



*Motus:  
Western expansion,  
new taxa and scalable  
science in CDFW*

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# *Topics*

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- What is Motus?
- How does it work?
- Why is Motus great?
- Motus in California
- CDFW's Motus Initiative



# What is Motus?

Motus is Latin for movement- a central objective of the effort is to understand animal movements.

“The Motus Wildlife Tracking System is an international collaborative research network that uses a coordinated automated radio telemetry array to track the movement and behaviour of small flying animals.”

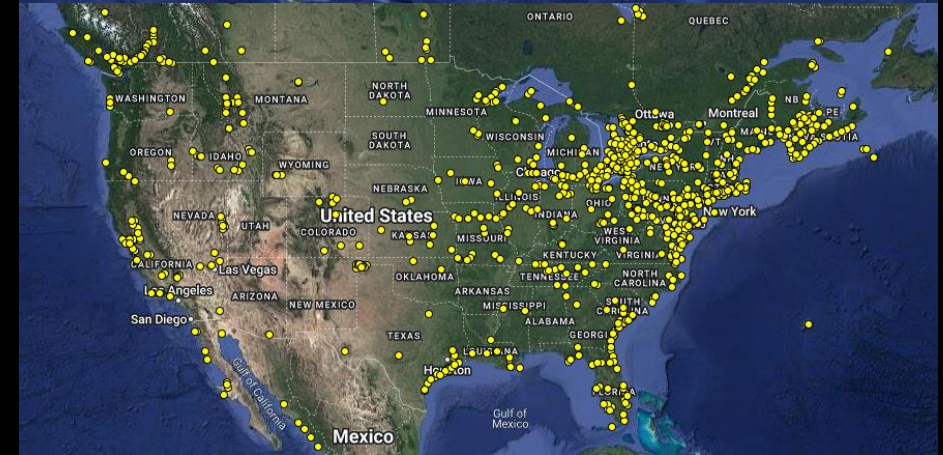
motus.org





# *What is Motus?*

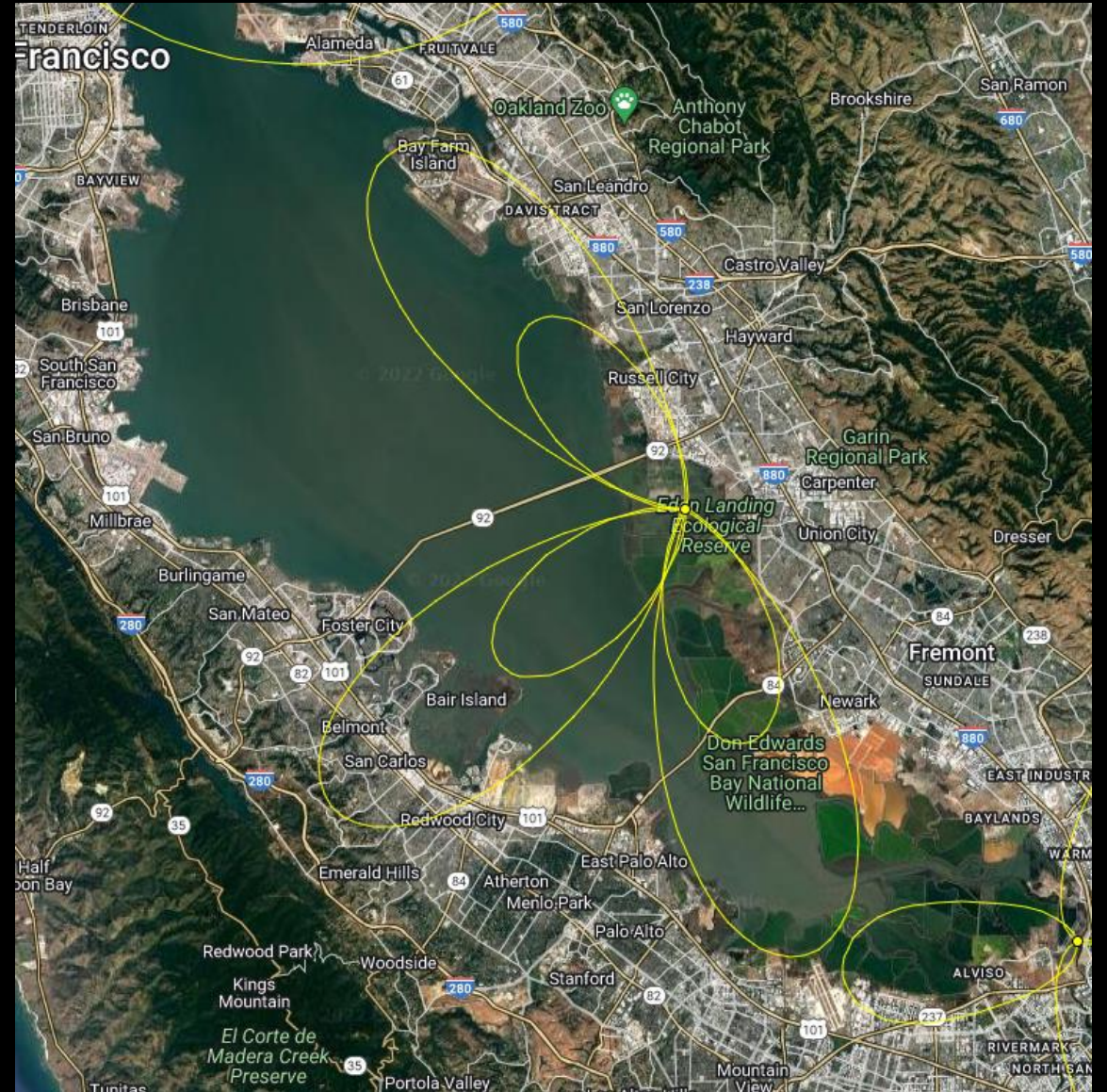
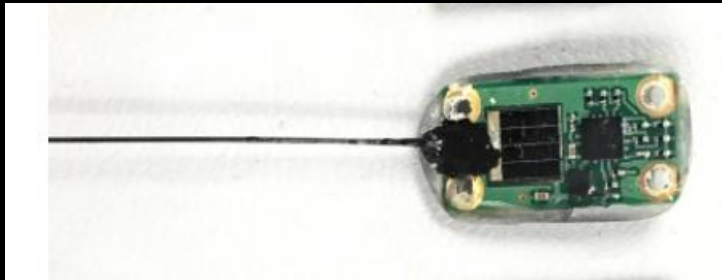
- A network of stationary radio transmitter signal receivers distributed across the landscape.
- Tag signals are received by ANY station, that data is made available to the researcher who registered the tag.
- Collaboration, community and teamwork are a must.





