

Mapping and Fur Seal Migration Track

OBJECTIVE

Students will become familiar with basic concepts of geography. Students will analyze a northern fur seal migration track.

TIME REQUIRED

20- 30 minutes

BACKGROUND

Geography

Every place on the earth can be described using two numbers, latitude and longitude. In order to accurately pinpoint locations on the surface of the earth, humans created a geographical grid system using lines of latitude and lines of longitude. This grid is attached to two fixed points, the North Pole and the South Pole.

Latitude lines run around the globe parallel to the equator. They measure the distance north and south of the equator.

Longitude lines (or meridians) are arcs running from the North Pole to the South Pole. They measure distances east and west from a base line or prime meridian.

For this lesson, latitude and longitude will be presented in decimal degrees.

Place	Latitude	Longitude
St Paul	57.18° N	170.3° W
St George	56.61° N	169.56° W
San Francisco	37.78° N	122.42° W
Equator	0°	
Greenwich, England		0° (prime meridian)

Migration

All northern fur seals migrate during the winter months. Seals depart the rookeries between August and December (males first, then pups, then females). Fur seals travel to different locations in the winter depending on their age and sex (see PowerPoint Lesson 6, slides 4-7 for maps). Pups must find their own way; neither parent teaches them how to feed or where to feed. Pups that do not find food will die of starvation. Storms, winds, currents and fish abundance all affect where seals go in the winter. Fur seals follow the food, so they seldom

move in a straight line. If food is hard to find they will move out of the area. If food is abundant, they will stay in the area.

MATERIALS

- World globe (teacher provided)
- Diagram of Prime Meridian, Arctic Circle, Tropic of Cancer
- Yarn or string (teacher provided)
- Map of adult female fur seal migration track

PROCEDURES – GEOGRAPHY

Orientation

- On the globe, show students latitude and longitude lines.
- Have them find the North Pole, South Pole, and Pribilof Islands.
- Have students find the Arctic Circle and the Tropic of Cancer. What latitude are they?
 Arctic Circle (66.5° N)
 Tropic of Cancer (23.5° N)
- Have students find the equator, Tropic of Capricorn, and Antarctic Circle and determine their latitudes.

Lines of Latitude

1. Cut six pieces of yarn long enough to go around your globe at least once.
2. Assign six students or six groups of students to measure a line of latitude from the list below.
 - a. Arctic Circle
 - b. Tropic of Cancer
 - c. Equator
 - d. Tropic of Capricorn
 - e. Antarctic Circle
 - f. Latitude 57° N (latitude of St Paul Island)
3. Before measuring, predict which line of latitude is the shortest and which is the longest.
4. Compare the lengths of yarn.

Based on the lengths of yarn, answer the following questions.

- Which line of latitude is the longest?
 Equator
- Which line of latitude is the shortest?
 Arctic and Antarctic Circles

- Which lines of latitude are the same?
 Arctic and Antarctic Circles are the same.
 Tropic of Cancer and Tropic of Capricorn are the same.

Lines of Longitude

Using new pieces of yarn, measure the lines of longitude listed below. Lines of longitude are measured from pole to pole. Measure the distance between the North Pole and South Pole for each set of numbers.

Before measuring ask each student to predict which line of longitude they think will be the shortest and which will be the longest.

1. 0° and 180°
2. 169° West and 169° East,
3. 100° East, 100° West

HINT: They should all be the same.

Label Map

- Have the students work individually or in groups to label Map 6.3.1 based on what they learned from the globe.
- Ask students to label the continents:
 - ◆ North America
 - ◆ South America
 - ◆ Europe
 - ◆ Antarctica
 - ◆ Asia
 - ◆ Africa
 - ◆ Australia
- Ask students to label the following geographic features:
 - ◆ Arctic Circle
 - ◆ Tropic of Cancer
 - ◆ Equator
 - ◆ Tropic of Capricorn
 - ◆ Antarctic Circle
 - ◆ Prime Meridian

DISCUSSION

- What was the difference between the lengths of yarn used to measure latitude and longitude?
 The latitude lines were shorter as they neared the poles whereas longitude lines were all the same length. This is because longitude lines are tied to fixed points at the North Pole and South Pole.

