

Introduction to the Motus Wildlife Tracking System

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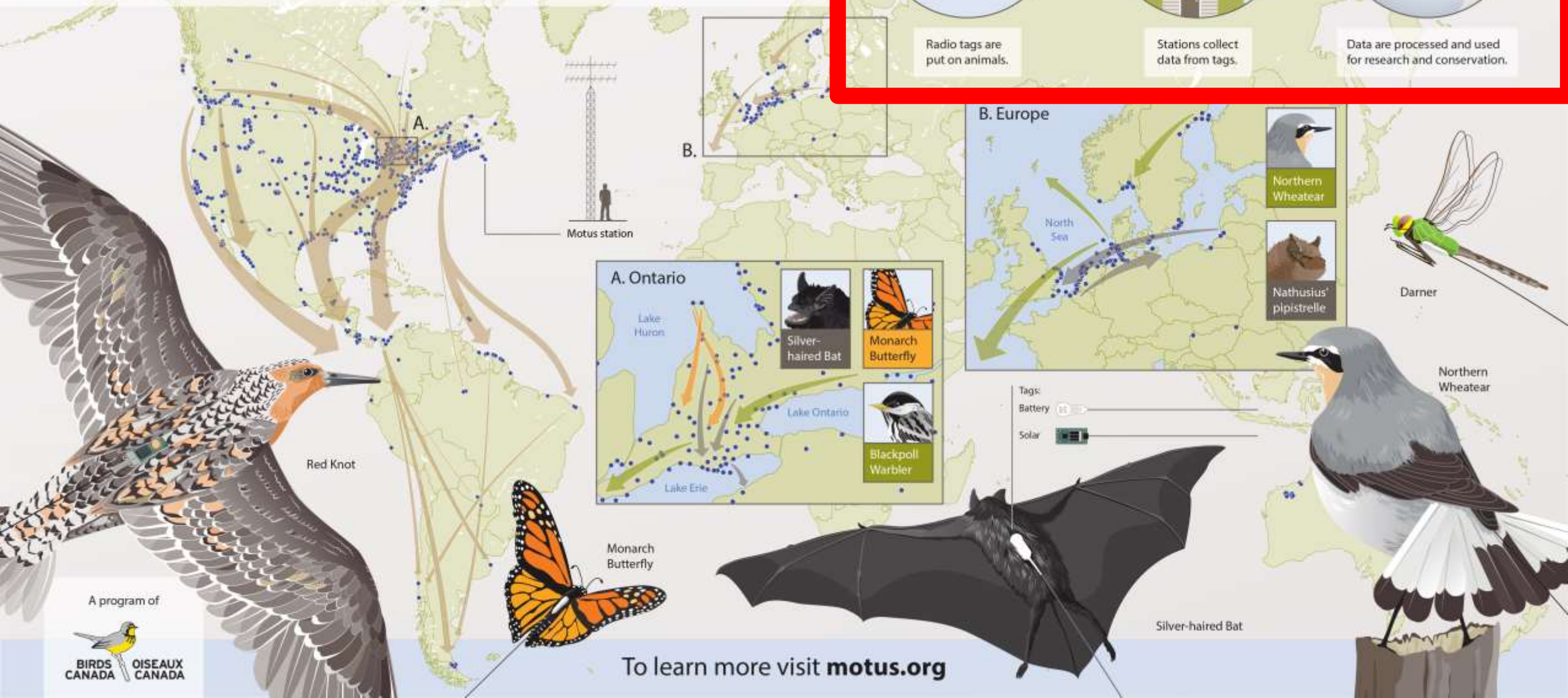
Motus

Wildlife Tracking System

A collaborative approach to radio telemetry.



A collaborative research network tracking wildlife movement for conservation



Tags



Radio tags are put on animals.

Stations



Stations collect data from tags.

Data



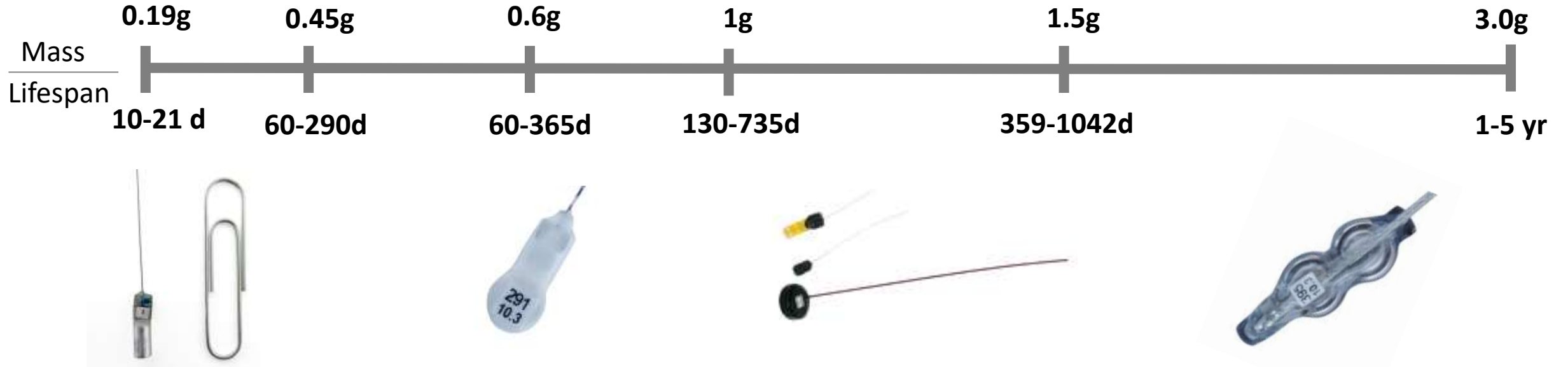
Data are processed and used for research and conservation.

Motus (Coded VHF) Tags

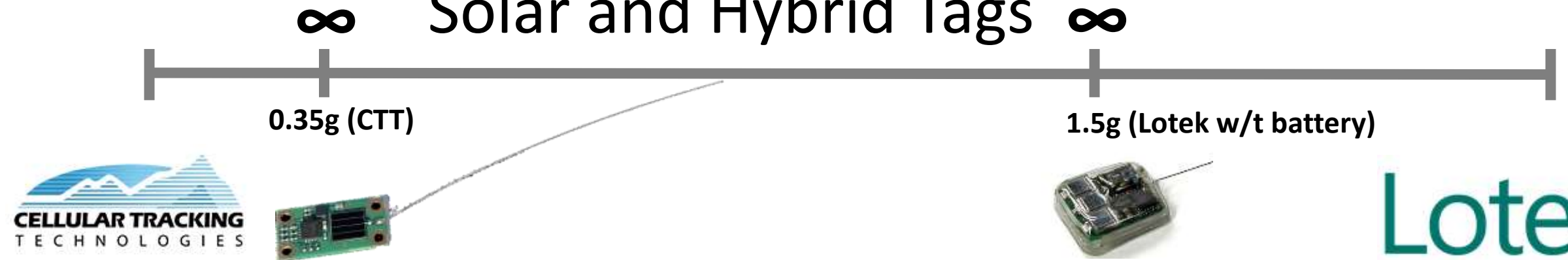


Tags

Battery Tags



Solar and Hybrid Tags



Tags

Stations

Data



What is a Motus Station?



Antenna Array

Mast & Structure

Computer

Power

What is a Motus Station?



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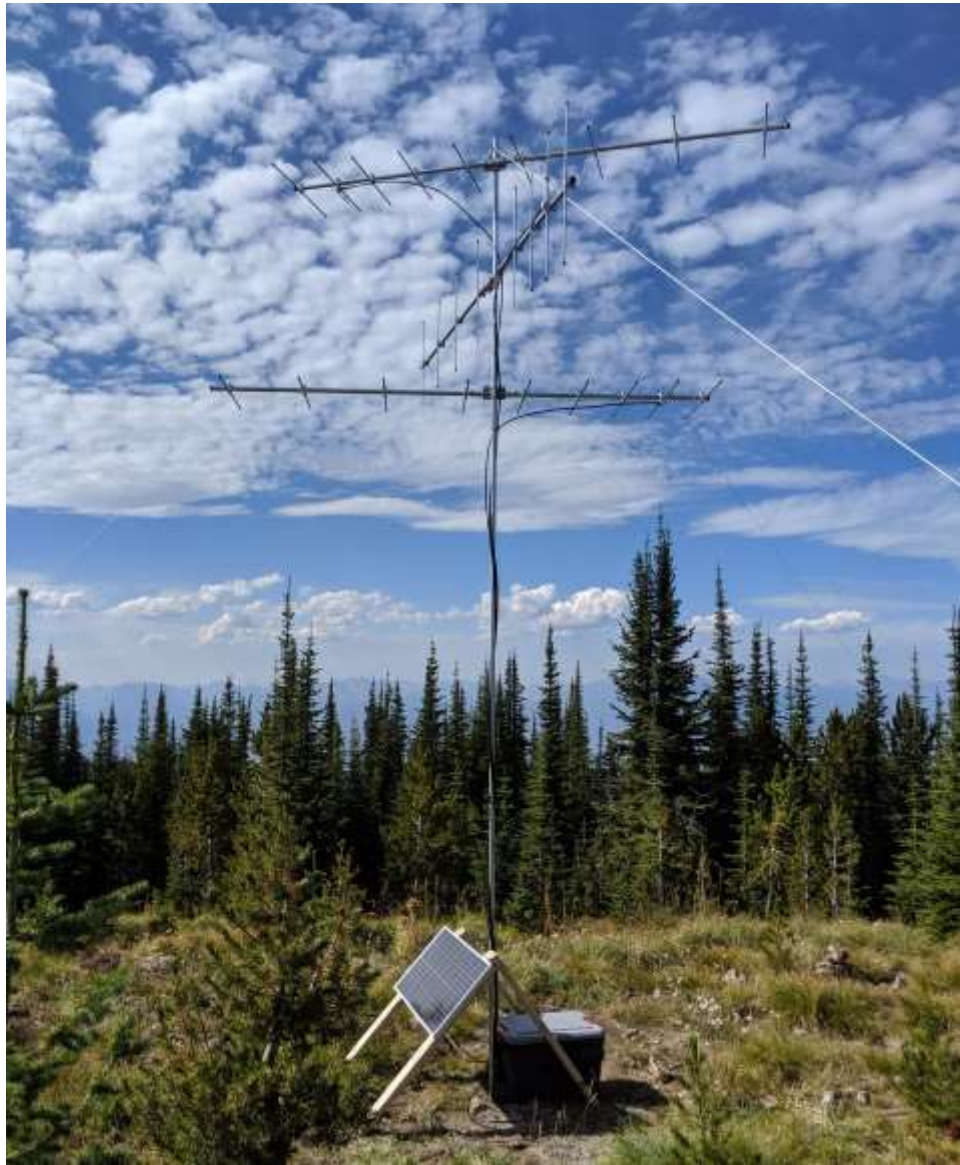
Antennas affixed to metal building.
Peregrine Fund Center, Boise, ID.



Lighthouse on Cape Sable, Nova Scotia
(Acadia University).



33ft tower on MPG Ranch, MT.



22ft mast above tree line, western Montana.

