

# The Rectrix

A seasonal newsletter of the Missouri River Bird Observatory Volume 4 No. 3 - December 2014



rectrix [rek-triks] noun. (pl. -trices) any of the larger feathers in a bird's tail, used for steering in flight.





# Letter from MRBO's Special Projects Coordinator

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## ON THE COVER:

A Black Vulture photographed in southern Louisiana. This species is often seen in central and southern Missouri during the breeding season. Though we in North America are lucky enough to have stable populations of Turkey and Black Vultures, throughout the rest of the world **vultures remain some of the most threatened raptors due to environmental degradation and persecution.** Many people find vultures to be ugly, gross, or even portents of doom; we believe they are a crucial contributor to ecosystems, extraordinarily graceful fliers, and have cute faces! For more information on raptor conservation, see Hawk Mountain Sanctuary's [Vulture Chronicles](#).

Dear MRBO Members and Friends,  
I have worked with MRBO for two years now while there are many rewarding aspects of my work with MRBO, something that encourages me and gives me hope for avian conservation is the ways in which MRBO collaborates with others who are studying birds, working with birds or are sharing their experiences and knowledge of birds with others. MRBO has many partners who are concerned about our feathered neighbors and it seems like Dana and Ethan are constantly traveling to some part of the state of Missouri or elsewhere to be part of these efforts for avian study or education. This past spring, summer and fall I was involved in a few of these collaborations, some of them ongoing efforts and a few were new opportunities.



I learned more about the Missouri Dept. of Conservation's Environmental Education Curricula for schools in April when Cynthia Green accompanied a busload of students from Clinton High School to our spring migration banding site at Mora Conservation Area. On that day the students learned about Swamp Sparrows and other migrant birds. To comply with the MDC's Discover Nature School program, teachers are required to take their students on outdoor field trips. The teachers receive trainings the different age levels—Nature Unleashed, Aquatics, Nature Unbound--during the summer. I attended several of these environmental education trainings in July and learned much more about this far-reaching program.



Amber Vansien of MU's Raptor Rehab Project with a rehabilitated Red-shouldered Hawk banded before release.

Occasionally MRBO will be contacted by volunteers from the University of Missouri Veterinary School's Raptor Recovery Project to band raptors that have been rehabilitated and will be released. I always look forward to these trips to get to see the beautiful birds and learn about the rehabilitation work. This past year I had the opportunity to band species that I had not banded before: a red-shouldered hawk and a broad-winged hawk.

In May, I began a collaboration with avian rehabilitators on a much smaller scale. Lanny Chambers, a hummingbird bander in eastern Missouri, forwarded me an email about a hummingbird that had been rehabilitated at Lakeside Nature Center in Kansas City. I contacted Leah Sokol, the person who did the rehabilitation work. She told me the story of how the adult male hummingbird was found in September of 2013 without many of its feathers, including flight feathers. Leah kept the hummingbird alive through the whole winter and when I went to the center to band it in late May most of its feathers had molted back and the bird was able to fly and hover. Leah released it about 10 days later when the flight feathers had fully molted in. Leah contacted me again in August when she had another hummingbird that was ready for release. Amazingly, Leah had rehabbed and was able to release about eight hummingbirds throughout the summer and fall. In late summer we learned about a study of fall-molting Grasshopper Sparrows being done by Alice Boyle, assistant professor at Kansas State University in Manhattan. The purpose of the study was to sample molting feathers of Grasshopper Sparrows in Kansas, Nebraska, northern Oklahoma and western Missouri. When Alice came to Missouri



A Ruby-throated Hummingbird undergoing rehabilitation at Lakeside Nature Center.



A Grasshopper Sparrow showing new flight-feather growth. Lab studies will analyze the stable isotope ratios in feathers collected from this species.

the last week of August to band Grasshopper Sparrows, I accompanied her to two sites east of Columbia but the day was a bust as well as the next two days for her. However, during several weeks in September I was able to capture and band six Grasshopper Sparrows at Hi Lonesome Conservation Area and contribute data for the study!

In 2014 I was able to continue to do educational presentations and band hummingbirds at Arrow Rock State Historic Site and Van Meter State Park through the collaboration with the park employees who organize events and maintain hummingbird feeders. And recently this October and November, in partnership with a landowner in Harrison County, Missouri, I set up Northern Saw-whet Owl nets to expand the range of captures for this species in the state.

Dana, Ethan and I are very appreciative of everyone who works with us - whether its a

friend who provides a room and a meal, the Master Naturalists who help with banding efforts and educational events, or a landowner who shares with us the history of their land and how it is managed or simply allows us access to survey birds. I learned so much this year through these collaborations and hope to be able to continue with many of them in 2015. I encourage you to read through the MRBO blogs and Facebook posts to read about other MRBO collaborations and visit the "Get Involved" section of the [www.mrbo.org](http://www.mrbo.org) website.

Sincerely,



Veronica presenting information about Ruby-throated Hummingbirds to attendees of a September hummingbird workshop in Arrow Rock.

## 2014 Volunteer of the Year Sue "Bobwhite" Kelly

It is with huge gratitude that we present our 2014 Volunteer of the Year award to Sue Kelly, a Master Naturalist of the Hi-Lonesome Chapter. Sue spent over 200 hours assisting Veronica Mecko and other MRBO staff at the spring and summer banding stations in the Cole Camp area. Without her, we would not have been able to operate our banding stations on many of the scheduled days, especially during the summer MAPS season. Sue spent more time helping Veronica than any other volunteer or staff member throughout 2014.

Sue began helping MRBO in spring of 2013, starting with a long-term training program conducted in partnership with the Master Naturalists. She attended many training sessions and began volunteering at migration sites in April of last year. Sue continued helping MRBO throughout the 2013 spring and summer seasons, including banding events at Cole Camp Prairie Day. In 2014, Sue not only signed up to volunteer at the prairie banding stations, she would also fill in on the many days when no other volunteers were available.



