

Citizen Science Program: Monitoring Flammulated Owls in Western Montana- 2010 Results



M Seidensticker photo



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We thank the hard-working volunteers who donated their time and late nights to this citizen science effort!

For more information or a copy of this report see <http://mtaudubon.org/birds/citizen.html>

Overview of this Citizen Monitoring Program

Over the past four summers Montana Audubon and the Avian Science Center have developed a successful citizen science program: Monitoring Flammulated Owls in Western Montana. Little is known about the long term status and site fidelity of Flammulated Owls in western Montana, and this program uses citizen scientists to help provide such information. Through this program volunteers sign up to “adopt” a survey route that they complete once or twice between the 3rd week of May and the middle of July. Volunteers conduct nighttime surveys using GPS units to navigate to pre-established points along roads. At each point volunteers play a Flammulated Owl call using a broadcast caller and record any responses from owls. We now have surveys established on forested lands near Missoula, in the Bitterroot valley, and near Helena, Montana.

Amy Cilimborg (Montana Audubon) took the lead in designing this program, working with Megan Fylling (Avian Science Center, ASC) to coordinate survey efforts on the three National Forests, train over 75 citizen scientists, and develop a system for sharing field equipment and maintaining data quality. Montana Audubon and the ASC have collaborated to run this project in 2009-10, and we hope to continue the collaborative program to provide the region with long-term data. In the Helena area this program was co-lead with biologist Denise Pengeroth of the Helena National Forest.

This program was made possible with financial support from Montana Fish Wildlife and Parks, the dedication & enthusiasm of citizen scientists from the Five Valleys and Last Chance Audubon Society chapters and the local communities, and with help from *Birds & Beasley's* of Helena and *Le Petit Outre* in Missoula.

Survey Methodology

In general, the survey program did not change substantially from previous years. The same routes were repeated and overall volunteer efforts remained the same.

However, in the Missoula area, we did alter the broadcast protocols. Since the Partner's-In-Flight (PIF) initiative to implement and standardize Flammulated Owl monitoring throughout the west became a priority, a specific approach to monitoring and broadcasting for owls was accepted by partners throughout the western U.S., Mexico, and Canada. The Flammulated Owl Survey Protocol (Fylling et.al. 2010) includes a different sequence of broadcasting intervals along with modifications in data collection; however the actual vocalization recording remained unchanged. To test the effectiveness and ease of use for citizen monitoring purposes, we decided to adopt the new PIF protocol for the Missoula area surveys and continue to use the original Avian Science Center protocol for the Helena area surveys. The new protocol involves detailed data collection for modeling for purposes, and was more than usually asked of volunteers. Most Missoula-area volunteers felt the PIF protocol required a significant adjustment from the previous protocol, even though some shortcuts were taken to streamline the amount of data recording. The new protocol can be viewed from the PIF website: <http://sites.google.com/site/pifwesternworkinggroup/projects/flammulated-owl-monitoring>

In future years we would like to continue to use the standardized PIF protocol if possible, but because of the intensive methodology, it will be worthwhile to discuss streamlining the protocol further to avoid unnecessary steps for citizen volunteers.

2010 Season & Results: Citizen Monitoring for Flammulated Owls

During the summer of 2010 we continued our citizen science monitoring effort for Flammulated Owls in the Greater Missoula Area and on the Helena National Forest. In planning for the survey season, we took into strong consideration that there were initiatives to monitor nightjar species around the country as well. Given that owls and nightjars are both nocturnal in behavior and have the potential to be simultaneously studied, our intent was to seek out a method that would serve to monitor both nightjars and owls. However, we discovered that since Common Nighthawks are western Montana's most common nightjar species, this approach would not work as well as we had hoped: Common Nighthawks are known to be active primarily during crepuscular times (dawn and dusk), rather than strictly nocturnal and therefore, cannot be monitored effectively given our existing program. We also occasionally detect Common Poorwills along our existing transects, but they are too rare in this region to redesign our protocol to fit these needs. Because we had hoped to add this nightjar portion into our Flammulated Owl program, we delayed the start of our owl surveys and consequently had a shorter window in which to survey.

Despite this, we did have fourteen volunteers survey 7 transects in the Missoula area, detecting a total of 15 owls across 6 transects. In the Helena area, 10 volunteers surveyed 7 transects, detecting a total of 5 owls on 1 transect. Tables 1 and 2 and Figures 1 and 2 show where these transects are located and the number of owls detected. Overall, at least one Flammulated Owl was detected on 50% of transects (7 of 14) and on four transects, owls were detected at two or more points, suggesting that these areas support multiple owls.

