

# Project Abstract Summary

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\* Funding Opportunity Number

F-FWS-WSFR-24-002

CFDA(s)

15.628

\* Applicant Name

Oregon State University

\* Descriptive Title of Applicant's Project

Strategic Development Tool for the Western Motus Network

\* Project Abstract

Being able to answer questions about Pacific Flyway migratory species of concern is paramount for their conservation especially considering climate change. Yet, the migratory life stage is understudied in most species. An ideal system for tracking movements and survival of avian species of concern for the purposes of identifying high-value conservation sites is the Motus radiotelemetry receiver network. This network is an international collaborative that successfully identifies stopover site duration, connected migratory routes, post-fledging dispersal and survival, and adult survival and fidelity on a landscape-scale; parameters that cannot be easily estimated using non-tagged birds. While the Motus network is highly connected in the eastern United States, the western United States is seriously lagging in coverage and connectivity, limiting the ability to obtain sample sizes large enough to robustly model demographic parameters from tagged birds. Thus, the expansion of the Motus network is a high priority for Pacific Flyway State Agencies. However, to date, no tool exists for determining optimal locations for new Motus receiving stations. Together with collaboration and input from a majority of States in the Western Association of Fish and Wildlife Agencies (WAFWA) region, which overlaps the Pacific Flyway, we propose to use eBird citizen scientist data to prioritize and identify strategic locations for Motus receiving stations throughout the Pacific Flyway. To this end, we will build a novel multi-species multi-state multi-scale dynamic occupancy model to determine co-occurrence of priority species while accounting for multiple abundance states (i.e., absent, present, abundant), survey effort, and habitat covariates affecting detection, occupancy, and abundance states, weather covariates over time, and random effects associated with detection and occupancy. Many of the biases associated with citizen science data can be overcome with occupancy modeling. Using predictions from our novel occupancy model, we will identify areas that receive high use by co-occurring priority species. These will be marked as priority locations for establishing Motus receiving towers that would have high probabilities of intercepting high abundance of multiple species of interest. Without such a predictive model, resources for the construction of new receiving towers would be less strategically allocated, resulting in sub-optimal detection rates of tagged individuals of species of concern. Our models will yield a series of species distribution maps that will be developed with input and used by States in the Pacific Flyway to prioritize locations of receiving stations to strategically develop a coordinated Motus network. We believe such a priority map can be used for outreach and stimulate action on development of the Motus network. Furthermore, the map will

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provide a basis for starting to conserve climate resilient migratory stopovers through stakeholder engagement.