

## Habitat Scenario Cards

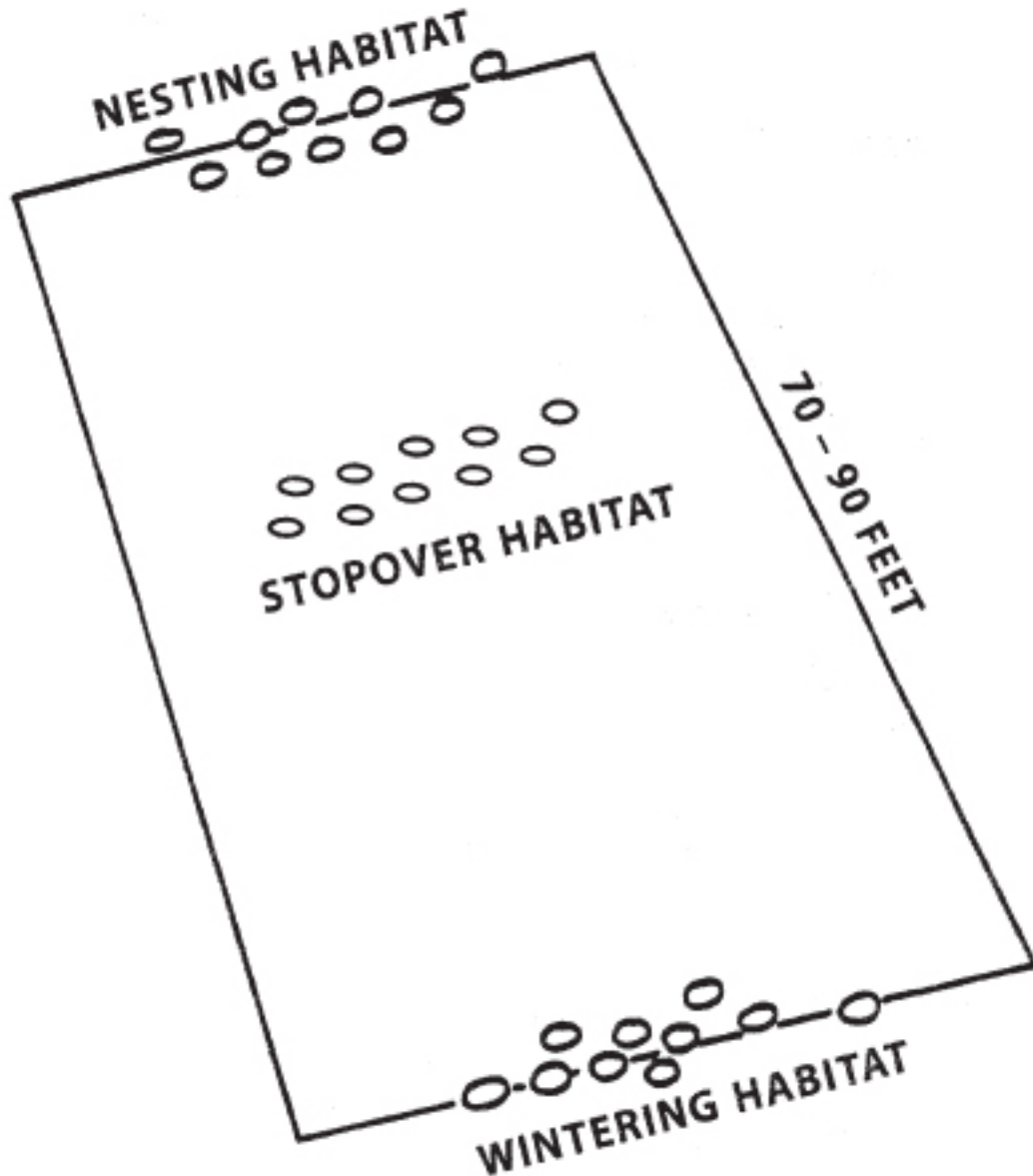
<p><b>New housing developments are built on shorebird habitat</b></p> <p><i>Remove 5 Plates</i></p>	<p><b>A wetland is drained</b></p> <p><i>Remove 5 Plates</i></p>
<p><b>Grasslands and wetlands are converted to farmland</b></p> <p><i>Remove 4 plates</i></p>	<p><b>The habitat is polluted</b></p> <p><i>Remove 3 Plates</i></p>
<p><b>Drought Year: Less Rainfall than usual</b></p> <p><i>Remove 3 Plates</i></p>	<p><b>People are getting too close and disturbing the shorebirds</b></p> <p><i>Remove 2 Plates</i></p>
<p><b>Low food supply</b></p> <p><i>Remove 1 Plate</i></p>	<p><b>Hunters illegally shoot some shorebirds</b></p> <p><i>Remove 1 Plate</i></p>

## Habitat Scenario Cards

<p><b>Grasslands and Wetlands are protected</b></p> <p><i>Add 4 Plates</i></p>	<p><b>A local factory stops polluting the watershed, and water quality improves</b></p> <p><i>Add 4 Plates</i></p>
<p><b>A wetland is restored so that shorebirds can now use it</b></p> <p><i>Add 3 plates</i></p>	<p><b>People are educated about how to protect and conserve shorebirds</b></p> <p><i>Add 3 Plates</i></p>
<p><b>Normal rainfall year</b></p> <p><i>Add 2 Plates</i></p>	<p><b>Hunters are educated about shorebirds and follow local laws protecting them</b></p> <p><i>Add 1 Plate</i></p>
<p><b>Farms managed to support crops, cattle, and shorebirds at the same time</b></p> <p><i>Add 3 Plates</i></p>	<p><i>Make your own scenario.</i></p>

## Diagram for Setup

Select a large area to play - a field, gymnasium, hallway, or if necessary a classroom with desks and chairs moved out of the way. Place an equal number of 'bases' (paper plates) in each of three areas (see *diagram*): 'Wintering Habitat' and 'Nesting Habitat' are at either end of the space, and 'Stopover Habitat' in the middle. Each base should have a big X on one side drawn with marker - arrange the bases with the 'X' hidden to start. At the start of the activity, there should be enough bases in each habitat to accommodate all of your students if they stand two students per base.



