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Tracking Ocean Animals

Standards

Students know that living things are found almost everywhere in the world and that distinct environments support the life of different types of plants and animals.

Students know areas that can be classified as regions according to physical criteria.

Google Earth Tools

- Layers panel: Ocean: Animal Tracking*
- Status bar: elev, Eye alt
- Toolbar: Tour
- Toolbar: Ruler

Overview

Students will use their Google Earth skills to learn about ocean animals.

Vocabulary

- migrate
- ocean
- tracking

Materials

- *Ocean Life* activity sheets (pages 154–156)
- crayons
- *Hello Ocean* (Ryan 2001) (optional)

Procedure

1 Read *Hello Ocean* (Ryan 2001) or another book about the ocean. (See the Recommended Literature List in Appendix F, page 242, for more titles.) Have students describe some features of the ocean and write their ideas on chart paper.

2 Distribute copies of the *Ocean Life* activity sheets (pages 154–156) to students and open Google Earth. **Zoom** out to show the whole globe centered on North America. Have students color the globe on their activity sheets (question 1). Ask students which color they used the most. Ask students why they think Earth is so blue.

3 Explain that almost three quarters of Earth is covered by oceans. Use the cursor or **Move joystick** to rotate Earth and look at all the oceans. Ask students if the oceans are separated from each other or if they are connected.

4 **Fly to** the Bahamas and **zoom** out to an **Eye alt** of about 800 km (500 mi.). Ask students to write down on their activity sheets how many different colors of blue they see (question 2).

* Tool introduced in this lesson

Tracking Ocean Animals *(cont.)*

Procedure *(cont.)*

5 Ask students why they think the ocean is different shades of blue. Explain that in Google Earth, the ocean appears lighter where it is shallower and darker where it is deeper. **Fly to** Guam (**Eye alt** 600 km or 1,000 mi.). Place the cursor over the ocean and move it from light to dark blue. Have students observe the **elev** display. Have students write the shallowest and deepest underwater elevations they can find (questions 3 and 4). Remind students to use a negative sign in front of each elevation to show that it is below sea level.

6 **Fly to** San Diego, California and **zoom** to an **Eye alt** of about 1,600 km (1,000 mi.). In the **Layers panel**, open the **Ocean layer** and turn on **Animal Tracking**. **Zoom** in to look for the **animal icons** that appear along the coast of California and Mexico.

7 Click on each of these **animal icons** to bring up a pop-up window and then click on the **Animal Facts tab** to see information about the animal. Have students use this information to write brief descriptions of two of the animals (question 5).

8 Each of these animals has a tracking tag. In each animal's pop-up window, click **Download Track** to see where each animal has traveled.

Download the tracks of some of the different animals: sea lion, fin whale, bluefin tuna, white shark, humpback and blue whales southwest of Mexico, sperm whale in the Gulf of Mexico. Have students compare the different animal tracking paths.

9 Use the **ruler tool** to measure roughly how far each animal traveled. Use the **Path tab** to click along the animal's track (this may be difficult with an animal like the sea lion) or use the **Line tab** to measure the farthest distance traveled in a straight line.

10 Have students choose three animals and fill in the chart on their activity sheets with information about each animal, including the distance each animal traveled (question 5). Then, have students identify which animal traveled the farthest and which went the shortest distance (questions 6 and 7).

11 Discuss with students the reasons that an ocean animal might migrate (e.g., searching for food, breeding, escaping predators, ocean temperature). Have students write two reasons an ocean animal might migrate (question 8).

Tracking Ocean Animals *(cont.)*
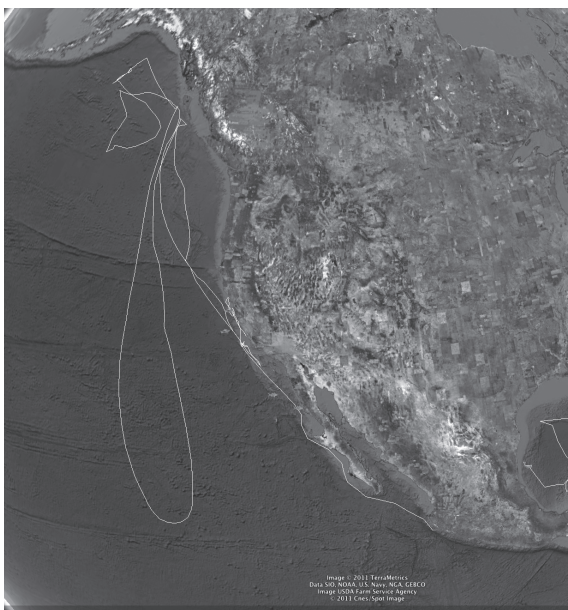
Extension Activity

Have students use the information in the animal tracking pop-ups to compare the sizes of the animals. Ask them to identify which is the largest and which is the smallest.