# What is Motus?

- Potential to detect signals up to 10 km away.
- Mostly line of site; signals are impacted by interference from anthropogenic sources, geological features and weather.
- Tag type is also a factor. Larger tags are generally more powerful



# *What is Motus?*

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What does a Motus station look like?

Highly configurable:

- Stand-alone

- Attached to existing infrastructure

Components:

- Support structure

- Power- Solar/battery or AC outlet

- Antennas- UHF and VHF

- Simple computer with many radios



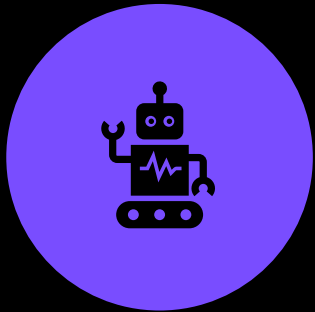


# *What is Motus?*

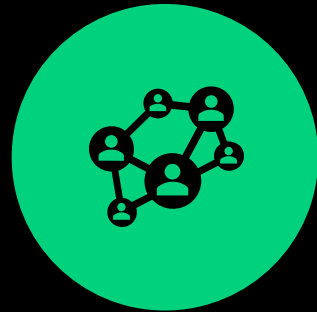


# *Why is Motus great?*

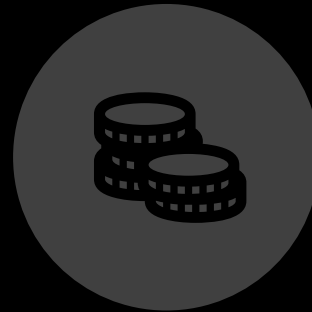
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AUTOMATED



NETWORKED



CHEAP

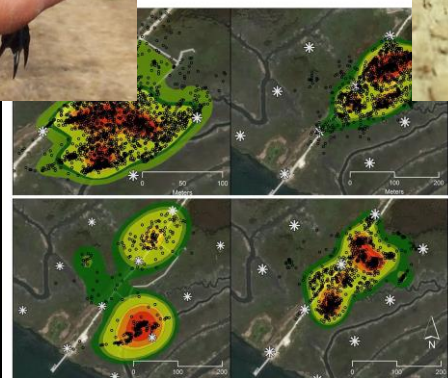


SMALL TAGS



# Why is Motus great?

- Tags are suitable for a wide variety of taxa
- with some additional hardware, the system can work for terrestrial animals as well..



