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On the cover ~
A Red-breasted Nuthatch,
one of many 2012
northern "invasion"
species, banded on
September 27th at Van
Meter State Park.

Dear friends and members of MRBO,

This fall, I had the pleasure to work alongside a group of people who changed my life. While searching for internship opportunities involving mist-netting, I came across the Missouri River Bird Observatory website. Although there were no job openings posted, I was so impressed with their involvement in ornithological research and community education throughout the state of Missouri (and beyond!) that I immediately contacted Dana in the hopes that they'd be able to take me on as an understudy.



A few months and a nine hour car ride later I found myself in Marshall, Missouri. In a handful of days, not only was I already learning proper mist-netting etiquette, but I was also enthusiastically burning through the research papers, books, and field guides that Dana and Ethan had graciously lent to me. I already had a passion for birds, and they encouraged me to broaden my knowledge of the feathered creatures that have intrigued the human race for centuries.

One thing I quickly learned was that there is always something new to be fascinated about. For example, while examining an Eastern Whip-poor-will in hand at Grand Pass, Dana and I discovered an odd comb-like structure on the middle claws of each foot. After some research, we found that this was known as a 'pectinate' toe and that its true function is still being debated.

Throughout my short stint with MRBO, I was able to partake in many of their fall activities. We banded over 925 individual birds at four different sites, including some of my all-time favorites like Wilson's Warblers, American Woodcock, and an Olive-sided Flycatcher (the first for MRBO at Van Meter). I was able to observe and participate in educational events in Centralia, Kansas City, and Columbia, meeting friendly new faces and learning how to provide positive environmental education experiences for people of all ages. Towards the end of my stay with MRBO, I was able to embark on winter grassland bird surveys under the patient guidance of Ethan and Dana. Northern Saw-whet owl banding was also on the agenda, which was definitely a change from waking up pre-dawn!

Now that my time with MRBO has drawn to a close, I find myself more confident with my abilities as an ornithologist as well as enlightened with a broader view of not only birds but the entire ecological spectrum. I have high hopes to visit soon and cannot wait to see how much this amazing organization has grown.

Wishing everyone the best this holiday season,

Janna a. Klass

Joanna Klass

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Joanna Klass was born and raised in Seymour, Wisconsin and has always harbored a special interest in ornithology. Her strong desire to gain mist-netting and avian research experience brought her to MRBO in Fall 2012. Animals and the natural world have fascinated her throughout her life, and in May 2011 she obtained BS degrees in Zoology and Biological Aspects of Conservation from the University of Wisconsin-Madison. During her undergraduate career, she studied abroad in the rainforests of Far North Queensland, Australia through the School for Field Studies. Her research project, The Socio-Ecological Impacts of the Yungaburra Spectacled Flying Fox Colony (Pteropus conspicillatus), earned her the Distinguished Student Researcher Award from SFS faculty and staff for addressing adaptive management issues relevant to the community. After graduating, she completed a number of internships at the National Aviary in Pittsburgh, the Caldwell Zoo in Tyler, Texas, and Fossil Rim Wildlife Center in Glen Rose, Texas. At Fossil Rim, she participated in the captive propagation of the highly endangered Attwater's Prairie Chicken. Future endeavors include pursuing a career in zoological management with the possibility of attending graduate school.



*Burroughs Audubon Library* – January 5<sup>th</sup>, February 2<sup>nd</sup>, and March 2<sup>nd</sup>: Join us at the library for a fun backyard banding demonstration from 10:00 a.m. - 1:00 p.m. If we are weathered out, we'll try the following day.

**Rocheport - January 8th:** "Monitoring Birds on the Missouri River", a presentation at Les Bourgeois Winery by MRBO's Ethan Duke. Part of <u>Missouri River Relief</u>'s excellent <u>Big Muddy Speaker Series</u>. 7 p.m.; all are welcome!

**Blue Springs - January 12th**: Join us at <u>Burr Oak Woods Nature Center</u> for their Big Year Festival kick-off! MRBO will provide a banding demonstration; there will also be games, prizes, Birding 101 class, and guided hikes!

*Marshall* - **February 23rd:** "Get to Know Missouri's Winter Birds" - A public class offered at the <u>Saline County Career Center</u>. 9:00 a.m. - 12:00 p.m. Please register in advance!

*The Bootheel-* March 23rd & 24th: March Marshbird Madness! With the <u>Audubon Society of Missouri</u>, MRBO will present an intensive workshop on marsh bird identification by sight and sound. Plus, even more training offered to those who'd like to join in statewide Secretive Marsh Bird Surveys!

In the next issue of The Rectrix...

**Species Profile:** Greater Prairie Chicken in Missouri.

**Kids' Corner:** Content for youth **Education & Outreach Report Winter Prairie Bird Monitoring** 



Fall 2012 saw another interesting, successful migration monitoring season here in central Missouri. We continued tracking migration at our established site at Van Meter State Park (VANM), and also set up pilot sites at Hi-Lonesome Conservation Area (HILO) in Benton County, and the MRBO home office site (HOME) outside of Marshall. A third pilot site was established at Grand Pass Conservation Area (GP93) in an area of early-successional willow and cottonwood growth where the infamous Flood of '93 had scoured the habitat within the levees.

