Common Poorwill Research Update 8/12/22

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Summary

Common Poorwills remain one of the least-studied nightjars in North America. On MPG Ranch they occur at high density in our mid-elevation shrublands and open forests. We've tackled most aspects of their life history including breeding phenology, fidelity to breeding and natal sites, home range size, habitat use, and diet. Our most recent work has included the use of nanotags to better understand migratory routes and overwintering destinations. This report highlights some of our major findings and suggested next steps for poorwill research.

Banding Efforts

We've banded 166 different Common Poorwills in 247 capture events. Though we don't know the details of people banding poorwills in other states, our effort far exceeds anything else in North America. The lack of banding in other regions suggests we should not rely on band encounters to provide information on migratory movements or overwintering locations.

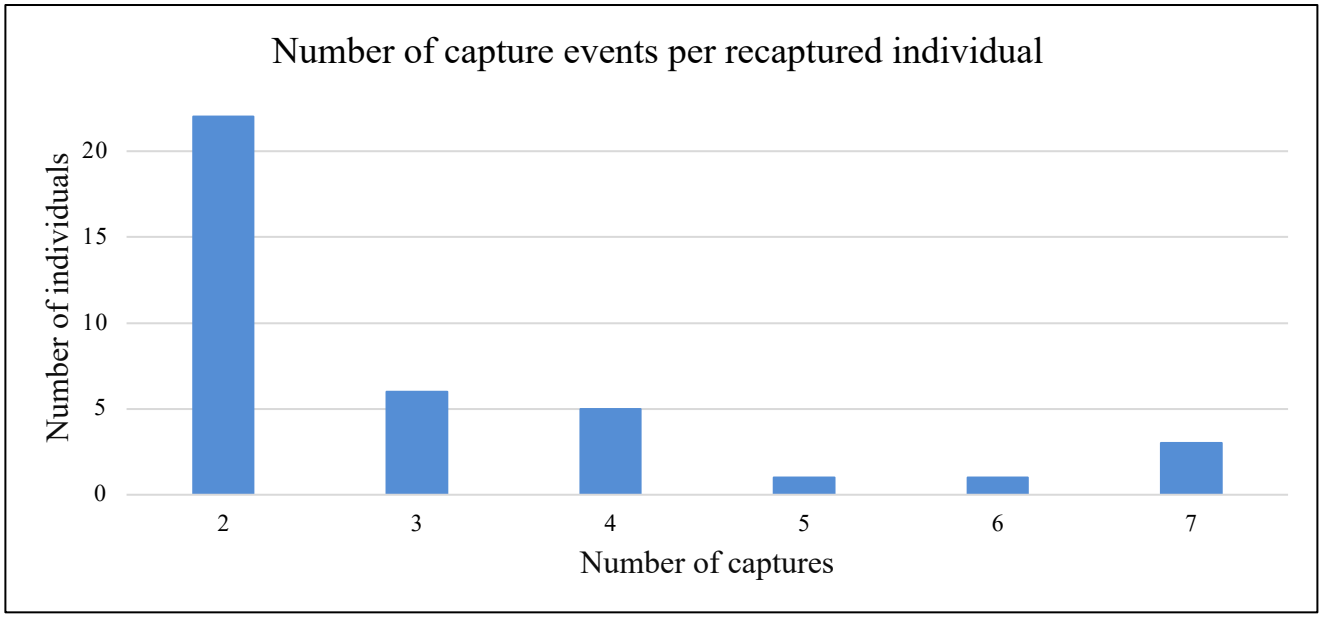
Common Poorwill banding events submitted to the USGS Bird Banding Lab 2015-2021							
	MT	CA	TX	ID	UT	CO	Total
2015	12			1	1		**14**
2016	37				1		**38**
2017	36		1			1	**38**
2018	27	4	2	1			**34**
2019	13	6	1				**20**
2020	11	1		1			**13**
2021	16		1				**17**
Total	**152**	**11**	**5**	**3**	**2**	**1**	**174**

Poorwill males (left) and females (right) look similar unless flight reveals the brighter white features of the male. Both exhibit exceptional camouflage.

Male poorwills respond to our audio lure more often than females and make up about half of our captures. A third of captures go unsexed because most young birds lack telltale plumage. Hatch-year birds caught late in fall may have enough definitive plumage to allow us determine their sex. We captured both hatch-year birds below on 9/17/21. The development of darker, adult plumage suggests the bird on the left likely came from a first-round nest, while the one on the right likely came from a second-round nest. Both had enough white in their outer tail feathers and in their throat to allow us to identify them as males.