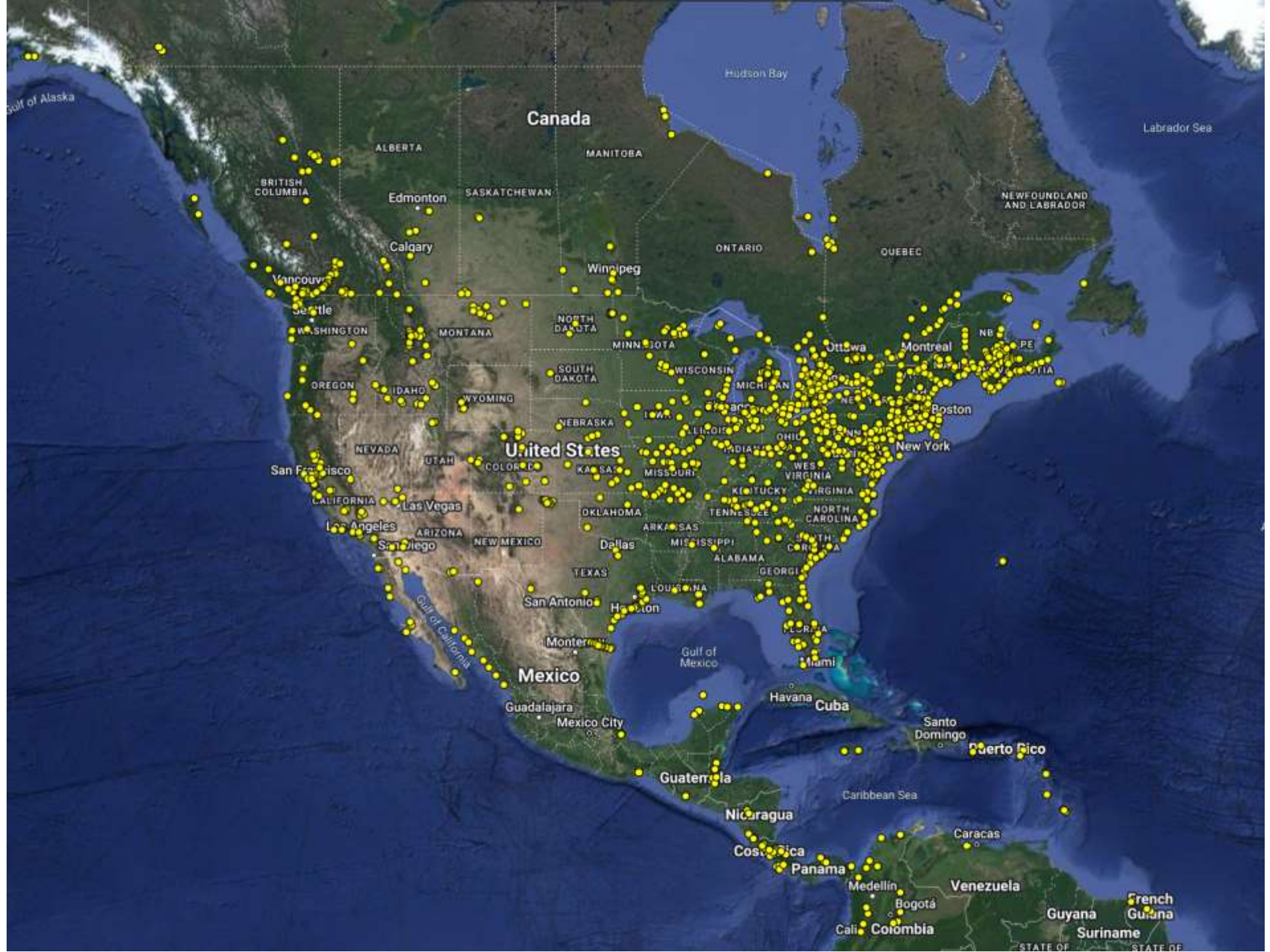


Mobile station, MPG Ranch, MT.



Map Satellite

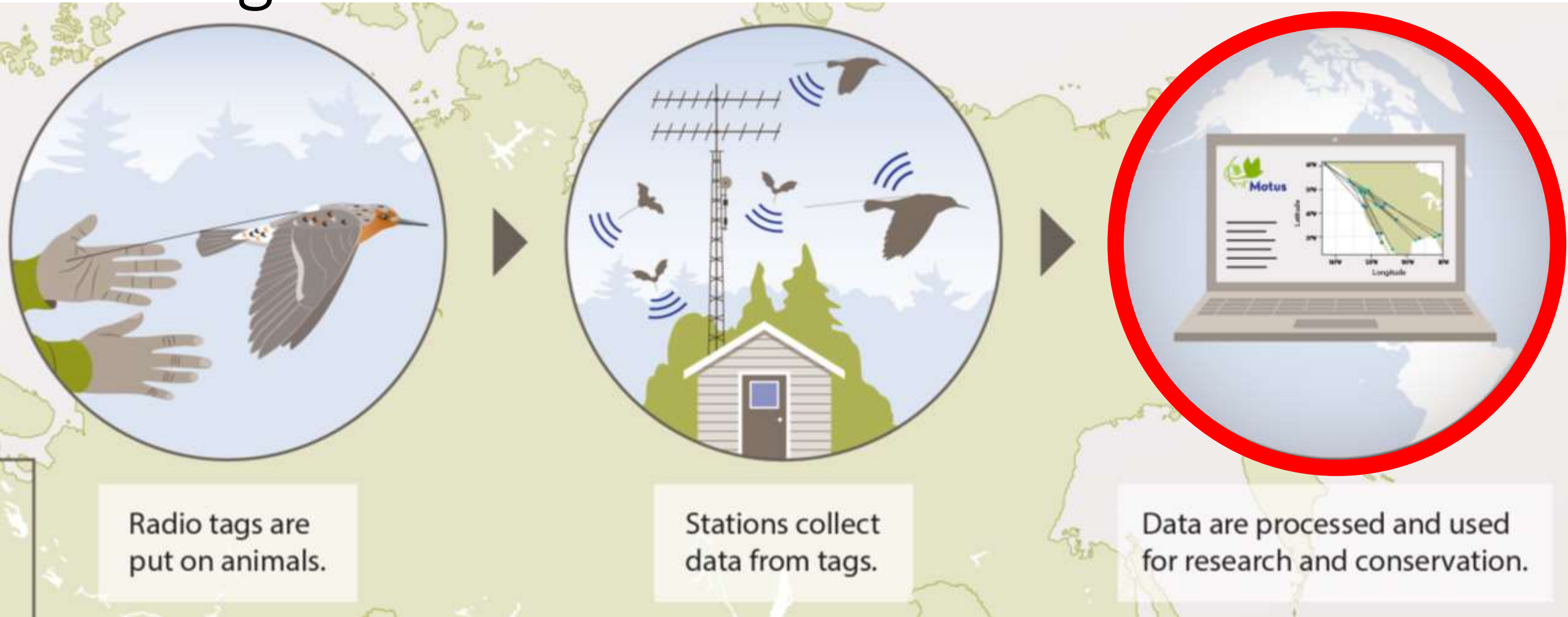




Tags

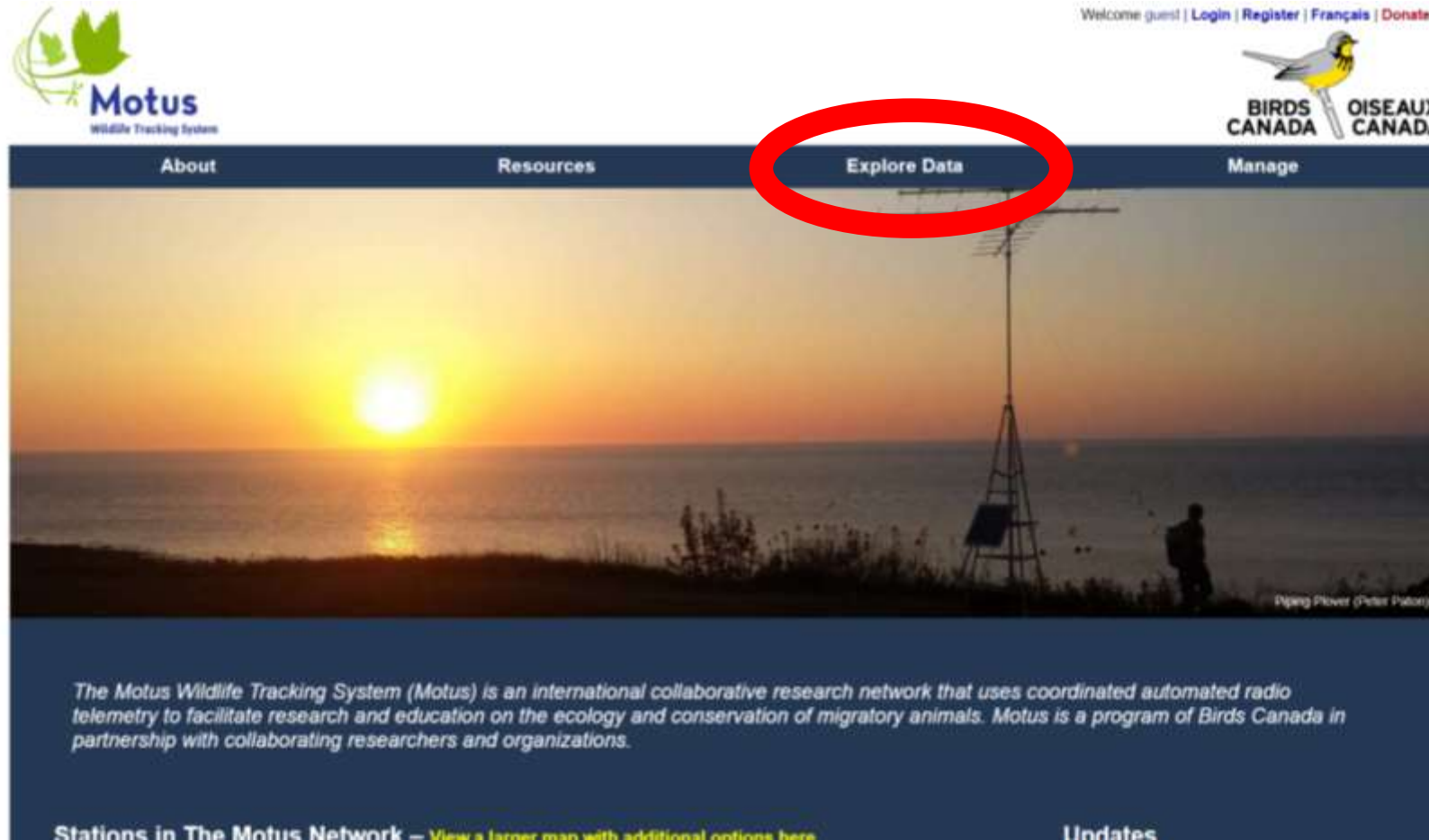
Stations

Data



Motus Website

- www.motus.org



The image shows a screenshot of the Motus Wildlife Tracking System website. The page features a dark blue header with navigation links: "About", "Resources", "Explore Data" (highlighted with a red circle), and "Manage". In the top right corner, there is a login area with links for "Welcome guest", "Login", "Register", "Français", and "Donate". Below the header is a large banner image of a sunset over the ocean with a radio tower and a person in the foreground. The text "Piping Plover (Peter Paton)" is visible in the bottom right corner of the banner. Below the banner, there is a paragraph of text describing the Motus system: "The Motus Wildlife Tracking System (Motus) is an international collaborative research network that uses coordinated automated radio telemetry to facilitate research and education on the ecology and conservation of migratory animals. Motus is a program of Birds Canada in partnership with collaborating researchers and organizations." At the bottom of the page, there are two sections: "Stations in The Motus Network – View a larger map with additional options here" and "Updates".

Welcome guest | [Login](#) | [Register](#) | [Français](#) | [Donate](#)

Motus
Wildlife Tracking System

BIRDS CANADA **OISEAUX CANADA**

About Resources **Explore Data** Manage

Piping Plover (Peter Paton)

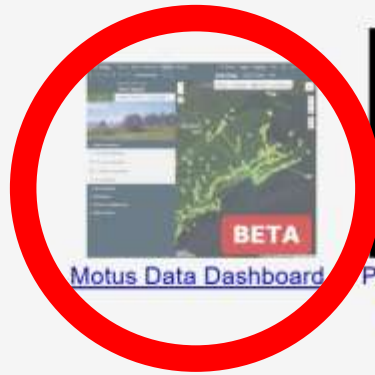
The Motus Wildlife Tracking System (Motus) is an international collaborative research network that uses coordinated automated radio telemetry to facilitate research and education on the ecology and conservation of migratory animals. Motus is a program of Birds Canada in partnership with collaborating researchers and organizations.