Blank Hemisphere Map: Activity Sheet 2.3









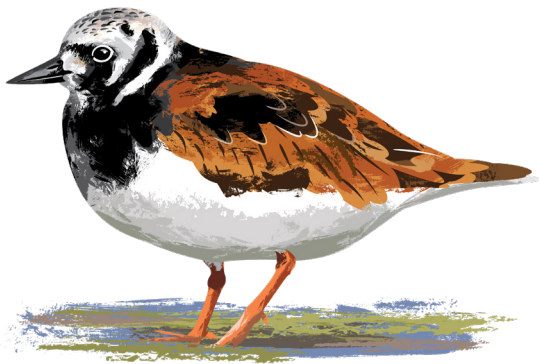














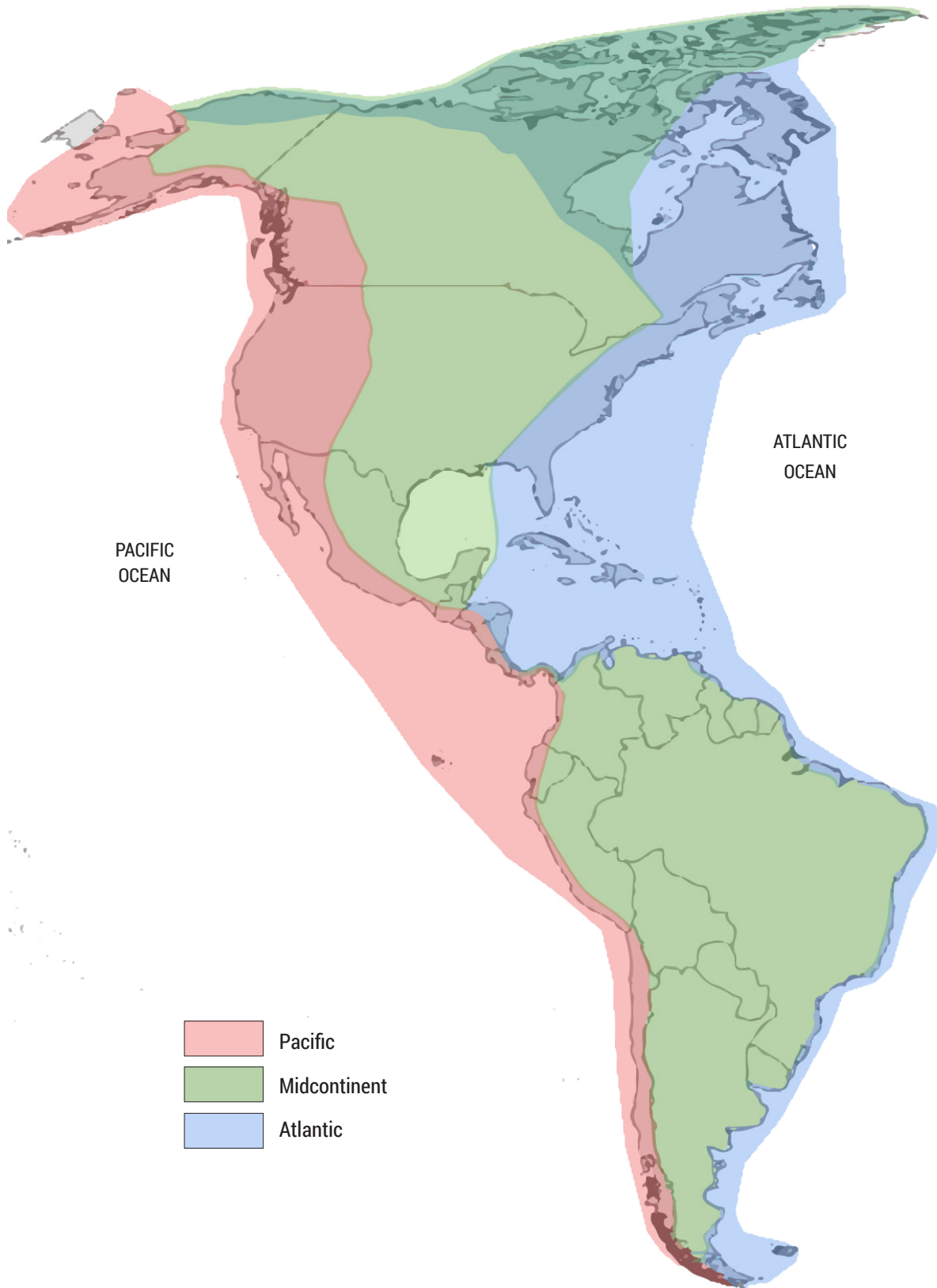




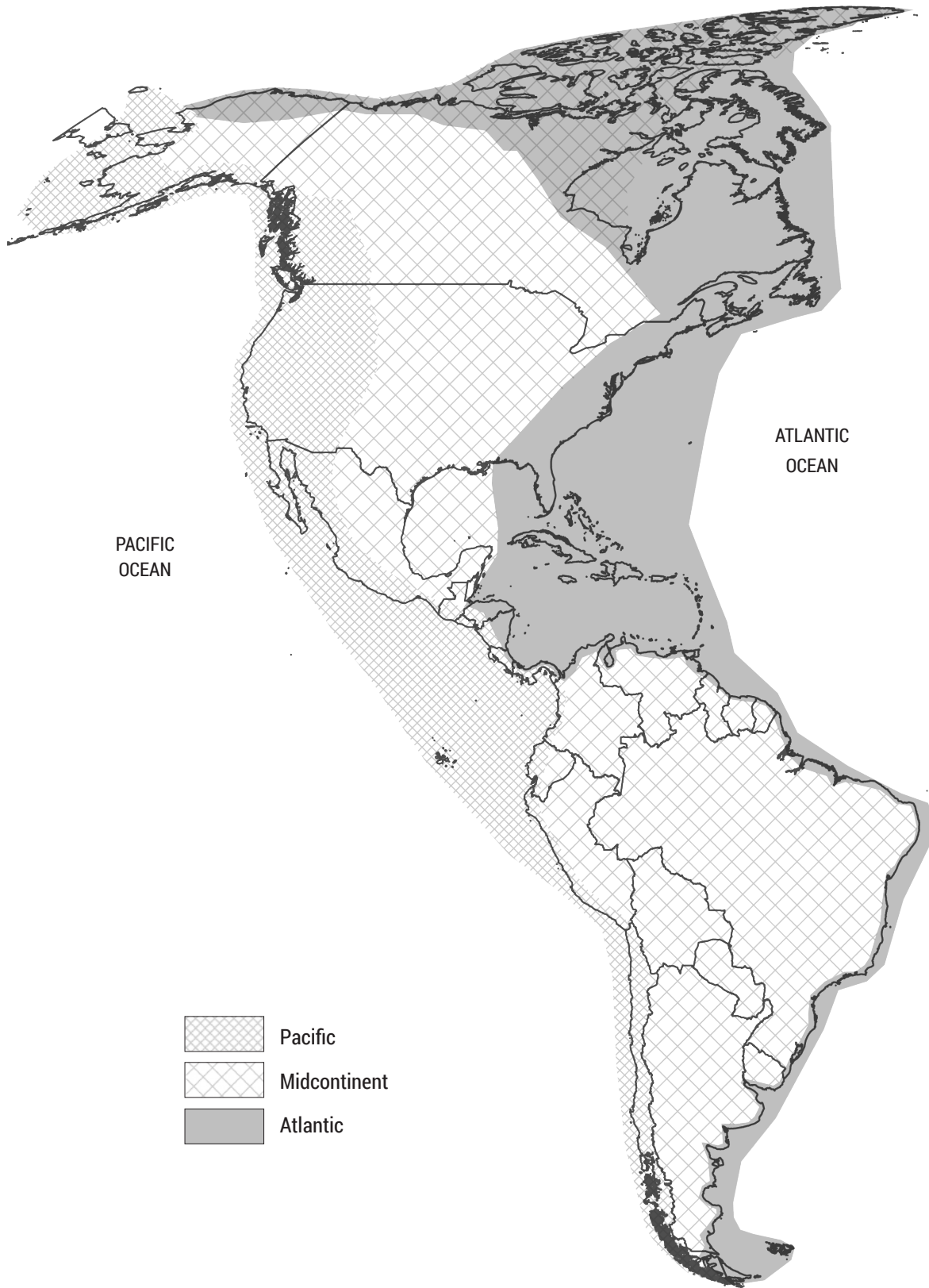




Flyways Map: Activity Sheet 2.5



Flyways: B&W Activity Sheet 2.5



# Travel Notes: Red Knot

Red Knot	Red Knot
<p>I'm on an island at the very southern tip of South America - in an area called Tierra del Fuego. I'm here with thousands of other red knots, and I spend most of the day on the shore gobbling up mussels from the mussel beds - they are delicious! When I'm not searching for food, I am resting and taking care of my feathers with other members of the flock!</p>	<p>I stopped on this beach halfway up the coast of Argentina to feed on the small ocean animals living in the mud and sand. I need to increase my body weight by 80 percent! I particularly love the small snails that are found here</p>
Red Knot	Red Knot
<p>Whew - that was a long flight! First I flew nonstop to the north coast of South America, and then I headed out across the ocean. I have now arrived on the sandy beaches and tidal flats of the Delaware Bay. There are about 15,000-30,000 of us here with tens of thousands of other shorebirds. We are all here for one reason: food! Horseshoe crab eggs galore! We eat and eat and eat...that is unless we are sleeping or trying to stay away from people and other animals.</p>	<p>I weigh so much that I don't think I can lift off the ground, even though I know it's time to head north. I move up the beach with the rest of the huge flock as the tide comes in, eating a few last horseshoe crab eggs as I go. Suddenly one bird takes off, and before I know it, we are all in the air! We fly north - we will not stop until we reach the arctic tundra.</p>
Red Knot	Red Knot
<p>As we fly over northern Canada, I see the tundra in springtime with its pools and hummocks of grass. I see an area that I like, and leave the flock and fly down to it. It is here that I will find my mate and we will spend the next six weeks establishing a nest, incubating the eggs, and raising our young.</p>	<p>Our babies have grown up and can feed themselves - they don't need me anymore! I leave them behind, and head to James Bay to eat clams on the mud flats. I will follow the west winds to the Atlantic coastline where I will spend the rest of the summer eating and slowly moving south. By September I'll be ready for a nonstop, four day flight over the ocean to South America! Eventually I'll end up where I started - in Tierra del Fuego at the southern tip of South America.</p>

# Travel Notes: Ruddy Turnstone

Ruddy Turnstone	Ruddy Turnstone
<p>I have been working my way north for the past month or so, finding many sandy beaches and mud flats in Florida. I spend most of my time turning over stones and seaweed to look for and catch my favorite food – sand fleas! But I will eat anything I can scavenge, including dead animals and bits of food left over from other animals feeding.</p>	<p>I have stopped along the Delaware Bay to gorge myself on horseshoe crab eggs. I feed a little differently than the other shorebirds that join me – I dig up the eggs that are right under the surface, while they pick the eggs up off the surface. I guess in this way I am making more eggs available to everyone! This year, the horseshoe eggs seem harder to find.</p>
Ruddy Turnstone	Ruddy Turnstone