Recapture rates, site fidelity, life span

On breeding grounds, we have a high recapture rate of 23% and close to 80 recapture events. Though we most often recapture birds twice, we've encountered five birds more than five times. Our recapture rate will likely increase as we head into concentrated trapping efforts this fall.



Recaptures across multiple years reveal poorwills have high breeding and natal site fidelity. We can't use plumage beyond the second and sometimes third year to age birds, so recapture events also help us calculate life span, a topic not previously addressed. We've captured one bird who has survived into its sixth year, and five who have survived into their fifth. Poorwill #2701-00665 (below) has nested at the base of Whaley Draw for at least three years. He was five when we last captured him in 2020. We will be working in Whaley Draw again in early September and hope to cross paths with him again.

“Most-Captured Poorwill” Award

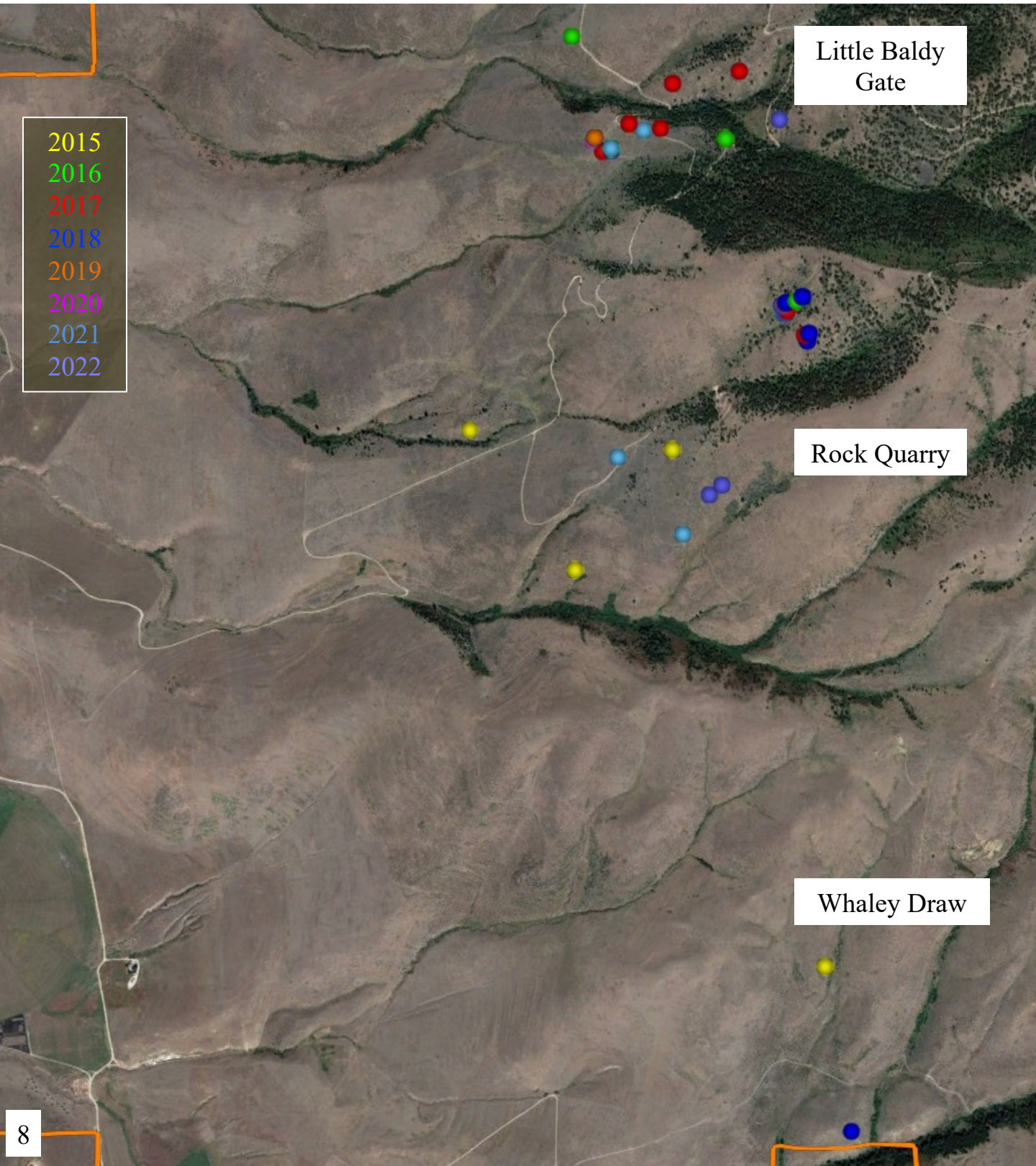
COPO 2701-00611 is one of three birds we’ve recaptured seven times! We caught him twice soon after fledging in the fall of 2016. At that time, he had golden highlights throughout his plumage indicative of a hatch-year bird (top). When he returned in his second year, we caught him three times in the Rock Quarry and tracked him for several weeks, but never found a nest. We missed him for several years, then caught him twice in the Rock Quarry in 2020 (bottom). If we catch him again this fall, he will gain fame as the oldest known poorwill at seven years old.