# Why is Motus great?

Collaborative- encourages and rewards researchers working together.

Individual investment benefits the community.



**Major Supporters**

|   |   |  |
|---|---|--|
| <br>This project was undertaken with the financial support of the Government of Canada. | <br>CANADA FOUNDATION FOR INNOVATION   FONDATION CANADIENNE POUR L'INNOVATION |  |
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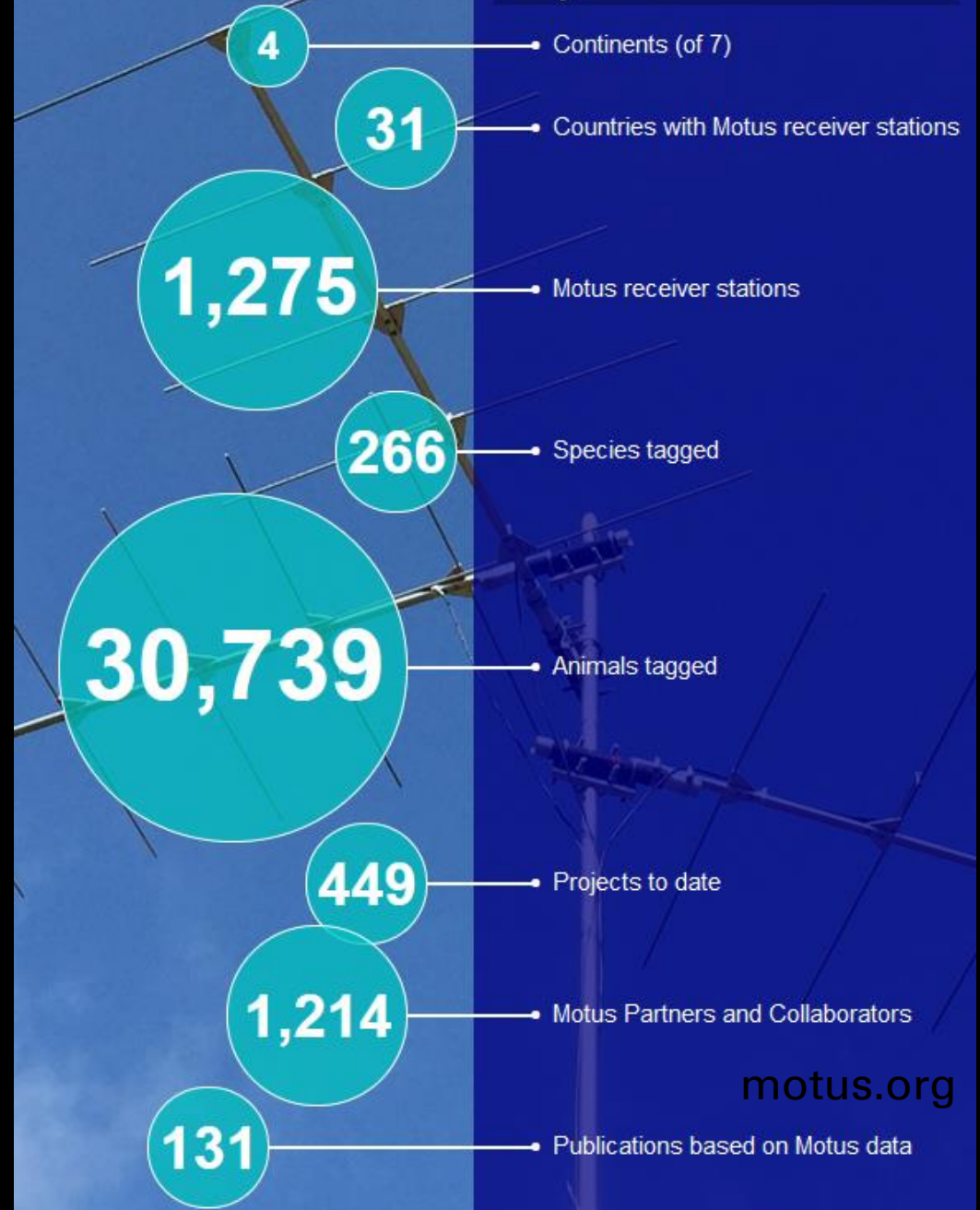
**Technology Partners**

