SUMMER ADVENTURES ON THE ROAD

Mapping the Journey
You probably know maps can help us learn about places on land. But did you know maps are also powerful tools to help us understand the ocean? Maps of Monterey Bay National Marine Sanctuary are a great example.

Monterey Bay has one of the deepest underwater canyons on the Pacific coast. The canyon is similar in size and shape to the Grand Canyon in Arizona! The biggest difference, of course, is that Monterey Canyon is underwater. (Check out this video to see what Monterey Canyon would look like without any water.)

Monterey Canyon and the surrounding waters are home to a dazzling variety of plants and animals. Maps help us learn where those organisms can be found and what characteristics make their habitats special. Dive into these mapping activities to start exploring!
MAP YOUR DREAM PARK

ACTIVITY  |  All Ages

MATERIALS
Device with an internet connection
Pen, pencil, or crayons

TO DO
If you could create a dream park, what would it be like? Think about the questions below, then design a map of the park.

1. Create a vision for your park. To help guide your thinking...
   - Does your park have any...
     - water (oceans, rivers, lakes, streams, or marshes)?
     - mountains or hills?
     - deep canyons—on land or underwater?
     - hot springs, geysers, volcanoes, or other geological or geothermal features?
   - What kinds of animals live in the park? Don’t forget to think about insects, reptiles, and amphibians.
   - What are the plants and trees like? Are there grassy areas? Woods? Are there many flowers? Are there low shrubs?
   - What can visitors do there? Can they swim, hike, bike, ski, snowboard, ice-skate, kayak, canoe, fish, scuba dive, snorkel, Rollerblade, bird-watch, mountain-climb, zip-line, or something else?

2. Map Your Park! Now that you have a vision for this park, it’s time to put it on paper. Use the template on the following page or your own sheet of paper and design the map. Be sure to include these key map elements:
   - Title (make up a name for your park)
   - Orientation (which way is north?)
   - Author (you!)
   - Date (when did you draw it?)
   - Scale (how far apart are the things on the map?)
   - Legend (what do the symbols and colors mean?)

3. Thinking bigger? Get creative about your canvas. Copy the park map onto a larger background. You could use chalk on a sidewalk, carve into sand at the beach, or paint or draw on an old bedsheets or flattened cardboard box headed for recycling.

4. Bonus question: What kind of climate does your dream park have? Based on the plants, animals, and things to do, which climate best describes your new park?
   - Tropical? (hot and humid)
   - Dry? (very little rain or other precipitation)
   - Temperate? (warm and humid summers, mild winters)
   - Continental? (warm to cool summers, very cold winters)
   - Polar? (always very cold, even in summer)
MAPMAKER MYSTERY GUESTS
ACTIVITY  |  4-8

MATERIALS
Device with an internet connection (optional)

What lives in Monterey Bay National Marine Sanctuary? A few of the residents want to introduce themselves.

Click on the points on this map or use the clues on the following page to find out where each mystery guest prefers to live. Need more hints? See the choices below.

TO DO
Once you know an answer, fill it in the corresponding space below. Can you guess all 10?

1. ______________________
2. ______________________
3. ______________________
4. ______________________
5. ______________________
6. ______________________
7. ______________________
8. ______________________
9. ______________________
10. _____________________

NAMES OF THE GAME
blue whale
sea turtle
dolphin
sea otter
jellyfish
sea urchin
harbor seal
kelp
sea lion
fangtooth
MapMaker Mystery Guests

CLUES

1. I grow in cool waters along rocky coastlines
   My floating forests give animals food and shelter. Instead of roots I have “holdfasts” that anchor me to the rocky bottom. Read more about me [here](#).

2. You can usually find me in kelp forests
   I am cute and furry, with stubby front paws. Floating on my back, I use my chest as a table when I eat. Grooming keeps my fur waterproof. Read more about me [here](#).

3. I like kelp beds, rocky shores, and coral reefs
   I’m round and covered in spines. It might hurt if you step on me. I graze on kelp and other algae. Read more about me [here](#).

4. You can find me close to shore or out in the open ocean
   I’m smart and playful. Groups of me are called pods. I’m a graceful, fast swimmer. I communicate with clicks, squeaks, and whistles. Read more about me [here](#).

5. I’m at the surface or in the darkest depths of the ocean
   I don’t have a traditional brain, bones, teeth, blood, or fins. I am almost all water. I come in many sizes, shapes, and colors. Read more about me [here](#).

6. I lay my eggs on the beach but live in the open ocean
   I’m a reptile with a tough shell. I can hold my breath underwater for four to seven hours when resting. Read more about me [here](#).

7. I live in the deep ocean and am not seen often by humans
   My large, sharp teeth inspired my name. I look ferocious but I’m only about 6 inches long. I eat fish and shrimp that happen to come close. Read more about me [here](#).