<p>I thought I ate enough horseshoe crab eggs so I could fly directly to my nesting grounds, but I guess I didn't gain as much weight as usual. I stop at Hudson Bay to feed among the rocks before continuing. I'm running late - I hope I will still have enough time to select a mate and nest.</p>	<p>I finally arrive in my nesting area! I see a good spot - a boulder to perch on while I call and watch for predators. Unfortunately the boulder is already taken by another Ruddy Turnstone, so I keep looking.</p>
Ruddy Turnstone	Ruddy Turnstone
<p>As much as I try, I can't find a good nesting site or a mate - they are all taken. I guess I arrived too late. I decide to leave the nesting area early and head south. Along the way I meet up with other Ruddy Turnstones that also didn't mate this year, and we form small flocks as we work our way down the Atlantic Ocean coastline. We stop at the Bay of Fundy in Nova Scotia and New Brunswick, and also further south in North Carolina and Georgia.</p>	<p>After spending some time on the beaches in Florida, we take off for South America! Our small flock finally arrives in northern Argentina, to the same beach where I started out last year. We will spend most of our time here eating, resting, and cleaning our feathers. I hope that next year I can make it back to the Arctic with plenty of energy and plenty of time to nest and find a mate.</p>

# Travel Notes: Buff-Breasted Sandpiper

<p><b>Buff-Breasted Sandpiper</b></p>	<p><b>Buff-Breasted Sandpiper</b></p>
<p>My friends and I are enjoying the shoreline of Argentina, which provides the perfect habitat for us to wade in shallow waters and fatten up on some of our favorite snacks like pillbugs, spiders, and snails. Yum! I'll soon have enough fat built up for my journey to the Arctic circle of Canada.</p>	<p>Whew! I made my way to the Central Plains region in Oklahoma. The short grass habitat is perfect for staying hidden and being able to find food. I'll stay here to rest and refuel on food for a couple of weeks before continuing my journey North to the Arctic Circle of Canada.</p>
<p><b>Buff-Breasted Sandpiper</b></p>	<p><b>Buff-Breasted Sandpiper</b></p>
<p>I've made it to Canada! All of my friends are arriving at the same time and the males have already started trying to impress us with their lekking. I am surrounded by courtship displays of male buff breasted sandpipers stretching out their wings and shaking their bodies. I wonder which display I will like best!</p>	<p>This morning I had a frightening experience! When I was searching for insects in the shallow water, a human grabbed me! The human put these funny-looking bands on my legs—a silver one, bright red and orange ones, and a white one with an end sticking out. These odd bands don't bother me when I walk or fly, but they sure do look funny. I wonder what they mean?</p>
<p><b>Buff-Breasted Sandpiper</b></p>	<p><b>Buff-Breasted Sandpiper</b></p>
<p>My eggs are hatching! The four eggs were laid 25 days ago, which means they are right on time. My chicks can't fly yet, but they are able to scurry around on the ground right away. Taking care of them is a big job - I had to incubate the eggs all by myself for almost a month. All of the male buff breasted sandpipers have already left our nesting grounds and are headed south for the winter.</p>	<p>I'm ready to leave my nesting grounds along with other successful females and our young! I'm flying with a small flock of 3 other birds who want to make this journey with me, but some others will fly back solo. I'll fly back along the same route I used to fly north.</p>