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motus.org

Motus

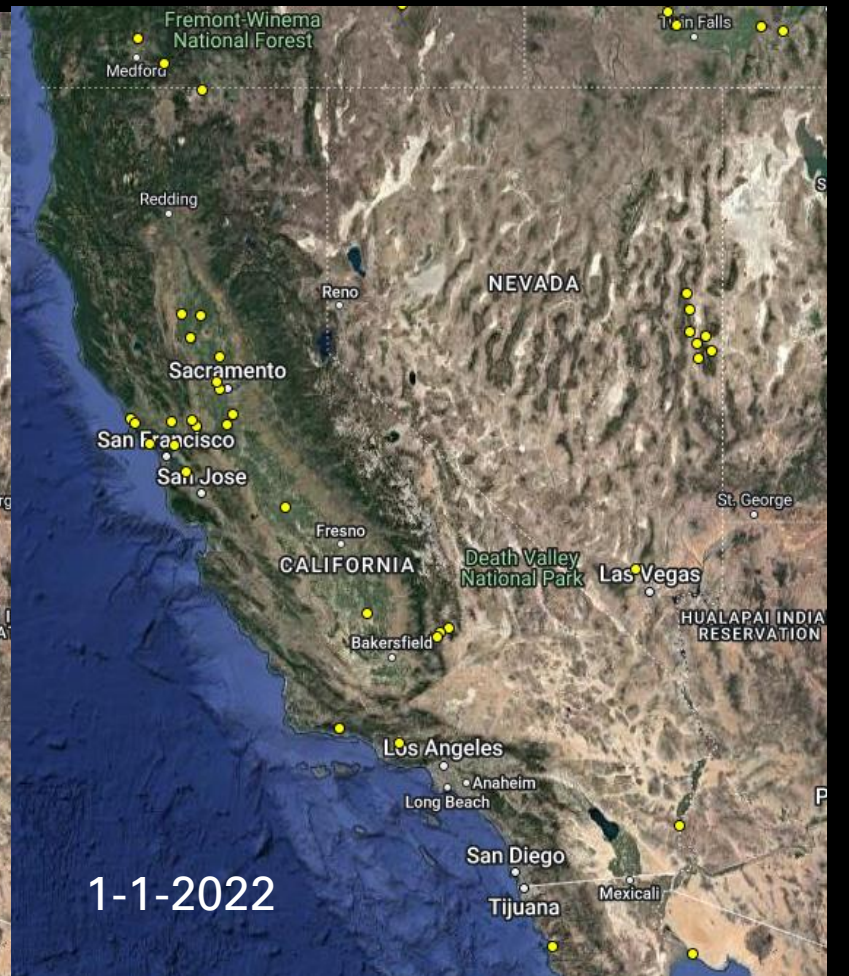