Nest searching

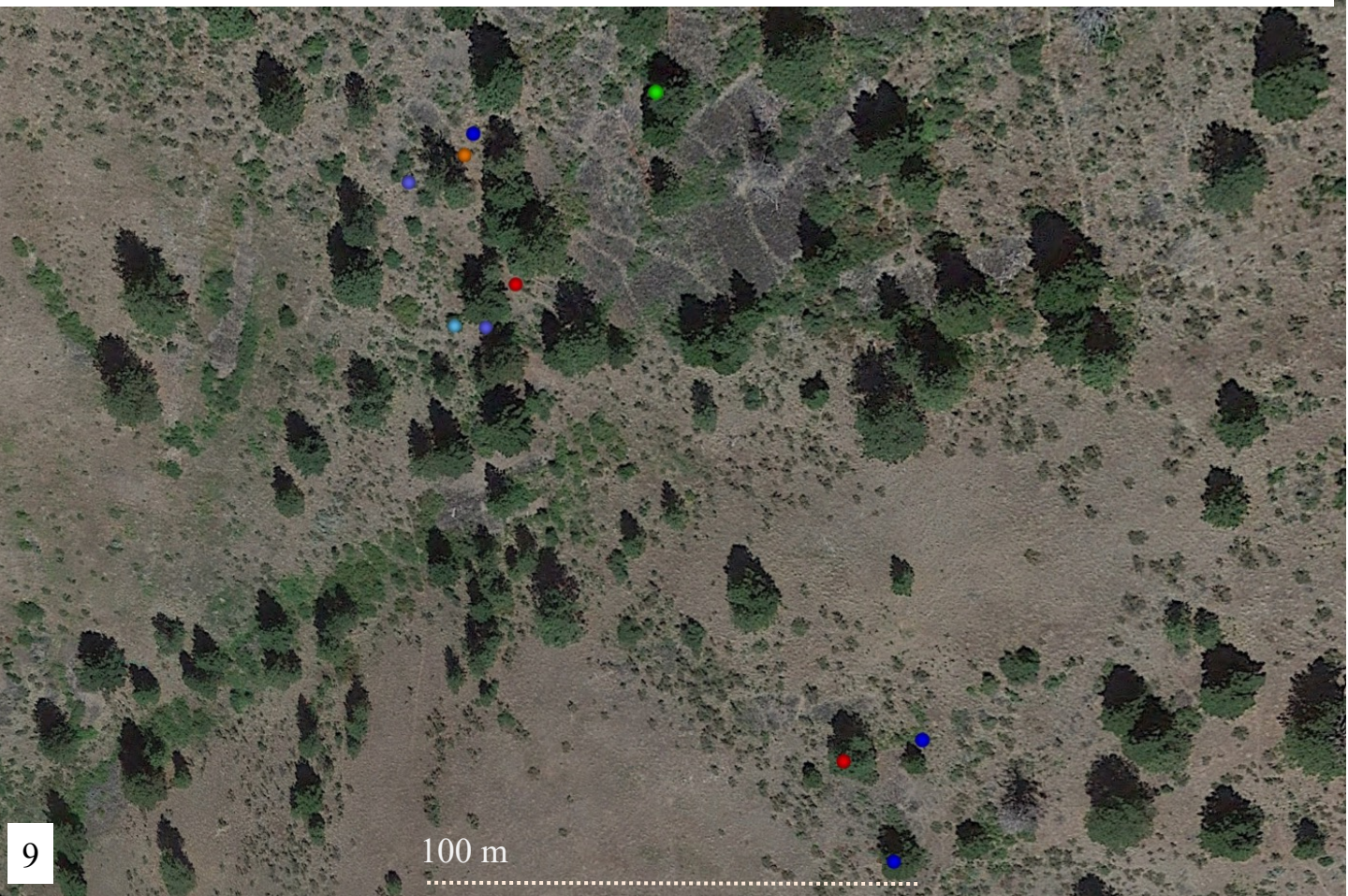
We've located 37 nests in our eight years of poorwill work. Nest discovery correlates highly to our use of transmitters to track birds, with highest number of nests found in the years with active tracking. Poorwills usually tuck nests into the base of vegetation, rocks, or logs and seldom flush off eggs, so stumbling upon a nest rarely happens. The poorwill incubating eggs in the center of this picture demonstrates the difficulty we have in locating their cryptic nests. Poorwills do have high breeding-site fidelity, and we sometimes find nests at or near previously-used sites by piecing together observational clues like the presence of pellets.