Stations in The Motus Network – [View a larger map with additional options here](#)

Updates

Explore Data

Motus collaborators contribute information and data from their projects to a centralized database housed at Birds Canada's National Data Centre. There are various online tools to summarize, explore, and access these data. Additional tools are under development to help users manage and explore their data.



[Motus Data Dashboard](#)



[Project, Receiver and Tag Exploration](#)



[Audubon Bird Migration Explorer](#)



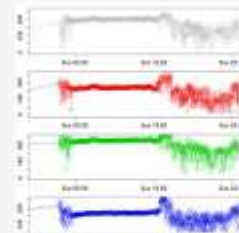
[Receiver Locations](#)



[View Tracks](#)



[Species Tagged](#)



[Download Data](#)

BETA EXPLORE **STATIONS**

Enter the name or ID of a Motus station or a receiver serial number.

- SPECIES
- REGIONS
- PROJECTS
- TAG DEPLOYMENTS



BETA EXPLORE > SPECIES

MOTUS SPECIES Wood Thrush

Hylocichla mustelina Switch Species

Animal summary

- 9 Projects with animals detected
- 48 Contributing projects
- 203 Stations visited
- 7 Countries visited
- 1372 Detections
- 463 Animals tagged

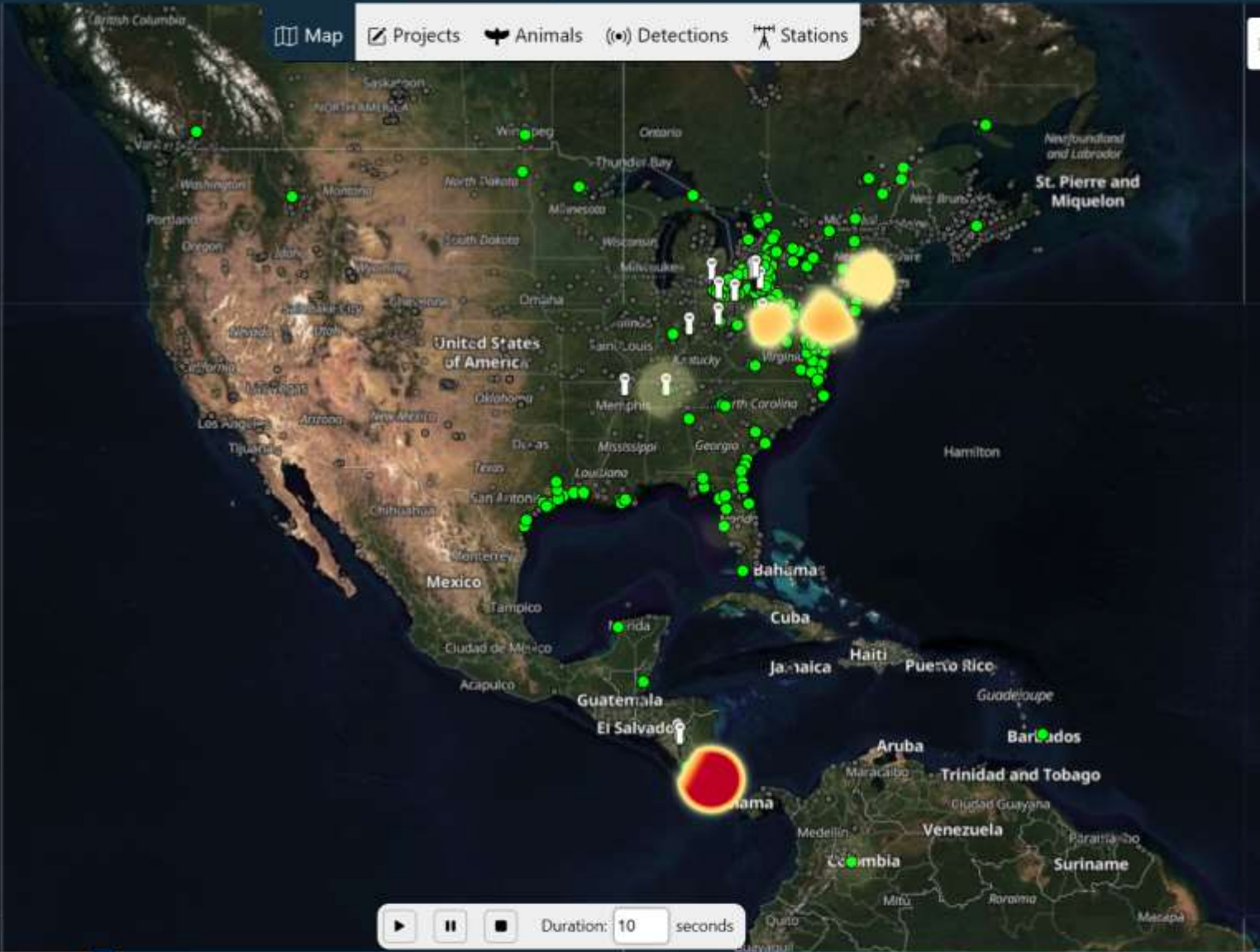
Latest activity

Tag detected: Wood Thrush #40487 on 2023-04-11 at WPNC banding station

Tag deployed: Wood Thrush #45142 on 2023-03-13

Map Legend

+
-



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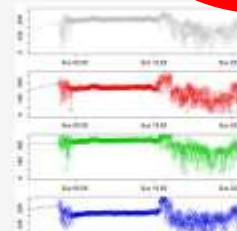
[Receiver Locations](#)



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Piping Plover (Peter Paton)

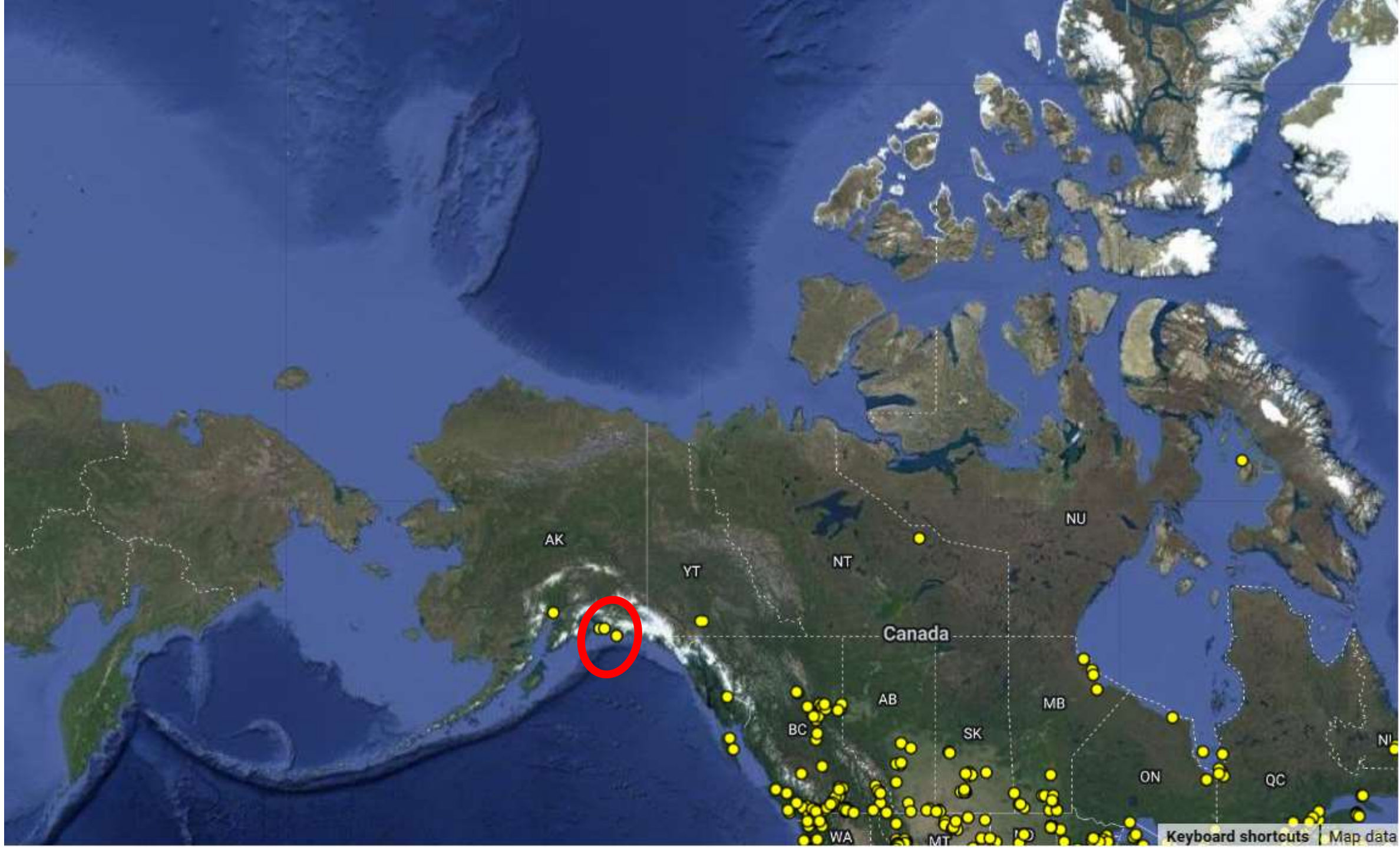
The Motus Wildlife Tracking System (Motus) is an international collaborative research network that uses coordinated automated radio telemetry to facilitate research and education on the ecology and conservation of migratory animals. Motus is a program of Birds Canada in partnership with collaborating researchers and organizations.

Stations in The Motus Network – [View a larger map with additional options here](#)

Updates



- December 2022 – **Important announcements to the Motus Community** [Click here to read them.](#)
- September 2022 – **Explore Motus data in Audubon's new Bird Migration Explorer** [Click here to see more.](#)
- April 2022 – **Job Opportunity: Motus US Director** Birds Canada and American Bird Conservancy are pleased to announce an exciting new opportunity, and are now accepting applications for a full-time Motus U.S. Director. [Click here to view the job posting and apply.](#)
- March 2022 – **R package documentation update** We have recently revised the Motus R Book and created a website for the [motus R package](#).
- February 2022 – **Lotek tags are now automatically registered!** The Motus teams at Lotek and Birds Canada are delighted to announce that all Motus-designated Lotek NanoTags will now automatically be registered with the system prior to delivery. [Read more.](#)
- December 2021 – **Web Update: Introducing Motus Stations and more!** New updates to the Motus metadata management system have been introduced. [Read more about them.](#)
- June 2021 – **Strategic Development – Motus Fest 2021!** Best ever in the strategic development of Motus



Cordova (ID# 9674)

Current status: active

Deployment started: 2023-04-28 06:33:00 UTC

Last data received: 2023-09-18 22:58:34 UTC

Tags detected: 32 ([table](#), [timeline](#))

Project: [CWS-Pacific Shorebird Stations \(#336\)](#)

Project contact: [Scott Flemming, Environment and Climate Change Canada](#)

Receiver: [CTT-V30B0154D452](#)

Location: Lat.: 60.4076°, Lon.: -145.5052° ([map](#))

Antenna 3: port: 3, type: 9-element Yagi Maple Leaf 9E166, dongle: Funcube Pro Plus, frequency: 166.38MHz