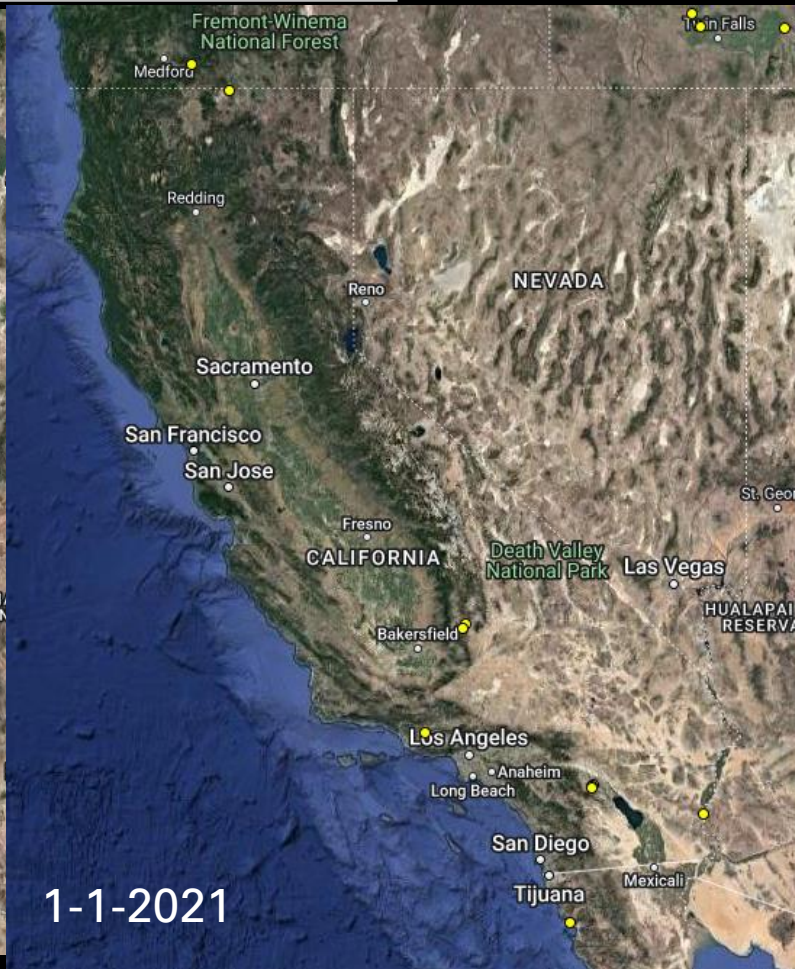
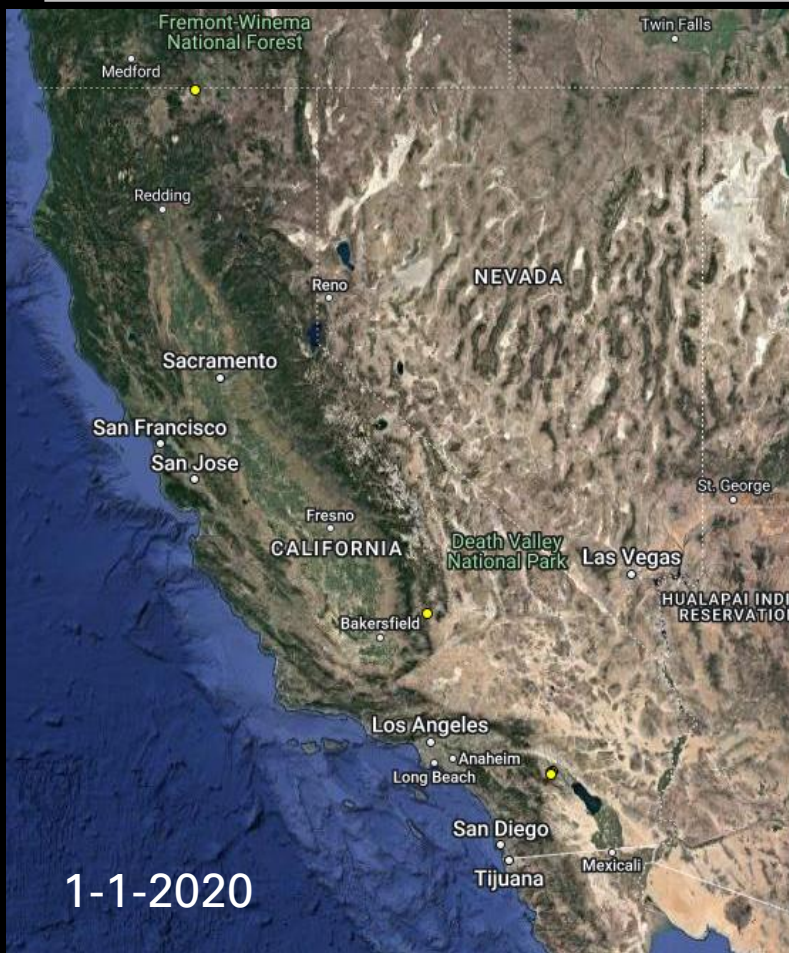
## By the Numbers