As MRBO has done in the past, this multi-site monitoring season allowed us to continue daily tracking of bird movement (in this case, using the VANM site), while testing other locations for potential future monitoring. When two or more stations run on the same day, this also allows us to compare bird abundance between sites, which is an indirect measure of habitat quality. If, for example, we found that on a given day, significantly more individual birds and a greater number of species were using one site in comparison to another, this would encourage us to initiate more comprehensive monitoring at the heavily-used site. We then begin assessing the habitat structure and plant diversity in order to answer our main question: what constitutes high-quality stopover habitat for migrating birds in Missouri? The goal of the MRBO migration monitoring program is to provide answers to this question to land managers such as the Missouri Department of Conservation, US Fish and Wildlife Service, and private landowners.

The establishment of a new site at HILO was the first phase of a much larger project in which we will monitor bird use of restored prairies throughout the year. Most conservation monitoring programs direct attention to the breeding season, but to really conserve birds, we need to provide quality habitat throughout their migratory and wintering periods as well.

On the following page, we present the data for birds banded at each Fall Migration site. Please note the "Net Hours" and "Birds Per 100 Net Hours" listed at the bottom. A "net hour" is the measure of a standard 12-m mist-net being open for one hour; a station with 10 nets run for 6 hours in a morning would thus constitute a day of 60 net hours. These measures are included to provide a clear understanding of the amount of time each station was run and to allow a direct comparison between sites. VANM was operated every day from August 30<sup>th</sup> to October 26<sup>th</sup>, with the exception of mornings with rain or strong winds, and so has a much larger number of total net hours than any of the other sites.

The initial results of Fall 2012 indicate that while VANM remains a well-used site for migrating birds, other sites have the potential to provide good study locations as well. Our Marshall Home site, for instance, resulted in a larger number of birds per 100 net hours than any of the other stations, suggesting that the Home property may warrant further study as a migration stopover site. The relatively low number of captures (and birds per net hour) at HILO reflects our need to improve and refine our methods for studying prairie birds; grassy habitat is far more difficult to capture birds in than forest or early-successional habitat. However, the effort is worth it: several secretive sparrow species will only be documented in migration via mist-netting. Finally, our GP93 site provided a very different habitat with which to compare results from VANM. These sites are in close proximity to each other, but contain extremely different vegetation structure and plant diversity.

#### **Exciting highlights from Fall 2012 include:**

- A Whip-poor-will banded at GP93.
- Le Conte's, Grasshopper, and Savannah Sparrows banded at HILO.
- Several Philadelphia Vireos, an Olive-Sided Flycatcher, and two Spotted Towhees banded at VANM.
- An American Woodcock and several Brown Creepers banded at HOME.
- Many early Red-breasted Nuthatches documented by sight and sound at GP93, VANM, and HOME.

## Fall Passerine Migration 2012



Species	GP93	HILO	HOME	VANM	Grand Total
American Goldfinch	2		3	3	8
American Redstart				3	3
American Robin		1		3	4
American Woodcock			1	1	2
Black-and-White Warbler				3	3
Black-capped Chickadee	6		4	4	14
Blue-headed Vireo	1			8	9
Blue Jay	6		4	5	15
Brown Creeper			3	2	5
Brown Thrasher			4	3	7
Blue-winged Warbler				1	1
Carolina Wren			3	6	9
Canada Warbler				5	5
Cedar Waxwing			1		1
Chipping Sparrow			9		9
Common Yellowthroat	11	4		7	22
Downy Woodpecker	2	1	1	5	9
Eastern Bluebird			4		4
Eastern Phoebe	1	1	2	4	8
Eastern Towhee	3			1	4
Eastern Wood Pewee				18	18
Eastern Whip-poor-will	1				1
Field Sparrow		9	5		14
Fox Sparrow	9		1	8	18
Great-crested Flycatcher				1	1
Golden-crowned Kinglet				1	1
Grey-cheeked Thrush				1	1
Gray Catbird	13	1	9	64	87
Grasshopper Sparrow		1			1
Hairy Woodpecker				1	1
Hermit Thrush	1		4	14	19
House Finch			3		3
House Wren	1	1	3	5	10
Hybrid Chickadee		1			1
Indigo Bunting	8	1	8	6	23
Killdeer				1	1
LeConte's Sparrow		1			1
Least Flycatcher	2			7	9
Lincoln's Sparrow	7	1	2	1	11
Magnolia Warbler				3	3
Marsh Wren		1			1
Mourning Warbler				5	5
Myrtle Warbler	1		12	4	17