PROCEDURES – MAPPING

Using Map 6.3.2 "Adult female fur seal migration", label the map with the United States, Canada, Alaska, Pribilof Islands, and Russia. Connect the dots on the map in order of date to see the migration track of the female seal. Add arrows to show the direction of her movement. Answer the following questions.

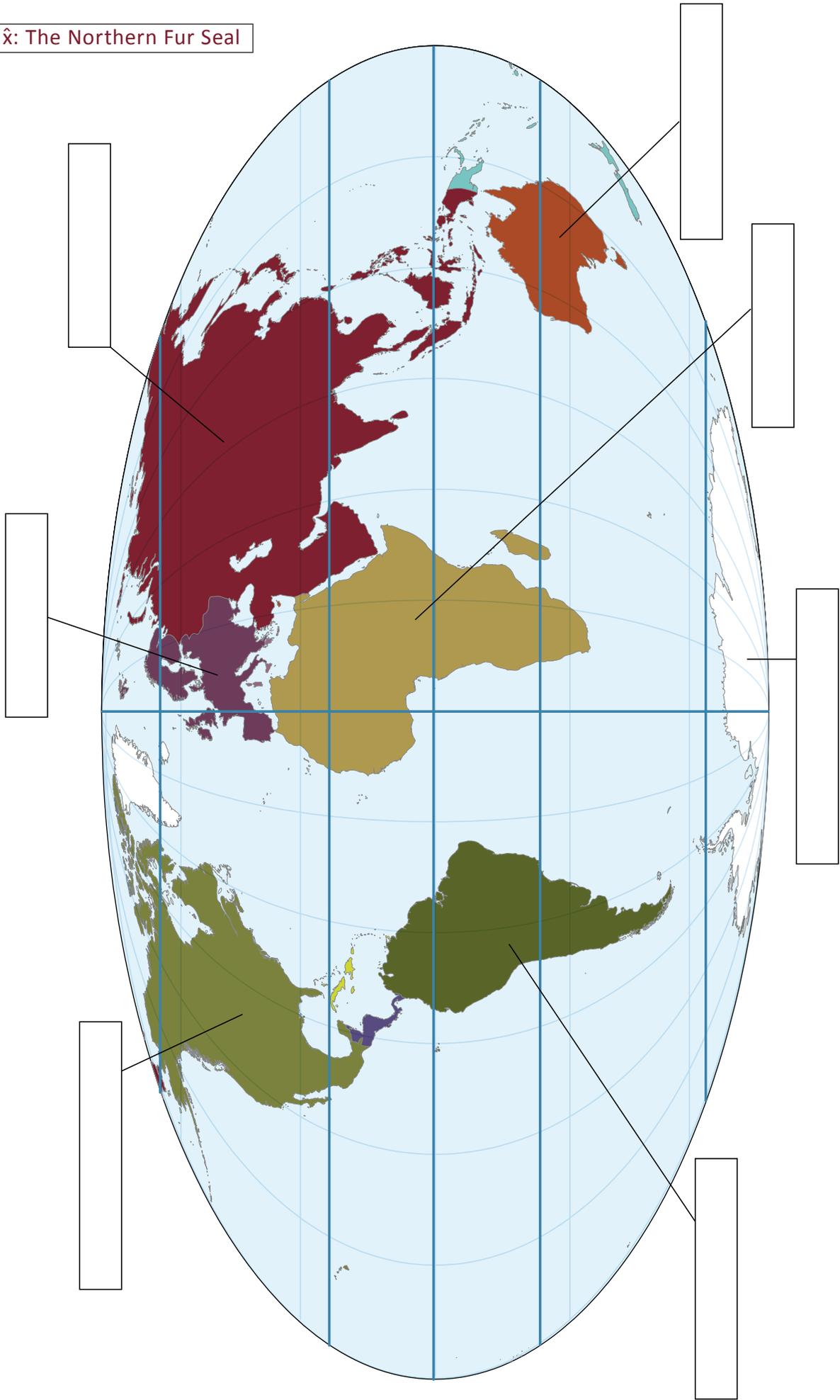
DISCUSSION

- How many days did it take the seal to travel from the Pribilof Islands to California?
 139 days
- Where did the female seal end up?
 Use latitude and longitude to determine her endpoint. Check other maps from Activity 6.1.
 The seal's approximate location is 37° N 126° W, just west of Monterey Bay, California (37° N 122° W).
- Do you see any patterns in the fur seal's movements?
 The seal slows down and stays in the same area between January 29 and March 4.
- How many miles do you think the fur seal travelled?
 Use the Internet to determine the distance between St. Paul Island and Monterey Bay, California.
 Roughly 2,600 miles.

