



Who Travels the Farthest?

Age range: 10-14

Time: 75-90 minutes

Subjects: Science, Geography

Resources: Class photocopied sets of handouts *Who Travels the Farthest?* *The Great Migration Map* and *Boreal Forest Migration Match-up*, pencil crayons

Learning Outcome

Students will investigate the importance of Canada’s boreal forest habitats by mapping the farthest points of migration for 10 bird species that use the boreal forest as a nesting ground.

Hook: How Far Have You Roamed?

Have students share with the class the farthest distance they have ever travelled. Then, record why students made these journeys (vacation, to visit family, to immigrate, family moved due to career choices made by their parents.)

Have students share the methods by which they travelled and how they found their way (maps, verbal directions).

Introduce the concept of migration (see page 6 Migration).

Next, show maps of the boreal forest (pages 4 and 5) and explain why the boreal forest is a highly suitable breeding habitat for many hundreds of bird species. (See page 6 The Boreal Forest: Nursery of the North). You may also use the Hinterland Who’s Who handout on the boreal forest:

<http://www.hww.ca/hww2.asp?id=354>

Procedure

1 Pass out the handouts *Who Travels the Farthest?* and *The Great Migration Map*. As directed on the handout, students will hypothesize about which bird species migrate the farthest from the boreal forest and the reasoning behind their hypothesis. Students then plot the farthest points of migration for the bird species listed and reflect on how the real data compare to their hypothesis. Explain that each point on the map is an approximation of where most of the birds are found at that point in the year. Animals of any migratory species are spread out at any given time.

2 Pass out the handout *Boreal Forest Migration Match-up* and have students complete it.

Answers

Handout *Who Travels the Farthest?*

4. FARTHEST:
- Arctic Tern pack ice off Antarctica
 - Hudsonian Godwit Southern tip of South America
 - Blackpoll Warbler northern South America
 - Yellow-bellied Sapsucker Panama
 - Sharp-shinned Hawk Honduras/Nicaragua
 - Ring-necked Duck Nicaragua
 - Ruby-throated Hummingbird Nicaragua/Costa Rica
 - Bonaparte’s Gull Caribbean Islands
 - White-throated Sparrow Mexico
 - Whooping Crane Texas

5. c) No, size of bird does not relate to distance travelled. Birds of various sizes travel similar distances.

Handout *Boreal Forest Migration Match-Up*

- 1. I 4. B 7. J 10. E
- 2. G 5. L 8. D 11. A
- 3. K 6. H 9. C 12. F

Name: _____ Date: _____



Handout: Who Travels the Farthest?

1. Place the 10 boreal nesting bird species listed below in the order of the species that you think travels farthest to least far in its migration from boreal forest nesting grounds to its wintering grounds each year.



Blackpoll Warbler



Arctic Tern



Ruby-throated Hummingbird



Hudsonian Godwit



Ring-necked Duck



Bonaparte's Gull



Whooping Crane



White-throated Sparrow



Sharp-shinned Hawk



Yellow-bellied Sapsucker

MY HYPOTHESIS:

Migrates the **farthest** distance from the boreal forest: _____

Migrates the **least** distance from the boreal forest: _____

2. Using the information in the table below, label the points on your map that represent how far south each species migrates.

Bird Species	Point of Farthest Migration to the South
Ruby-throated Hummingbird	9, half way between E and F
Ring-necked Duck	8.5, between F and G (toward the F)
White-throated Sparrow	9.5, D
Whooping Crane	10.5, halfway between D and E
Blackpoll Warbler	8.5, H
Hudsonian Godwit	1.5, between G and H (on land)
Arctic Tern	0.5, G (on floating pack ice)
Yellow-bellied Sapsucker	8.5, between F and G (almost to G)
Sharp-shinned Hawk	8.5, halfway between F and G
Bonaparte's Gull	10, G



Name: _____ Date: _____



3. Examine your map. Keep in mind that each bird species has different migration routes – some travel over land and some over water for part of their journey. Isn't it amazing that these birds travel from the boreal forest to their wintering grounds over a period of a few days, or within about two weeks? Keep in mind that some of the species that you are studying breed in the southern boreal forest and some in the more northern parts.

4. Using your completed map, list the birds in the spaces below that in reality migrate the farthest:

Migrates the **farthest distance** from the boreal forest: _____

Migrates the **least distance** from the boreal forest: _____

5. a) How close was your hypothesis to the real data?

b) Are you surprised at which bird species migrates the farthest? Give two reasons why.

c) Does size of bird relate to how far it is able to migrate? (Hint: Consider how far the ruby-throated hummingbird travels!)