## Fall Migration 2012 Results

Species	GP93	HILO	HOME	VANM	Grand Total
Nashville Warbler	12		3	20	35
Nelson's Sparrow				1	1
Northern Cardinal	1		15	17	33
Northern Waterthrush				2	2
Orange-crowned Warbler	3		2	1	6
Olive-sided Flycatcher				1	1
Ovenbird	4		4	20	28
Philadelphia Vireo				6	6
Rose-breasted Grosbeak	1			3	4
Red-breasted Nuthatch				1	1
Red-bellied Woodpecker			1	2	3
Ruby-crowned Kinglet	7		5	11	23
Red-eyed Vireo			1	12	13
Savannah Sparrow		3			3
Slate-colored Junco	6	5	12	5	28
Scarlet Tanager				1	1
Song Sparrow	6	2	3		11
Spotted Towhee				2	2
Sharp-shinned Hawk				2	2
Summer Tanager			1	2	3
Swamp Sparrow	11	1	2	3	17
Swainson's Thrush	1		2	19	22
Tennessee Warbler				1	1
Traill's Flycatcher	4			4	8
Tufted Titmouse	2	21	10	9	42
Veery				1	1
Warbling Vireo				2	2
White-breasted Nuthatch			2	2	4
White-crowned Sparrow	3			1	4
Wilson's Warbler	2			11	13
Winter Wren				3	3
Wood Thrush				8	8
Western Palm Warbler		3			3
White-throated Sparrow	9	1	42	148	200
Yellow-breasted Chat	1				1
Yellow-bellied Flycatcher				10	10
Yellow-bellied Sapsucker			1		1
Yellow-shafted Flicker		1	1	4	6
Grand Total	148	61	197	539	941
Number of species	33	21	38	66	81
Total Net Hours	551	267	445	1780	3043
Birds per 100 net hours	26.9	22.8	44.3	30.3	30.9



### Northern Saw-whet Owls in 2012

One of our favorite projects here at MRBO is the Northern Saw-whet Owl study. This project, funded entirely by our membership, is exciting because it's old-fashioned in nature – we get to find out entirely new information about a very charismatic species. No one really knew when, where, how many, or how often Saw-whets came to Missouri, and we at MRBO are working each fall to figure that out. And this fall's Saw-whet season was outstanding.

As in past years, we kicked off the season with our interns traveling up to Hitchcock Nature Center in southwestern Iowa to learn from our owl mentor, bander Jerry Toll. Upon their return on October 23<sup>rd</sup>, we began operation at Marshall's Indian Foothills Park. Our net set-up at Foothills consists of four 60-mm mesh mist-nets (our passerine nets, in contrast, have 30-mm mesh) in a small grove of Eastern Red Cedar trees. The nets surround a FoxPro game caller loaded with a male Northern Saw-whet Owl breeding call. As you can imagine, we do catch more female owls than males using this call type, but many researchers in the U.S. and Canada have determined that this is the most effective audio-lure overall for this species (for more information on this subject, please see www.projectowlnet.org).

As usual at MRBO, we also set up a second comparison test site located at the MRBO Home just outside of Marshall. Additionally, we conducted several trials at other locations in Missouri. The seasonably cold temperatures and north winds during late October and early November were favorable and we had an extremely successful early season.