Sue (right) with Veronica at the Arrow Rock Hummingbird Banding event.

We have nicknamed Sue "Bobwhite" because of her love for the two-note mating call of Missouri's only quail species.



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## Upcoming Events

**December 12<sup>th</sup>, January 9<sup>th</sup> & March 9<sup>th</sup> in Jefferson City:** Join us at the Birds-I-View Bird Garden for bird-watching, color-banding demonstrations, and avian fellowship from 1:30 – 4:00 p.m. BIV owners Steve and Regina Garr always have hot beverages and treats for everyone who comes by!

**January 10<sup>th</sup>, February 7<sup>th</sup>, and March 7<sup>th</sup> in Blue Springs:** Burroughs Audubon Library winter banding demonstrations! Come visit us at the Library to learn more about the backyard birds that frequent the Greater KC Area. All ages welcome at this traditional monthly event. 10 a.m. – 1 p.m.

**January 24<sup>th</sup> – 30<sup>th</sup> in Pigeon Forge, Tennessee:** Looking for a nature-oriented winter getaway? Come to the 25<sup>th</sup> annual Wilderness Wildlife Week! MRBO's Dana Ripper and Ethan Duke will be presenting every day of the festival on such topics as beginning and intermediate birding, avian acoustics, wildlife-friendly landscaping, and environmentally-friendly food choices.

**February 4<sup>th</sup> – 6<sup>th</sup> at Lake of the Ozarks:** Conservationists welcome at the annual Missouri Natural Resources Conference held at Tan-Tar-A Resort. Current and aspiring natural resource professionals from all disciplines come together to present and discuss current conservation issues and research in Missouri.

**February 19<sup>th</sup> – 24<sup>th</sup> at Lake of the Ozarks:** Interface 2015 for educators. This huge conference brings teachers and non-formal educators together from across Missouri to learn ways of enhancing their math and science curricula. MRBO will be giving a presentation aimed at bolstering teachers' skills in the outdoors.

**February 28<sup>th</sup> in Springfield:** Join us for a banding demonstration and bird-watching at the Springfield Nature Center! This will be MRBO's second winter event at SNC, where the feeders are home to a huge variety of residents and winter visitors. 10 a.m – 2 p.m., with weather date of March 14<sup>th</sup>.

**March 31<sup>st</sup>:** Educators, book your dates now for MRBO education programs! MRBO staff will be hosting classes and youth groups at our prairie banding stations in the Sedalia/Cole Camp area. We will also be providing a nature education component for school groups attending Friends of Arrow Rock programs during April and May!



Volunteers learn prairie bird survey techniques at Spring Creek Prairie, Nebraska.

# Monitoring Avian Productivity & Survivorship 2011 - 2014



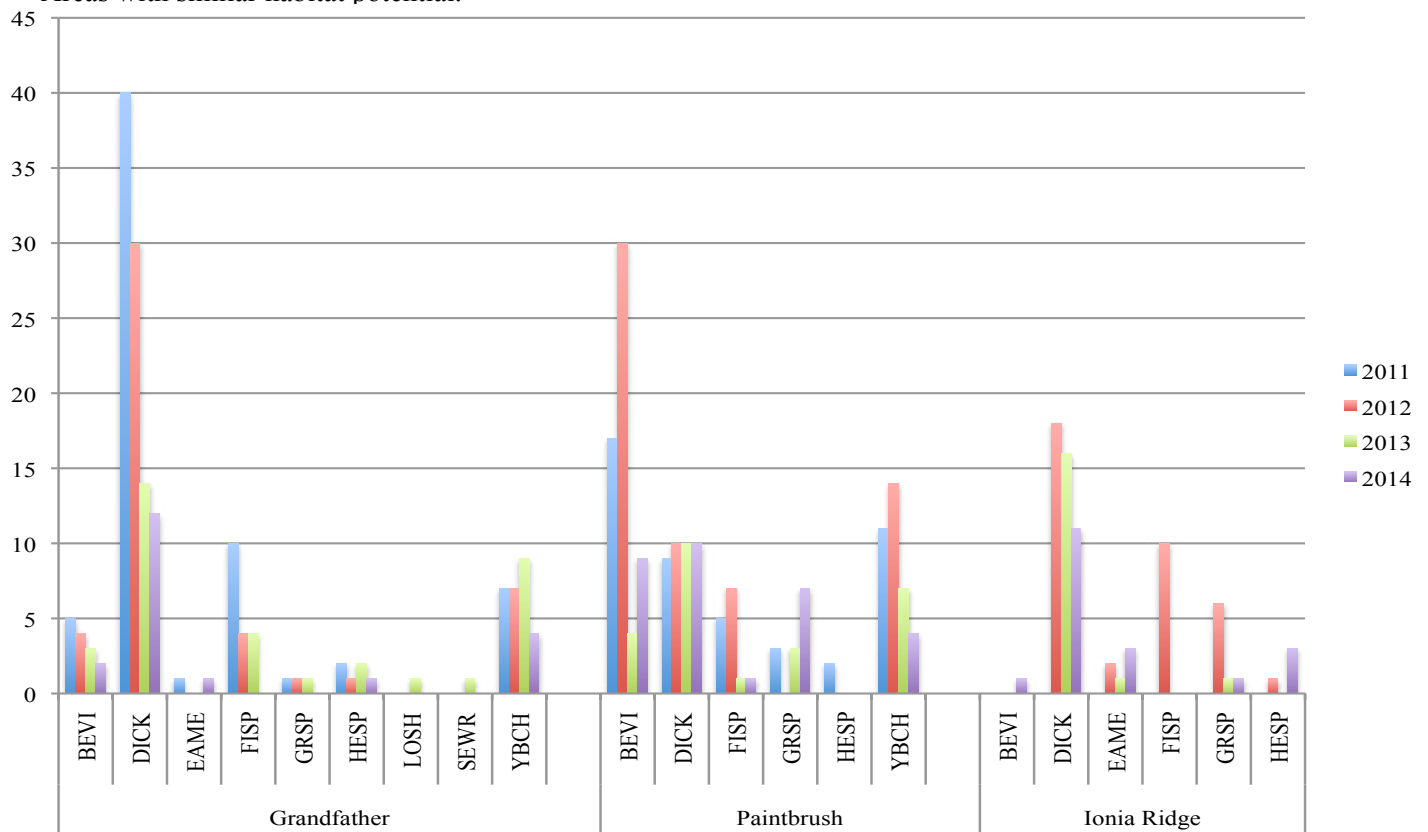
Eastern Meadowlark at Grandfather Prairie, June 2014.

