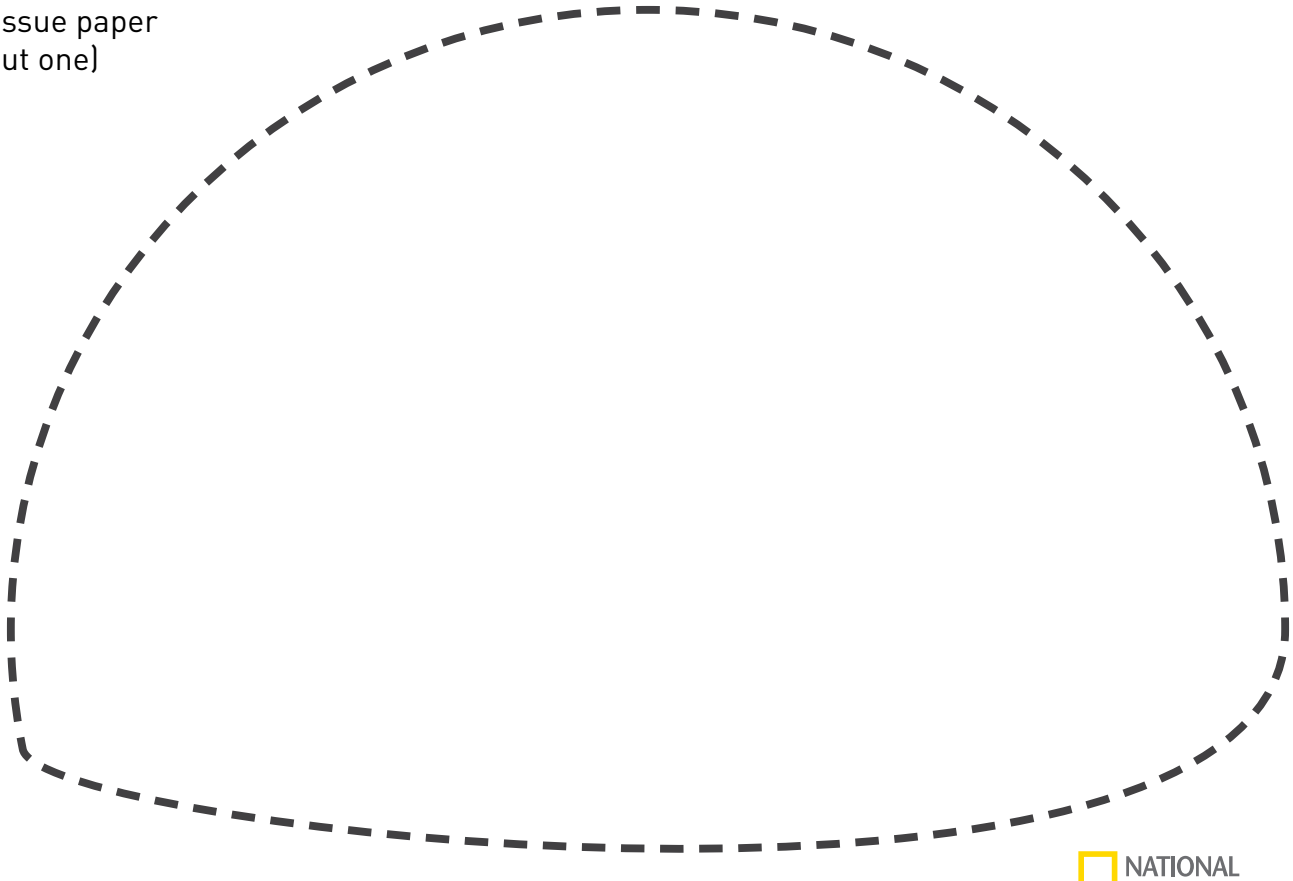
You'll Need:
Tissue paper
Construction or color paper (Optional: Glow in the dark paper)
Precut jelly pieces
Glue (child-safe)

Step 1: Have an adult use pattern to trace and pre-cut:
• Jelly outlines (2, construction paper)
• Jelly body (one, tissue paper)
• Tentacles (6-8 strips of tissue paper)
Step 2: Glue the jelly body onto a jelly outline.
Step 3: Glue the tentacles onto the bottom of the jelly.
Step 4: Glue the second outline on top of the tissue paper body.