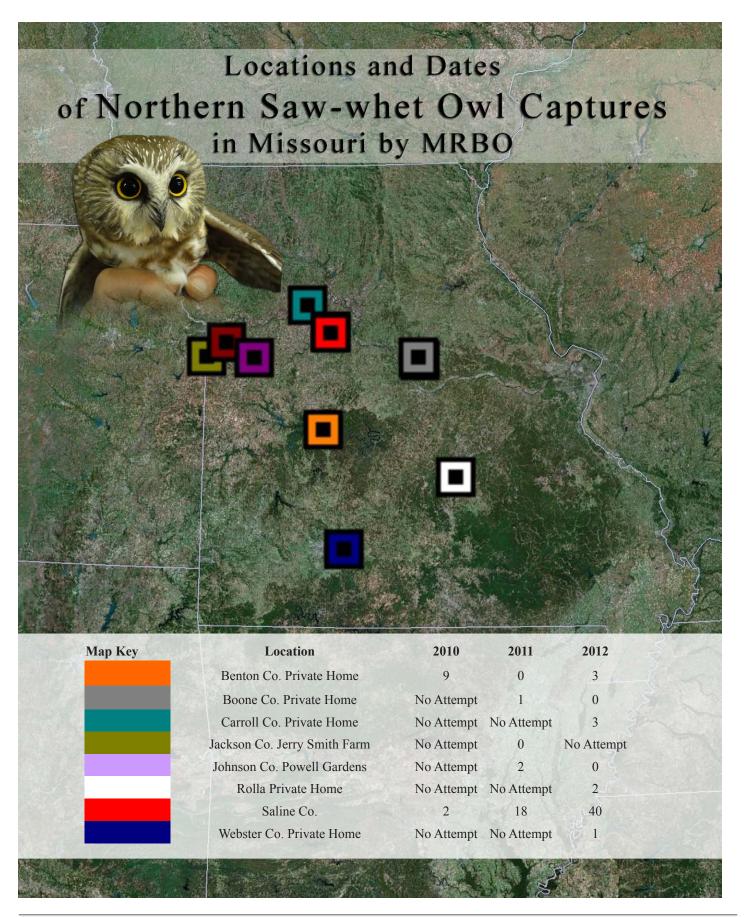


Just for comparison: in fall 2011 and winter 2012, we captured 18 owls at Foothills Park during a month of operation, and an additional 8 throughout the state in trials near Rolla, Springfield, Warsaw, and Powell Gardens. This fall, from October 23<sup>rd</sup> to November 27<sup>th</sup>, we captured 27 Saw-whets at Foothills Park and an additional 12 owls at our Home site. We also had several between-site recaptures. Almost all of our captures and recaptures occurred prior to November 10<sup>th</sup>, at which point consistent winds out of the south seemed to hold back, or maybe even reverse, the movement of migrating Saw-whets. Owl banders from the eastern U.S. similarly reported that this was an early migration year, with Saw-whets ending the major part of their movements by early November. Owl trials at other sites in Missouri during November were disappointing, with no owls captured at Powell Gardens on November 17<sup>th</sup> or outside of Rolla on November 20<sup>th</sup>; we had captured Saw-whets at both locations in 2011. However, during a recent trial in Carroll County our luck changed – we captured three owls, two small males and one big female on December 3<sup>rd</sup>! **This brought our total count to 42 Northern Saw-whet Owls in Missouri for Fall 2012!** 



Aside from documenting more Saw-whets than ever before, our biggest news from the 2012 season was this: on October 29<sup>th</sup>, an owl was captured at Foothills Park that had been banded in central Sas-katchewan on September 12<sup>th</sup>! This is a movement of over 1,100 miles in five weeks. This Second-Year female owl was originally banded at the Nisbet Banding Station outside of Prince Albert, Saskatchewan, which bands more than 400 Northern Saw-whet Owls each fall.

MRBO's study of wintering Sawwhets will continue throughout the 2012-2013 winter, and we hope to pilot a spring migration study of this species in March 2013. There are also banders in the northwestern and eastern parts of Missouri who are documenting this species' movements in their regions!



Many thanks to Jeff Stubblefield of Marshall Parks Department for allowing us to operate at Foothills Park again this year, and to MRBO bander Brittney Cross and interns Joanna Klass and Daniel Cardoso for operating the "owl's share" of nights there. We'd also like to thank the folks who hosted us on their properties for owl trapping – Alan Branhagen of Powell Gardens, the Perrys of Rolla, and the Casner Family of Carroll County.



he Henslow's Sparrow (*Ammodramus henslowii*) is an often-overlooked bird of our native prairies, but once you recognize it, you will find Henslow's to be a charming, intriguing species. Henslow's are short-distance migrants, breeding throughout the remaining prairies of the Midwest and Northeast and wintering in the southern Gulf Coastal Plains. Upon arriving at their Missouri breeding grounds in April, male Henslow's will begin singing their quiet, three-note song – often "day or night, rain or shine" (Smithsonian Institution 2006). Both males and females exhibit secretive behavior, foraging in thick grasses and forbs along the ground. Their unobtrusiveness, relatively diminutive song, and preference for thick prairie vegetation renders the Henslow's Sparrow sometimes very difficult to detect.

Upon first glance, the Henslow's Sparrow often appears drab. But if you are lucky enough to get a long, close-up view of an individual you will see differently. The markings of a Henslow's, especially on the back, are an incredibly ornate mixture of russet, taupe, black and many shades of brown organized in an amazingly beautiful pattern (see photo at right). There is no difference in plumage between males and females, but a juvenile can be identified by its tawnier and less ornate appearance.

Across most of its range, the Henslow's Sparrow is undergoing a steep population decline, estimated at -7.5% each year, more than any other prairie bird (American Bird Conservancy 2010). Prairie birds in general are among some of the most imperiled species in North America, due to widescale habitat loss. Almost all native prairie in the U.S. has been converted to agriculture or urban development; Missouri has less than 1% of its original native prairie remaining (please see maps on page 11 and the Missouri Prairie Foundation's website at www.moprairie. org for more information).

This species' preference for thick prairie habitat requires a vegetation community consisting of diverse grasses and forbs. This type of habitat is generally found in remnant prairie patches and restored grasslands that are burned and/or grazed on a long (>3 year) rotation (e.g., Powell 2006; Cully Jr. and Michaels 2000). The thick vegetation structure chosen by Henslow's Sparrows must be delicately managed such that it does not become either too sparse (which can result from frequent burning or grazing) or too encroached upon by woody plants (which can result

from too *infrequent* burning or grazing). Habitat maintenance for this declining species therefore requires focused attention on the part of landowners, a situation in which our Missouri Department of Conservation and other Missouri landowners have done well thus far. Missouri is one of only three states throughout the Henslow's Sparrow range in which populations appear stable (US Fish and Wildlife Service 2011).

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### Monitoring Avian Productivity and Surviviorship in the Prairies



In 2012, we continued our Monitoring Avian Productivity and Survivorship (MAPS) season at Ionia Ridge, Grandfather, and Paintbrush Prairie Conservation Areas located in Pettis and Benton Counties just south of Sedalia, MO. The season was successful in many ways. In addition to banding, we also instituted daily point counts at three locations on each prairie, and territory mapping to determine actual numbers (not statistical estimates) of breeding birds and their continued presence throughout the season. These data supplemented the mist-netting that was conducted once every ten days throughout the breeding season.