# Travel Notes: Buff-Breasted Sandpiper

Buff-Breasted Sandpiper	Buff-Breasted Sandpiper
<p>I take a break to feed at Padre Island in Texas until my small flock and I are ready to continue flying south. This seems to be an important resting stop for other migratory birds heading south as well!</p>	<p>We are back in Argentina! Many of us will stay here all winter long until it's time to head north and breed again. It seems like a lot of buff breasted sandpipers have already arrived, but I'm sure some of my friends won't be back until December. Very different than when we all arrive in Canada on the same day!</p>

# Travel Notes: Western Sandpiper

<b>Western Sandpiper</b>	<b>Western Sandpiper</b>
<p>Huge flocks of us are forming here on the coast of Peru, getting ready for our long trip north to the nesting grounds. It's amazing having so many of us together at one time. We'd better hurry; we've got a long way to fly!</p>	<p>After stopping at several locations to feed, we've made it to the San Diego Bay National Wildlife Refuge in the United States. We'll rest and refuel in the mudflats before heading to our next stop-- San Francisco Bay.</p>
<b>Western Sandpiper</b>	<b>Western Sandpiper</b>
<p>After leaving Oregon Island National Wildlife Refuge, we stopped in the Fraser River Delta in British Columbia before heading to Alaska!</p>	<p>I bet there are one million of us here at Alaska's Copper River Delta. This is a wonderful place to stop along our way north. The endless mudflats give me a chance to probe the mud for tiny clams, worms, and sand fleas until I replace some of the body fat I used up getting here. I'm going to need that energy to make it all the way to western Alaska.</p>
<b>Western Sandpiper</b>	<b>Western Sandpiper</b>
<p>Looks like the male Western Sandpipers have beaten us here to the Yukon Delta National Wildlife Refuge. Well, that's OK. They've already selected nesting sites, so all I have to do is choose a mate and lay my eggs.</p>	<p>I'm so glad that my mate and I take turns incubating the eggs. That gives me a chance to feast on the large numbers of insects that are hatching now. I'd better watch out while I'm feeding. The Arctic fox is always looking to make a meal out of us shorebirds!</p>

# Travel Notes: Western Sandpiper

Western Sandpiper	Western Sandpiper
<p>Here we go again! Those gulls are nasty predators and are after our chicks. Maybe I can distract them with the “broken wing act” while my mate leads our chicks to safety. Uh oh - looks like they’ve seen this trick before and aren’t falling for it this time. That was a very narrow escape!</p>	<p>My babies have grown up and can feed themselves now, so it’s time to leave them behind. I fly to Kachemak Bay in Alaska, then to Stikine River Delta in Canada. This is my favorite spot on my journey south because I can find so many clams here in the mudflats! After this, I will travel south along the coast line, stopping every couple hundred miles to rest and eat.</p>
Western Sandpiper	Western Sandpiper
<p>We have arrived on the coast of Mexico! This is a great place to rest. In fact, some Western Sandpipers will stay here all winter. I will make one more stop in Panama before continuing on to Peru.</p>	<p>I’m glad to be back in Peru for the winter. I need a rest! Every year the trip gets harder for me. There are so many people along the coast who disturb me when I try to rest and feed along the way. Sometimes the food has a strange, unfamiliar taste that makes me feel weak. Well, at least I can rest here for a few months and regain my strength.</p>



# Travel Notes: Red Knot

Red Knot	Red Knot
<p>There are thousands of us feeding on the sandy beaches and mud flats at the southern tip of South America in Tierra del Fuego. I spend most of the day feeding in the mussel beds, devouring young mussels. When I'm not eating, I roost and preen with the rest of the flock.</p>	<p>I arrived on the central coast of Argentina to feed again on the invertebrates living in the mud of the immense tidal sand flat. I need to increase my body weight by 80 percent! I particularly love the small snails that are found here.</p>
Red Knot	Red Knot
<p>After a nonstop flight to the northern coast of South America, then across the ocean, I arrived on the sandy beaches and tidal flats of the Delaware Bay. There are about 15,000-30,000 of us here with tens of thousands of other shorebirds. We are all here for one reason: food! Horseshoe crab eggs galore! We eat and eat and eat...that is unless we are sleeping or trying to stay away from people and other animals.</p>	<p>I weigh so much that I don't think I can lift off the ground, but late in the afternoon, the incoming tide pushes me and the flock higher up on the beach. We all move away from the advancing water, moving as one. Someone jumps a certain way and we are all up in the air, flying north, knowing that we will not stop until we fly over Hudson Bay and reach the Arctic tundra.</p>
Red Knot	Red Knot
<p>As we fly over the northern Canadian tundra pools and hummocks of the Melville Peninsula, I leave the flock and fly down to a barren area scattered with vegetation. It is here that I will find my mate and we will spend the next six weeks establishing a nest, incubating the eggs, and raising our young.</p>	<p>Leaving our young behind, I make it to James Bay. This is my favorite spot on my southward migration. The tidal mud flats are full of clams! From here I will follow the west winds to the Atlantic coastline where I will feed almost constantly until late August. The best places to stop along the coast are national and state refuges, parks, and forests. By September I'll be ready for the nonstop, four day flight over the ocean to Suriname. I'll rest and feed before my final leg - a return flight to Tierra del Fuego, Argentina.</p>