Construction paper
(cut two)



Tissue paper
(cut one)



STATION 4: PROTECTING THE OCEAN

Recycle Dance

Get your family and friends excited about helping the earth with this fun game.

Step 1: Create your own silly dance moves while repeating the word, "Recycle."
Step 2: Then spin around (dance in a circle) one time and say, "Reduce, reuse, recycle." Then continue dancing and saying, "Recycle." Be as wacky as you can.
Step 3: The challenge is that you cannot laugh or smile while dancing or watching someone else dance. Anyone who laughs or smiles has to sit down for that round.

Repeat game.
Laugh, smile, recycle!

STATION 4: PROTECTING THE OCEAN

How I Protect the Ocean

Create this cool certificate and place it somewhere to remind you that no matter how big or small, everyone can protect the ocean.

You'll Need:
Copy of "I Promise to Protect the Ocean" certificate
Finger paint (child-safe)
Crayons

You will use your handprint to make the certificate.

Step 1: Color the Earth.
Step 2: Have an adult spread a tiny amount of paint onto the sponge or paper towel.
Step 3: Gently press your hand onto the paint. Then press your hand onto the paper.

I Promise to Protect the Ocean.

Here are five simple things my family and I can do:
1. Reduce the amount of disposable and chemical products we use.
2. Reuse items. Instead of plastic or paper grocery or lunch bags, use reusable cloth bags and food containers.
3. Reimagine items. Find new uses for items.
4. Recycle at home and at school. Start or join the Recycling Team at your school or community center.
5. Tell a friend!

A healthy ocean is a healthy world!

Handprint here

STATION 4: PROTECTING THE OCEAN

Recycling Monster

Use your imagination (and recycled materials) to create a Recycling Ocean Monster that eats trash and keeps the ocean clean.

You'll Need:
Recycled plastic water bottles or paper tubes
Recycled paper, magazine pages, ads, and/or newspapers
Glue sticks (child-safe)
Glue dots (child-safe)

Step 1: Have an adult collect (clean, empty) plastic water bottles or paper tubes, paper, magazines, ads, and newspapers from recycling bin.
Step 2: Use the paper tube or water bottle as the Recycle Monster's body. Decorate the bottle (or paper tubes) by giving the monster the body parts it needs to survive. Think about what body part(s) it will need to swim, find trash, eat the trash, and avoid predators.
Step 3: Display your Recycle Monster somewhere it will remind you and your family to become recycling monsters, too!

STATION 4: PROTECTING THE OCEAN

Reusable Grocery Bag

Decorate a reusable grocery bag.

You'll need:
Canvas grocery bag
Paint (child-safe, nontoxic)
Paint brushes, sponges, stamps, or other painting tools

Step 1: Decorate your reusable grocery bag any you want.
Step 2: Allow time to dry.
Step 3: Take it with you to the store. Reuse again and again!

OPTION:
Make a reusable grocery or lunch bag from a favorite old t-shirt or pair of jeans. Have an adult help to cut and sew. Add thick ribbon for straps.

CHANT

I Love the Earth Chant

Get fired up about creating a healthy ocean and a healthy world!

I Love the Earth

Earth, Earth, Earth, Earth. (crescendo)
Earth, Earth, Earth, Earth. (crescendo)
Earth, Earth, Earth, Earth. (crescendo)
I love the Earth!

Ocean, ocean, ocean, ocean.
Ocean, ocean, ocean, ocean.
Ocean, ocean, ocean, ocean.
I love the ocean!

Current, current, current, current.
Current, current, current, current.
Current, current, current, current.
I love the current!

Recycle, recycle, recycle, recycle.
Recycle, recycle, recycle, recycle.
Recycle, recycle, recycle, recycle.
I love to recycle.

Earth, Earth, Earth, Earth.
Earth, Earth, Earth, Earth.
Earth, Earth, Earth, Earth.
I love the Earth!