8. I find the space I need in cold, open waters
   I’m the largest animal on Earth. My tongue can weigh as much as an elephant. I come to Monterey Bay in the summer to eat tiny krill. Read more about me [here](#).

9. I like coastal areas and rest on rocks just offshore
   I’m quiet, shy, and plump. I’m awkward on land but graceful in the water. I sometimes sleep with everything but the tip of my nose underwater. Read more about me [here](#).

10. Crowds of me like to hang out on rocky shores
    We’re a social, noisy bunch. We bark and make acrobatic moves. We’re fast and agile swimmers. We can leap high out of the water. Read more about me [here](#).
MapMaker Guess Who

ACTIVITY | Ages 9+

MATERIALS
Device with an internet connection (optional)

TO DO
How many creatures in Monterey Bay National Marine Sanctuary do you know? Let’s find out! Click the points on this map or read the clues on the following page to be introduced to a different animal in the sanctuary. Read the clues and fill in the answers. Can you name all 15?

1. o ___________________________ n
2. e ___________________________
3. ___________________________ n ___________________________ n
4. u ______________ c
5. h ___________________________ l
6. e ___________________________
7. r ___________________________ n ___________________________
8. a __________________________
9. a __________________________
10. e __________________________ e
11. ___________________________ i
12. a __________________________ a
13. e __________________________ e
14. e __________________________ a
15. e __________________________ o

(you may need to zoom out)
MapMaker Guess Who

CLUES

1. I scoop up fish in my large pouch
   I can spot my prey from up to 60 feet in the air. I dive into the water and swallow sardines and other fish headfirst. Read more about me [here](#).

2. I’ll run sideways and hide if you get close
   If a seagull grabs my leg, I can shed it and grow a new one. Often my shell has green stripes, thus my name. I’m common in tide pools. Read more about me [here](#).

3. I can clone myself by splitting in half
   I look like a harmless underwater flower, but I paralyze small prey with stinging cells on my tentacles. I’m abundant on rocky shores. Read more about me [here](#).

4. I look like a pincushion
   My color is a mix of red and blue. Sea otters eat me. I can harm kelp forests and destroy coral reefs if I multiply too much. Read more about me [here](#).

5. I’m the deepest-diving animal of my kind
   I’ve got the largest geographic range of any reptile. I’m in most of the world’s oceans, but I’m under threat. I dine on jellies. Read more about me [here](#).

6. I’m black and white and have teeth
   I travel along the Pacific coast. In the sanctuary, I mainly prey on gray whales and sea lions. Orca is my less scary name. Read more about me [here](#).

7. I use my long canine teeth to battle for females
   Most of the year I feed offshore on fish and squid. But you might see me on the beach when I’m resting, breeding, or pupping. Read more about me [here](#).

8. I’m the largest predatory fish on Earth
   I’m a loner. Little is known about aspects of my behavior, like breeding. People are afraid of me, but I prefer seals and sea lions. Read more about me [here](#).

9. I’m plump, curious, and whiskered
   I’ve got a spotted gray to black coat, small flippers, and no visible ear flaps. I wriggle on my belly on land but I’m a fast swimmer. Read more about me [here](#).

10. I have a long, elegant neck
    My wingspan is up to seven feet. I wade silently, standing frozen on my long legs before lunging for fish and other prey. Read more about me [here](#).

11. I don’t roar, but bark
    I’m a great swimmer. I walk (awkwardly!) on land on my large flippers. I have visible ear flaps and like hanging out in crowds. Read more about me [here](#).

12. I consume up to 3,000 pounds of food per day
    I filter krill, anchovies, and sardines from the water. My haunting calls travel miles under water. I often breach the surface. Watch me! Read more about me [here](#).

13. I don’t have blubber, but I have a thick fur coat
    When I’m not feeding in kelp forests, I like to float on my back to rest. I use rocks to break open hard-shelled prey, like crabs. Read more about me [here](#).

14. I prey on mussels, keeping their numbers in check
    I’m common, but still a star, in wave-swept areas of the shoreline. I hang on to rocks with hundreds of small, suction-cup feet. Read more about me [here](#).

15. Webs of skin connect my eight tentacles
    When I spread my arms, I look like something that protects you from rain, thus my name. Others like me have an ink sac, but I don’t. Read more about me [here](#).
A mysterious package arrives addressed to you. Inside is an invitation: Take a virtual trip and explore the ocean in three different places around the world. Lucky you!

When we think about where we’d like to travel, sometimes we forget to include underwater places. Marine protected areas (MPAs for short) are places that have been selected for conservation. They include a range of habitats—the open ocean, coastal areas, intertidal zones (where the ocean meets the land between high and low tides), estuaries (the area where a river meets the sea), and even large lakes.

MPAs like Monterey Bay National Marine Sanctuary are home to fascinating plants, animals, and underwater landforms. So much to see! Where will you go?