motus.org



# Motus in California





# *Motus in California*

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Partners that have or will soon have stations up:



**National Park Service**

As well as several local Audubon chapters



**Southern Sierra Research Station**

*...conserving biological diversity through research*



# *CDFW's Motus Initiative*

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CDFW provided startup resources for the purchase of components for 13 motus stations.

Enabled under SB94- mandates CDFW work to understand the impacts to wildlife movement from increased cannabis cultivation at the watershed scale.

Also fits well with partner efforts to understand shorebird movements related to drought.



California Department of  
**Fish and Wildlife**



**Point Blue**  
Conservation  
Science

The Nature  
Conservancy 



**Audubon**  
CALIFORNIA

# *CDFW's Motus Initiative*



California Department of  
**Fish and Wildlife**

## Installed:

Eden Landing ER\*  
Upper Butte Basin WA\*  
Grizzly Island WA\*  
Elkhorn Slough ER\*  
Yolo Bypass WA\*  
North Grasslands WA\*  
Napa-Sonoma Marshes  
WA\* (TNC/PointBlue)

## Proposed sites:

Battle Creek WA  
Palo Verde ER  
Burton Mesa ER  
San Elijo Lagoon ER  
San Jacinto WA  
Imperial WA  
Bolsa Chica ER





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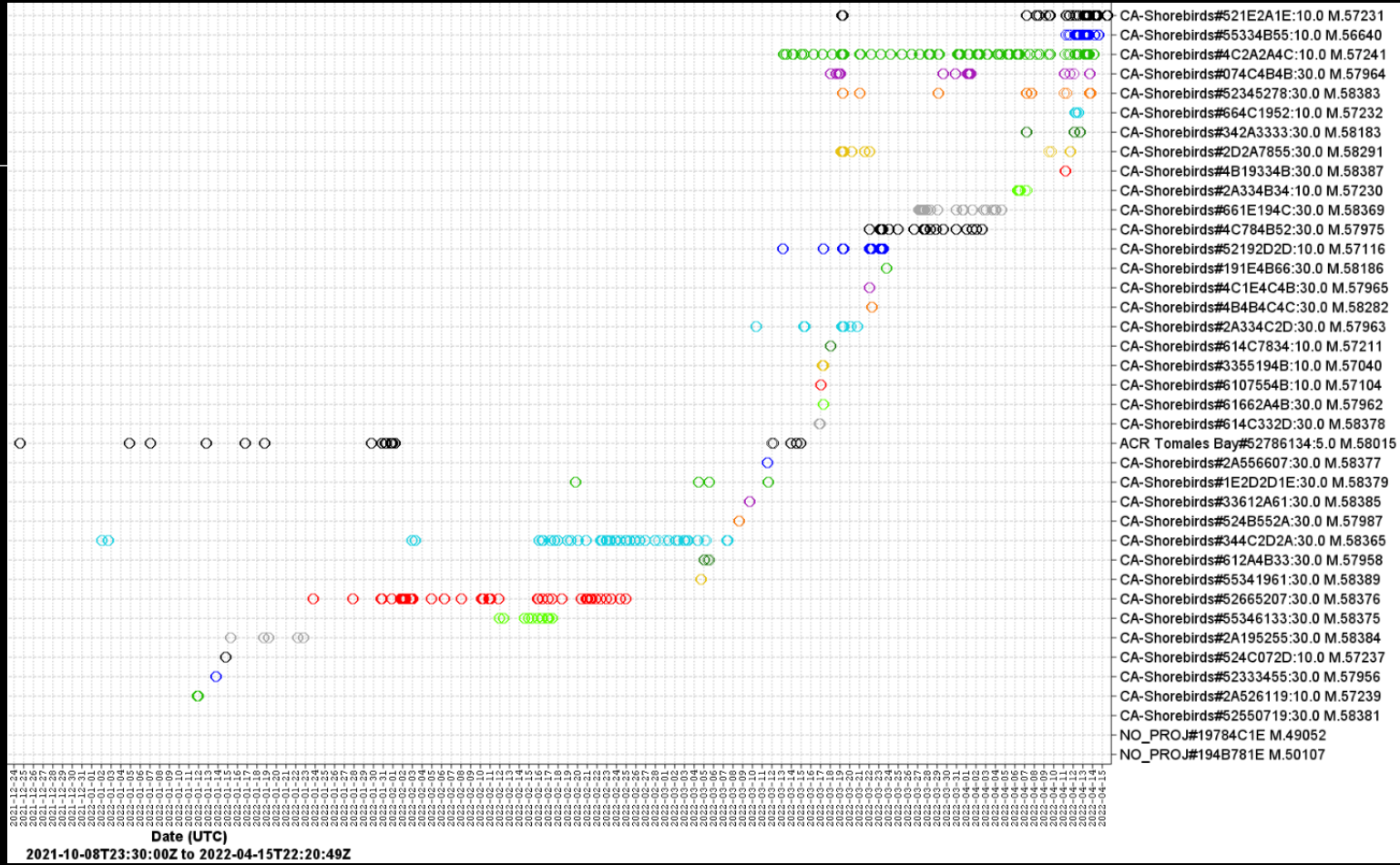
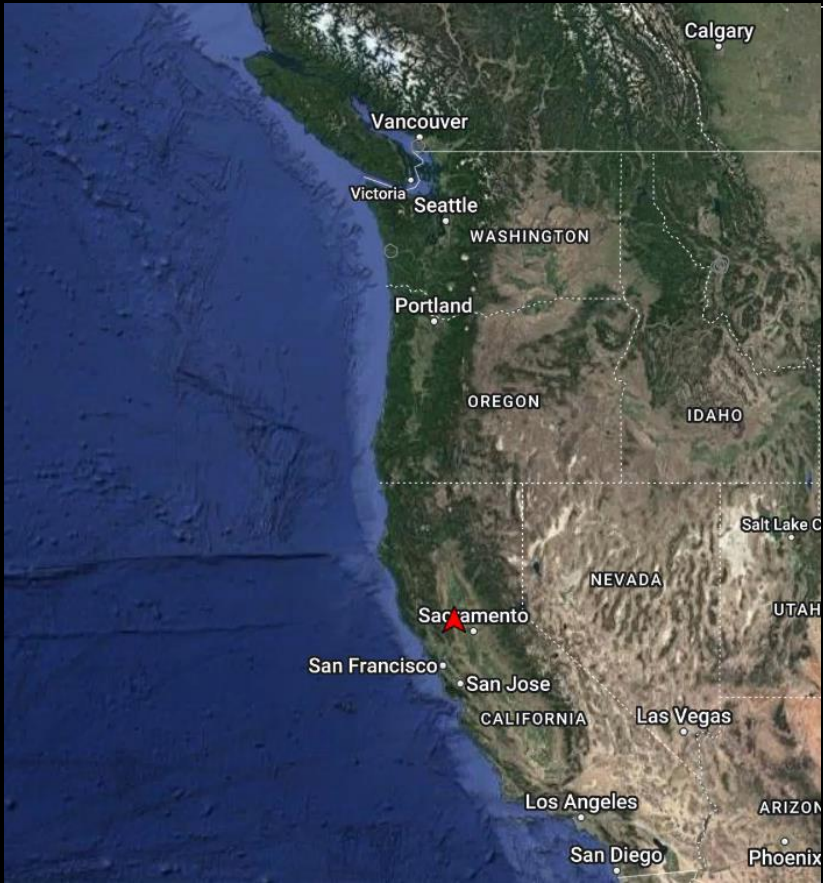
**Just authorized for additional stations!**