Nest locations

We find most nests close to our primary capture areas, including Little Baldy Gate and the Rock Quarry. These locations represent a small fraction of their breeding habitat on MPG Ranch; we hear them singing or see them sitting on roads in almost all shrublands with similar topography at mid elevations. We've also captured a few in the open or regenerating forests of the Davis, Upper Woodchuck, and Miller Creek drainages.



Nest locations over multiple years near Little Baldy Gate (above) and the upper Rock Quarry (below) show just how close nest sites can be between years. Poorwills may reuse the same nest site in successive years. They often nest twice in a season but do move locations, often within less than 20 m of the first nest.



Age at first breeding

Second-year birds represent our most frequent age class captured; we've banded 54. Some bird species breed in their second year of life, while others wait several years. When we began our work, no one knew poorwill age of first breeding. We've documented seven second-year birds at nests, including male poorwill #0741-03380 brooding two chicks at his nest (below). Like most poorwills in our study, he exhibits what we call "poorwill stink eye" behavior. Poorwills seldom flush off eggs or chicks, but their slit-eyed glares communicate their awareness of an intruder.

Poorwill bromance

Prior to the onset of nesting, or in between nest attempts, we often see poorwill pairs roosting together, presumably to strengthen pair bonds and perhaps to share warmth. This year, Mary observed two male poorwills- aged six and four- roosting together throughout the breeding season. Both males successfully bred in the Rock Quarry last year. This year, the younger male did not nest at all, while the older male had two failed nest attempts. Instead of roosting with a female after each nest failure, Mary found him with the younger male. Despite tracking many birds and documenting many roost sites, these observations of same-sex roosting are a first for us. Could these birds be related? We do have feather and fecal samples from both birds that might contain genetic clues to relatedness.

Current nesting status

We saw widespread nest failure this year, perhaps due to a combination of tumultuous hail and rainstorms followed by extreme heat. As of this writing, poorwills with second nest attempts have likely hatched eggs, while the young from first nest attempts near independence. While both males and females take turns incubating and brooding first-round eggs and young, once they begin second nests, males brood the first-round young while females incubate the second-round eggs. Mary found this second-round nest with eggs in upper Tongue Creek on 7/26/22 and found two-day-old chicks on 8/8/22.