In the Missoula area, where several routes were surveyed in at least three of the four years, we observed substantial differences in the proportion of points that produced Flammulated Owl detections among years. In 2007 and 2009 owls were detected on about a quarter of the survey points: 27% of points (35 out of 128 pts) in 2007 and 22% of points (21 out of 96 pts) in 2009. In contrast, owls were detected on only 8% of points (5 out of 59 pts) in 2008 and 13% of points (11 of 88) in 2010. With a limited sample size and only four years of data it is difficult to ascertain the factors most responsible for these differences between years, but the cold and wet conditions experienced in 2008 may have affected our ability to detect owls in that year. Other factors such as low site fidelity, variable survival, or variable breeding patterns may also explain differences. Such variation across years points to the value of continued survey efforts over time.

In the Helena area, Flammulated owls were detected on 14% of points in 2008, 6% of points (5 of 80) in 2009, and 6% of points (5 of 89) in 2010. Many of the Helena area surveys were carried out relatively late in the 2009 and 2010 seasons which may explain the decrease in detections on those years. Since we know Flammulated owls are detected most reliably during the month of June (Barnes and Belthoff 2008, Cilimburg *pers. observation*), it is advisable to have all surveys completed by early July.

Table 1. In 2010 we surveyed 7 transects in the Helena area and Flammulated Owls were detected on 1 of these 7 transects. 7 transects were surveyed in the Missoula area and owls were detected along 6 of these transects (see also Figures 1 and 2).

2010 Season Results:			
Route Name	No. of Visits	Owl Detected	No. points with owls
MAGPIE	2	No	0
MOUNT HELENA CITY PARK	2	Yes	5
OWL GULCH	1	No	0
PARK LAKE	2	No	0
PRIEST PASS	1	No	0
STRAWBERRY MTN	1	No	0
UNIONVILLE	1	No	0
Helena Totals	7 transects	1 transect	5 owls
BREWSTER CREEK	2	Yes	6
BUTLER CREEK	1	Yes	1
CRAZY CANYON	1	Yes	1
FRENCH GULCH	1	No	0
HOLLOWMAN SCHWARTZ	2	Yes	2
STONEY ROCK	1	Yes	1
WOODS GULCH	1	Yes	4
Missoula Area Totals	7 transects	6 transects	15 owls

2007 through 2010 Survey Effort

Below (Table 2) are all transects ever surveyed in the four years that this program has been in existence. There is a large amount of variation in the amount of transects surveyed and the total survey effort, but the table represents where any one or more owls were detected on a given transect in a given year.

Table 2. Transects surveyed on the Bitterroot, Helena and Lolo National Forests. An “X” denotes one or more owl detections.

Forest:	2007-2010 Results:				
Bitterroot NF	Route Name	2007 Owl Detected	2008 Owl Detected	2009 Owl Detected	2010 Owl Detected
	COFFEE GULCH	X			
	ELK POINT	X			
	ROBBINS GULCH	X			
	SWEENEY GULCH				
Helena NF	AVALANCHE GULCH				
	BRIDGE CREEK				
	CABIN GULCH				
	DRY CREEK				
	MAGPIE GULCH				
	MOUNT HELENA CITY PARK				
	MOUNT HELENA RIDGE TRAIL		X		X
	OWL GULCH				
	PARK LAKE				
	PRIEST PASS		X		
	STRAWBERRY MTN				
	TEN MILE CREEK			X	
	UNIONVILLE		X	X	
	YORK GULCH				
Lolo NF	BABCOCK	X			
	BLUE MOUNTAIN EAST	X			
	BLUE MOUNTAIN WEST				
	BOYD MOUNTAIN				
	BREWSTER CREEK	X	X	X	X
	BUTLER CREEK	X		X	X
	CRAZY CANYON	X		X	X
	FRENCH GULCH	X		X	
	GREENOUGH CREEK				
	HOLLOWMAN SCHWARTZ	X		X	X
	MOCASSIN EAST				
	MOCASSIN WEST		X		
	STARK MOUNTAIN			X	
	STONEY ROCK				X
	SWAMP CREEK EDDY	X			
	WOODS GULCH	X	X	X	X

Summary

This monitoring effort continues to add to our understanding of Flammulated Owl presence and persistence over time. It is set up to be continued, and the strength of the results and our abilities to apply them to effective conservation will increase over time. Citizen science efforts such as these have benefits beyond the data themselves. These efforts educate volunteers about owl natural history, the process of science, and the importance of conservation. We hope to secure further funding to continue this program.

For results of previous years' efforts, including Forest Service studies in 2005 and 2008, see http://avianscience.dbs.umt.edu/projects/flammulated_owl.php

Literature Cited

Barnes, K P and J R Belthoff. 2008. Probability of detection of Flammulated owls using nocturnal broadcast surveys. *Journal of Field Ornithology*. 79: 321-328.