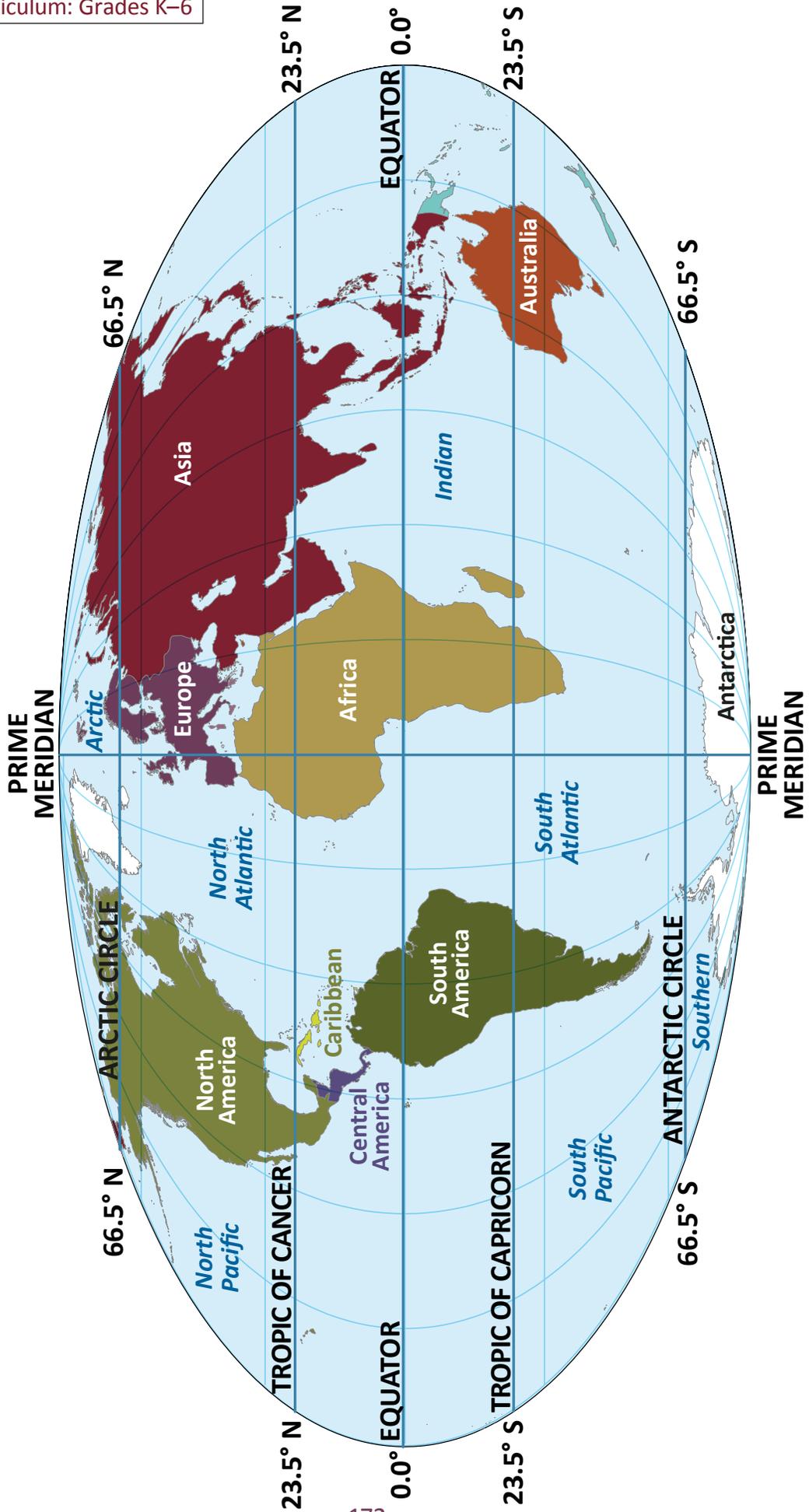
EXTENSION

Plot fur seal migration data using information collected from tags. Data are located in the 7–12 curriculum Lesson Six, Activity 6.3.