Tagging efforts

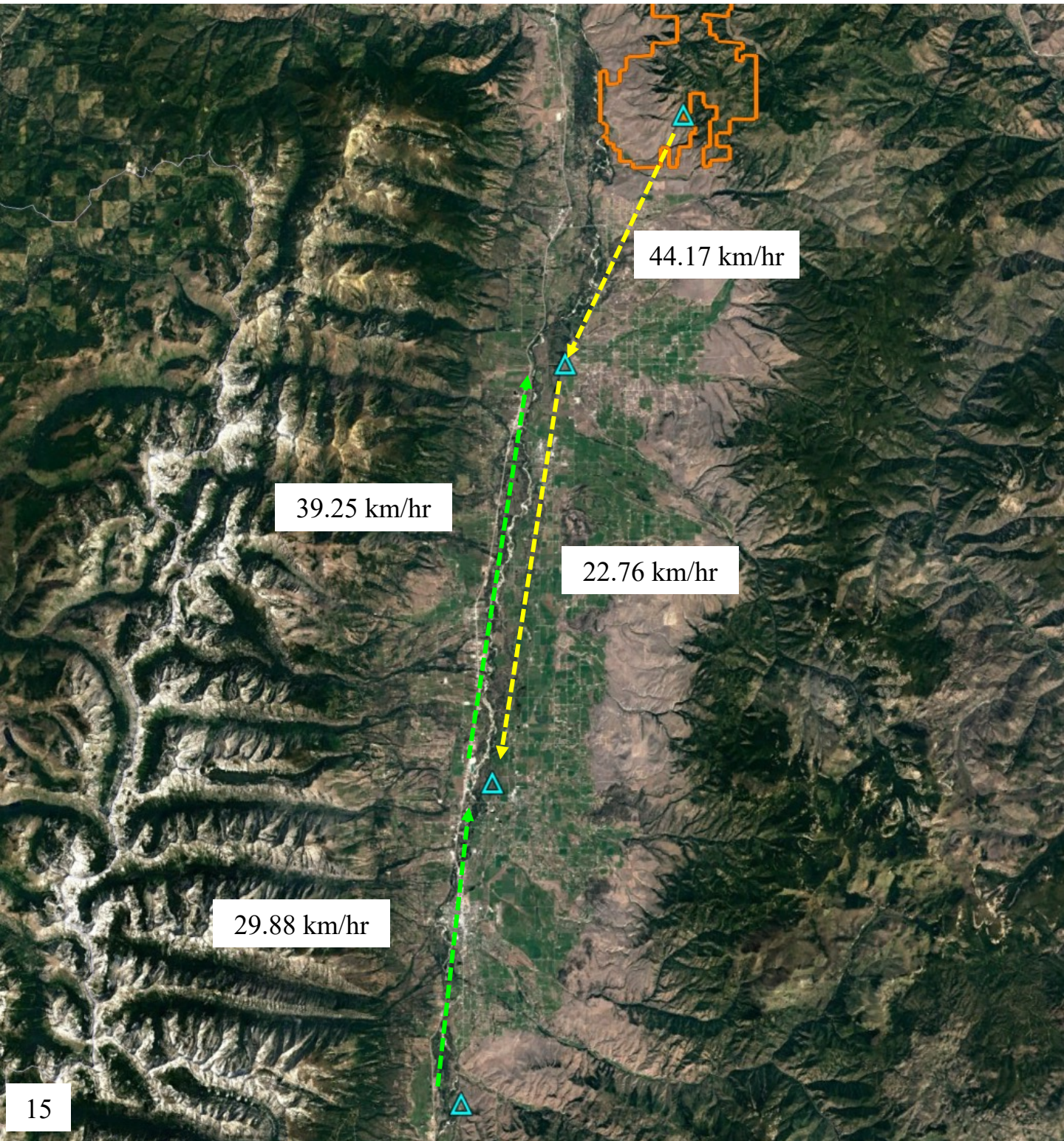
Even with high recapture rates, we have many poorwills we never capture again but likely return to the ranch. We'd like to know if they return without an intensive trapping effort and disturbance to the birds. We also want to learn more about migratory movements and overwinter destinations. We started putting nanotags on poorwills to track local and large-scale movements using the Motus network. From fall of 2020 through fall of 2021, we've deployed 33 tags.

Arrival and departures

Our tags help us understand arrival and departure dates for poorwills. Existing literature suggests that poorwills arrive at breeding sites within their northern range in May and leave in September. The presence and then absence of signals from tagged individuals show that our local population generally arrives in April and leaves in late September through early October. Poorwill 2701-00664 broke the earliest detection record for Montana as he passed by multiple stations in the Bitterroot Valley on March 27, 2022. We first detected him on MPG Ranch on April 7. We confirmed his signal coming from his known breeding area in the Rock Quarry but did not closely track him given the cold temperatures and the risk of stepping on a torpid bird. Mary tracked him to this nest on June 16.