APPENDIX: Additional information

Whale Shark (Rhincodon typus)
Size: 18 to 32.8 ft (5.5 to 10 m)
Weight: Average 41,200 lbs (18,700 kg)
Diet: Plankton
Distribution: Tropical, worldwide
Fun Fact: The whale shark is the largest fish–and shark–in the world.

Leatherback Sea Turtle (Dermochelys coriacea)
Size: 4.5 to 5.2 ft (1.4 to 1.6 m)
Weight: 661 to 2204 lb (300 to 1000 kg)
Diet: Jellies
Distribution: Temperate and tropical, worldwide
Fun Fact: A leatherback hunts in the deep. It can dive up to 3821 ft (1000 m) and stay under for 85 minutes.

Great Hammerhead (Sphyrna mokarran)
Size: 12 to 20 ft (3.7 to 6.1 m)
Weight: 500 to 1,000 lb (230 kg to 449 kg)
Diet: A wide variety of prey including crabs, squid, octopus, lobsters, and fishes, sharks, and rays.
Distribution: Tropical and temperate, worldwide
Fun Fact: Stingrays are a great hammerhead's favorite food.

Sea Otter (Enhydra lutris)
Size: 4 ft (1.2 m)
Weight: 50 to 70 lb (23 to 32 kg)
Diet: Sea urchins, clams, crabs, squid, octopuses, and fish
Distribution: Coastal, Pacific Ocean in North America and Asia
Fun Fact: Some sea otters use rocks to crack open clams and mussels.

Giant Squid (Architeuthis dux)
Size: 33 ft (10 m)
Weight: 440 lb (200 kg)
Diet: Shrimp, fish, squid
Distribution: Deep sea, worldwide
Fun Fact: The eye of a large giant squid is as big as a person's head.

Manatee (Trichechus sp)
Size: 8 to 13 ft (2.4 to 4 m)
Weight: 440 to 1,300 lb (200 to 600 kg)
Diet: Algae, seaweed, and sea grass
Distribution: Amazon River, the west coast and rivers of Africa, and the Eastern coasts of North, Central, and South America from Florida to Brazil.
Fun Fact: It's like the lawnmower of the water, eating as much as 1/10 of its body weight in a day. That means a large manatee can eat 130 pounds of algae and sea grass a day!

Herring Gull (Larus argentatus)
Size: 22 to 26 in (56 to 66 cm)
Weight: 1.8 to 2.8 lb (800 to 1,250 g)
Diet: Fish, crustaceans, squid, insects, smaller seabirds, eggs, and more
Distribution: Coastal and inland, throughout the Northern Hemisphere
Fun Fact: These opportunistic scavengers take advantage of any food source, from grabbing fish trying to evade dolphins, earthworms exposed in a freshly plowed field, or scavenging at a garbage dump.

Harbor Seal (Phoca vitulina)
Size: Up to 5 ft (1.6 m)
Weight: 50 to 170 lb (22.6 to 77 kg)
Diet: Fish, crustaceans, and squid
Distribution: Coastal, temperate, subarctic, arctic, North Atlantic and Pacific Oceans
Fun Fact: A harbor seal uses its whiskers to help it find food.

Deep-Sea Anglerfish (Melanocetus johnsonii)
Size: 8 in (20 cm)
Diet: Fish and crustaceans
Distribution: Deep sea, temperate to tropical waters worldwide
Fun Fact: The deep-sea anglerfish uses its glowing (bioluminescent) lure to attract prey.

Crab (Order Decapodia, Infraorder Brachyura)
Size: Depending on the species, as small as 0.25 in to 13 ft (0.73 cm to 4 m)
Diet: Depending on species, they can be scavengers, plankton eaters, or predators.
Distribution: Worldwide, salt, and freshwater
Fun Fact: There are about 4500 different kinds of crabs found throughout the world.

Cuttlefish (Sepia officinalis)
Size: Up to 24 in (61 cm)
Diet: Fish, crabs, shrimp
Distribution: Atlantic coast of Europe and Africa and Mediterranean Sea
Fun Fact: Like its cousin the octopus, a cuttlefish disappears from predators by quickly changing colors or releasing a cloud of ink.