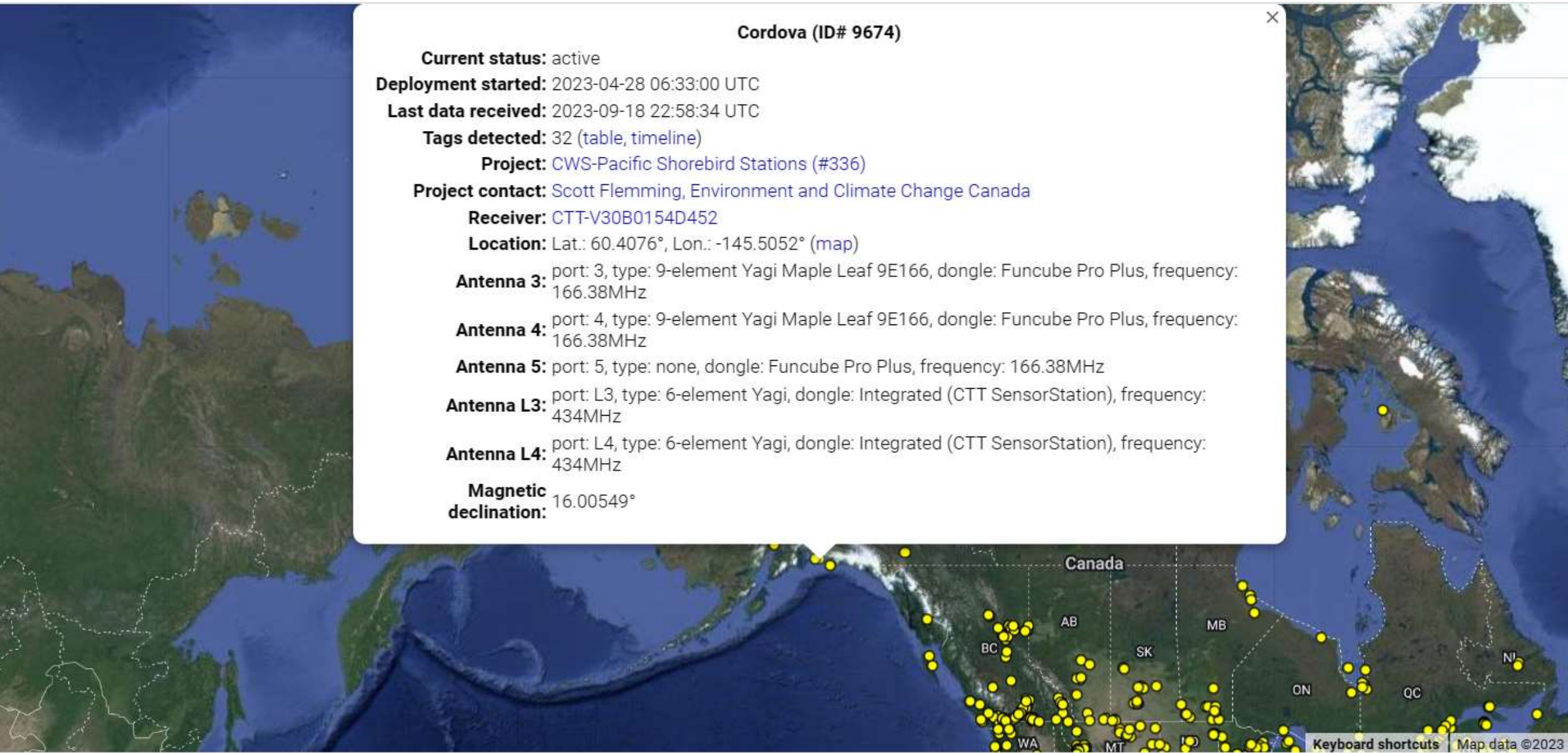
Antenna 4: port: 4, type: 9-element Yagi Maple Leaf 9E166, dongle: Funcube Pro Plus, frequency: 166.38MHz

Antenna 5: port: 5, type: none, dongle: Funcube Pro Plus, frequency: 166.38MHz

Antenna L3: port: L3, type: 6-element Yagi, dongle: Integrated (CTT SensorStation), frequency: 434MHz

Antenna L4: port: L4, type: 6-element Yagi, dongle: Integrated (CTT SensorStation), frequency: 434MHz

Magnetic declination: 16.00549°



Cordova Motus Station



Station: Cordova

Location: [60.4076, -145.5052](#)

Start Date: April 21, 2021

Report Date: November 09, 2021

Number of species detected: 3

Number of individuals detected: 27



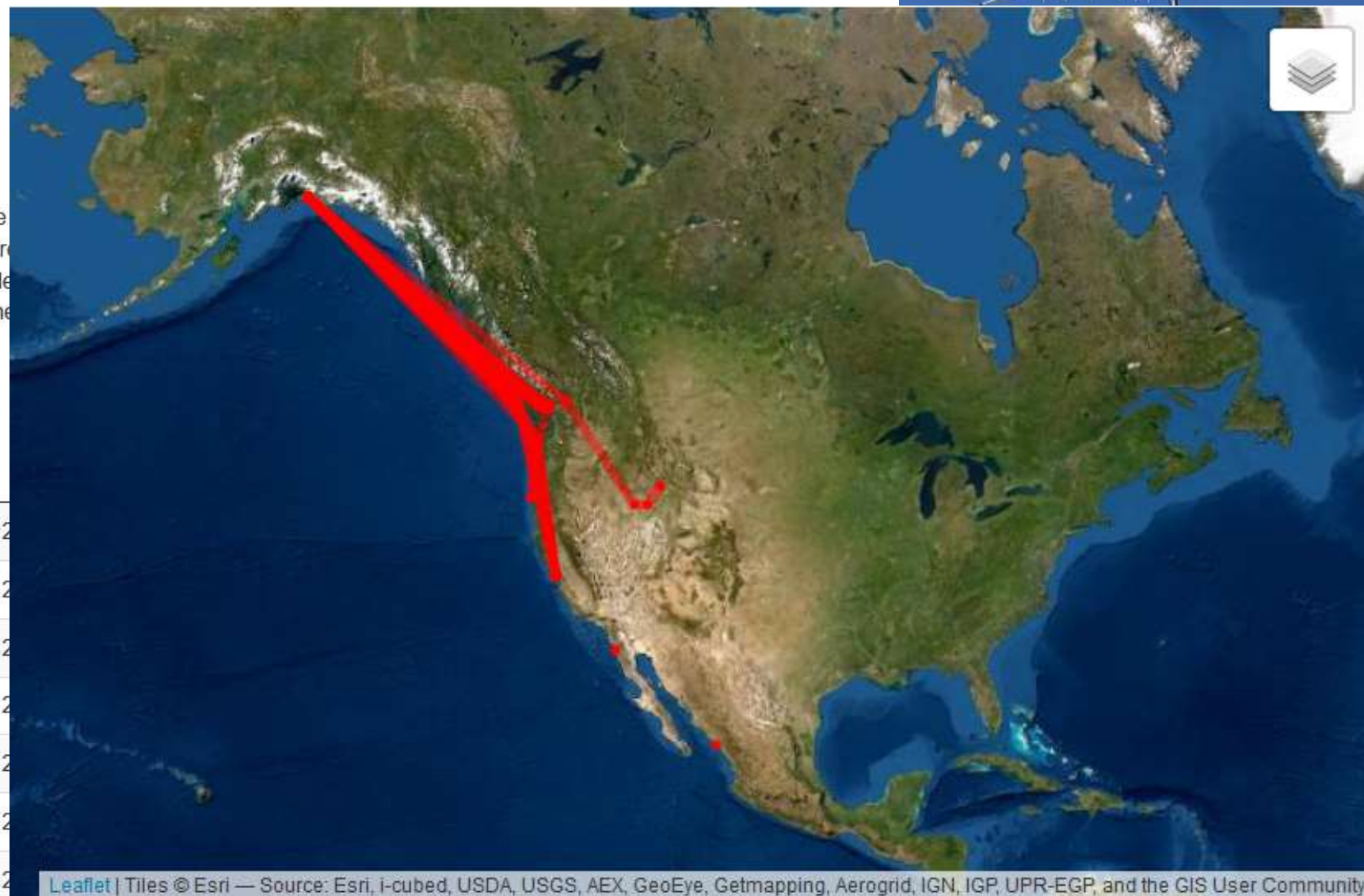
BIRDS CANADA
OISEAUX CANADA



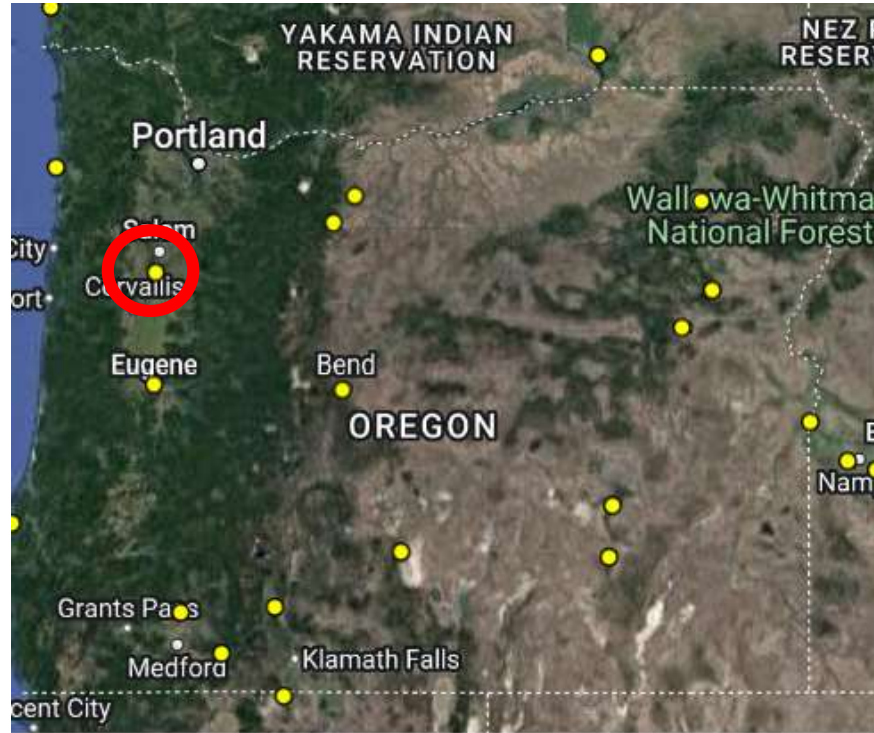
The table below summarizes all tagged animals that have been detected at this station (where background radio static can resemble the signature of a tagged animal) included in this summary. Click on the link to view more details about the project that tagged it, as well as an overview of all the other projects.

Show entries

	Species	
1	Western Sandpiper	2
2	Western Sandpiper	2
3	Western Sandpiper	2
4	Dunlin	2
5	Western Sandpiper	2
6	Western Sandpiper	2
7	Western Sandpiper	2