2014 marked the fourth year of operation for MRBO's three Monitoring Avian Productivity and Survivorship (MAPS) program located in the grasslands between Sedalia and Cole Camp. Our MAPS study areas are located at Ionia Ridge Conservation Area, Paintbrush Prairie, and Grandfather Prairie. These sites provide the opportunity to intensively study grassland bird productivity, survivorship, and condition at three prairies in very different stages of restoration. Ionia Ridge Conservation Area, owned by the MDC since 2008, is a 233-acre parcel containing a heterogeneous mix of habitat patches. Cool-season grasses, a recent warm-season grass planting, former row crop, and remnant prairie are all represented. Paintbrush Prairie is a 314-acre property owned by the

MDC since 1978; it displays extremely high floristic diversity and contains a 74-acre designated natural area containing over 200 species of native plants. Grandfather Prairie is an 80-acre remnant prairie patch acquired by the MDC in 1987. Though Grandfather Prairie has never been plowed, due to its small size, the bird community reflects the presence of nearby shrub- and forest-edge. All three sites are surrounded by an agricultural landscape, with adjacent fields row-cropped or harvested for hay.

The objectives of our MAPS project are:

- 1) Assess differences in demographics and productivity between three sites with different habitat qualities and management regimes.
- 2) Continue long-term monitoring of changes in demographics and productivity as management of the three sites continues.
- 3) Examine differences in habitat use by focal species within the MAPS study areas.
- 4) Inform MDC Area Managers of our findings to assist with management decisions for these sites and Conservation Areas with similar habitat potential.



Above: Captures of grassland obligate species at our three MAPS sites. Species codes: BEVI = Bell's Vireo, DICK = Dickcissel, EAME = Eastern Meadowlark, FISP = Field Sparrow, GRSP = Grasshopper Sparrow, HESP = Henslow's Sparrow, LOSH = Loggerhead Shrike, SEWR = SedgeWren, YBCH = Yellow-breasted Chat.

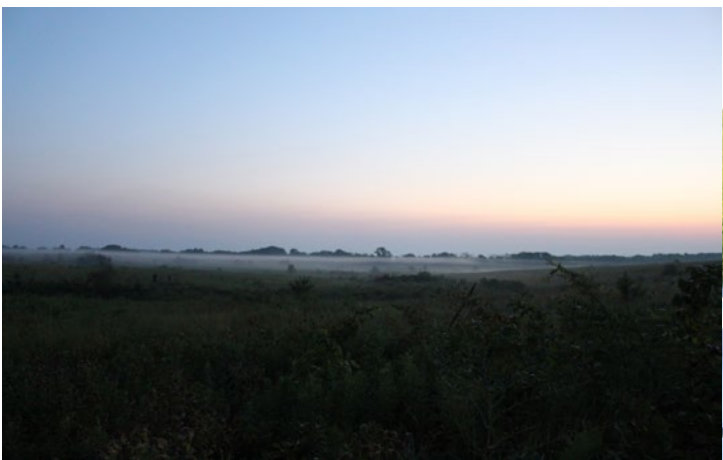
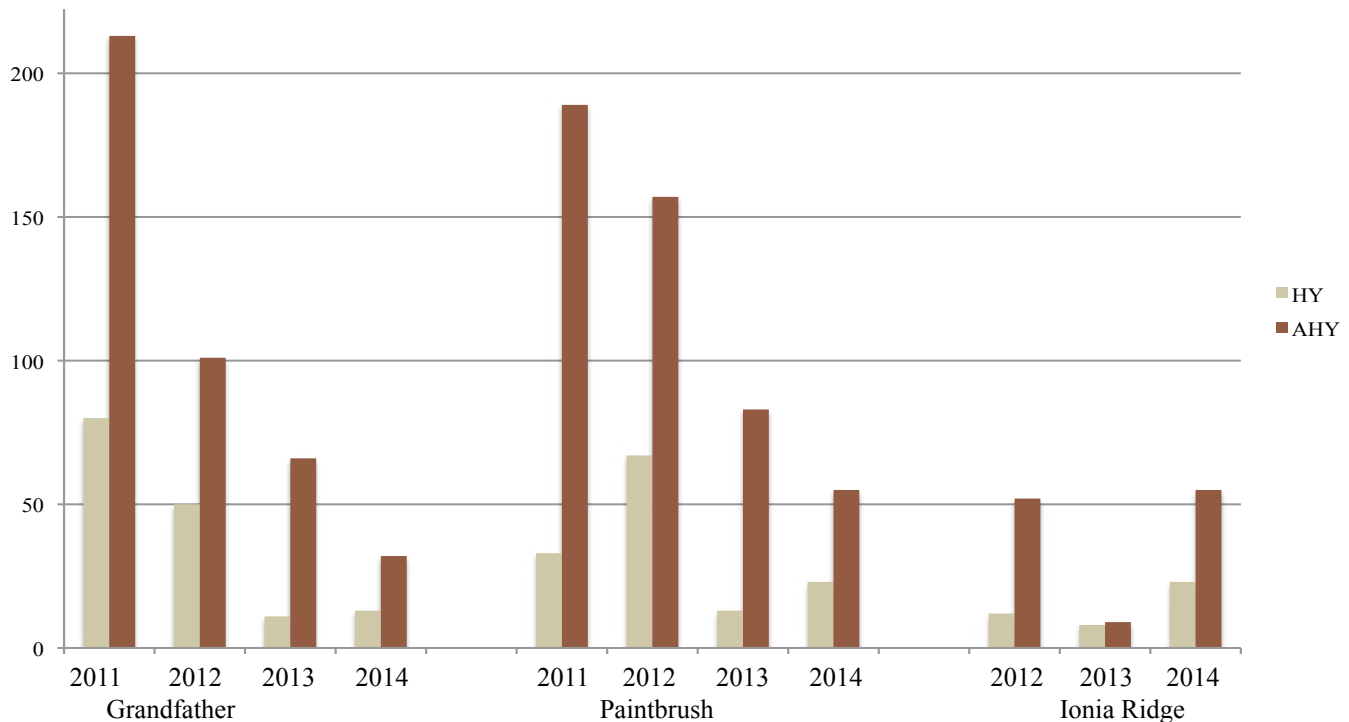
# Monitoring Avian Productivity & Survivorship 2011 - 2014