Moray Eel (Gymnothorax mordax)
Size: Up to 5 ft (1.6 m)
Diet: Shrimp, crab, lobster, octopus, sea urchins, and small fish
Distribution: Eastern Pacific coast, Mexico to California, and Galapagos Islands
Fun Fact: An eel is a fish.

Frogfish (Family Antennariidae)
Size: Up to 1 ft (33 cm)
Diet: Fish and crustaceans
Distribution: Tropical, Red Sea, Atlantic, and Pacific Ocean
Fun Fact: Frogfish mimic coral, sponges, and sea urchins to hide from predators and prey.

Black Sea Nettle (Chrysaora achlyos)
Size: Bell up to 3 ft (1 m), tentacles up to 20 ft (6 m) long
Distribution: Mexico, southern Baja California to southern California, rarely found as far north as Monterey Bay
Diet: Plankton, other jellies
Fun fact: Scientists know very little about the black sea nettle.

Lionfish (Pterois volitans)
Size: 11.8 to 15 in (30 to 38 cm)
Weight: Up to 2.6 lb (1.2 kg)
Diet: Small fish, shrimp, and crabs
Distribution: Warmer ocean water throughout South Pacific and Indian Ocean
Fun fact: Lionfish herd prey by fluttering their venomous fins.

Sailfish (Istiophorus platypterus)
Size: 5.7 to 11 ft (1.7 to 3.4 m)
Weight: 120 to 220 lb (54.4 to 100 kg)
Diet: Fish, squid, octopus, and crustaceans
Distribution: Tropical and semi-tropical waters worldwide.
Fun Fact: Reaching speeds up to 68 mph (110 kph), the sailfish is the fastest fish in the sea.

Smalltooth Sawfish (Pristis pectinata)
Size: 18 to 25 ft (5.5 to 7.6 m)
Weight: 770 pounds (350 kg)
Diet: Fish and crustaceans
Distribution: Atlantic, Indian, and Pacific Ocean
Fun Fact: The "saw" of a sawfish has teeth sticking out. It is used find, stun, and kill prey.

Seahorse (Hippocampus sp)
Size: 0.6 to 14 in (1.5 to 35 cm)
Diet: Plankton and small crustaceans
Distribution: Found in shallow tropical and temperate waters throughout the world.
Fun Fact: Thirty-five different kinds of seahorses prance through the ocean.

Sea Star (Asteroidea)
Size: 4.7 to 9.4 in (12 to 24 cm)
Weight: Up to 11 lb (5 kg)
Diet: Depending on species, sea stars eat algae, detritus, invertebrates, and fish
Distribution: Worldwide
Fun Fact: There are 2000 species of sea stars

Walrus (Odobenus rosmarus)
Size: 7.3 to 11.5 ft (2.2 to 3.5 m)
Weight: Up to 2,000 lb (907 kg)
Diet: Invertebrates including clams, snails, worms, and sea cucumbers
Distribution: Arctic, circumpolar
Fun Fact: Both male and female walruses have tusks.

Bottlenose Dolphin (Tursiops truncatus)
Size: 6.6 to 12.8 ft (2 to 3.9 m)
Weight: 331 to 442 lb (150 to 200 kg)
Diet: Fish, squid, and invertebrates
Distribution: Temperate and tropical, worldwide
Fun Fact: A dolphin has up to 104 teeth, but doesn't chew its food. It uses its teeth to grasp prey, and then swallows it whole.

Octopus (Octopoda)
Size: Depending on species, less than an inch to 30 ft (9 m) long
Diet: Fish and invertebrates
Distribution: Worldwide, mostly ocean floor
Fun Fact: To disappear in the sea, octopus can change the color and texture of their skin. Some even mimic the behavior or movement of other animals.

Ocean Sunfish (Mola mola)
Size: 10 ft long (3 m) and 14 ft wide (4.3 m) from tip of dorsal fin to tip of anal fin
Weight: Up to 5,000 lb (2.3 t)
Diet: Jellies, brittle stars, fish, squid, sponges, mollusks, and plankton
Distribution: Worldwide in tropical and temperate waters
Fun Fact: The ocean sunfish is the heaviest bony fish in the world.