# Travel Notes: Ruddy Turnstone

Ruddy Turnstone	Ruddy Turnstone
<p>I have been working my way northward for the past month or so, finding many sandy beaches and mud flats in coastal south Florida. Much of my time is spent turning over stones and seaweed to look for and catch my preferred food – sand fleas! But I will eat anything I can scavenge, including dead animals and bits of food left over from other animals feeding.</p>	<p>I have stopped along the Delaware Bay to gorge myself on horseshoe crab eggs. I feed a little differently than the other shorebirds that join me – I dig up the eggs that are right under the surface, while they pick the eggs up off the surface. I guess in this way I am making more eggs available to everyone! This year, the horseshoe eggs seem harder to find.</p>
Ruddy Turnstone	Ruddy Turnstone
<p>I thought I ate enough horseshoe crab eggs so I could fly directly to my breeding grounds, but I guess I didn't gain as much weight as usual. I stop at Churchill, on the Hudson Bay to feed along the jetties before continuing. I hope I will still have enough time to select a mate and nest.</p>	<p>I finally arrive on the breeding grounds north of Hudson Bay and look for the location I have used in the past. The boulder on the tundra is an ideal place for me to perch and call and watch for predators. As I touch down, I am immediately assaulted by another Ruddy Turnstone, driving me away from the area.</p>
Ruddy Turnstone	Ruddy Turnstone
<p>As much as I try, I am unable to find a suitable nest site and available mate - I guess I arrived too late. Leaving the breeding grounds early, I head south. Along the way I meet up with other Ruddy Turnstones and we form small flocks as we work our way down the Atlantic coastline, stopping at the Bay of Fundy in Nova Scotia and New Brunswick, Pea Island National Wildlife Refuge in North Carolina, and Sapelo Island National Estuarine Reserve in Georgia.</p>	<p>After we depart from the national wildlife refuges and sanctuaries at the southern tip of Florida, our small flock arrives in northern Argentina. This is the same beach I started out at last season when I migrated north. We spend most of our time feeding and preening. I hope that next year I can make it back to the Arctic with plenty of energy and plenty of time to breed.</p>

# Travel Notes: Buff-Breasted Sandpiper

<p align="center"><b>Buff-Breasted Sandpiper</b></p>	<p align="center"><b>Buff-Breasted Sandpiper</b></p>
<p>My friends and I are enjoying the shoreline of Bahía de Samborombón in Argentina, which provides the perfect habitat for us to wade in shallow waters and fatten up on some of our favorite invertebrate snacks like pillbugs, spiders, and snails. Yum! I'll soon have enough fat built up for my journey to the Arctic circle of Canada.</p>	<p>Whew! I made my way to the Central Plains region in Oklahoma. The short grass habitat is perfect for staying hidden and being able to find food. I'll stay here to rest and refuel on food for a couple of weeks before continuing my journey North to the Arctic Circle of Canada.</p>
<p align="center"><b>Buff-Breasted Sandpiper</b></p>	<p align="center"><b>Buff-Breasted Sandpiper</b></p>
<p>I've made it to Canada! All of my friends are arriving at the same time and the males have already started trying to impress us with their lekking. I am surrounded by courtship displays of male buff breasted sandpipers stretching out their wings and shaking their bodies. I wonder which display I will find most impressive!</p>	<p>This morning I had a frightening experience! When I was searching for aquatic insects in the shallow water, a human grabbed me! The human put these funny-looking bands on my legs—a silver one, bright red and orange ones, and a white one with an end sticking out. These odd bands don't bother me when I walk or fly, but they sure do look funny. I wonder what they mean?</p>
<p align="center"><b>Buff-Breasted Sandpiper</b></p>	<p align="center"><b>Buff-Breasted Sandpiper</b></p>
<p>My eggs are hatching! The four eggs were laid 25 days ago, which means they are right on schedule and the chicks are almost immediately ready to leave the nest. I have been the only bird responsible for incubating these eggs since they were laid. All of the male buff breasted sandpipers have already left our breeding grounds and are headed south for the winter.</p>	<p>I'm ready to leave my breeding grounds along with other successful females and our young! I'm flying with a small flock of 3 other birds who want to make this journey with me, but some individuals are flying solo for the trip back. I'll most likely stop at the same spots on the way back to Argentina as I did during my journey north.</p>

# Travel Notes: Buff-Breasted Sandpiper

Buff-Breasted Sandpiper	Buff-Breasted Sandpiper
<p>I take a break to feed at Padre Island in Texas until my small flock and I are ready to continue flying southbound. This seems to be an important resting stop for other migratory birds heading south as well!</p>	<p>We are back at Bahía de Samborombón for another winter! Many of us will stay here all winter long until it's time to head north and breed again. It seems like a lot of buff breasted sandpipers have already arrived, but I'm sure some of my friends won't be back until December. Very different than when we all arrive in Canada on the same day!</p>







# Travel Notes: Western Sandpiper

<b>Western Sandpiper</b>	<b>Western Sandpiper</b>
<p>Everyone's flocking up here on the coast of Peru, getting ready for our long trip north to the breeding grounds. It's amazing having so many of us together at one time. We'd better hurry; we've got a long way to fly!</p>	<p>After stopping at several locations to feed, we've made it to the San Diego Bay National Wildlife Refuge in the United States. We'll rest and refuel in the mudflats before heading to our next stop-- San Francisco Bay National Wildlife Refuge.</p>
<b>Western Sandpiper</b>	<b>Western Sandpiper</b>
<p>After leaving Oregon Island National Wildlife Refuge, we stopped in the Fraser River Delta in British Columbia before heading to the nutrient-rich Alaska coast!</p>	<p>I bet there are one million of us here at Alaska's Copper River Delta. This is a wonderful stopover site along our way north. The endless mudflats give me a chance to probe the mud for tiny clams, worms, and sand fleas until I replace some of the body fat I used up getting here. I'm going to need all that energy to make it all the way to western Alaska.</p>
<b>Western Sandpiper</b>	<b>Western Sandpiper</b>
<p>Looks like the males have beaten us here to the Yukon Delta National Wildlife Refuge. Well, that's O.K. They've already selected nesting sites, so all I have to do is choose a mate and lay my eggs.</p>	<p>I'm so glad that my mate and I take turns incubating the eggs. That gives me a chance to feast on the large numbers of insects that are hatching now. I'd better watch out while I'm feeding. The Arctic fox is always looking to make a meal out of us shorebirds!</p>







# Travel Notes: Western Sandpiper

Western Sandpiper	Western Sandpiper
<p>Here we go again! Those gulls are nasty predators and are after our chicks. Maybe I can distract them with the “broken wing act” while my mate leads our chicks to safety. Looks like they’ve seen this trick before and aren’t falling for it this time. That was a very narrow escape!</p>	<p>Having left the young behind, I fly to Kachemak Bay at the Alaska Maritime National Wildlife Refuge, then to Stikine River Delta along the Canadian coast. This is my favorite spot on my southward migration because of the abundance of clams in the tidal mudflats. Then I will travel along the coast line, stopping every couple hundred miles. We take our time getting home.</p>
Western Sandpiper	Western Sandpiper
<p>We have arrived at Marismas Nacionales near Tepic, Mexico. This is a great place to rest. In fact, some Western Sandpipers will stay here all winter. I will continue to Peru with one stop in Panama before arriving.</p>	<p>I’m glad to be back in Peru for the winter. I need a rest! Every year the trip gets harder for me. There are so many people along the coast who disturb me when I try to rest and feed along the way. Sometimes the food has a strange, unfamiliar taste that makes me feel weak. Well, at least I can rest here for a few months and regain my strength.</p>