TO DO
Use the resources below to help you pick three MPAs to explore. Then, look over the map on the following page. Label the Southern Ocean and any other features you’d like to identify, and mark your three chosen MPAs. Mark and label each location on the map on the next page. Include two reasons each place appeals to you, using either drawings or words. Then draw lines to mark the route from your starting point to the three places and where you will end your trip. You can include pictures or drawings of planes, ships, sailboats, or other modes of transportation to show how you’ll travel.

Share your trip itinerary with a friend or family member and see if they will go on the virtual visit with you!

FOR IDEAS AND INSPIRATION:
Pristine Seas: Discover some of the wildest places in the ocean worldwide.

U.S. National Marine Sanctuaries: Check out more than a dozen amazing marine sites protected by the United States.

Protected Planet: A database of the world’s protected areas, including MPAs.
ANSWERS

PG 5
1. kelp
2. sea otter
3. sea urchin
4. dolphin
5. jellyfish
6. sea turtle
7. fangtooth
8. blue whale
9. harbor seal
10. sea lion

PG 7
1. BROWN PELICAN
2. LINED SHORE CRAB
3. AGGREGATING ANEMONE
4. PURPLE SEA URCHIN
5. LEATHERBACK TURTLE
6. KILLER WHALE
7. NORTHERN ELEPHANT SEAL
8. GREAT WHITE SHARK
9. HARBOR SEAL
10. GREAT BLUE HERON
11. CALIFORNIA SEA LION
12. HUMPBACK WHALE
13. SOUTHERN SEA OTTER
14. OCHRE SEA STAR
15. UMBRELLA OCTOPUS
Full Links

PG 2
Monterey Canyon
https://www.youtube.com/watch?v=xDbKaQOrgPo

PG 5
MapMaker
https://mapmakerbeta.nationalgeographic.org/map/2f4b5ce510ef4a1184b573b774412df5?lat=36.80&lon=-121.940&zoom=9

PG 6
Kelp Forests
https://sanctuaries.noaa.gov/visit/ecosystems/kelpdesc.html

Seal, Sea Lion and Sea Otters
https://montereybay.noaa.gov/visitor/access/sealssealionsotters.html

Sea urchins
https://sanctuaries.noaa.gov/vr/olympic-coast/urchins-diver/

Dolphins
https://www.nationalgeographic.com/animals/mammals/facts/dolphins

Jellyfish
https://kids.nationalgeographic.com/animals/invertebrates/facts/jellyfish

Sea Turtle
https://sanctuaries.noaa.gov/earthisblue/wk170-pacific-leatherback-sea-turtle.html

Fangtooth
https://www.montereybayaquarium.org/animals/animals-a-to-z/fangtooth

blue whale
https://www.montereybayaquarium.org/animals/animals-a-to-z/blue-whale/

harbor seal
https://www.montereybayaquarium.org/animals/animals-a-to-z/harbor-seal

sea lion
https://montereybay.noaa.gov/visitor/access/sealssealionsotters.html
Full Links

PG 7
MapMaker
https://mapmakerbeta.nationalgeographic.org/map/d08e2ae69936462b9c5d7c470a84bd88?lat=36.80&lon=-121.940&zoom=9

PG 8
brown pelican
https://www.montereybayaquarium.org/animals/animals-a-to-z/brown-pelican

lined shore crab

aggregating anemone
https://www.montereybayaquarium.org/animals/animals-a-to-z/aggregating-anemone

purple sea urchin
https://www.montereybayaquarium.org/animals/animals-a-to-z/purple-sea-urchin/

leatherback turtle
https://www.fisheries.noaa.gov/species/leatherback-turtle

killer whale
https://montereybay.noaa.gov/visitor/waletwatching/whales.html

northern elephant seal
https://www.montereybayaquarium.org/animals/animals-a-to-z/northern-elephant-seal

great white shark
https://www.nationalgeographic.com/animals/fish/facts/great-white-shark?loggedin=true

harbor seal
https://sanctuaries.noaa.gov/earthisblue/wk293-harbor-seal.html

great blue heron
https://www.nationalgeographic.com/animals/birds/facts/great-blue-heron

California sea lion
https://www.fisheries.noaa.gov/species/california-sea-lion

humpback whale
https://montereybay.noaa.gov/visitor/waletwatching/whales.html#humpback

southern sea otter
https://www.montereybayaquarium.org/animals/animals-a-to-z/sea-otter

ochre sea star
https://montereybay.noaa.gov/visitor/slideshow/pages/6.html

umbrella octopus

PG 9
Pristine Seas
https://www.nationalgeographic.org/projects/pristine-seas/expeditions/?q=&protection_status=Protected

National Marine Sanctuary System
https://sanctuaries.noaa.gov/visit/#locations

Protected Planet
https://www.protectedplanet.net/en