The MAPS protocol is designed to measure long-term demographic changes and breeding success within a selected site. Each station is operated once in each ten-day period from 21 May – 8 August. Important data gleaned from MAPS operation includes age and sex ratios of captured birds, post-breeding survival of adults and fledglings, return rates, and measures of body condition.

Over the past four years, we have captured a total of 1,492 birds across the three MAPS sites, including 406 members of our target species group, the grassland obligates. These species require grasslands for nesting and tend to be present in higher densities and have more young in higher quality habitat. As you can see from the chart below, we capture far more After Hatch Year birds (AHY; breeding adults) than Hatch Year birds (HY; young of the year). This may mean that the populations of birds at these three sites are not reproducing enough to sustain themselves. Alternatively, this may mean that our MAPS season end date of 8 August is not late enough to catch the young of the year. In order to test this hypothesis, MRBO staff will be operating the MAPS stations later into August in 2015.



Juvenile Dickcissel at Ionia Ridge, July 2014.



Left: sunrise at Paintbrush Prairie. Right: Veronica bands a Dickcissel at the Paintbrush MAPS site while Sherry Leonardo records data.



## Species Profile: Loggerhead Shrike



**Loggerhead Shrike** by Osage Trails Master Naturalist Linda Williams.  
Linda is a long-time MRBO member who often lets us use her awesome bird photos!

The Loggerhead Shrike is a bird of open country that is most well-known for its habit of impaling prey on thorns and barbed wire. 100% carnivorous, the Shrike's diet consists of approximately 70% insects (especially grasshoppers), 4% spiders, and 26% vertebrates, including voles, mice, frogs, and other birds. This attractive but relatively under-studied species has come to the forefront of conservation concern due to its precipitously declining populations throughout most of the Midwest. In Missouri, anecdotal observations by bird-watchers and other outdoorspeople, along with Breeding Bird Survey data (Sauer et al. 2014) indicate that the Loggerhead Shrike is becoming exceedingly rare.

Studies of this species' habitat preferences have focused on the breeding season and have yielded sometimes conflicting results (Wiggins 2005). The common factors identified by most researchers include

a need for open prairie or pasture necessary for hunting coupled with a small area of dense shrub and/or tree cover for nesting. The species and height of trees or shrubs do not appear to be as important a factor as the cover density. This description of breeding season habitat would suggest that pastures bordered by hedgerows would provide sufficient habitat, but there appear to be a number of confounding influences in the situation. In two studies, Loggerhead Shrikes were much more common in landscapes where small shrubby areas were randomly interspersed within grassland than in linear tree rows bordering pastures (Yosef 1994, Flickinger 1995).

During the breeding season, males will build and even decorate a food cache of impaled prey to attract the female. The pair will then weave a relatively bulky cup nest made of twigs and lined with grasses and sometimes cattle hair. Nesting begins in approximately mid-April and it takes the pair 6-12 days to build the nest. Egg incubation lasts 15-20 days, and the young fledge 20 days from hatching. The male Shrike provides most of the post-fledging care, and remains on the breeding territory longer than the female (Yosef 1996).

One crucial aspect of Loggerhead Shrike habitat is the presence of numerous perches at varying heights for hunting. Open grassland habitat that offers an abundance of scattered perches is ideal (Chabot et al. 2001). In fact, perches appear to be one of the most significant factors in determining territory size; all else being equal in terms of habitat quality, Shrikes with more perches in the vicinity of their nest are able to maintain a smaller territory size. This situation is most often achieved in native prairie that displays a wide floristic diversity and heterogenous mix of vegetation structure. Unfortunately, this is one of the habitat types that is most lacking in Missouri and throughout the Midwest. Loggerhead Shrikes do not actively avoid grasslands grazed by cattle and in fact numerous studies have shown that Shrikes forage in a wide variety of grass heights. However, the homogenous habitat that often occurs due to overgrazing (such as a broad expanse of even-height grass) does not provide adequate foraging habitat or hunting perches for Shrikes. Additionally, lightly to moderately grazed prairies and pastures tend to support an abundance of insects, which are by far the most commonly taken prey item (Prescott and Collister 1993, Yosef 1996).