User Tip

Google Earth is building an amazing set of ocean exploration tools at http://earth.google.com/ocean/showcase. You can view each **tour** as a video by clicking **Play Tour** or download each **tour** into Google Earth.

Did You Know? ⊗

Open the **Ocean layer**, then open **State of the Ocean** and double-click **Sea Surface Temperature**. Click on the **Sea Surface Temperature icon** and click on **Download & View the Map** in the **Sea Surface Temperature window** that appears. The oceans will be colored according to how warm or cold they are. The redder the color, the warmer the ocean. Blue colors indicate colder oceans. Look for the areas that are very red—these are areas where hurricanes (and typhoons) are most likely to occur, as hurricanes need warm water to form.

Screenshots

Animal tracking

DATA SIO, NOAA, U.S. NAVY, NGA, GEBCO, IMAGE © 2011 TERRAMETRICS, © 2011 CNES/SPOT IMAGE, IMAGE USDA FARM SERVICE AGENCY, © GOOGLE

Animal tracking

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Name _____ Date _____

Ocean Life

1 Color Earth to match what you see in Google Earth.

2 How many shades of blue do you see in the ocean around the Bahamas?

_____

3 Write the shallowest ocean elevation you found.

_____

4 Write the deepest ocean elevation you found.

_____

Ocean Life *(cont.)*

5 Choose two ocean animals that you saw in Google Earth. Write a brief description of each animal in the second column. In the third column, write how far each animal traveled.

Animal	Description	Distance Traveled

Ocean Life *(cont.)*

6 Which animal traveled the farthest from where it started?

_____

7 Which animal traveled the shortest distance from where it started?

_____

8 Write two reasons why an ocean animal might travel.
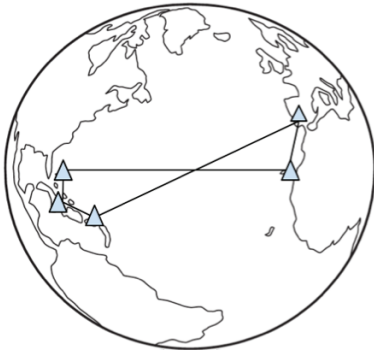
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_____

Answer Key *(cont.)*

From Coast to Coast (pages 136–138)

1 Palos, Spain; Canary Islands; San Salvador, The Bahamas; Cuba; Haiti.
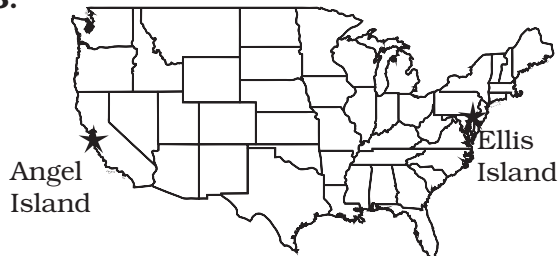
2. and 3.

4. West
5. East
6. Students should color the ship.
7. Responses will vary.

Immigration Stations (pages 142–144)

1. Students should draw a line from Europe to the general area of New York City.
2. Students should draw Ellis Island and the immigration building.

3.

4. Responses will vary. Sample responses include: They were near the ocean; They are sheltered; They are islands.

Celebrate America (pages 148–150)

1. Responses will vary.
2. MLK Jr. Day—January; Washington's birthday—February; Memorial Day—May; Flag Day—June; Independence Day—July; Columbus Day—October; Thanksgiving—November
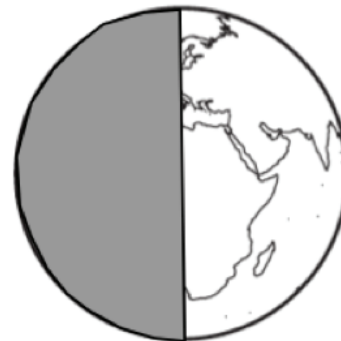3. Responses will vary.

Science

Ocean Life (pages 154–156)

1. Students should color the globe to match Google Earth.
2. Four or more
3. Responses will vary.
4. Responses will vary.
5. Responses will vary.
6. Responses will vary.
7. Responses will vary.
8. Responses will vary. Sample responses include: to find food; to have offspring; to find a mate; to escape cold weather.

Shadows on Earth (pages 160–162)

1. day; night

2.

3. Students should draw one activity they do at night and one they do in the day.
4. Students should color the lengths of the winter day and summer day they observed.
5. shorter; longer

Where is the Weather? (pages 166–168)

1. Students should color the globe to match Google Earth and add cotton "clouds" across the middle of Africa.
2. Students should color the thermometer to reflect the temperature in their town.
3. Responses will vary.
4. Responses will vary.