# Real Data!



# *Thank you!*

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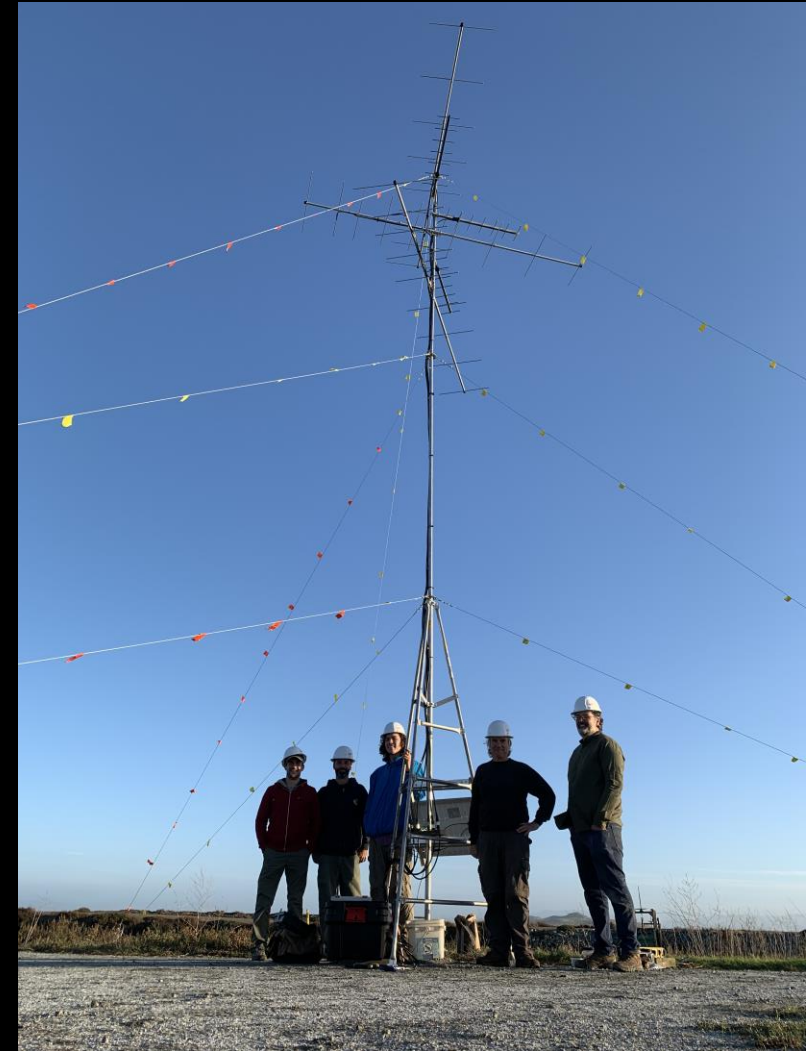
Levi Souza