Summer of 2012 was a particularly difficult season to work in any habitat, but none more so open prairie. We adjusted our net operation time to half an hour before sunrise for four hours (roughly 5:00 to 9:00 a.m.) to ensure that birds captured in mist-nets would not over-heat. We also checked nets constantly. Happily, this focused attention to bird safety resulted in all captured birds being handled briefly and released unharmed. Nonetheless, with temperatures often reaching 90 degrees by 9 a.m. and no relief in the heat or drought from June to August, the season proved to be more difficult on people than on breeding birds! We were very lucky to have a dedicated, thoughtful group of young people working on the project with us; that was the key to this summer's success.

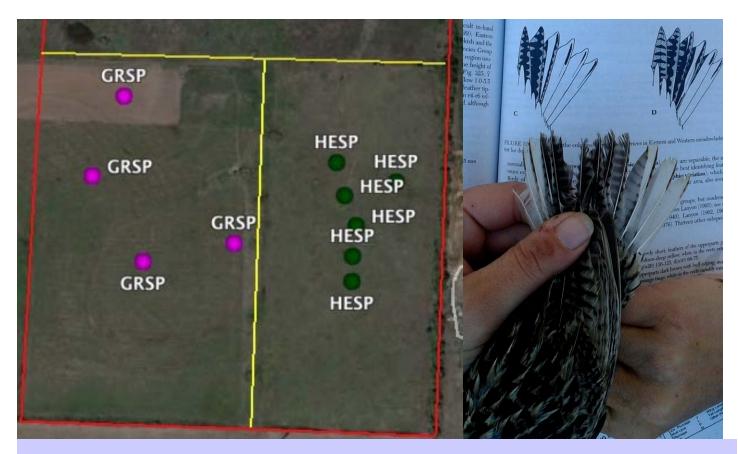
For 2012 we refined our MAPS sampling protocol to better sample grassland-obligate birds. Net placement was adjusted from that of 2011 at all sites. This resulted in lower numbers of birds captured (especially at Grandfather Prairie), but more even representation of grassland-obligates. We also moved the entire MAPS station at the Ionia Ridge site. The map on page 12 shows a portion of the new study area (in red), located on the southeast side of Ionia

Ridge, along with divisions between management units. The north site of the area is a mixture of cool-season grasses, the southwest side consists of sparse warm-season grasses planted by the MDC in 2008, and the southeast side is a patch of remnant prairie. The map also shows territory mapping results for Grasshopper Sparrow (GRSP) and Henslow's Sparrow (HESP), which are a direct indication of these species' breeding habitat preferences.

The new study area at Ionia Ridge is an example of an open grassland habitat; in contrast, Paintbrush Prairie is intersected with shrubby draws, and Grandfather Prairie is bordered by trees on all sides. The presence of these habitats is represented in the banding data on the following pages. For example, Grey Catbirds were abundant at Grandfather Prairie and even more so at Paintbrush Prairie, which is a reflection of just a few nets at each site that remain in shrubby areas. These shrub nets also help us sample Bell's Vireo and Yellow-breasted Chat, two grassland-obligate species that naturally prefer the shrubby areas of prairie for breeding habitat.

We were extremely pleased to recapture 47 birds originally banded 2011 at the Grandfather and Paintbrush Prairie sites. This number will likely be higher in future years as the net placement remains constant.





**Left:** Distribution of Grasshopper and Henslow's Sparrow reflecting habitat preferences within different sections of a prairie. **Right:** Distinguishing Eastern from Western Meadowlark by morphology. This one is a Western.

## Results from the Prairies

	Grand	lfather	Ionia	Ridge	Paint	brush	Returns <sup>2</sup>
Species <sup>1</sup>	2011	2012	2011	2012 new site	2011	2012	
American Goldfinch	26	6	6		32	21	2
American Robin			6				
Baltimore Oriole	5	1				1	
Barn Swallow		1			5	8	
Black-and-White Warbler					1		
Black-capped Chickadee	7						1
Bell's Vireo	9	4			20	31	2
Brown-headed Cowbird	13	6		1	6	3	1
Blue Grosbeak	4	4	1		1		
Blue Jay	1						
Brown Thrasher	4	2	12	1	3	7	
Carolina Chickadee		1					
Carolina Wren					1		
Cedar Waxwing			1		1	1	
Common Grackle			5	2			

	Grand	lfather	Ionia Ridge		Paintbrush		Returns <sup>2</sup>
Species <sup>1</sup>	2011	2012	2011	2012 new site	2011	2012	
Common Yellowthroat	23	11	11	7	19	17	14
Dickcissel	52	34	32	16	18	10	3
Downy Woodpecker	6	3	1		1	4	
Eastern Kingbird	1	6	1	1	1		1
Eastern Meadowlark	1			2			
Eastern Phoebe	1	2	1	2		1	
Eastern Towhee	1	1			1		
Eastern Wood-Pewee	1						
Field Sparrow	16	4	30	10	14	7	2
Grasshopper Sparrow	1	1	3	6	3		
Great-Crested Flycatcher		1			2		
Grey Catbird	43	19	1		56	74	11
Hairy Woodpecker		1					
Henslow's Sparrow	2	1		1	2		
House Wren		1				1	
Indigo Bunting	21	5	6	1	15	14	3
Least Flycatcher	1				1		
Loggerhead Shrike				1			
Lincoln's Sparrow						1	
Northern Cardinal	8	2			1		
Northern Mockingbird	2	3	4			3	
Orchard Oriole	22	13			7	5	5
Ovenbird	1						
Red-winged Blackbird	1	1	21	9			
Song Sparrow			2				
Summer Tanager	1						
Traill's Flycatcher	9	1	2		9		
Tree Swallow				1			
Tufted Titmouse		1					
Western Meadowlark				2			
White-crowned Sparrow			1				
Wilson's Warbler					1	1	
Yellow-breasted Chat	13	9			14	14	2
Yellow-billed Cuckoo	2		2				
Total	298	145	149	63	235	224	47
Species Diversity	31	30	22	16	26	19	