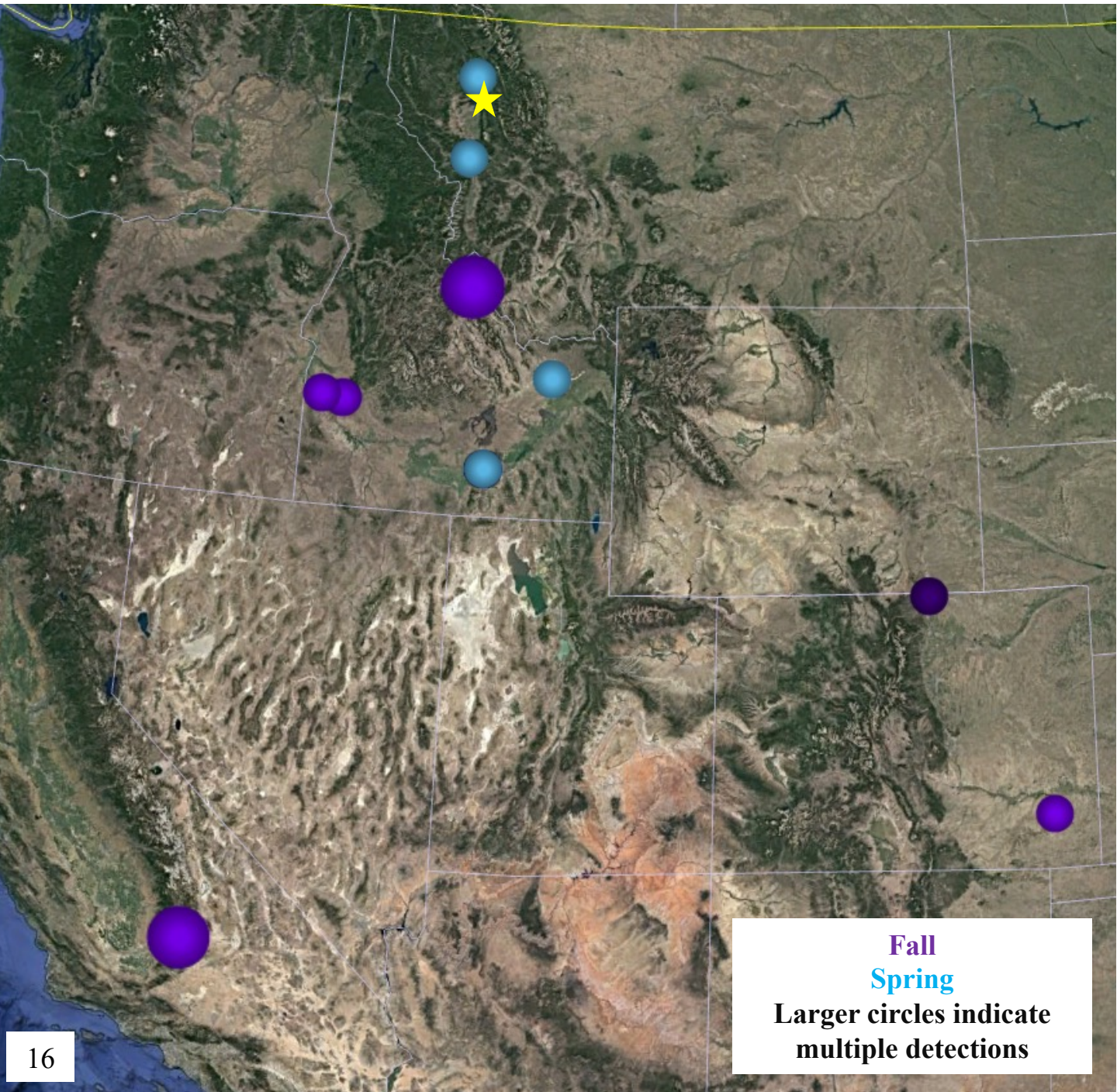
Travel rates

We don't think of poorwills as strong fliers; they have long wings relative to body size and forage for insects using short, fluttery flights. Our detections of them at multiple stations as they depart or arrive in the Bitterroot Valley allow us to estimate travel rates and reveal some surprising speeds. For example, in fall 2021, COPO #2701-00664 averaged 27.46 km/hr as he traveled the 42.6 km between three stations in about 90 minutes. In spring 2022, he covered 46 km in 80 minutes and averaged 34.61 km/hr. We will compile additional estimates of travel rates after fall migration 2022.



Migratory movements

Our increase in tag deployments and the addition of more stations to the Motus network allows us to piece together a better sense of migratory movements. In the fall, we see movements along both the eastern and western edges of the poorwill's distribution. We have fewer detections in the spring, but also less station coverage in the center of the poorwill's distribution where our few spring detections occur. One poorwill returned to the Bitterroot Valley from the north; he passed near a station in Creston and then Frenchtown prior to returning to MPG Ranch. We still suspect our poorwills may overwinter farther south than our detections indicate. Additional stations planned in New Mexico, Arizona, and northern Mexico in the next few months to years should help us determine wintering spots more precisely.



Next steps

Our main 2022 poorwill capture efforts will occur in late August and throughout September. We hope to deploy up to 20 additional nanotags. We also hope to recapture some birds from previous years. As we consider learning more about migration and overwintering destinations, we're checking with potential collaborators to our south. Might we try capture efforts in areas with both Motus coverage and high winter poorwill densities? We also worked with our Ecology Project International interns to discuss what population genetic questions we might answer using the 120+ feather samples we've collected over the years.

Acknowledgements

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