In addition to the landscape changes that have reduced the amount and quality of Loggerhead Shrike habitat, several studies have indicated that the widespread use of insecticides is taking its toll on this species (Wiggins 2005). Since Shrikes are mainly insectivorous, the sharp decline in food supply, as well as direct mortality resulting from birds eating insecticide-tainted prey, may be the primary cause of their continuing rarity.

As part of MRBO's grassland bird monitoring project, we recently constructed a conservation ranking system for grassland obligates with the help of MDC Grasslands Coordinator Max Alleger and MDC Wildlife Ecologist (and author

# Species Profile: Loggerhead Shrike

of the book Birds in Missouri) Brad Jacobs. Their input along with Breeding Bird Survey (BBS) data and American Bird Conservancy (ABC) watch-list information resulted in the following chart. All input considered, the Loggerhead Shrike ranks second only to the Greater Prairie-Chicken as Missouri's most imperiled grassland bird species.

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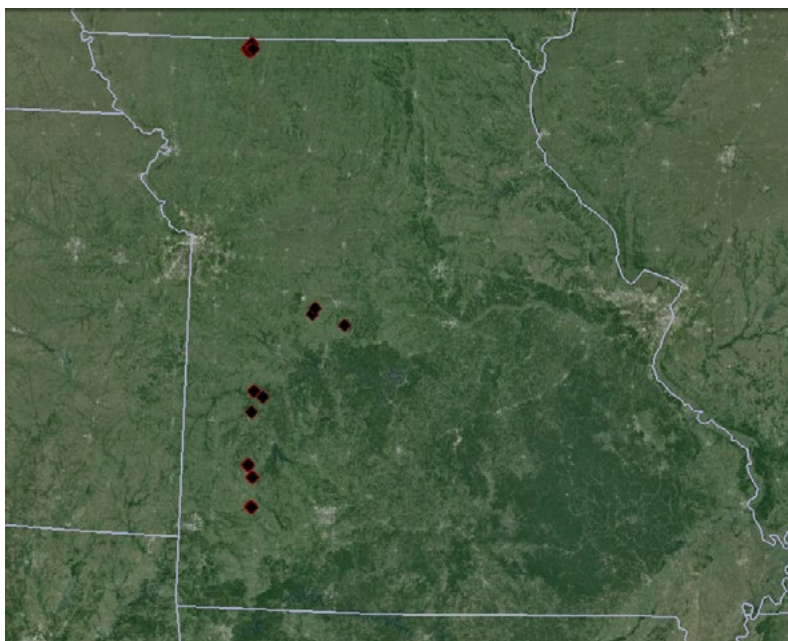
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	MRBO rank	Justification	ABC rank	Jacobs rank	BBS trend MO 1966-2012	BBS trend MO 2002-2012	BBS trend ETGP	MO BBS n (1966-2013)
Greater Prairie-Chicken	10	<100 remaining in Missouri	16	1	not given	not given	-5	455
Loggerhead Shrike	9	extreme declines in region & state; declines obvious to MO observers	13	3	-6.99	-8.5	-5.71	2010
Henslow's Sparrow	8	high ABC rank, MO is range core; but, marked increases in region & state	16	2	8.44	9.82	3.64	476
Bell's Vireo	8	high ABC rank, neg trend in MO, MO is range core; but, shrub habitat not rare.	16	5	-1.73	-0.32	-0.6	958
Common Nighthawk	8	rare in natural habitat (common only in MO towns), high ABC rank, rangewide declines	15	not rated	1.01	1.31	-1.12	463



This map depicts all 21 of MRBO's observations of Loggerhead Shrike (LOSH) during 2014 grassland surveys. Seven of these are clustered in northwest Missouri on private properties in close proximity with one another. Other LOSH were observed at Taberville Prairie Conservation Area, Wah'Kon-Tah Prairie, and five private properties in central and southwest Missouri.

This small number of observations can be compared with data collected by MRBO surveyors for other grassland species considered rare or declining. For example, we had 328 detections of Northern Bobwhite, 974 detections of Bobolinks, and 1,041 detections of Henslow's Sparrow over the course of the 2014 breeding season. The only survey species for which we had fewer detections than LOSH was Greater Prairie-Chicken, of which only seven were recorded all season.

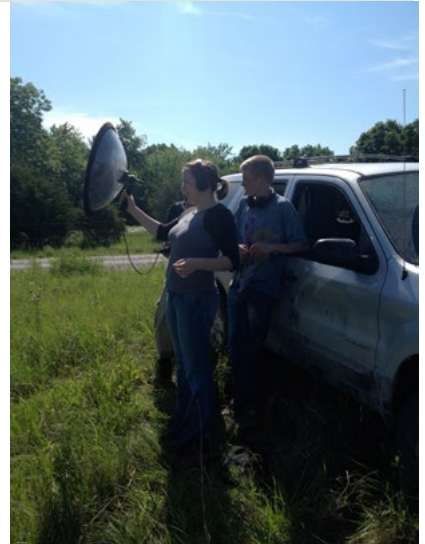
Breeding Bird Survey data and observations of long-time Missouri bird-watchers and biologists indicate that the low LOSH numbers recorded by MRBO this year are no mistake. This species has declined dramatically throughout Missouri over the past 50 years.



# Education & Outreach Report

MRBO staff have been very busy with education events throughout the state since the publication of our summer newsletter. In fact, we even have to report on a few events that took place during the summer because we didn't have room for them in our July news! In the following pages, we summarize all of the education activities we've undertaken in the past several months.