Ankeny Hill Nature Center



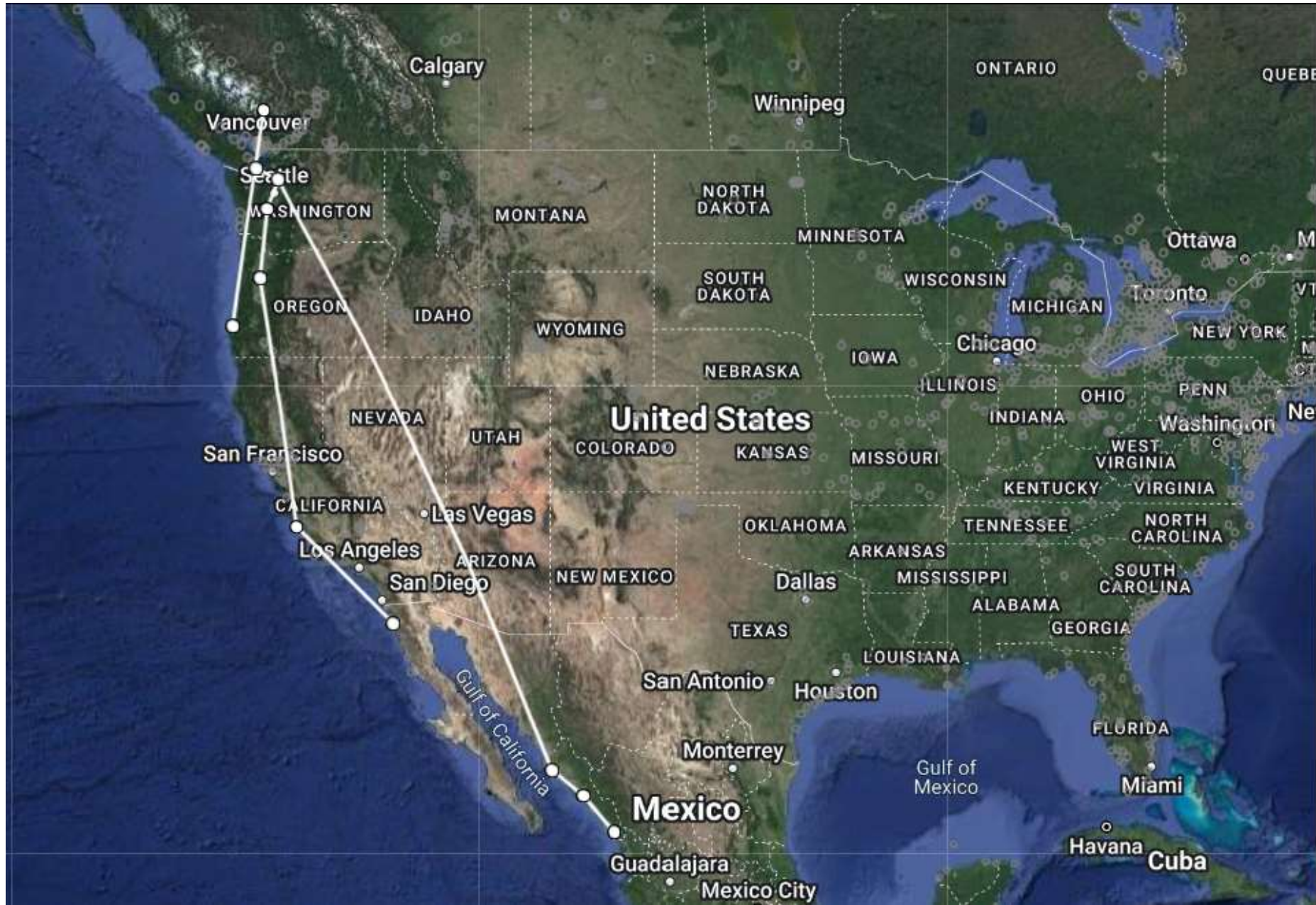
Ankeny Hill Nature Center

Detection date ▲	Tag deployment ▲	Species ▲	Date deployed ▲	Latitude ▲	Longitude ▲
2022-10-29	CA-Shorebirds#61662A4B:30 M.57962	Dunlin	2022-01-27	39.178	-122.0761
2023-01-10	BCwinter#62:19.1 M.71516	American Robin	2022-10-18	49.101081	-123.166129
2023-01-12	BCwinter#62:19.1 M.71516	American Robin	2022-10-18	49.101081	-123.166129
2023-01-13	BCwinter#62:19.1 M.71516	American Robin	2022-10-18	49.101081	-123.166129
2023-01-14	BCwinter#62:19.1 M.71516	American Robin	2022-10-18	49.101081	-123.166129
2023-01-15	BCwinter#62:19.1 M.71516	American Robin	2022-10-18	49.101081	-123.166129
2023-01-16	BCwinter#62:19.1 M.71516	American Robin	2022-10-18	49.101081	-123.166129
2023-01-17	BCwinter#62:19.1 M.71516	American Robin	2022-10-18	49.101081	-123.166129
2023-01-18	BCwinter#62:19.1 M.71516	American Robin	2022-10-18	49.101081	-123.166129
2023-01-19	BCwinter#62:19.1 M.71516	American Robin	2022-10-18	49.101081	-123.166129
2023-02-05	BCwinter#62:19.1 M.71516	American Robin	2022-10-18	49.101081	-123.166129
2023-02-06	BCwinter#62:19.1 M.71516	American Robin	2022-10-18	49.101081	-123.166129
2023-02-07	BCwinter#62:19.1 M.71516	American Robin	2022-10-18	49.101081	-123.166129
2023-02-09	BCwinter#62:19.1 M.71516	American Robin	2022-10-18	49.101081	-123.166129
2023-02-10	BCwinter#62:19.1 M.71516	American Robin	2022-10-18	49.101081	-123.166129

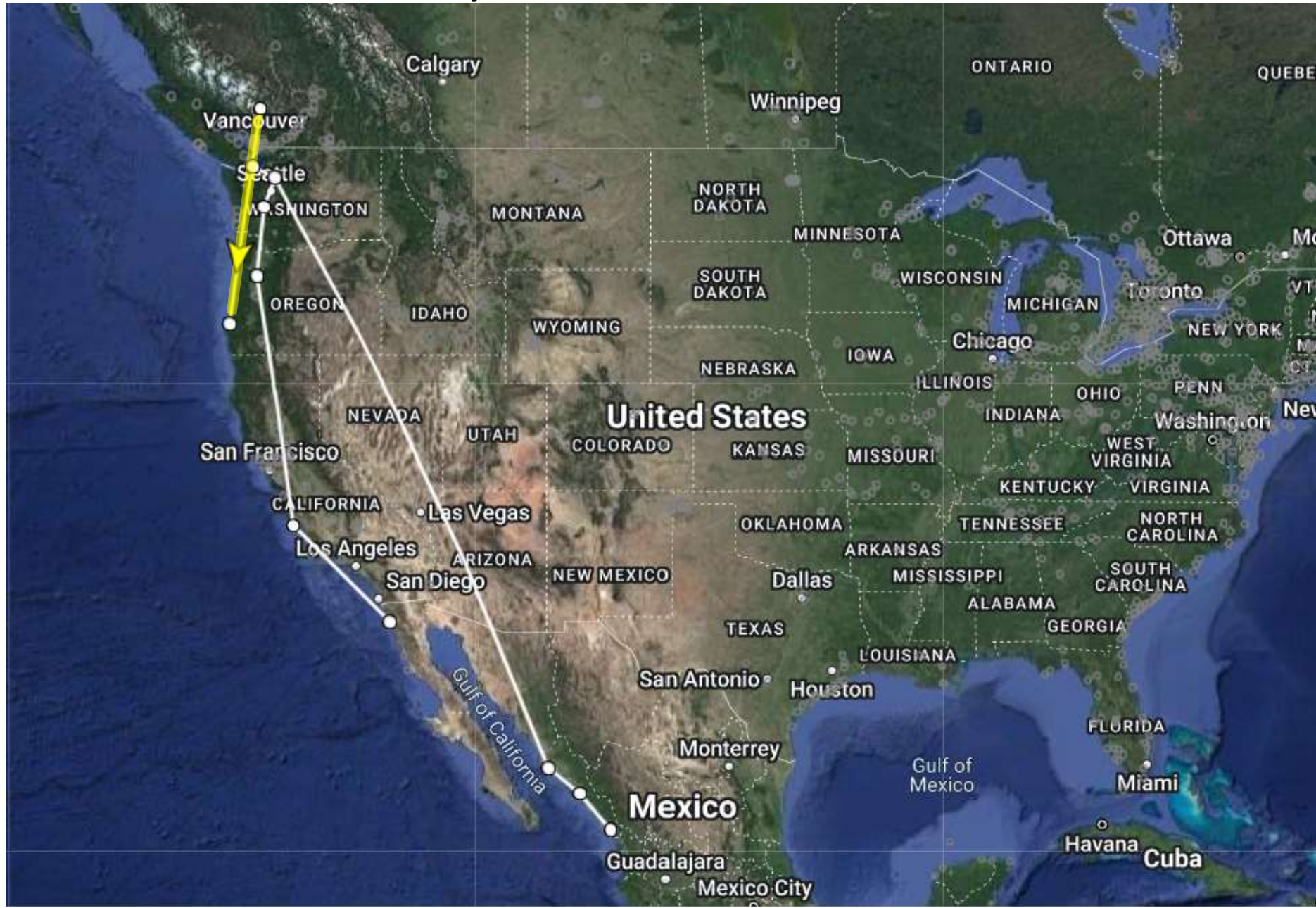
Ankeny Hill Nature Center

Detection date	Tag deployment	Species	Date deployed	Latitude	Longitude
2023-10-03	VARC/UFV#290:28.3 M.75304	Swainson's Thrush	2023-08-26	49.2398	-122.7976
2023-10-02	VARC/UFV#271:28.3 M.71249	Swainson's Thrush	2023-08-20	49.2398	-122.7976
2023-10-02	VARC/UFV#290:28.3 M.75304	Swainson's Thrush	2023-08-26	49.2398	-122.7976
2023-09-30	VARC/UFV#291:28.3 M.75305	Swainson's Thrush	2023-08-26	49.2398	-122.7976
2023-09-19	thrushes#77:25.7 M.62979	Swainson's Thrush	2022-08-24	50.220008	-122.885314
2023-09-18	thrushes#110:25.7 M.68348	Swainson's Thrush	2022-08-28	50.220008	-122.885314
2023-09-17	VARC/UFV#286:28.3 M.75300	Swainson's Thrush	2023-08-19	49.2398	-122.7976
2023-09-12	VARC/UFV#260:28.3 M.69003	Swainson's Thrush	2023-06-14	49.2398	-122.7976
2023-09-12	VARC/UFV#268:28.3 M.69011	Swainson's Thrush	2023-07-01	49.2398	-122.7976
2023-09-05	VARC/UFV#283:28.3 M.75297	Swainson's Thrush	2023-07-12	49.2398	-122.7976
2023-08-23	ABC#3352554C:5 M.71092	TEST	2023-04-05	null	null
2023-07-12	ABC#3352554C:5 M.71092	TEST	2023-04-05	null	null
2023-06-21	ABC#3352554C:5 M.71092	TEST	2023-04-05	null	null
2023-05-17	ABC#44:38.3 M.76608	TEST	2023-05-01	null	null
2023-05-17	ABC#782D6655:5 M.71096	TEST	2023-04-05	null	null
2023-05-17	Willamette Valley OR#534:10.9 M.71917			null	null
2023-04-29	ACR Tomales Bay#1E781E78:5 M.70498	Dunlin	2022-12-16	38.2124	-122.9303
2023-04-20	CA-Shorebirds#4C780707:5 M.68183	Dunlin	2022-11-30	39.1545	-121.9954
2023-04-19	CA-Shorebirds#4C780707:5 M.68183	Dunlin	2022-11-30	39.1545	-121.9954

