

# *Blue Impact: Shorebirds*

## *Answer Key*

### **DIRECTIONS**

Answer the following questions while watching the New England Aquarium's **Blue Impact Shorebirds on Stage** video. It is a good idea to read all the questions before you start the video. You may also need to pause or replay sections to help you answer the questions.

### **QUESTIONS**

1. What is the maximum distance that some shorebirds can migrate?

- a. 15,000 miles**
- b. 9,000 miles
- c. 10,000 miles
- d. 5,000 miles

2. How long is the Red Knot's migration?

- a. 15,000 miles
- b. 9,000 miles**
- c. 10,000 miles
- d. 1,000 miles

3. What is a staging site?

***A staging site is where the birds rest and feed to get ready for their long flight.***

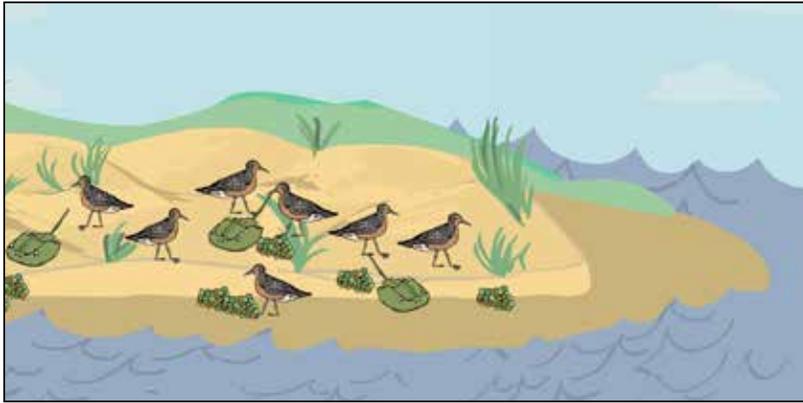
4. Label the map with the following terms:

- a. South America
- b. North America
- c. Central America
- d. North
- e. South
- f. East
- g. West
- h. Tierra del Fuego staging site
- i. Delaware staging site
- j. Canada staging site
- k. Brazil staging site



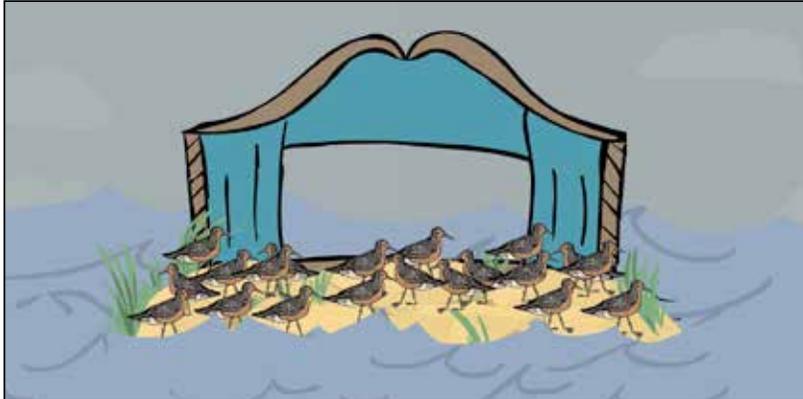
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5. Describe what happens between horseshoe crabs and Red Knots at the staging site in Delaware. You may refer to this image to help you explain.



***Thousands of Red Knots (*Calidris canutus*) arrive in Delaware at the same time horseshoe crabs (*Limulus polyphemus*) are laying their eggs. The Red Knots feast on the horseshoe crab eggs that are not buried properly. The Knots feast on these eggs over the next two weeks, gobbling down up to 25,000 of them a day and going through one of the most radical weight gain diet plans in the animal kingdom.***

6. How is climate change threatening Red Knots and horseshoe crabs? You may refer to this image to help you explain.



***Studies suggest that by 2100 between 20 and 70 percent of today's coastal mudflats—like the one in the Delaware Bay where the Red Knots and horseshoe crabs meet—will be under water (to learn more about sea level rise, watch the [Blue Impact](#) video, *Higher Harbors*). Also, since the CO<sub>2</sub> blanket is trapping more energy in the atmosphere, storms will become more extreme and disrupt these coastal staging areas. Therefore, climate change will cause the Red Knot's feeding ground, and the horseshoe crab's mating ground to diminish. With the same number of Red Knots in a smaller area, there's simply not enough food. The shorebird populations will decline as some birds simply won't have energy to complete the grueling round trip between the wintering, mating and feeding grounds.***

## CHALLENGE QUESTIONS

Use the following websites to help you research the two challenge questions.

<http://horseshoecrab.org/>

[www.arkive.org/](http://www.arkive.org/) (Search for “horseshoe crab.”)

<http://eol.org> (Search for “horseshoe crab.”)

### 1. Classification

Fill in the table with the following information on the horseshoe crab.

<b>Kingdom</b>	<b>Animalia</b>
<b>Phylum</b>	<b>Arthropoda</b>
<b>Class</b>	<b>Merastomata</b>
<b>Order</b>	<b>Xiphosurida</b>
<b>Family</b>	<b>Limulidae</b>
<b>Genus</b>	<b><i>Limulus</i></b>
<b>Species</b>	<b><i>polyphemus</i></b>

### 2. Claims, Evidence, Reasoning

Are horseshoe crabs true crabs (i.e. are they closely related to rock crabs, hermit crabs, etc.)?  
Give details of your answer by:

a. Writing a claim (a statement or conclusion that answers the original question/problem).

***Horseshoe crabs are not true crabs.***

b. Supporting your claim with evidence (scientific data that supports the claim. The data needs to be appropriate and sufficient to support the claim).

***While horseshoe crabs and true crabs are both Arthropods, true crabs are in the subphylum Crustacea and horseshoe crabs are in the subphylum Chelicerata.***

c. Explaining your reasoning (a justification that connects the evidence to the claim. It shows why the data counts as evidence by using appropriate and sufficient scientific principles).

***Animals in the subphylum Crustacea (true crabs) have antennae and have 10 pairs of walking legs. Animals in the subphylum Chelicerata (horseshoe crabs) do not have antennae and have eight walking legs and two appendages known as chelicerae. These differences help scientists to categorize true crabs and horseshoe crabs as two distinct types of animals. Therefore, horseshoe crabs are not true crabs.***