- ✎ **Wah'kon-tah Prairie:** In May, MRBO was part of a traditional field day for students of Montrose High School. This excellent event, hosted by MDC biologists Elizabeth Middleton and Matt Hill, gave students from a small school the chance to experience all aspects of southwest Missouri's premier prairie.
- ✎ **Gayfeather Prairie:** MRBO was happy to once again be part of the Missouri Prairie Foundation's summer Bio-blitz. Attendees came from far and wide to spend a day and a half learning from the state's best botanists, entomologists, mammalogists and others about all life on a native prairie. We were happy to catch several Dickcissels and a Henslow's Sparrow to discuss with the crowd.
- ✎ **Marshall Public Library:** As part of the Catch Our Drift summer reading program, MRBO staff provided an adult and a youth program focused on the Missouri River and its inhabitants for attendees from our hometown. Adults learned about the conservation issues facing birds in the Missouri River Valley, while young people learned the basics of bird identification and song for the most common birds in our area.



Montrose High School Field Day at Wah'Kon-Tah Prairie. Here, students are listening to birds with Ethan's audio recording equipment.



Missouri River Relief summer camp at Eagle Bluffs Conservation Area.

- ✎ **Butterfield Youth Services:** The services and atmosphere provided by this facility in Marshall to troubled and abandoned youth from all over Missouri can not be praised enough. In July, MRBO, Hi-Lonesome Master Naturalists Roxanne, Elizabeth and Sam Stockdall, and MDC Conservation Agent Andrew Mothershead, provided a field day for Butterfields summer campers. Campers got to seine the nearby stream for invertebrates, study the furs of local mammals, see birds in hand, and view (and even hold!) a variety of snakes.
- ✎ **Eagle Bluffs Conservation Area:** The great people of Missouri River Relief held a summer camp week for high school students; one of the many activities for the kids that week was a MRBO banding demonstration at Eagle Bluffs. The campers got to see many breeding birds of the area, including Warbling Vireo, Yellow-breasted Chat, and Worm-eating Warbler!

- ✎ **Glasgow Jamboree:** MRBO's Ethan Duke and Zeb Yoko operated a Missouri River birds-themed booth and presentation at this August event. Ethan gave a presentation on the birds of the Missouri River to an audience of almost 50 festival attendees.
- ✎ **Boonville River Fest:** Missouri River Relief strikes again, with a big educational festival open to all ages in September. MRBO staff operated a booth at the Fest and answered all manner of bird questions. In addition to the many educational booths at this festival, there was also excellent live music and a number of vendors with food, drink, and crafts.

Second-grade students at Columbia Audubon's Band With Nature.



## Education



Second grade students at Centralia Field Day.

✂ Trails Regional Library: Our second seminar at this wonderful library in Warrensburg, we discussed Missouri's winter birds and some tough identification questions with attendees of many different skill levels.

✂ Prairie State Park's Prairie Jubilee: At this astonishingly huge and varied bi-annual event, MRBO talked with and gave out bird literature to hundreds of attendees. We also got to eat barbequed bison, go on an educational bison hay ride with MDC biologist Randy Haas, watch cowboys in action, and view many historical crafting demonstrations.

✂ Columbia Audubon Banding With Nature: At this hugely popular and growing field day for Columbia 2<sup>nd</sup>-graders, MRBO again presented all-day banding demonstrations to over 300 students. We were happy to have two birds to show every class this year!

✂ Arrow Rock Heritage Craft Festival: Now in its 46<sup>th</sup> year, the Craft Fest is attended by over 2,000 people. MRBO staff operated a booth where families could build a nestbox or bird-feeder to take home for free. We sent more than 50 families home with these items this year!

✂ Cole Camp Prairie Day: MRBO's Veronica Mecko and Zeb Yoko hosted MRBO's 4<sup>th</sup> annual banding demonstration in conjunction with the Missouri Prairie Foundation's Evening on the Prairie. Attendees got to see several grassland sparrows that are usually difficult to view in the winter!

✂ Centralia 2<sup>nd</sup> Grade Field Day: This superb event, organized by Centralia science teacher Angela Willier, rotates students around fun educational stations at the City Park. These stations included fish, mammals, invertebrates, and geology. MRBO was there to show students birds in hand, teach them binoculars use, and go on bird walks!

✂ Truman Elementary School: This was our second all-day educational event at this Rolla school, hosted by Meramec Hills Master Naturalists Bob and Pat Perry and assisted by Sandy Hubbard. Eight 3<sup>rd</sup> and 4<sup>th</sup> grade classes viewed and collected data at banding demonstrations conducted in their outstanding Outdoor Classroom. We captured 60 birds that day, including 27 White-throated Sparrows and several Carolina Chickadees, Northern Cardinals, and Tufted Titmice. Two Common Grackles were the bird stars of the day for the kids, while MRBO staff especially enjoyed a surprising Chipping Sparrow juvenile.

Left: happy with a completed nestbox at Arrow Rock Heritage Craft Festival. Right: Collecting data at Truman Elementary School.





## Education



Our booth at Prairie State Park's Prairie Jubilee.