Fylling, M.A., J.D. Carlisle, A.B Cilimburg, J.A. Blakesley, B.D. Linkhart, and D.W. Holt. 2010. Flammulated Owl Survey Protocol. <http://sites.google.com/site/pifwesternworkinggroup/projects/flammulated-owl-monitoring>

Figure 1. Map showing all Flammulated Owl routes and points, shown in yellow, in the Missoula area from 207 - 2010.

Missoula Area Flammulated Owl Routes

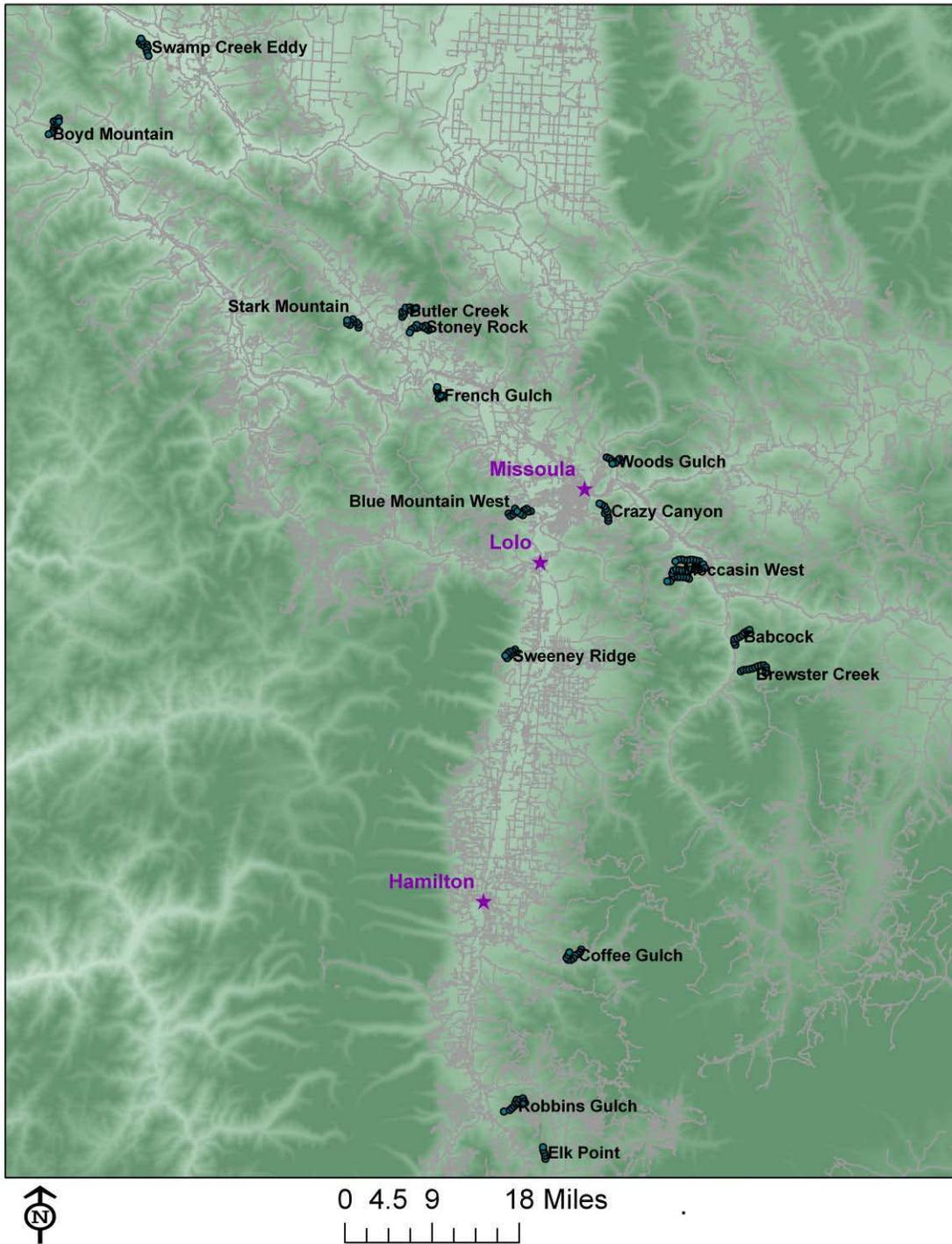


Figure 2. Map showing all Flammulated Owl routes and points, shown in yellow, in the Helena area from 2007 - 2010.

Helena Area Flammulated Owl Routes