<sup>1</sup>Grassland obligate species denoted by bold type.

<sup>2</sup>Birds banded in 2011; Grandfather and Paintbrush Prairies only.

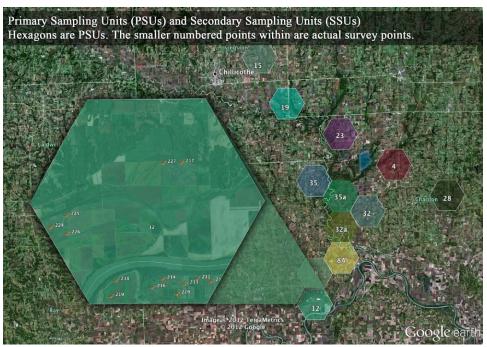


After two years of development, in 2012 MRBO achieved its first year of the state-wide Secretive Marsh Bird Survey Program. We tested a the use of the National Marsh Bird Monitoring Protocol (NMBMP) in Missouri in order to assess how well this could provide data on marsh birds for regional and state conservation objectives. The development process for this project involved a great deal of coordination with state and federal agencies as well as communication with private landowners. We are currently writing reports for our funders, area managers, and landowners detailing the results and future goals of this long-term study. MRBO is using a programmatic approach to monitoring secretive marsh birds to keep a careful watch on their distribution and population as we continue to lose wetland habitat.

How do we survey? The NMBMP is a rigorous, standardized field method used for detecting marsh birds that took years of development throughout the country. Experts have worked hard to ensure marsh birds are surveyed in a standardized manner so that data is comparable across all states. If everyone used different protocols, there would be a great deal of "comparing apples to oranges" across the geographic range of marsh

bird species. In the long run, conservation dollars are scarce, and planning and management needs to focus in a strategic and coordinated fashion to maximize its effectiveness. With that idea in mind, we adhered to the standard methodology, which involves stationary point counts where a predetermined series of marsh bird vocalizations are broadcast from a speaker for a fixed amount of time. All surveys are conducted within a short window of time in the early morning and evening hours. Each bird is documented during each minute of the sequence. The distance from the surveyor and whether detections were made by sight or sound are recorded for each bird. If a bird is heard, the exact type of vocalization they made was documented.

Where do we survey? Regional planners from the US Fish and Wildlife Service developed a geographic framework for Missouri surveys. This framework ensured unbiased geographic coverage so that we could more reliably determine the distribution of the marsh birds across the state and sample in way that is comparable to other states. This was not a mission to detect as many marsh birds as possible; our aim was to collect quality data in a standardized fashion. If the former had been the goal,

