Case Study:
SWAINSON’S THRUSH
MIGRATION ECOLOGY

PHOTO: NICK SAUNDERS
SWAINSON’S THRUSH

A Swainson’s Thrush is a medium-sized songbird in the Thrush family. They have an omnivorous diet, foraging for insects on the forest floor and fruits and berries in the undergrowth.

LATIN:
*Catharus ustulatus swainsoni*

FRENCH:
Grive à dos olive

SPANISH:
Zorzal de Swainson

Swainson’s Thrush are currently designated as a species of ‘Least Concern’ by the International Union for Conservation of Nature. However, Swainson’s Thrush and many other neotropical forest birds, are experiencing declining population trends due to a variety of factors across wintering, migrating, and breeding ranges.

Key conservation concerns:
- Large-scale habitat loss in South America (clear-cutting; animal agriculture)
- Habitat conversion (changing diverse, mixed-species forests with monocultures (pine or coffee plantations)
- Collisions with windows and structures along migration
Swainson’s Thrushes are neotropical migrants, travelling long distances between their non-breeding and breeding habitats. They fly at night, stopping to rest and feed in woodlots and parks during the day.

Swainson’s Thrushes spend the winter in mature tropical forests and forest-pasture edges of Central and South America. They have an omnivorous diet, foraging for insects from the forest floor, and fruits and berries in the undergrowth.

Swainson’s Thrushes nest in dense undergrowth of northern coniferous and deciduous forests. A clutch size of 3-4 speckled blue eggs are laid in a bulky nest cup made of moss, lichen, twigs, and leaves and lined with grass. Nestlings are fed a diet of energy-rich caterpillars, ants and beetles.

Fall migration routes are variable and widespread as birds return to their wintering grounds. Swainson’s Thrushes moult throughout migration, replacing worn body and flight feathers at stopover sites. As the season changes, Swainson’s Thrush forage for wild fruits and berries to fuel their journey.
Scientists are investigating the full life cycle ecology of Swainson’s Thrush to understand factors leading to population declines, and to help recover or conserve populations.

SCIENCE GOALS:
• Identify wintering sites and specific habitat needs in South America.
• Determine departure and arrival times between its wintering and breeding locations.
• Identify important stopover locations and length of stay during migration.

METHODS:

Fine ‘mist nets’ are set up in the tropical forests of the Andes Mountains in Colombia during the non-breeding (winter) stage of the birds’ cycle. Birds caught are measured, banded, and tagged. The nanotag is attached like a backpack, with loops around the legs, and sits in the centre of the bird’s back. The bird is released, and the tag will emit a unique signal, which can be detected by the radio antennas across the landscape.

Nanotags have been released on nearly 300 Swainson’s Thrushes during 2014, 2015, and 2016. Detections of these tags indicate the date and location of an individual bird as it moves.
Swainson’s Thrush ‘SWTH 6548’ was tagged on March 10, 2016 in Nilo, Colombia. As it moved, the tagged bird was detected by radio telemetry stations at locations provided in the table below.

Explore its movements on the provided base map using the following guidelines.

**Check your migration track here:**
https://motus.org/data/demo/educationSWTH.html

**See multi-track animation here:**
https://motus.org/data/demo/thrusesSpring2016.html

**STUDENT ACTIVITY**

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 the track with the tag identification number.
4. Draw arrowheads on the track to point in the direction of bird movement.
5. Label the date 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.
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 colour to label each stage: Breeding, Migration, and Wintering.
10. Fill in the Breeding range and the Wintering range of the map, using the legend colours. Trace the flight track with the color for Migration.
11. Circle the country names in which this bird was detected.
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>
</tr>
</thead>
<tbody>
<tr>
<td>April 5, 2016</td>
<td>4.3 N</td>
<td>74.5 W</td>
<td>J-17</td>
<td>Bogota, Colombia</td>
<td>40d 1h 52m</td>
</tr>
<tr>
<td>April 20, 2016</td>
<td>9.0 N</td>
<td>79.4 W</td>
<td>I-16</td>
<td>Colon, Panama</td>
<td>0d 0h 5m</td>
</tr>
<tr>
<td>April 21, 2016</td>
<td>9.4 N</td>
<td>79.9 W</td>
<td>I-16</td>
<td>Panama City, Panama</td>
<td>0d 0h 5m</td>
</tr>
<tr>
<td>May 15, 2016</td>
<td>29.4 N</td>
<td>94.8 W</td>
<td>G-12</td>
<td>Galveston, Texas</td>
<td>0d 0h 10m</td>
</tr>
<tr>
<td>May 23, 2016</td>
<td>39.0 N</td>
<td>84.3 W</td>
<td>H-10</td>
<td>Cincinnati, Ohio</td>
<td>0d 0h 2m</td>
</tr>
<tr>
<td>May 25, 2016</td>
<td>42.2 N</td>
<td>79.8 W</td>
<td>I-9</td>
<td>Erie, Pennsylvania</td>
<td>0d 0h 8m</td>
</tr>
<tr>
<td>May 26, 2016</td>
<td>44.1 N</td>
<td>76.4 W</td>
<td>I-9</td>
<td>Kingston, Ontario</td>
<td>0d 0h 1m</td>
</tr>
<tr>
<td>May 28, 2016</td>
<td>45.4 N</td>
<td>73.9 W</td>
<td>I-8</td>
<td>Montreal, Quebec</td>
<td>0d 0h 2m</td>
</tr>
<tr>
<td>May 29, 2016</td>
<td>46.9 N</td>
<td>71.2 W</td>
<td>I-8</td>
<td>Quebec City, Quebec</td>
<td>0d 0h 4m</td>
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<tr>
<td>June 2, 2016</td>
<td>50.2 N</td>
<td>63.8 W</td>
<td>J-7</td>
<td>Mingan Archipelago National Park Reserve, Quebec</td>
<td>0d 0h 23m</td>
</tr>
</tbody>
</table>
**DISCUSSION**

Use the guided discussion boxes below to analyze the project results from this Case Study. Present and discuss as a class, or compare results with other Case Study species.

### POPULATIONS

1. What is the population trend and status for Swainson’s Thrush?

### MIGRATION ECOSYSTEM

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

### THREAT ASSESSMENT

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

- **Breeding:**

- **Migration:**

- **Non-breeding:**

### CONSERVATION

4. How can human-related threats be reduced or mitigated?