Name: _____

Date: _____



Blackpoll Warbler



Arctic Tern



Ruby-throated Hummingbird



Hudsonian Godwit



Ring-necked Duck



Bonaparte's Gull



Whooping Crane



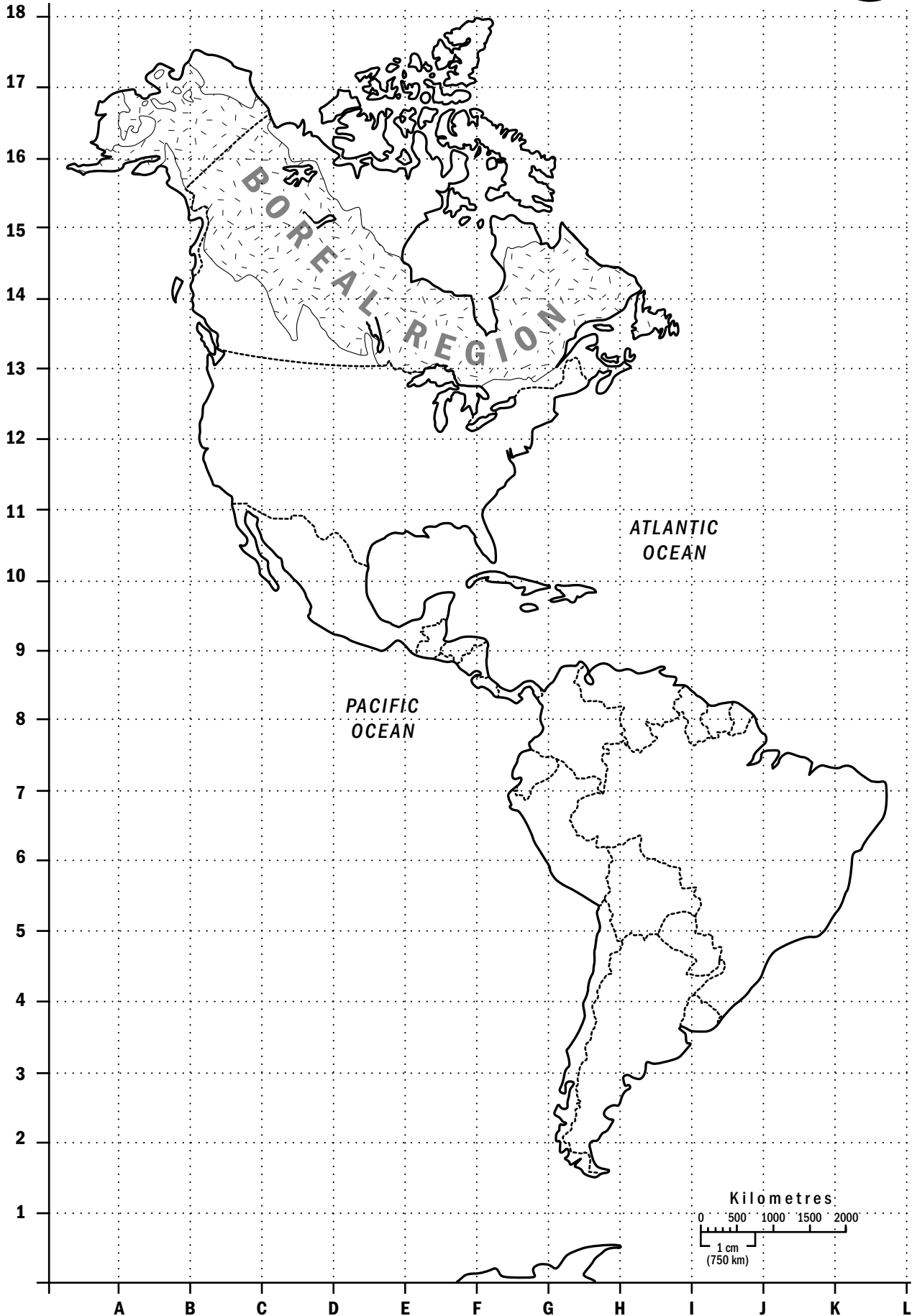
White-throated Sparrow



Sharp-shinned Hawk



Yellow-bellied Sapsucker





Boreal Forest Migration Match-Up

- | | |
|---|---|
| 1. _____ This is the altitude (distance above the Earth) at which most birds migrate. | A. Fly at night |
| 2. _____ These features of the wings of migratory birds makes migrating easier. | B. Fat |
| 3. _____ These features of a bird's body allow efficient flight. | C. 21 |
| 4. _____ In preparation for migration, a bird eats lots of food in order to store this. | D. Ruby-throated Hummingbird |
| 5. _____ This bird makes an astounding yearly migration of 30 000 km from its Arctic breeding grounds to the seas and ice of Antarctica. | E. Berries and other fruits |
| 6. _____ Some birds fly in _____, a strategy that reduces energy use. | F. Blackpoll Warbler |
| 7. _____ Many bird species will do this just prior to migration in order to avoid predators, find others and orient themselves for the trip. | G. Migrating birds have longer and more pointy wings |
| 8. _____ This tiny bird flies north for 24 hours straight to cross the Gulf of Mexico (1000 km) every spring! | H. Formation |
| 9. _____ A typical Blackpoll Warbler almost doubles its weight in preparation for fall migration south, going from 11 grams to about _____ grams. | I. 500-2000 m above the Earth |
| 10. _____ In order to gain as much weight as they can before migration, birds which ordinarily eat insects will switch to this food, which is readily available in early fall. | J. Flock together |
| 11. _____ Many birds do this during migration in order to reduce the threat of overheating, dehydration and predator attack. This also allows a greater chance of using favourable winds. | K. Large lungs and heart, air sacs, rapid heartbeat, large chest muscles, high body temperature, hollow bones, streamlined body shape |
| 12. _____ This bird's over-water flight from the United States to South America keeps it in the air for 80 or 90 hours straight! | L. Arctic Tern |

Source of information: Have Wings, Will Travel: Avian Adaptations to Migration by Mary Deinlein, Smithsonian Migratory Bird Centre, National Zoo, Washington, DC, USA <http://nationalzoo.si.edu>