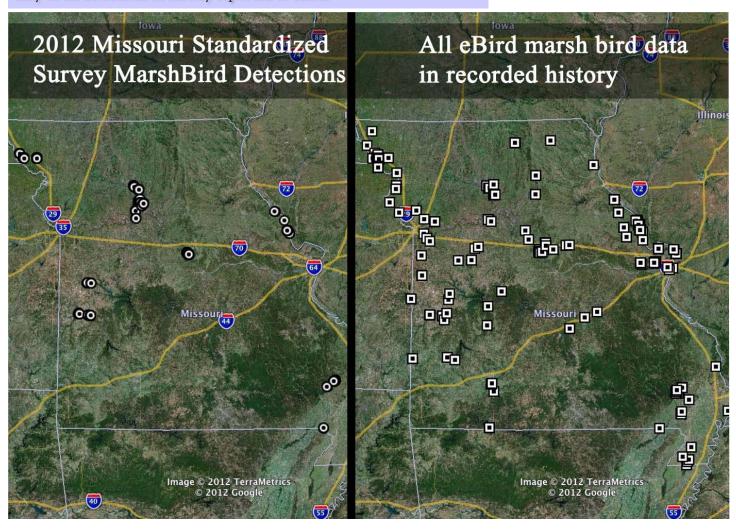


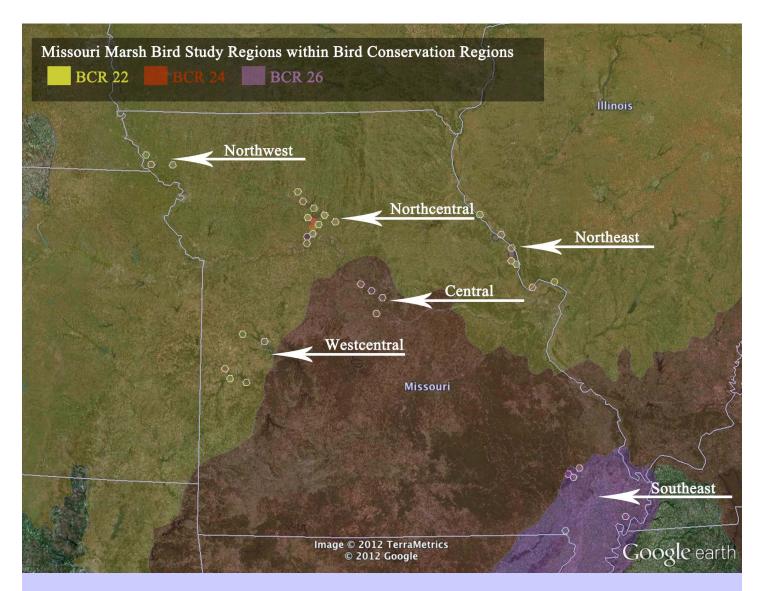
**Above:** A description of the survey sampling design. Large hexagon areas were chosen randomly. Survey points were randomly chosen within each hexagaon.

**Below:** Survey detections during this pilot season are distubuted similarly to all detections in history reported to ebird.

we would have simply surveyed all wetlands having historical accounts of marsh birds. However, that would violate core principles of statistical sampling and result in data that is not scientifically sound. On the contrary, this framework included a randomized process of selecting general areas and a secondary randomization for specific points in each area. We call the general areas "Primary Sampling Units" (PSUs) and the exact survey points "Secondary Sampling Units" (SSUs; please see map, left).

On 28 March 2012, MRBO received 690 potential SSUs within 36 PSUs. The potential survey sites included public and private lands under a variety of different management treatments. With our goal of surveying 100-200 SSUs each month of the field season, we had our work cut out for us. A total of 96 SSUs fell on private lands, 122 SSUs fell on state public lands, and 75 SSUs were surveyed





**Above:** PSUs within Partners in Flight Bird Conservation Regions and Regional breakdown for Missouri Marsh Bird Surveys. **Below:** Number of PSUs and SSUs in each region. Each SSU was surveyed three times.

Region	Private PSUs	Public PSUs	<b>Private SSUs</b>	Public SSUs
Northcentral	10	10	68	26
Northeast	0	4	0	52
Southeast	2	2	15	18
Westcentral	1	3	4	41
Northwest	2	2	9	27
Central	0	2	0	13
Totals	15	23	96	177

on federal refuges. This required efficient coordination among all collaborators. After point generation, we were able to coordinate with the Natural Resources Conservation Service (NRCS) and MDC Wildlife Division to expedite letters of request to 59 landowners. Public land area managers on refuges and state lands were contacted as ground-truthing and survey logistics were planned. The process of ground-truthing entails assessing each SSU to

see if it actually falls in a wetland and should be surveyed.

Potential survey locations eventually fell into five regions throughout Missouri (Northwest, Northeast, Northcentral, Westcentral, Central, and Southeast; please see map above). All SSUs were ground-truthed and routes were established before the end of April. Additional SSUs were created throughout the surveys. Additional points were created throughout the season.

Three field technicians were hired and received training material prior to three days of in-field training by 8 March 2012. During orientation, technicians were given regional packets for their respective areas, which included maps, descriptions of areas, and landowner/area manager contact information. After that we were off to the races.

Many Conservation Area managers and biologists from Clarence Cannon and Squaw Creek National Wildlife

Marsh bird detections as a percentage of survey points within public and privately managed wetlands.

Туре	Marsh Birds	Points Surveyed	Percentage of Points w/ Detections
Private	79	96	0.82
Public	131	177	0.74
Туре	Detections	Points Surveyed	Percentage of Points w/ Detections
Private	48	96	0.50

Refuges (NWRs) worked closely with MRBO to continue development of robust surveys on their respective refuges. In some of these areas we generated additional points to improve monitoring in areas that the randomized site selection process missed.

Birds Surveyed. As we all worked together from April to June to refine the survey design and conduct three visits to each SSU, we were able to detect some marsh birds on several of the properties throughout Missouri. Our results are indicative of how rare some of these birds have become in our state. A slightly higher percentage of marsh birds were found on private lands than on intensively managed public lands. These results only reflect one "pilot" season, but this may be an indicator of what we can learn about providing habitat on public lands from those managing habitat on private lands. Also, many of the rare marsh birds were found during breeding season so it is worthwhile to consider that the habitat also serves scores more during migration.

Most importantly, through collaboration and diligence by many different people, we have established a program that will continue to be broadened and refined as means of collecting data on marsh birds. This guild is not only of high conservation concern, it is also an excellent indicator of wetland quality. This program will also serve as a medium of communication regarding wetland management and wetland-dependent.

The Future. For the 2013 field season and beyond, we plan to further expand upon the PSUs and refine the SSU process in order to gain more thorough coverage of our Missouri wetlands. We are also well into the development of a long-term Missouri Marsh Bird Program which involves providing continued information to wetland stewards and the public. Part of the program includes public events offering volunteer opportunities and training. If you would like to get involved, look for an event in your region (please see the schedule below).