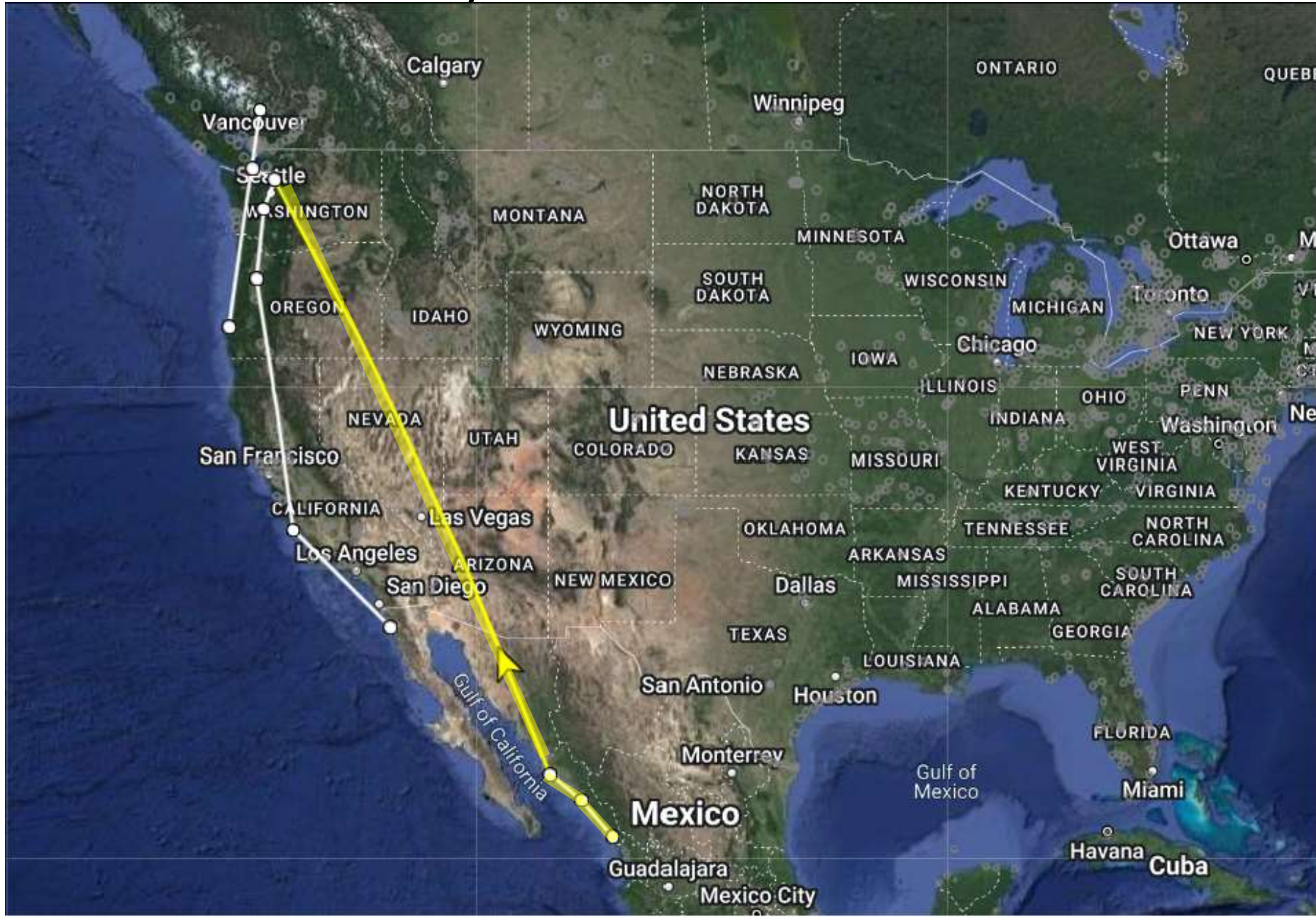
Ankeny Hill Nature Center



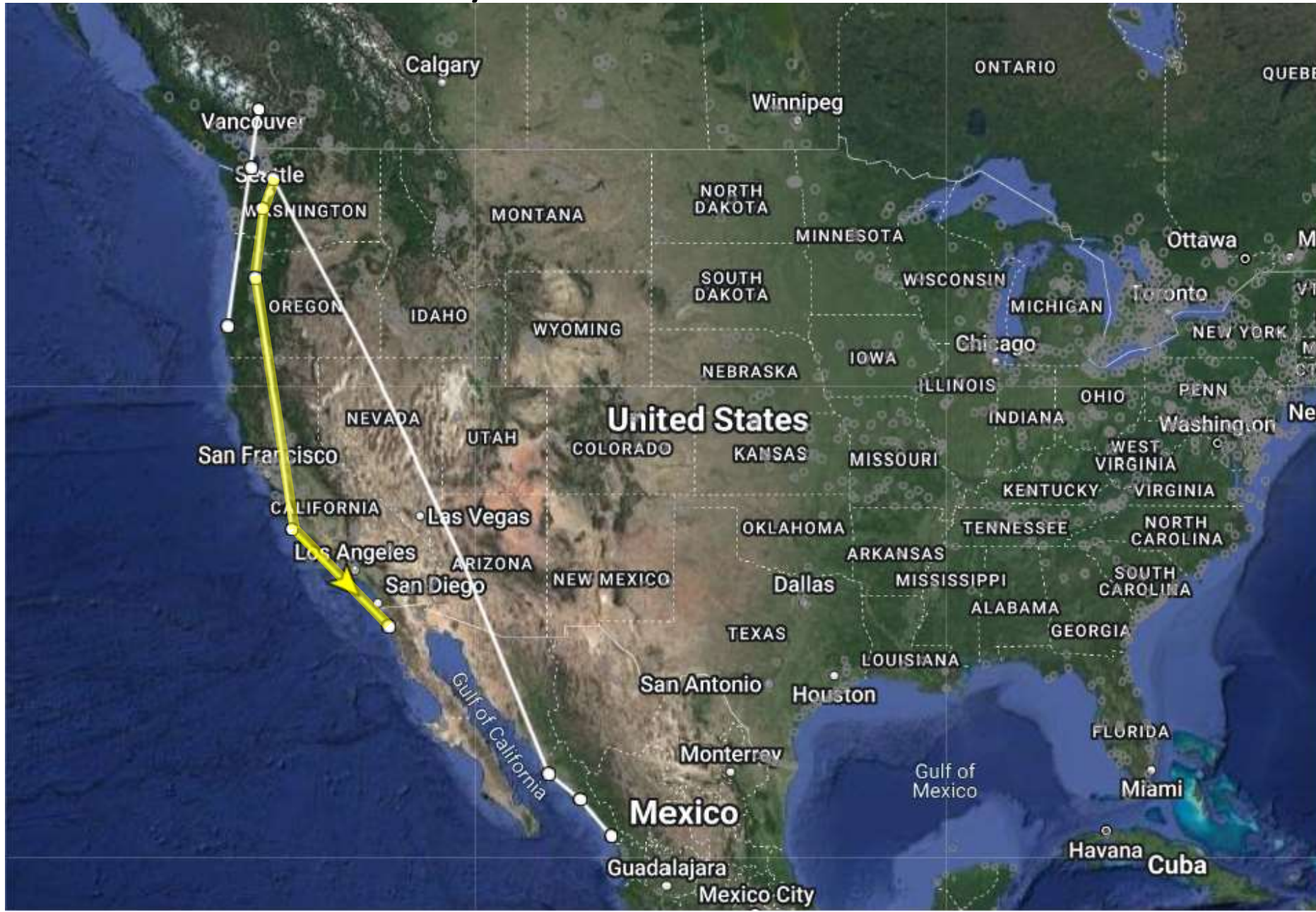
Ankeny Hill Nature Center



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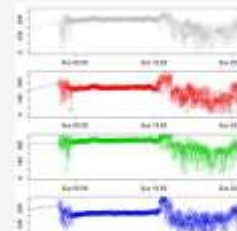
[Receiver Locations](#)



[View Tracks](#)



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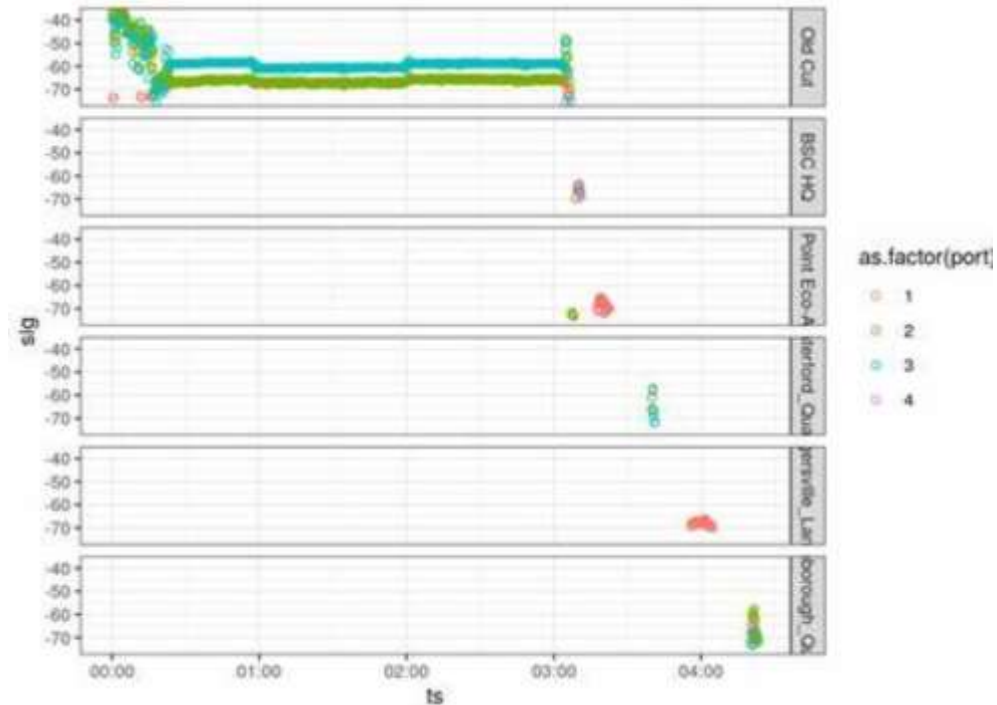
The Intermountain West Collaborative Project