# Date Cards: Red Knot







<p><b>Red Knot</b></p>  <p><b>January 8</b></p>	<p><b>Red Knot</b></p>  <p><b>March 14</b></p>
<p><b>Red Knot</b></p>  <p><b>May 19</b></p>	<p><b>Red Knot</b></p>  <p><b>May 31</b></p>
<p><b>Red Knot</b></p>  <p><b>June 3</b></p>	<p><b>Red Knot</b></p>  <p><b>July 18</b></p>

# Date Cards: Ruddy Turnstone



<p><b>Ruddy Turnstone</b></p>  <p><b>April 10</b></p>	<p><b>Ruddy Turnstone</b></p>  <p><b>May 16</b></p>
<p><b>Ruddy Turnstone</b></p>  <p><b>June 3</b></p>	<p><b>Ruddy Turnstone</b></p>  <p><b>June 16</b></p>
<p><b>Ruddy Turnstone</b></p>  <p><b>July 8</b></p>	<p><b>Ruddy Turnstone</b></p>  <p><b>September 4</b></p>









# Date Cards: Buff-Breasted Sandpiper

Buff-Breasted Sandpiper	Buff-Breasted Sandpiper
 <p data-bbox="375 722 581 768"><b>March 16</b></p>	 <p data-bbox="1062 728 1222 774"><b>May 17</b></p>
Buff-Breasted Sandpiper	Buff-Breasted Sandpiper
 <p data-bbox="404 1184 552 1230"><b>June 4</b></p>	 <p data-bbox="1070 1190 1218 1236"><b>June 6</b></p>
Buff-Breasted Sandpiper	Buff-Breasted Sandpiper
 <p data-bbox="410 1644 542 1690"><b>July 9</b></p>	 <p data-bbox="1045 1652 1242 1698"><b>August 5</b></p>





# Date Cards: Buff-Breasted Sandpiper

Buff-Breasted Sandpiper	Buff-Breasted Sandpiper
 <p data-bbox="358 722 597 772"><b>October 12</b></p>	 <p data-bbox="1024 730 1263 781"><b>October 31</b></p>

# Date Cards: Western Sandpiper

<p><b>Western Sandpiper</b></p>  <p><b>April 10</b></p>	<p><b>Western Sandpiper</b></p>  <p><b>April 20</b></p>
<p><b>Western Sandpiper</b></p>  <p><b>May 10</b></p>	<p><b>Western Sandpiper</b></p>  <p><b>May 20</b></p>
<p><b>Western Sandpiper</b></p>  <p><b>June 1</b></p>	<p><b>Western Sandpiper</b></p>  <p><b>June 10</b></p>

# Date Cards: Western Sandpiper

Western Sandpiper	Western Sandpiper
 <p data-bbox="386 697 565 747"><b>June 24</b></p>	 <p data-bbox="1062 697 1224 747"><b>July 18</b></p>
Western Sandpiper	Western Sandpiper
 <p data-bbox="363 1155 587 1205"><b>August 30</b></p>	 <p data-bbox="990 1155 1295 1205"><b>September 15</b></p>

# Teacher Key

## Red Knot (Atlantic Flyway)

### January 8

I'm on an island at the very southern tip of South America - in an area called Tierra del Fuego. I'm here with thousands of other red knots, and I spend most of the day on the shore gobbling up mussels from the mussel beds - they are delicious! The rest of the time I rest and take care of my feathers with the rest of the flock.

### March 14

I stopped on this beach halfway up the coast of Argentina to feed on the small ocean animals living in the mud and sand. I need to increase my body weight by 80 percent! I particularly love the small snails that are found here.

### May 19

Whew - that was a long flight! First I flew nonstop to the north coast of South America, and then I headed out across the ocean. I have now arrived on the sandy beaches and tidal flats of the Delaware Bay. There are about 50 to 100,000 of us here with tens of thousands of other shorebirds. We are all here for one reason: food! Horseshoe crab eggs galore! We eat and eat and eat...that is unless we are sleeping or trying to stay away from people and other animals.

### May 31

I weigh so much that I don't think I can lift off the ground, even though I know it's time to head north. I move up the beach with the rest of the huge flock as the tide comes in, eating a few last horseshoe crab eggs as I go. Suddenly one bird takes off, and before I know it, we are all in the air! We fly north - we will not stop until we reach the arctic tundra.

### June 3

As we fly over northern Canada, I see the tundra in springtime with its pools and hummocks of grass. I see an area that I like, and leave the flock and fly down to it. It is here that I will find my mate and we will spend the next six weeks establishing a nest, incubating the eggs, and raising our young.

### July 18

Our babies have grown up and can feed themselves - they don't need me anymore! I leave them behind to fatten up some more, and head to James Bay. This is my favorite spot on my southward migration. The mud flats are full of clams! From here I will follow the west winds to the Atlantic coastline where I will spend the rest of the summer eating and slowly moving south. The best places to stop along the coast are national and state refuges, parks, and forests. By September I'll be ready for the nonstop, four day flight over the ocean to the north coast of South America. I'll rest and feed before my final flight - a return flight to Tierra del Fuego, on the southern tip of South America.

## Teacher Key, continued

### Ruddy Turnstone (Atlantic Flyway)

#### April 10

I have been working my way north for the past month or so, finding many sandy beaches and mud flats in Florida. I spend most of my time turning over stones and seaweed to look for and catch my favorite food – sand fleas! But I will eat anything I can scavenge, including dead animals and bits of food left over from other animals feeding.

#### May 16

I have stopped along the Delaware Bay to gorge myself on horseshoe crab eggs. I feed a little differently than the other shorebirds that join me – I dig up the eggs that are right under the surface, while they pick the eggs up off the surface. I guess in this way I am making more eggs available to everyone! This year, the horseshoe eggs seem harder to find.

#### June 3

I thought I ate enough horseshoe crab eggs so I could fly directly to my nesting grounds, but I guess I didn't gain as much weight as usual. I stop at Hudson Bay to feed among the rocks before continuing. I'm running late - I hope I will still have enough time to select a mate and nest.

#### June 16

I finally arrive in my nesting area! I see a good spot - a boulder to perch on while I call and watch for predators. Unfortunately the boulder is already taken by another Ruddy Turnstone, so I keep looking.