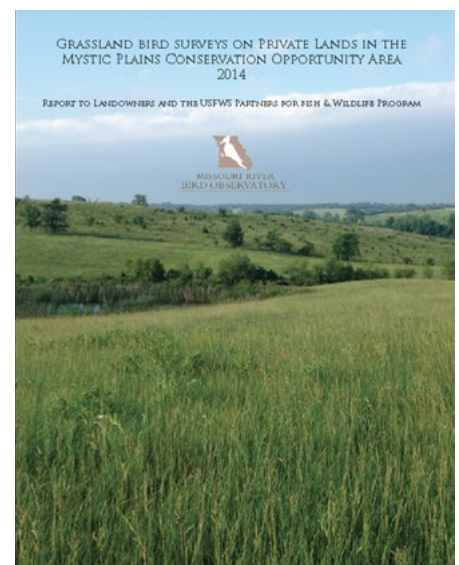
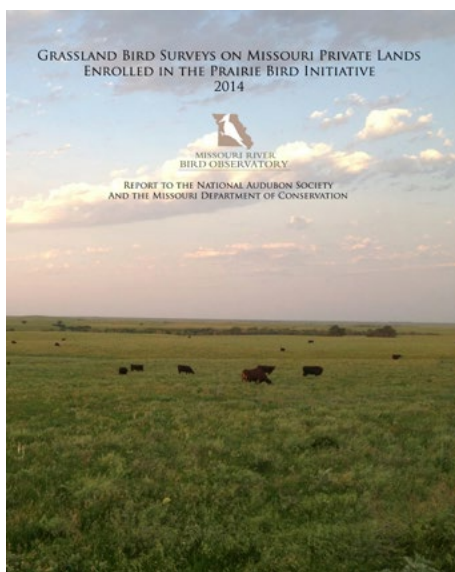
✂ Burroughs Audubon Library: MRBO kicked off the first of five winter banding events at the Library in November. The demonstration was well-attended by children and adults, and we were pleased to capture a wide diversity of birds. The highlight of the day was a Mourning Dove, a species which is rarely caught in our mist-nets due to its large size and powerful flight muscles.

✂ Lake of the Ozarks Master Naturalists: One of our long-time Backyard Banding participants, Joann Billington, hosted 15 members of her Master Naturalist Chapter at an early December banding event. We discussed all manner of bird topics, including winter site fidelity, migration patterns, and physiology. Attendees got to see a nice diversity of birds, including White-breasted Nuthatch, Downy Woodpecker, Pine Siskin, and a female Hairy Woodpecker originally banded at the site in 2012!

Our great appreciation goes out to all of the people who invited us to take part in their educational events.

## Outreach to Private Landowners

In addition to the educational events described above, we have also been conducting outreach to private landowners as part of our grasslands and wetlands monitoring projects. Many of our study sites occur on private land. This not only gives us the opportunity to monitor birds on unstudied sites, it allows us to speak and correspond with landowners to increase their awareness of non-game birds. We are also able to learn much from them regarding the “lay of the land” and its uses – aspects of each site that are unique and how the landowners’ management activities affect bird habitat quality. At the end of each survey season, we provide every landowner with a report indicating all the bird species and numbers documented on their property as well as a write-up detailing our observations of habitat. These reports went out to 38 landowners in 2014, and were part of comprehensive reports to the National Audubon Society, MDC, Natural Resources Conservation Service, and the US Fish and Wildlife Service Partners for Fish and Wildlife Program.