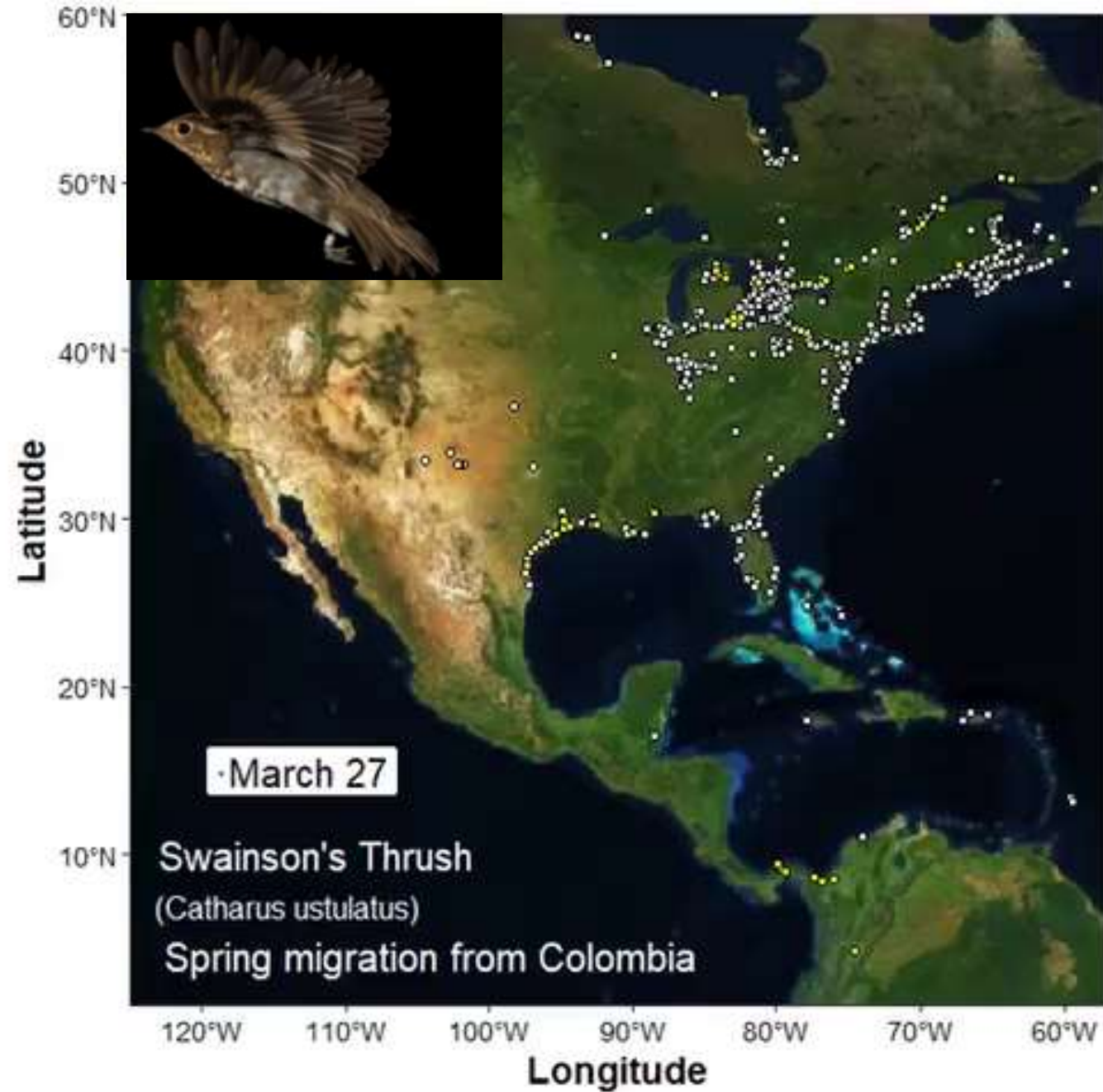
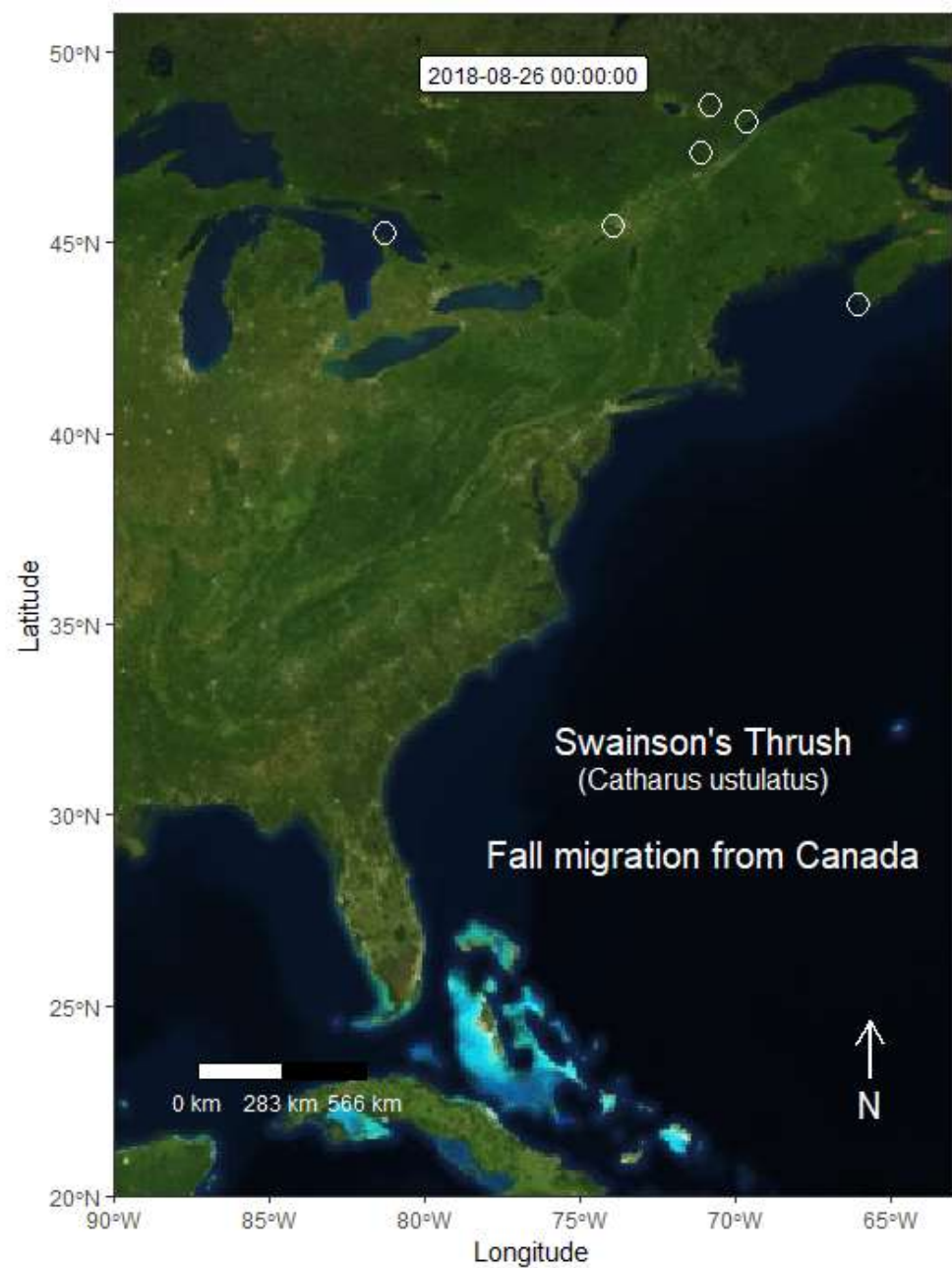
Common
Nighthawk
Migration



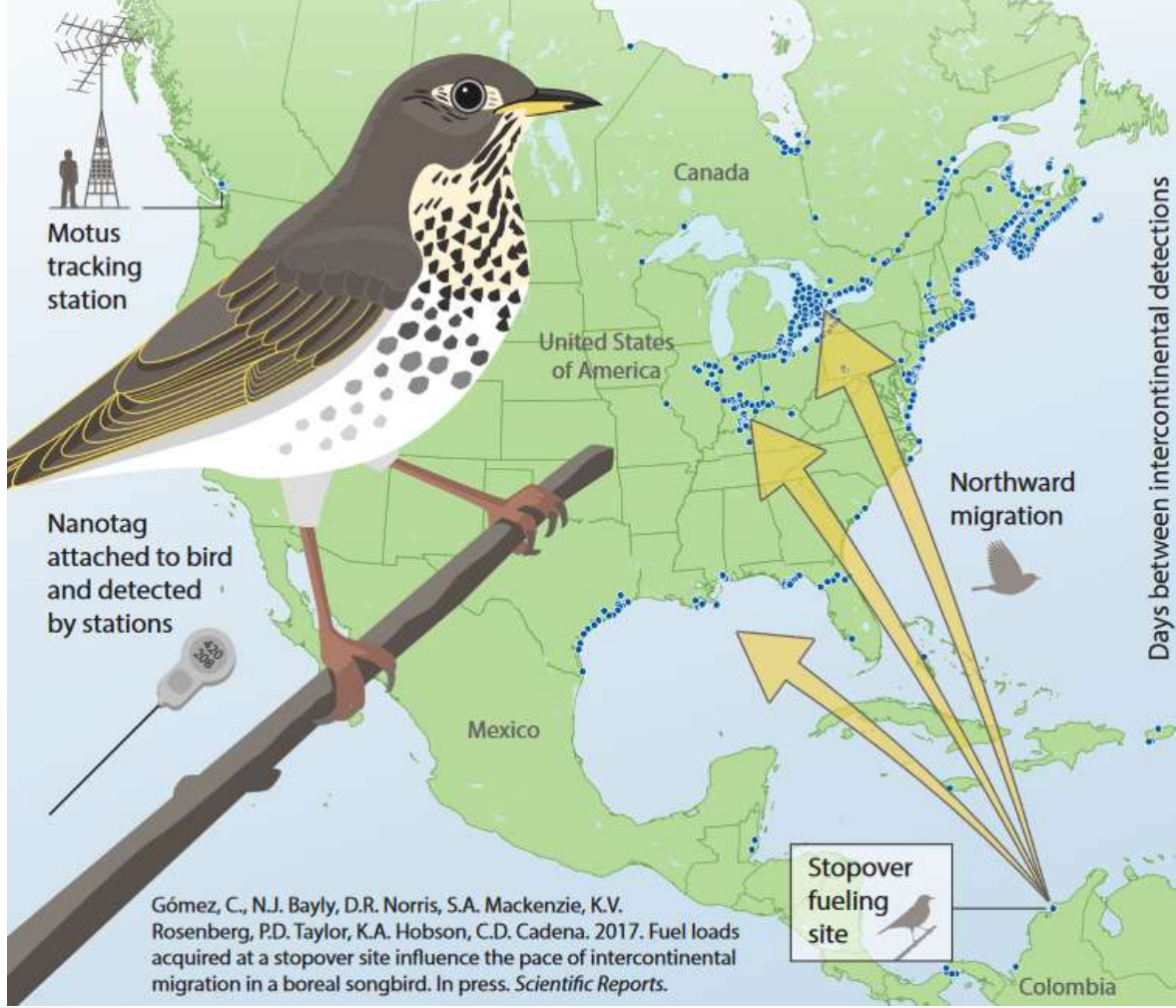
Motus Data: Analyses in R

```
> tagme(176, update = TRUE, dir = "./data/")
Please enter a value for login name at motus.org
==>
motus.sample
Please enter a value for password at motus.org
==>
motus.sample
Checking for new data in project 176
src: sqlite 3.19.3 [F:\Motus\Motus_RPackage\MotusRBoo
tbls: admInfo, allambigs, alltags, antDeps, batches, b
, recvs,
  runs, runsFilters, species, tagAmbig, tagDeps, tags
> |
```



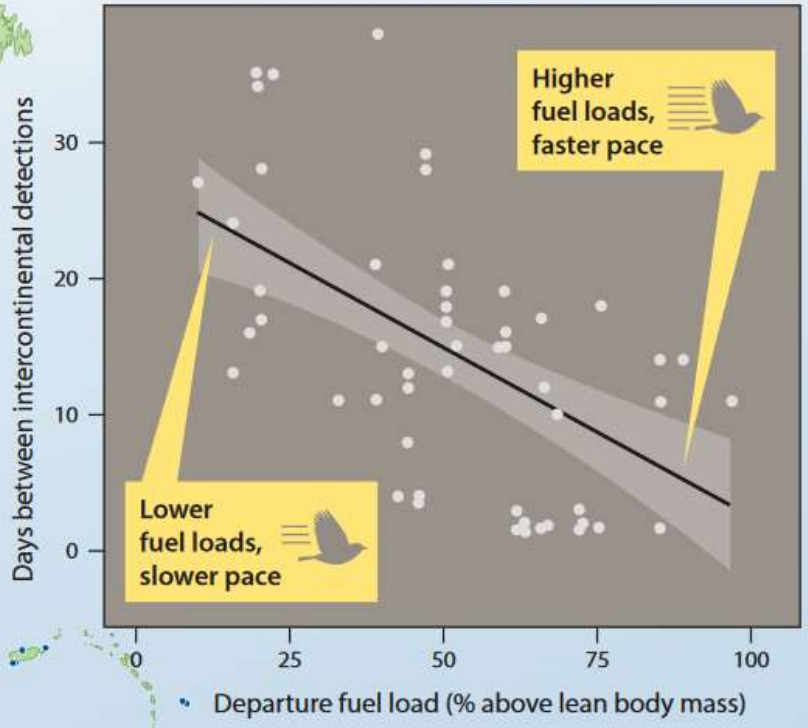


Fuel load (fat) acquired at a stopover site influences the pace of Gray-cheeked Thrush migration



Gómez, C., N.J. Bayly, D.R. Norris, S.A. Mackenzie, K.V. Rosenberg, P.D. Taylor, K.A. Hobson, C.D. Cadena. 2017. Fuel loads acquired at a stopover site influence the pace of intercontinental migration in a boreal songbird. In press. *Scientific Reports*.

Effect of fuel loads on migration pace



www.selva.org.co
 @cdanielcadena
 @BirdStudiesCan
 @CornellBirds
 @NorrisLab





A collaborative research network tracking wildlife movement for conservation



Radio tags are put on animals.



Stations collect data from tags.



Data are processed and used for research and conservation.



Red Knot



Monarch Butterfly



Silver-haired Bat



Darner



Northern Wheatear



Motus station



B.