#### July 8

As much as I try, I can't find a good nesting site or a mate - they are all taken. I guess I arrived too late. I decide to leave the nesting area early and head south. Along the way I meet up with other Ruddy Turnstones that also didn't mate this year, and we form small flocks as we work our way down the Atlantic Ocean coastline. We stop at the Bay of Fundy in Nova Scotia and New Brunswick, and also further south in North Carolina and Georgia.

#### September 4

After spending some time on the beaches in Florida, we take off for South America! Our small flock finally arrives in northern Argentina, to the same beach where I started out last year. We will spend most of our time here eating, resting, and cleaning our feathers. I hope that next year I can make it back to the Arctic with plenty of energy and plenty of time to nest and find a mate.



## Teacher Key, continued

### Buff-Breasted Sandpiper (Central Flyway)

#### March 16

My friends and I are enjoying the shoreline of Argentina, which provides the perfect habitat for us to wade in shallow waters and fatten up on some of our favorite snacks like pillbugs, spiders, and snails. Yum! I'll soon have enough fat built up for my journey to the Arctic circle of Canada.

#### May 17

Whew! I made my way to the Central Plains region in Oklahoma. The short grass habitat is perfect for staying hidden and being able to find food. I'll stay here to rest and refuel on food for a couple of weeks before continuing my journey North to the Arctic Circle of Canada.

#### June 4

I've made it to Canada! All of my friends are arriving at the same time and the males have already started trying to impress us with their lekking. I am surrounded by courtship displays of male buff breasted sandpipers stretching out their wings and shaking their bodies. I wonder which display I will like best!

#### June 6

This morning I had a frightening experience! When I was searching for insects in the shallow water, a human grabbed me! The human put these funny-looking bands on my legs—a silver one, bright red and orange ones, and a white one with an end sticking out. These odd bands don't bother me when I walk or fly, but they sure do look funny. I wonder what they mean?

#### July 9

My eggs are hatching! The four eggs were laid 25 days ago, which means they are right on time. My chicks can't fly yet, but they are able to scurry around on the ground right away. Taking care of them is a big job - I had to incubate the eggs all by myself for almost a month. All of the male buff breasted sandpipers have already left our nesting grounds and are headed south for the winter.

#### August 5

I'm ready to leave my nesting grounds along with other successful females and our young! I'm flying with a small flock of 3 other birds who want to make this journey with me, but some others will fly back solo. I'll fly back along the same route I used to fly north.

#### October 12

I take a break to feed at Padre Island in Texas until my small flock and I are ready to continue flying south. This seems to be an important resting stop for other migratory birds heading south as well!

#### October 31

We are back in Argentina! Many of us will stay here all winter long until it's time to head north and breed again. It seems like a lot of buff breasted sandpipers have already arrived, but I'm sure some of my friends won't be back until December. Very different than when we all arrive in Canada on the same day!

## Teacher Key, continued

### Western Sandpiper (Pacific Flyway)

#### April 10

Huge flocks of us are forming here on the coast of Peru, getting ready for our long trip north to the nesting grounds. It's amazing having so many of us together at one time. We'd better hurry; we've got a long way to fly!

#### April 20

After stopping at several locations to feed, we've made it to the San Diego Bay National Wildlife Refuge in the United States. We'll rest and refuel in the mudflats before heading to our next stop-- San Francisco Bay.

#### May 10

After leaving Oregon Island National Wildlife Refuge, we stopped in the Fraser River Delta in British Columbia before heading to Alaska!

#### May 20

I bet there are one million of us here at Alaska's Copper River Delta. This is a wonderful place to stop along our way north. The endless mudflats give me a chance to probe the mud for tiny clams, worms, and sand fleas until I replace some of the body fat I used up getting here. I'm going to need that energy to make it all the way to western Alaska.

#### June 1

Looks like the males Western Sandpipers have beaten us here to the Yukon Delta National Wildlife Refuge. Well, that's OK. They've already selected nesting sites, so all I have to do is choose a mate and lay my eggs.

#### June 10

I'm so glad that my mate and I take turns incubating the eggs. That gives me a chance to feast on the large numbers of insects that are hatching now. I'd better watch out while I'm feeding. The Arctic fox is always looking to make a meal out of us shorebirds!

#### June 24

Here we go again! Those gulls are nasty predators and are after our chicks. Maybe I can distract them with the "broken wing act" while my mate leads our chicks to safety. Uh oh - looks like they've seen this trick before and aren't falling for it this time. That was a very narrow escape!

#### July 18

My babies have grown up and can feed themselves now, so it's time to leave them behind. I fly to Kachemak Bay in Alaska, then to Stikine River Delta in Canada. This is my favorite spot on my journey south because I can find so many clams here in the mudflats! After this, I will travel south along the coast line, stopping every couple hundred miles to rest and eat.

#### August 30

We have arrived on the coast of Mexico! This is a great place to rest. In fact, some Western Sandpipers will stay here all winter. I will make one more stop in Panama before continuing on to Peru.

#### September 15

I'm glad to be back in Peru for the winter. I need a rest! Every year the trip gets harder for me. There are so many people along the coast who disturb me when I try to rest and feed along the way. Sometimes the food has a strange, unfamiliar taste that makes me feel weak. Well, at least I can rest here for a few months and regain my strength.





# Teacher Key

## Red Knot (Atlantic Flyway)

### January 8

There are thousands of us feeding on the sandy beaches and mud flats at the southern tip of South America in Tierra del Fuego. I spend most of the day feeding in the mussel beds, devouring young mussels. The rest of the time I roost and preen with the rest of the flock.

### March 14

I arrived on the central coast of Argentina to feed again on the invertebrates living in the mud of the immense tidal sand flat. I need to increase my body weight by 80 percent! I particularly love the small snails that are found here.

### May 19

After a nonstop flight to the northern coast of South America, then across the ocean, I arrived on the sandy beaches and tidal flats of the Delaware Bay. There are about 50 to 100,000 of us here with tens of thousands of other shorebirds. We are all here for one reason: food! Horseshoe crab eggs galore! We eat and eat and eat...that is unless we are sleeping or trying to stay away from people and other animals.

### May 31

I weigh so much that I don't think I can lift off the ground, but late in the afternoon, the incoming tide pushes me and the flock higher up on the beach. We all move away from the advancing water, moving as one. Someone jumps a certain way and we are all up in the air, flying north, knowing that we will not stop until we fly over Hudson Bay and reach the Arctic tundra.

### June 3

As we fly over the northern Canadian tundra pools and hummocks of the Melville Peninsula, I leave the flock and fly down to a barren area scattered with vegetation. It is here that I will find my mate and we will spend the next six weeks establishing a nest, incubating the eggs, and raising our young.