Further plans are also underway to establish an even more cost-effective means of monitoring marsh birds. Along with other researchers in the US and Canada, we're working to standardize a methodology for surveying marsh birds with Autonomous Recording Units (ARUs). Many days of recordings were captured this year as the units were tested all over the state. The units have proven a good tool to detect marsh birds and other species. Even though it has been done with forest birds and whales, more work is needed in order to accurately measure the number of individuals at any given point.

## Preliminary detection results from Missouri marsh bird surveys in 2012.

Species	<b>Individuals Detected</b>
Green Heron	1
Yellow Rail	1
Black Rail	1
Pied-billed Grebe	2
Black-crowned Night-Heron	2
Sandhill Crane	2
King Rail	3
Virginia Rail	3
Marsh Wren	12
American Bittern	19
Least Bittern	19
Wilson's Snipe	20
American Coot	58
Sora	84

2013 Marsh Bird Survey Training with the Missouri River Bird Observatory

Dates	Location	Notes
March 23rd and 24th	The Missouri Bootheel	"March Marshbird Madness" with the Audubon Society of Missouri! A fun weekend of learning, birding, and camaraderie. Informal classroom sessions and field training will be offered.
April 3rd and 4th	Clarence Cannon NWR	Open to anyone interested in volunteering on Missouri marsh-
April 10th and 11th	Eagle Bluffs CA	bird surveys! Trainings will consist of an afternoon classroom
TBD - April	Grand Pass CA	sesson and evening field session on the first day, followed by an
TBD - April	Squaw Creek NWR	early-morning field session the second day.



Who... 5 - 8 year olds 9 - 11 year olds 12 - 15 year olds

What... A drawing of a Missouri BIRD in its Missouri HABITAT – that may be its favorite tree, bush, flower, or pond!

it may be the prairie, forest, or wetland where it lives!

Prizes... one winner in each age group will get:

- a one year MRBO membership
- a MRBO t-shirt, hat, and water bottle
- your art featured in MRBO's next newsletter!

Everyone who enters gets...

one suet cake to give to their backyard birds!

To enter...
send your bird
art by January
25th 2013



To: Missouri River Bird Observatory 2012 Art Contest 27331 Highway WW

Marshall, Missouri 65340

Don't forget to write your name and address on the back of your drawing!



December 7th, 2012

Dear members and friends of MRBO,

We are so incredibly thankful for the support we have received for furthering MRBO's mission. This small NGO is no longer small in scope. With your help and encouragement, we have embarked on a multi-state prairie monitoring project, a long-term, state-wide marsh bird monitoring program, fall and spring migration monitoring at new locations, MDC prairie monitoring, and more education and outreach than ever.

Our mission is as "perpetual" as the state of change and flux of our increasingly altered habitats. What Ludlow Griscom wrote in the Audubon Society reprint of John James Audubon's classic work in 1950 is as true today as it was then. The underlying causes of habitat loss and bird population decline are inextricably linked. To counter this, we provide scientific measures of bird populations and share the value of birds and healthy habitats— with the idea that reason and our better natures will endure. We hope that you feel a shared sense of accomplishment as you read through our newsletter that serves as testament to this perpetual effort.

As MRBO continues to evolve, we see the growth of interns paralleling the expansion of projects. We see more people, young and old, learning about birds and their habitats. We see more people working together for conservation and education. We see more families and individuals enjoying the great outdoors.

This is possible because of your support. We hope you see it, too.

Yours truly, Ethan 🕲 Dana

# Please join the Missouri River Bird Observatory in conserving Missouri's birds and their habitats.

Your membership is a direct contribution to MRBO's avian conservation projects, environmental education program, and internship opportunities for young biologists in Missouri. MRBO membership provided the majority of funding for our education and outreach work, fall migration monitoring, and Northern Sawwhet Owl research in 2012, and allowed us to run at full capacity in all other projects.

Membership Level		Includes	
Student \$20		MRBO e-newslette	er & water bottle
Individual or F	amily \$50	MRBO e-newslett	er & hat or mug
Supporter \$100		MRBO printed ne your choice of T-sl	
Contributor \$2	50	MRBO printed ne your choice of MR	
Steward \$500+		all above gifts, plu tailored to your in	s custom field program terest.
Name:			
Address:			
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	th check addressed to: Misso rshall MO 65340. Or join v	ouri River Bird Observatory ia Paypal at http://www.mrbo.org	g/Pages/membership.html
	•	ndividuals have joined or ren ation of our summer newslet	
Contrib	outors	Melissa & Randy Lewis	Licking, MO
Bill & Carol Edson	Naperville, IL	Donnie & Kim Nichols	Warsaw, MO
Mark & Renee Freeman	Sedalia, MO	Linda Tossing	St. Louis, MO
Steve & Regina Garr	Jefferson City, MO	<b>Individuals</b>	and Families
Herman Jansen	Toronto, ON	The Frey Family	Washington, MO
Chrissy McClaren	St. Louis, MO	The O'Daniels Family	Independence, MO
Bob & Pat Perry	Rolla, MO	The Tieman Family	Lees Summit, MO
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