A. Ontario



Silver-haired Bat



Monarch Butterfly



Blackpoll Warbler



B. Europe



Northern Wheatear



Nathusius' pipistrelle



Tags:

Battery

Solar

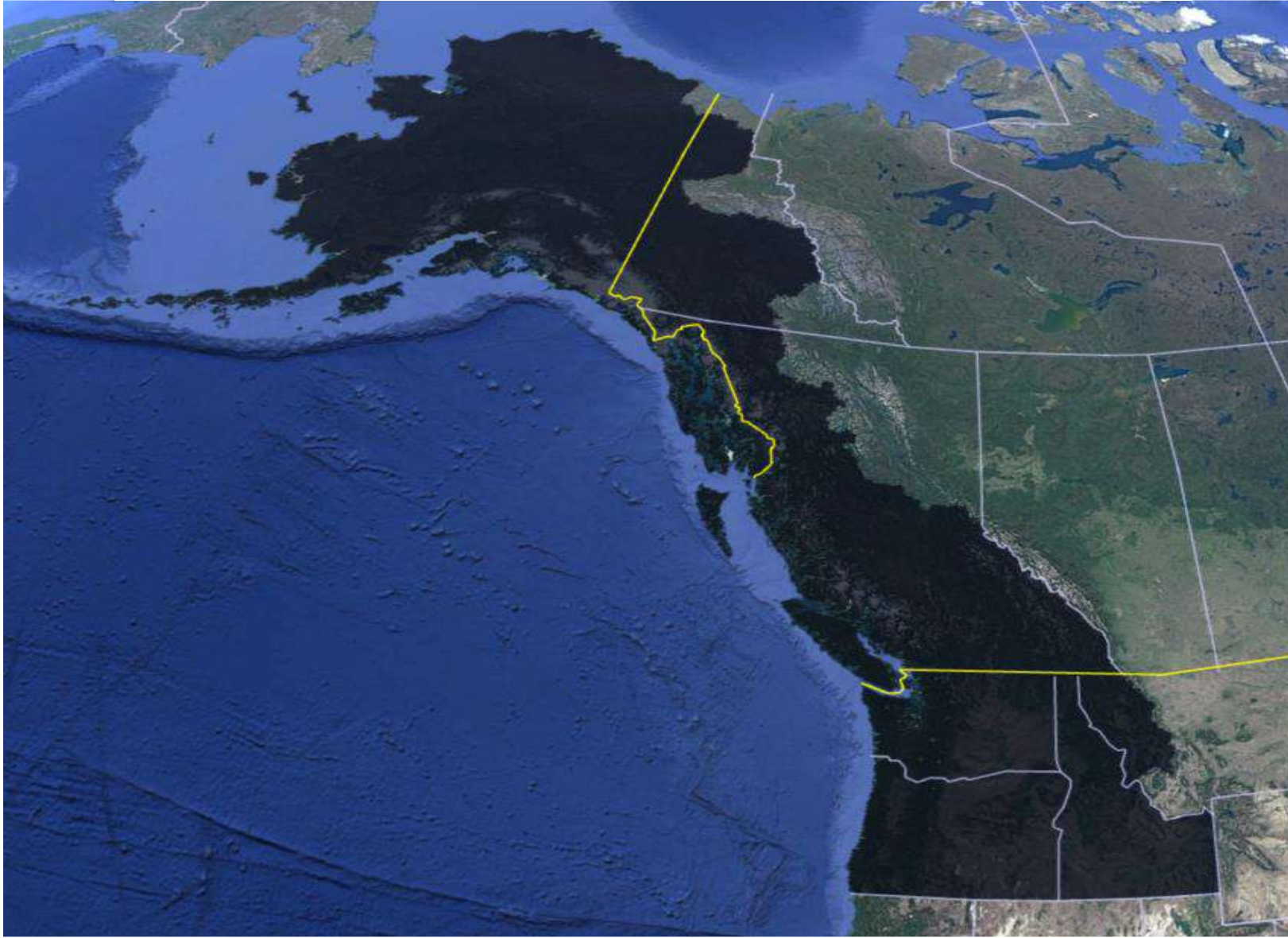
To learn more visit motus.org

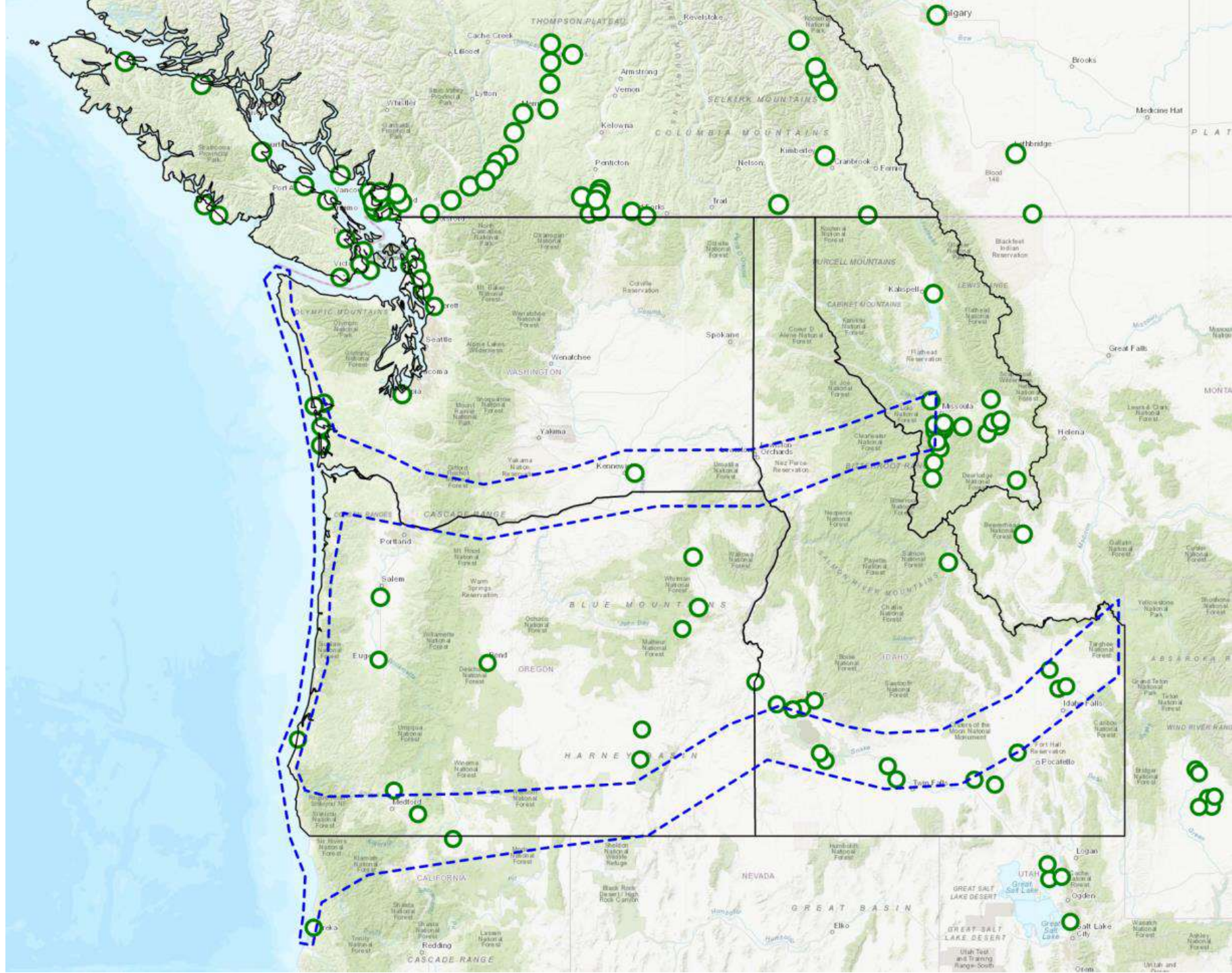
A program of

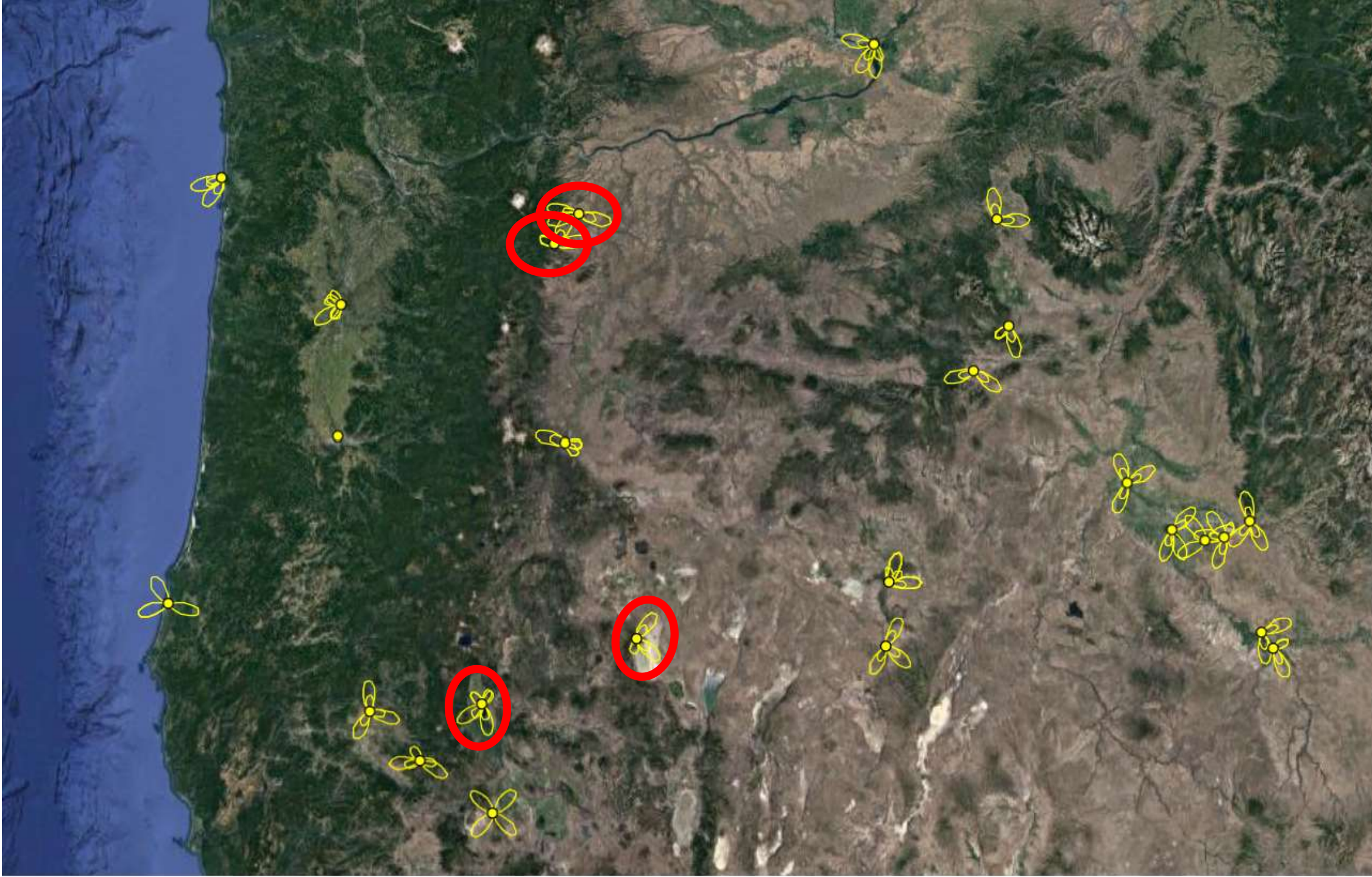


Pacific Northwest Motus Strategy (2023 – 2025)

American Bird Conservancy



















Strategy to 2030

Tracking wildlife, driving science and conservation

DRAFT



1 Receivers deployed by independent groups
Sharing receiver infrastructure and metadata
increases study area for all participants.



2 Tags deployed for specific
research questions
Sharing tag metadata reduces
study duplication and
enhances collaboration.



3 Centralised data
repository and portal
Eases study integration and
access to data processing tools.



4 Augmented research outputs
Improved interaction between
academia, government, and NGOs.



5 Increased research impacts
Public engagement and greater
participation in the network.



Motus

Strategy at a Glance

Vision

Motus is a global research network delivering critical information to conserve smaller flying animals.



Goals

Motus is first and foremost a science and technology program. It is also a large, vibrant, highly committed community of organizations and individuals working together for the conservation of migratory animals. In this next phase of development, we will achieve our vision through four goals:



Enabling Conservation

Motus results are widely used to inform and enact conservation



Pioneering Science

Motus drives fundamental advances in movement ecology



Building Community

Motus is served by regional champions and support networks



Innovating Technology Integration

Motus enables many compatible data and equipment types





4 Continents (of 7)

31 Countries with Motus receiver stations



1,361 Motus receiver stations

280 Species tagged

31,666 Animals tagged



498 Projects to date

1,379 Motus partners and collaborators

147 Publications based on Motus data

Thank You!

William Blake

Pacific Northwest Motus Coordinator
WBlake@abcbirds.org



A Program of Birds Canada 