ACTIVITY 6.3 MAP 6.3.1



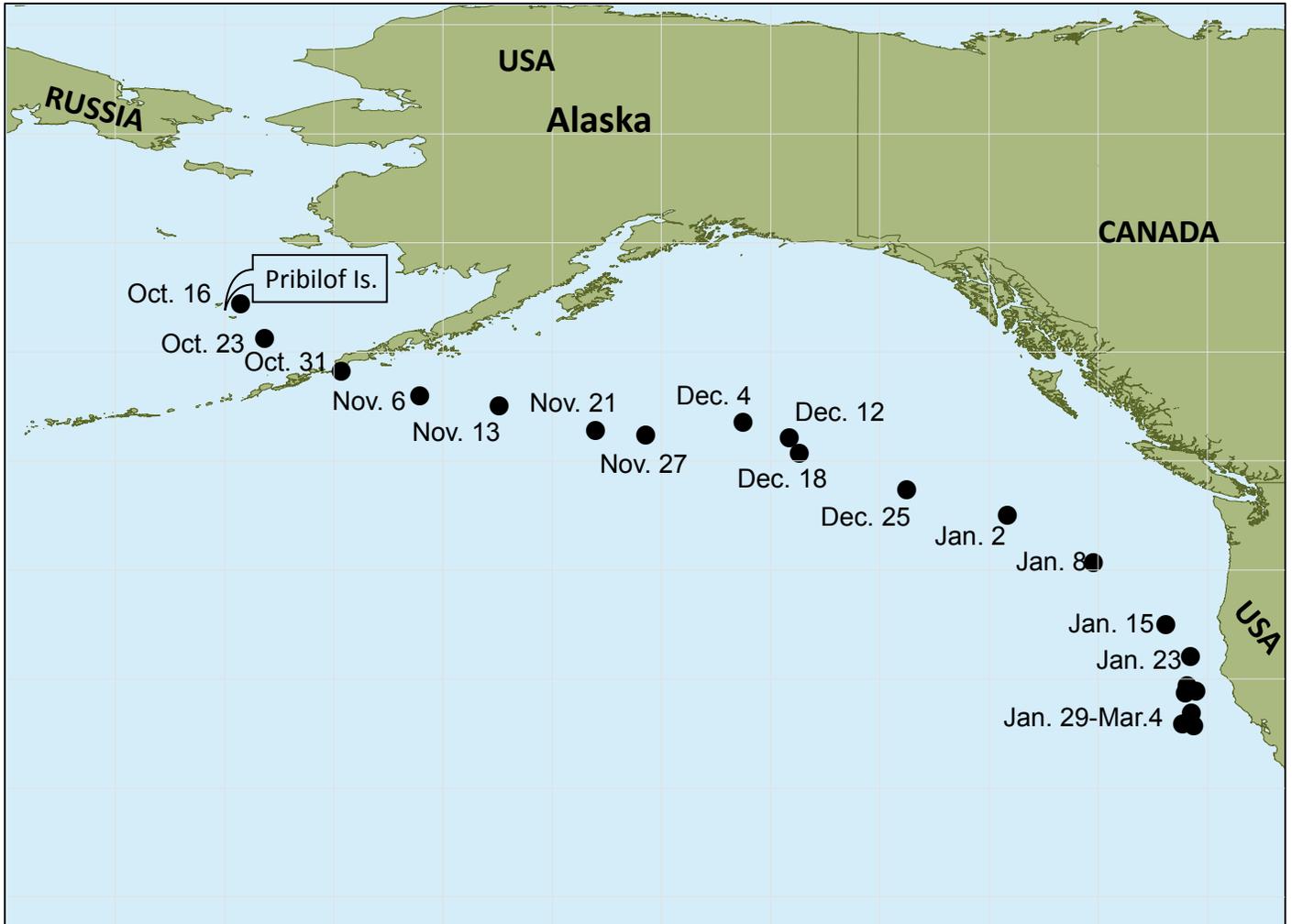
ACTIVITY 6.3 TEACHER KEY 6.3.1



ACTIVITY 6.3

MAP 6.3.2

Adult female fur seal migration



ACTIVITY 6.3 **TEACHER KEY 6.3.2** Adult female fur seal migration

