Case Study:
SEMIPALMATED SANDPIPER

PHOTO: JADEN BARNEY
A Semipalmated Sandpiper is a small shorebird in the Sandpiper family. They are found in wetland and coastal habitats in small groups to large flocks, probing for small invertebrates. The name ‘semipalmated’ refers to the partial webbing between its toes.

**CLASSIFICATION:**
- **Kingdom:** Animalia
- **Phylum:** Chordata
- **Class:** Aves
- **Order:** Charadriiformes (Shorebirds)
- **Family:** Scolopacidae (Sandpipers)
- **Genus:** Calidris
- **Species:** pusilla

**Conservation**
Semipalmated Sandpiper populations have continuously declined over the past 40 years, and are globally designated as ‘Near-Threatened’ by the International Union for the Conservation of Nature. As long-distance migrants, they rely on a network of important stopover sites along migration.

**Key conservation concerns:**
- Legal & illegal hunting in wintering habitats
- Reduced availability of food sources (human harvestings; mismatched timing of migration)
- Change in habitat quality on breeding grounds & roost sites (climate; predation; food; space)
Non-breeding Semipalmated Sandpipers spend the winter along the shorelines of South America. They forage for aquatic invertebrates in mangroves, tidal mudflats and beaches.

Breeding Males establish breeding territory in the tundra by making small depressions, or ‘scrapes’ in the ground. Females lay 4 dark speckled eggs. Both males and females take turns incubating and defending the nest for 3 weeks. The young are ready to fly 2 weeks after hatching.

Spring Migration Semipalmated Sandpipers are neotropical migrants, travelling long distances to their breeding areas in the arctic. The northward, long-distance migration begins in early May. Short stopovers fuel the journey and build fat reserves for egg production once the birds arrive in the sub-arctic breeding habitats.

Fall Migration After leaving the breeding grounds, the shorebirds gather in large flocks at key stopover sites to rest and feed on energy-rich mudshrimp and other aquatic invertebrates. They may double their weight to fuelling the flight to South America over the Atlantic Ocean.

Nature Conservancy of Canada: www.youtube.com/watch?v=lZ-6m_MaH5g
Semipalmated Sandpipers in the Bay of Fundy

More than 30% of the eastern population of Semipalmated Sandpipers gather in the Bay of Fundy in August and September each year.

SCIENCE GOALS:
• Track individual Semipalmated Sandpiper movements and length of stay to assess population size in Atlantic Canada.
• Identifying important stopover locations and habitats during migration.
• Determine locations, and arrival and departure dates between breeding and wintering life stages.

METHODS:

When the Bay of Fundy tides are high, the birds roost in large groups on the shoreline. A ‘Fundy Pull Trap’ is set on the beach to safely capture large numbers of birds under light netting. The science crew quickly untangle the birds from under the net and store them in boxes until each bird can be fitted with a metal band, plastic leg flag, and nanotags. The nanotag is glued onto the back of the bird. The bird is released and the nanotag will emit a unique signal detected by the Motus receivers. Nanotags have been released on more than 1000 Semipalmated Sandpipers since 2012.

TV Ontario Striking Balance: Bay of Fundy (start at 28:00)
https://youtu.be/qrwm9I2I1R-I
The following individual Semipalmated Sandpipers represent a subset of the population’s movements across the landscape.

Explore the Semipalmated Sandpipers movements on the provided base map using the following guidelines:

1. Label the bird species in the top right corner of the map page.
2. Use the detection data in the table below to plot the locations on the map.
3. Connect the dots and label each track with the tag identification number.
4. Draw arrowheads on the tracks to point in the direction of bird movement.
5. Label the track dates on the first detection location and the last detection location.
6. Circle the location where the bird stopped for the longest time. Label its length of stay.
7. Using the scale on the map and a ruler, measure and label the total flight track distance from its wintering to breeding location.
8. Choose two detections and calculate the flight speed between locations (distance/time as km/hr). Label this on the map sites.
9. Build a legend in the bottom left corner of the map. Use a different color to label each stage: Breeding, Migration, and Wintering.
10. Fill in the Breeding range and the Wintering range of the map, using the legend colors. Trace the flight tracks with the color for Migration.
11. Circle the country names of which this bird was detected in.
12. Draw a big star on your location. Which range for this species are you located (breeding, migration or non-breeding)?

### PROJECT DATA

<table>
<thead>
<tr>
<th>DATE</th>
<th>LATITUDE</th>
<th>LONGITUDE</th>
<th>ALPHA-NUMERIC</th>
<th>NEAREST REFERENCE</th>
<th>LENGTH OF STAY</th>
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<tr>
<td>August 3, 2014</td>
<td>51.29</td>
<td>-80.12</td>
<td>H-7</td>
<td>Moosonee, Ontario</td>
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<tr>
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<td>45.82</td>
<td>-64.58</td>
<td>J-8</td>
<td>Hopewell Cape, New Brunswick</td>
<td>2d 0h 4m</td>
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<tr>
<td>August 20, 2018</td>
<td>45.83</td>
<td>-64.51</td>
<td>J-8</td>
<td>Johnsons Mills, New Brunswick</td>
<td>0d 0h 5m</td>
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<tr>
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<td>45.82</td>
<td>-64.58</td>
<td>J-8</td>
<td>Hopewell Cape, New Brunswick</td>
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<tr>
<td>August 25, 2018</td>
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<td>J-8</td>
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<tr>
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<td>-64.58</td>
<td>J-8</td>
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<td>Cayenne, French Guiana</td>
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</tbody>
</table>

Check your migration track here: [https://motus.org/data/demo/educationSESA.html](https://motus.org/data/demo/educationSESA.html)
What is the population trend and status for Semipalmated Sandpipers?

What habitat and food resources make a good stopover site for this species?

Identify a threat that might impact survival or success at each stage below.

How can human-related threats be reduced or mitigated?

Breeding:

Migration:

Non-breeding: