

**Motus Update:
Grassland Songbirds
Maggie Blake, Anna Noson, Megan Fylling
October 2023**

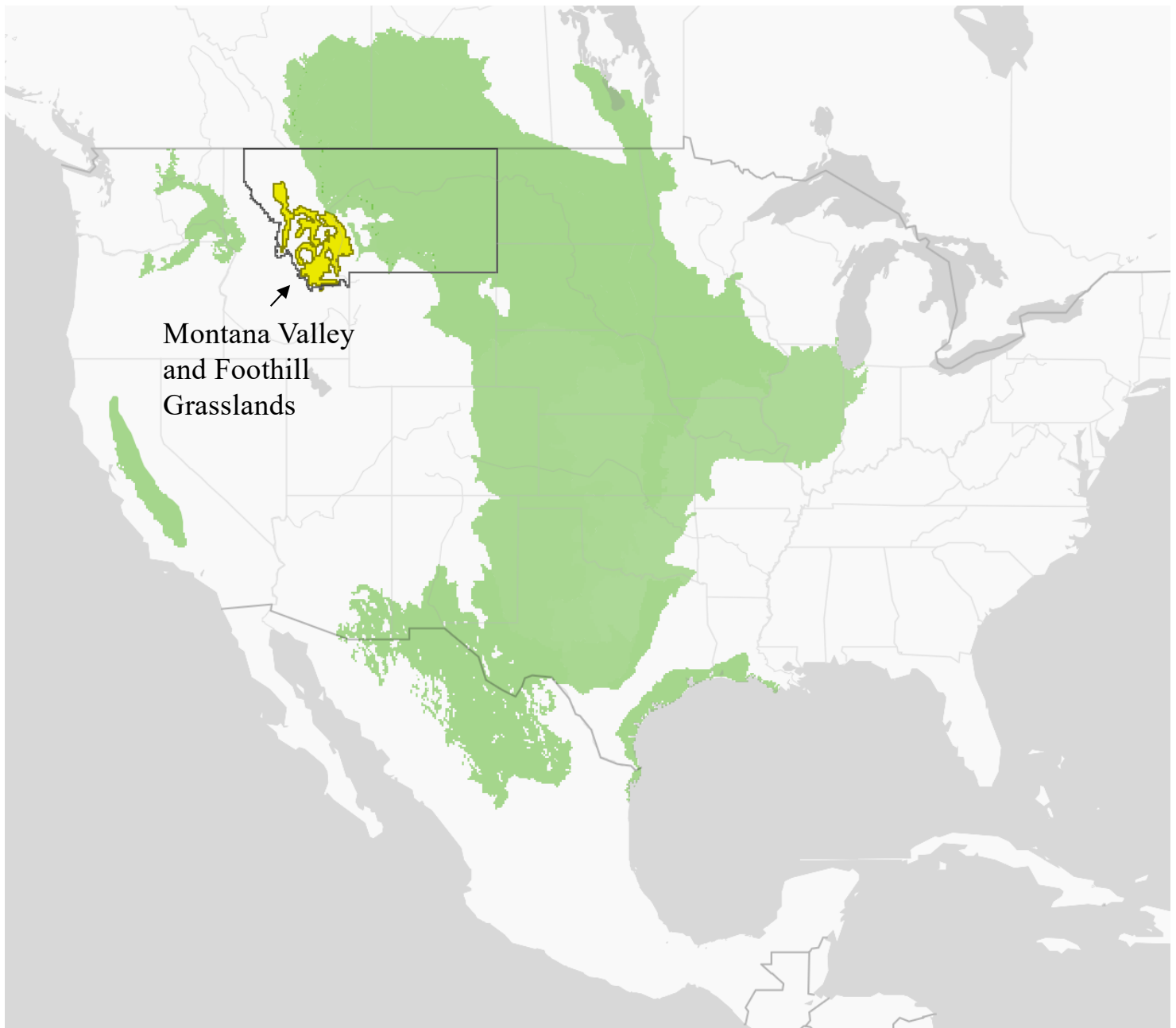


This summer, the University of Montana Bird Ecology Lab (UMBEL) continued to deploy Motus tags on grassland birds to complement our research into the breeding ecology of songbirds in the grasslands of the Bitterroot Valley. We tagged three bird species and we increased our field effort from 20 tags deployed in 2022 to 50 tags deployed in 2023.

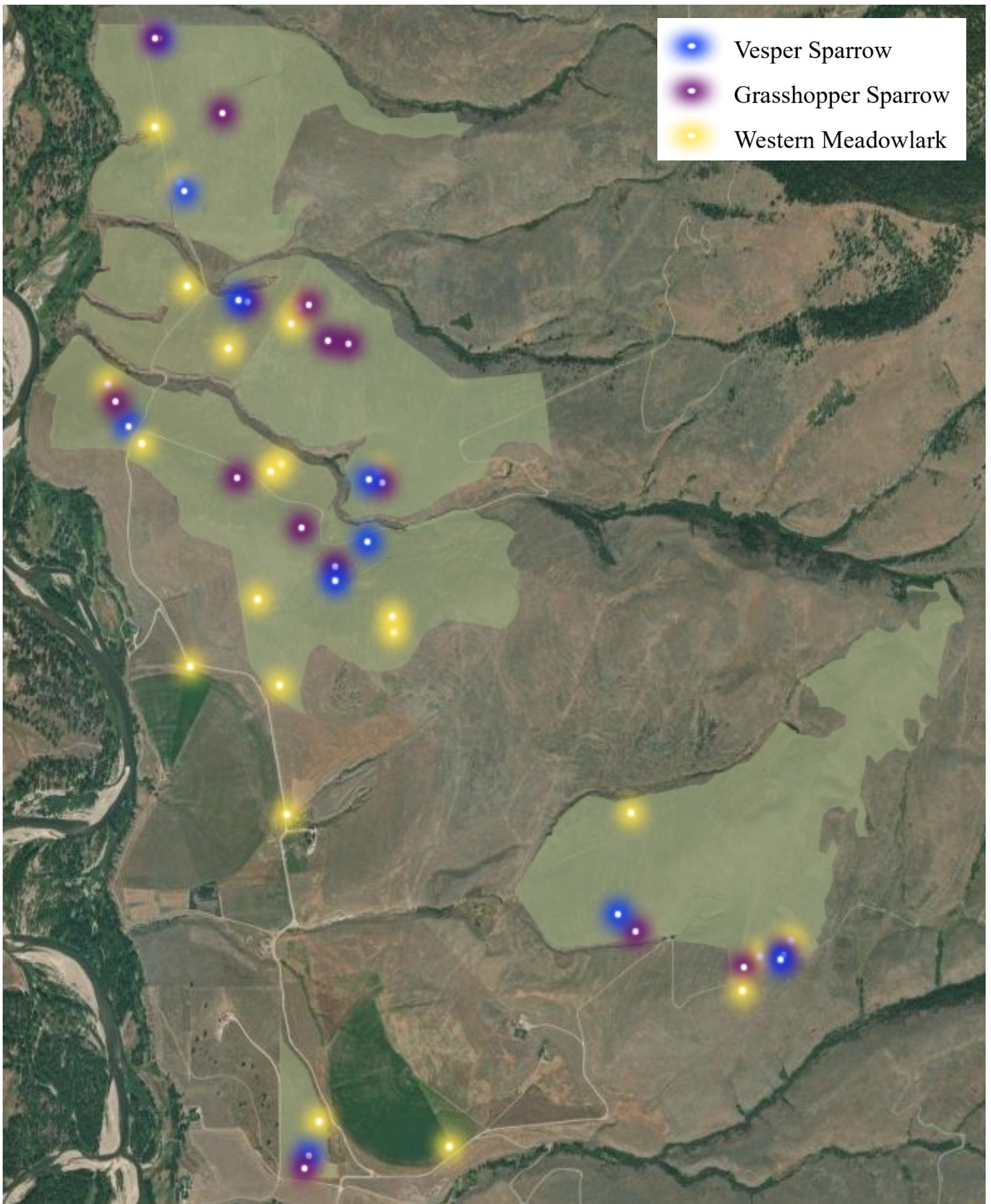


Grassland bird populations in North America are plummeting at alarming rates due to widespread habitat loss and degradation. Most research attention is aimed at songbirds breeding in the once vast prairies of the Great Plains (green below). Far less is known about birds nesting in western Montana's Valley and Foothill grasslands, including those found in the Bitterroot Valley.

We are tagging birds on MPG Ranch to shed light on the migratory movements and habitat preferences of birds breeding in western Montana's grasslands. We hope to document previously unknown migration routes and wintering locations for grassland birds in the region. We are also measuring site fidelity, an indicator of habitat quality, by tracking how many tagged birds return to breed in the same locations in subsequent years. This information will add to our understanding of songbird response to grassland restoration on MPG Ranch, and will inform management and conservation of grassland bird species in Montana's Valley and Foothill grasslands.



We captured and tagged Grasshopper Sparrows, Western Meadowlarks, and Vesper Sparrows across restored and other managed grasslands in our study area (shaded green areas) on MPG Ranch at locations shown in the map below.

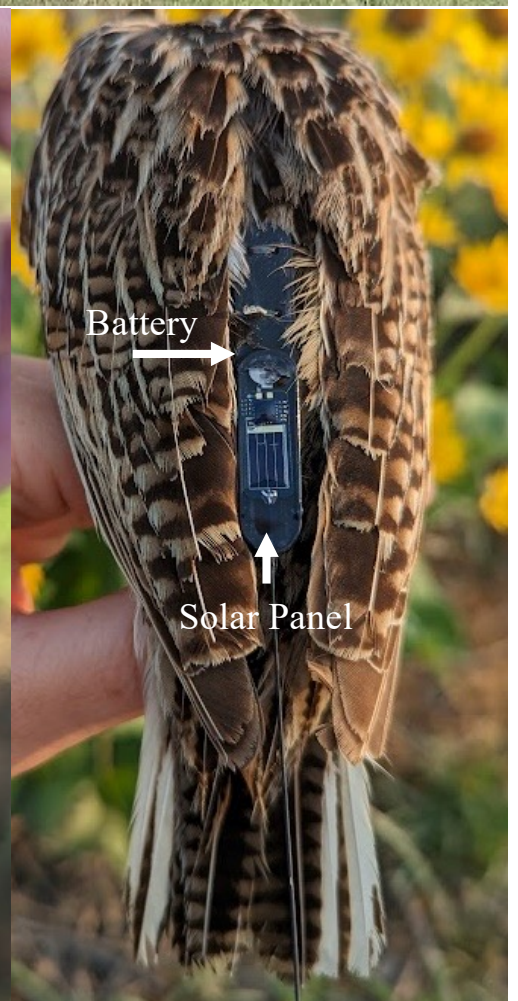
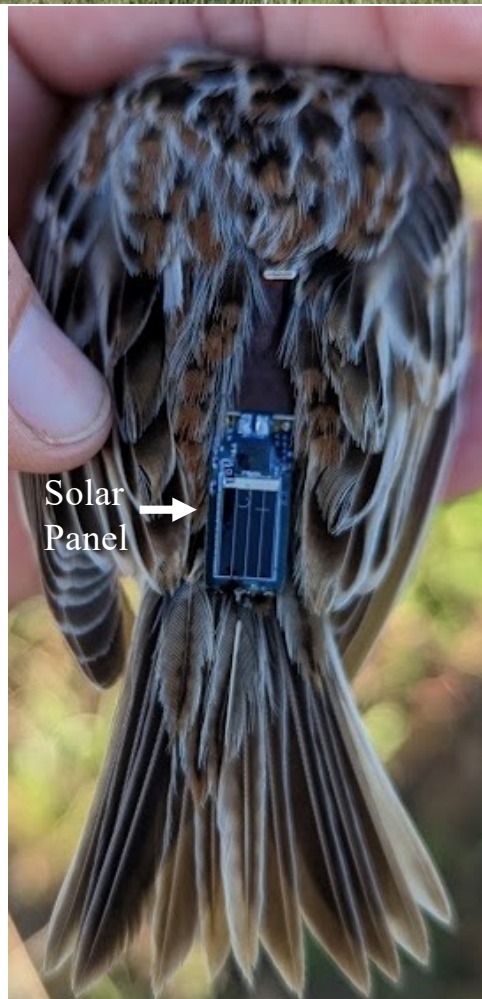


Catching grassland birds can be tricky because the habitat is wide open, making our nets visible and easier to avoid. We string nets together in an 'L' shape and lure birds into our nets by playing territorial calls of target species sometimes coupled with a wooden decoy, visible in the photo below.



We deployed LifeTags on Vesper and Grasshopper Sparrows (left photo) that are solar-powered and designed to last for the life of the bird.

On larger-bodied Western Meadowlarks, we used heavier Hybrid tags (right photo). Hybrid tags have both a solar panel and a battery to power the tags at night when the solar panel is not able to charge. We hope these tags will perform more consistently throughout the day to capture migratory movements of meadowlarks.



We also deployed Argos satellite tags on Western Meadowlarks in collaboration with a continent-wide effort led by the Smithsonian Institute to understand migration patterns of both Eastern and Western Meadowlarks. Argos tags communicate with satellites as opposed to Motus tags that rely on ground tower infrastructure. Diversifying tag types deployed from our study area and building partner relationships will improve our sample sizes and provide context to our research findings.



Grasshopper Sparrows

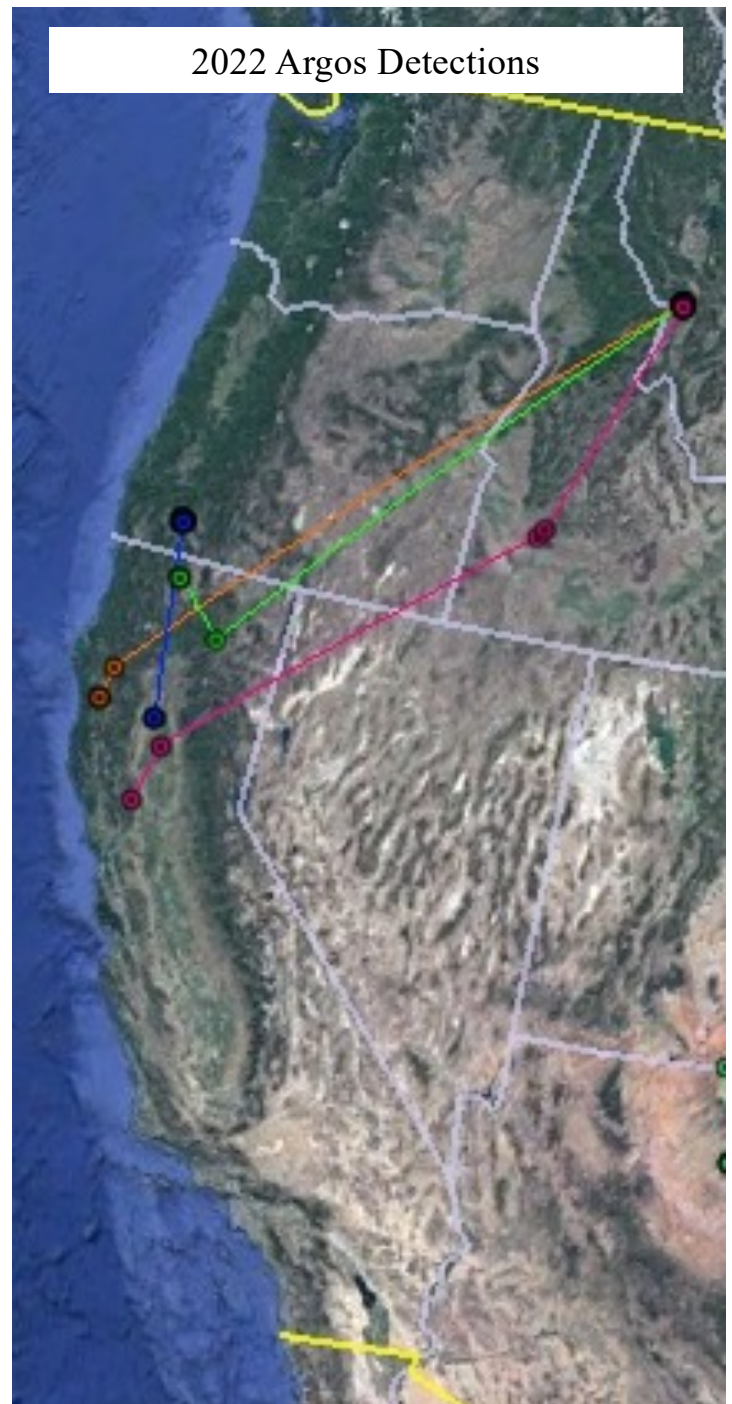
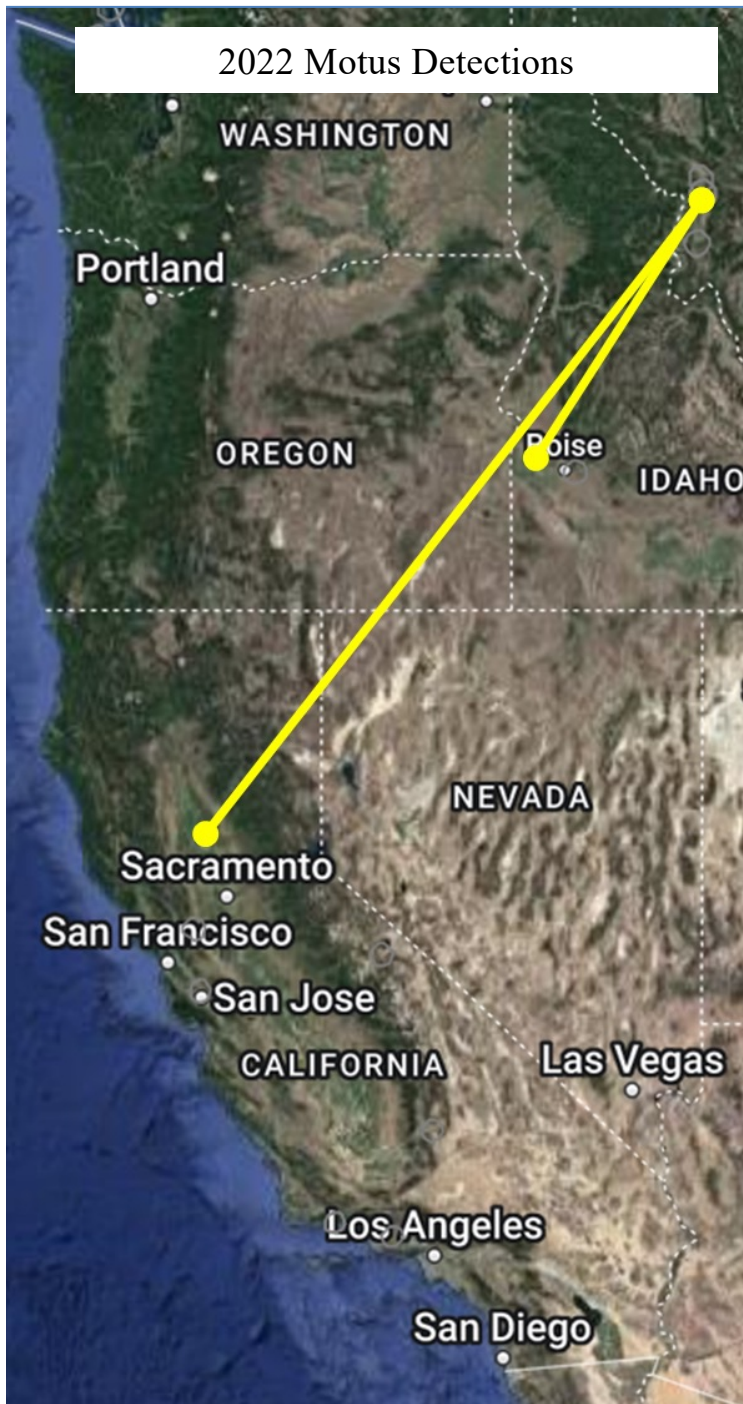
Of the six Grasshopper Sparrows we tagged last year, none were picked up by Motus towers after departing the Bitterroot Valley for the winter. The following spring, five of these sparrows returned to our study area— an 83% return rate. Our preliminary findings stand out compared to studies in the Great Plains where reported return rates of male Grasshopper Sparrows are low to non-existent from one year to the next. We tagged 15 more Grasshopper Sparrows this past summer, and hope to see many more birds returning next year.



Western Meadowlark

Last fall, two tagged Western Meadowlarks were picked up by Motus towers in southern Idaho and northern California, respectively (left map), offering the first evidence of a distinct migratory route for birds breeding in western Montana. These findings would not be possible without MPG's efforts with partners to expand Motus infrastructure along the Snake River plains of Idaho.

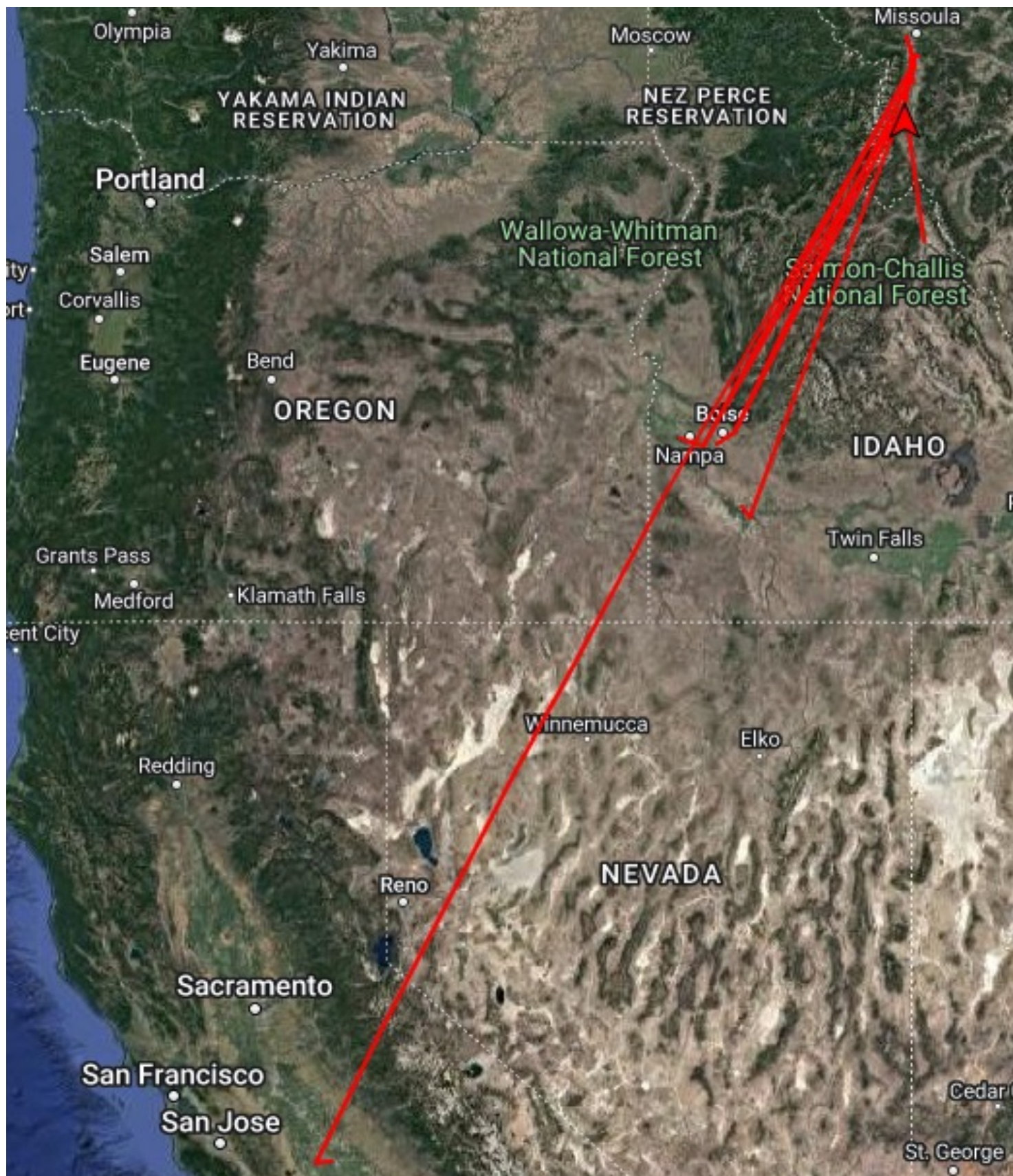
Meadowlarks carrying Argos tags followed a similar migratory route (right map) and were last detected during fall migration in northern California. Documented movements by our tagged birds contrast with meadowlarks tagged by partners in eastern Montana that traveled southeast to the central flyway through Nebraska and as far south as Texas.



Motus towers on MPG Ranch picked up four returning Western Meadowlarks this year: one in mid-March, two in April, and one in early July. We recaptured a fifth bird wearing a LifeTag with a broken antenna (below), bringing our known return rate for meadowlarks to 50%. Tag technology is new and under constant development, so tag malfunctions are expected. This year, to improve sample sizes and buffer any tag loss, we increased our tagging effort, deploying 20 Motus tags and five Argos tags on meadowlarks.



This fall, meadowlarks are again departing the Bitterroot Valley on their migratory journey to warmer winter locations. As of mid-October, Motus towers in Idaho have already detected six of our tagged birds, and one of these birds was picked up again in Central Valley, California. These detections add to last year's evidence that meadowlarks from western Montana follow a more westward migratory route than eastern populations and winter in California.



Vesper Sparrow

We deployed Motus tags on Vesper Sparrows for the first time this summer. As the most abundant species on MPG Ranch, they will provide critical information about how grassland birds respond to restoration efforts. We found male Vesper Sparrows very responsive to playback calls making them an easy species to catch. We deployed all 10 of the LifeTags we reserved for Vesper Sparrows this year.



Songbirds tagged at MPG Ranch are leading the way in documenting migration from breeding grounds in North American grasslands. We have deployed nearly half of all tags ever placed on these three grassland species. We anticipate our increased tagging effort this year, combined with expanding Motus infrastructure, will add further insights.

We look forward to new detections as our tagged birds migrate this fall, filling in unknown routes and wintering locations for these species. Next spring, we will eagerly await Motus updates to find out who returns to their previous year's breeding grounds in the Bitterroot Valley.



Acknowledgements:
Many thanks to MPG
Ranch for supporting
this effort!