### July 18

Leaving our young behind, I make it to James Bay. This is my favorite spot on my southward migration. The tidal mud flats are full of clams! From here I will follow the west winds to the Atlantic coastline where I will feed almost constantly until late August. The best places to stop along the coast are national and state refuges, parks, and forests. By September I'll be ready for the nonstop, four day flight over the ocean to Suriname. I'll rest and feed before my final leg - a return flight to Tierra del Fuego, Argentina.



## Teacher Key, continued

### Ruddy Turnstone (Atlantic Flyway)

#### April 10

I have been working my way northward for the past month or so, finding many sandy beaches and mud flats in coastal south Florida. Much of my time is spent turning over stones and seaweed to look for and catch my preferred food – sand fleas! But I will eat anything I can scavenge, including dead animals and bits of food left over from other animals feeding.

#### May 16

I have stopped along the Delaware Bay to gorge myself on horseshoe crab eggs. I feed a little differently than the other shorebirds that join me – I dig up the eggs that are right under the surface, while they pick the eggs up off the surface. I guess in this way I am making more eggs available to everyone! This year, the horseshoe eggs seem harder to find.

#### June 3

I thought I ate enough horseshoe crab eggs so I could fly directly to my breeding grounds, but I guess I didn't gain as much weight as usual. I stop at Churchill, on the Hudson Bay to feed along the jetties before continuing. I hope I will still have enough time to select a mate and nest.

#### June 16

I finally arrive on the breeding grounds north of Hudson Bay and look for the location I have used in the past. The boulder on the tundra is an ideal place for me to perch and call and watch for predators. As I touch down, I am immediately assaulted by another Ruddy Turnstone, driving me away from the area.

#### July 8

As much as I try, I am unable to find a suitable nest site and available mate - I guess I arrived too late. Leaving the breeding grounds early, I head south. Along the way I meet up with other Ruddy Turnstones and we form small flocks as we work our way down the Atlantic coastline, stopping at the Bay of Fundy in Nova Scotia and New Brunswick, Pea Island National Wildlife Refuge in North Carolina, and Sapelo Island National Estuarine Reserve in Georgia.

#### September 4

After we depart from the national wildlife refuges and sanctuaries at the southern tip of Florida, our small flock arrives in northern Argentina. This is the same beach I started out at last season when I migrated north. We spend most of our time feeding and preening. I hope that next year I can make it back to the Arctic with plenty of energy and plenty of time to breed.



## Teacher Key, continued

### Buff-Breasted Sandpiper (Central Flyway)

#### March 16

My friends and I are enjoying the shoreline of Bahía de Samborombón in Argentina, which provides the perfect habitat for us to wade in shallow waters and fatten up on some of our favorite invertebrate snacks like pillbugs, spiders, and snails. Yum! I'll soon have enough fat built up for my journey to the Arctic circle of Canada.

#### May 17

Whew! I made my way to the Central Plains region in Oklahoma. The short grass habitat is perfect for staying hidden and being able to find food. I'll stay here to rest and refuel on food for a couple of weeks before continuing my journey North to the Arctic Circle of Canada.

#### June 4

I've made it to Canada! All of my friends are arriving at the same time and the males have already started trying to impress us with their lekking. I am surrounded by courtship displays of male buff breasted sandpipers stretching out their wings and shaking their bodies. I wonder which display I will find most impressive!

#### June 6

This morning I had a frightening experience! When I was searching for aquatic insects in the shallow water, a human grabbed me! The human put these funny-looking bands on my legs—a silver one, bright red and orange ones, and a white one with an end sticking out. These odd bands don't bother me when I walk or fly, but they sure do look funny. I wonder what they mean?

#### July 9

My eggs are hatching! The four eggs were laid 25 days ago, which means they are right on schedule and the chicks are almost immediately ready to leave the nest. I have been the only bird responsible for incubating these eggs since they were laid. All of the male buff breasted sandpipers have already left our breeding grounds and are headed south for the winter.

#### August 5

I'm ready to leave my breeding grounds along with other successful females and our young! I'm flying with a small flock of 3 other birds who want to make this journey with me, but some individuals are flying solo for the trip back. I'll most likely stop at the same spots on the way back to Argentina as I did during my journey north.

#### October 12

I take a break to feed at Padre Island in Texas until my small flock and I are ready to continue flying southbound. This seems to be an important resting stop for other migratory birds heading south as well!

#### October 31

We are back at Bahía de Samborombón for another winter! Many of us will stay here all winter long until it's time to head north and breed again. It seems like a lot of buff breasted sandpipers have already arrived, but I'm sure some of my friends won't be back until December. Very different than when we all arrive in Canada on the same day!

## Teacher Key, continued

### Western Sandpiper (Pacific Flyway)

#### April 10

Everyone's flocking up here on the coast of Peru, getting ready for our long trip north to the breeding grounds. It's amazing having so many of us together at one time. We'd better hurry; we've got a long way to fly!

#### April 20

After stopping at several locations to feed, we've made it to the San Diego Bay National Wildlife Refuge in the United States. We'll rest and refuel in the mudflats before heading to our next stop-- San Francisco Bay National Wildlife Refuge.

#### May 10

After leaving Oregon Island National Wildlife Refuge, we stopped in the Fraser River Delta in British Columbia before heading to the nutrient-rich Alaska coast!

#### May 20

I bet there are one million of us here at Alaska's Copper River Delta. This is a wonderful stopover site along our way north. The endless mudflats give me a chance to probe the mud for tiny clams, worms, and sand fleas until I replace some of the body fat I used up getting here. I'm going to need all that energy to make it all the way to western Alaska.

#### June 1

Looks like the males have beaten us here to the Yukon Delta National Wildlife Refuge. Well, that's O.K. They've already selected nesting sites, so all I have to do is choose a mate and lay my eggs.

#### June 10

I'm so glad that my mate and I take turns incubating the eggs. That gives me a chance to feast on the large numbers of insects that are hatching now. I'd better watch out while I'm feeding. The Arctic fox is always looking to make a meal out of us shorebirds!

#### June 24

Here we go again! Those gulls are nasty predators and are after our chicks. Maybe I can distract them with the "broken wing act" while my mate leads our chicks to safety. Looks like they've seen this trick before and aren't falling for it this time. That was a very narrow escape!

#### July 18

Having left the young behind, I fly to Kachemak Bay at the Alaska Maritime National Wildlife Refuge, then to Stikine River Delta along the Canadian coast. This is my favorite spot on my southward migration because of the abundance of clams in the tidal mudflats. Then I will travel along the coast line, stopping every couple hundred miles. We take our time getting home.

#### August 30

We have arrived at Marismas Nacionales near Tepic, Mexico. This is a great place to rest. In fact, some Western Sandpipers will stay here all winter. I will continue to Peru with one stop in Panama before arriving.