[Levi.Souza@wildlife.ca.gov](mailto:Levi.Souza@wildlife.ca.gov)

916-588-0490

Up Next- SFBBO's Motus work!

Katie LaBarbera, PhD  
Landbird Program Science Director  
San Francisco Bay Bird Observatory





# SFBBO Motus: The Present

- *Coyote Creek Field Station tower*



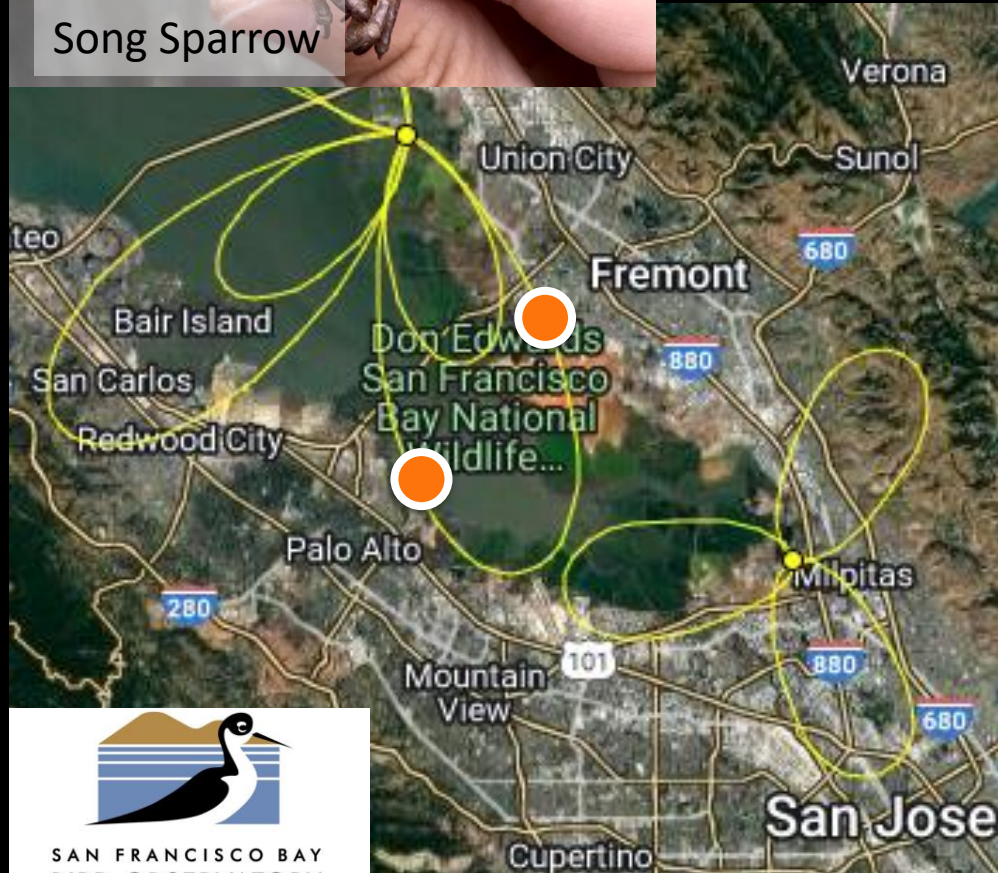


# SFBBO Motus: The Future

- *two more towers (orange dots)*
- *tagging birds at the banding station*
- *Motus-based educational resources*



Song Sparrow



Common Yellowthroat



Thanks to: SFBay Joint Venture, SFBay Restoration Authority, CA Wildlife Foundation, USFWS, Midpeninsula Regional Open Space District, Facebook