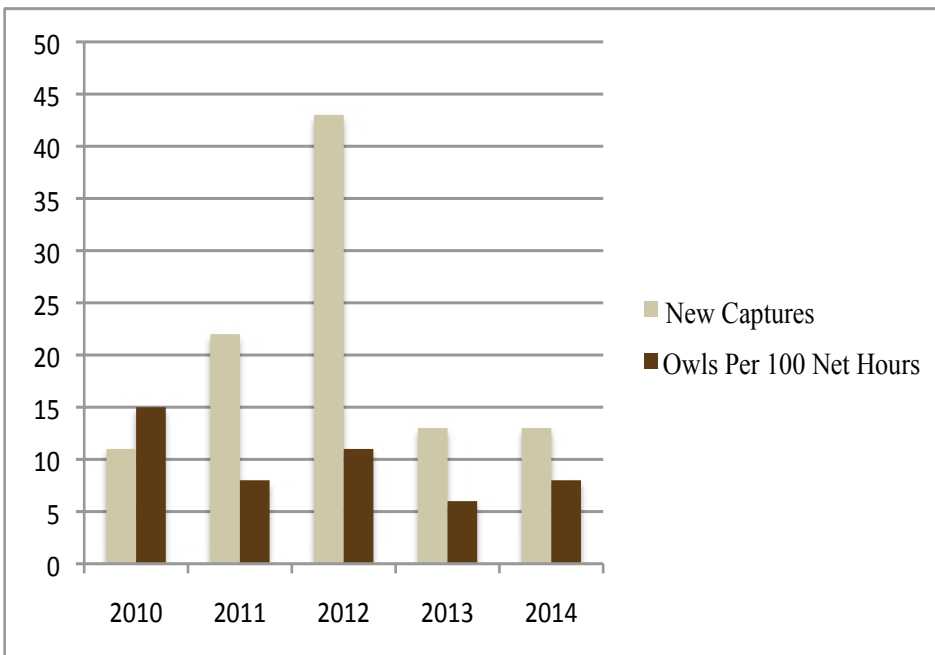


## Northern Saw-Whet Owls 2014

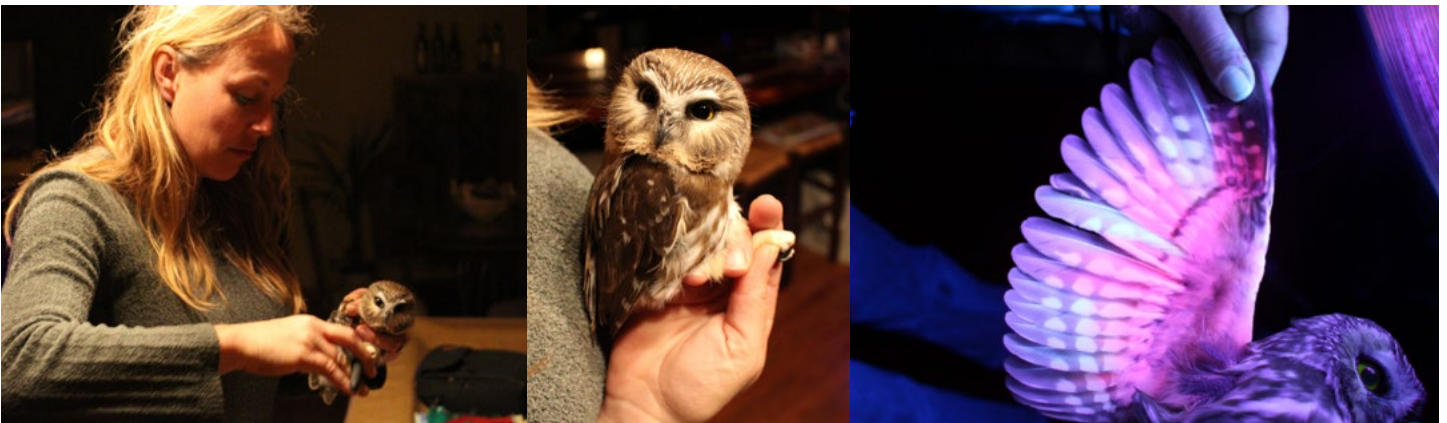


2014 marked the fifth year of MRBO's on-going efforts to capture Northern Saw-whet Owls (NSWO) during their migration through our region. Unlike our other banding and survey projects, the NSWO banding project is a volunteer effort on the part of MRBO staff conducted while other projects are still on-going. While this means it is primarily a labor of love, it also means that we don't get to operate owl nets as much as we would like! This year, we were able to open nets for owls on 15 nights at our home station in Marshall and one night each at Arrow Rock, Powell Gardens, and a private property outside Carrollton. Overall, we had 12 new NSWO captures and an extremely exciting "foreign capture" of a female owl originally banded in Thunder Bay, Ontario in 2013!

The chart below shows the number of NSWO captures by MRBO over the past five years. In order to show how the variation in effort has effected the number of captures, we also show owls per 100 net hours. Each 3x12-meter mist-net operated for one hour equals one net hour; therefore, if we run three nets for four hours in a night, that results in 12 net hours. Readers can see that in 2010, our relative amount of captures by net effort was extremely high. In 2012, we caught a large number of owls (43) but that year we were also able to operate more often than in 2013 or 2014, as indicated by the relative height of the birds per 100 net hours bar.



No matter where, when or how much effort it takes, every single owl captured is astonishing and feels like a miracle. As some readers may be aware, other banders in Missouri have undertaken this effort and we are collectively trying to get a handle on the numbers, distribution, and migratory patterns of the NSWO in our state. We are also extremely happy to report that a University of Arkansas undergraduate, Mitchell Pruitt, and his advisor Dr. Kimberly Smith, have begun trapping NSWO in Arkansas. Missouri and Iowa owl banders have been hoping for several years that someone south of us would take up the search for the NSWO grail!





# Making History in Arrow Rock, Missouri

"KNIGHTS OF THE BUSH"  
—*Kansas City Journal (Pro-Union)*

"No region in America was better suited to guerrilla cavalry operations than western Missouri. . . . Broad belts of timber linked by large sweeps of prairie made the land ideal for sudden strikes and swift retreats."—*Thomas Goodrich.*

Part of an exhibit on Missouri's infamous Bushwhackers. Note the description of the native landscape of our state; almost no "large sweeps of prairie" exist any longer.

A small gem of a Missouri town exists in eastern Saline County: Arrow Rock. This National Historic Site has 58 residents that live within the bounds of a Missouri State Historic Site. Its historical significance is revered and celebrated by thousands of visitors each year. Exceptional education programs capitalize on the town's historical buildings and artifacts through the work of organizations such as the Missouri Department of Natural Resources (DNR) and the Friends of Arrow Rock (FAR). Famed for being home to Missouri icons such as Dr. Sappington and artist George Calib Bingham and also a set for the 1973 film "Tom Sawyer", it is renowned for its world-class visitors' center and museums.

Social and cultural history is brought to life in a beautifully preserved landscape, nestled on a bluff adjacent the Jameson Island Unit of the Big Muddy National Wildlife Refuge. We think Arrow Rock would also be ideal for MRBO to contribute to communicating Missouri's *natural*

history through educational programs, events, and other works. MRBO has already become quite involved in Arrow Rock events, on our own and in partnership with the DNR and FAR. We have presented several seminars as part of the FAR's Monthly Speaker Series, done many educational events focused on birds at the State Historic Site, and even conducted a Saw-whet Owl banding program for winners of an auction item donated by MRBO to a village event. Additionally, MRBO's Dana Ripper and Ethan Duke are involved in a restaurant in Arrow Rock owned by Dana's mother. In a quest to source local and organic food, we have greatly increased our knowledge of the connection between food production systems and conservation. This has provided a much deeper understanding of, and broader framework for, MRBO partnerships with Missouri ranchers involved in Audubon's Prairie Bird Initiative.



MRBO's namesake at Jameson Island National Wildlife refuge in Arrow Rock.

A Timeline of Missouri Natural History  
History, developments, and what we can learn from it



MRBO permanent and seasonal staff all feel that Arrow Rock would be an excellent central location for our organization. MRBO is in need of an official office, a venue for hosting visitors and meetings, and housing for our seasonal assistant. Inspired by Arrow Rock's extensive education work and community-oriented culture, we think that a permanent home for MRBO in this little central Missouri village would be a perfect fit.

A young man with his suet feeder (left) made at our booth (middle) during Arrow Rock's 46th Annual Heritage Craft Festival. We would like to expand MRBO's education programs to include natural history so that Missouri residents are aware of the species we have already lost, like the Ivory-billed Woodpecker (right).



## Holiday Giving, Conservation Style

It's that time of year again...*time to buy stuff*! Instead of showering loved ones with material goods they may not really need, let's encourage everyone to give gifts that help nature *and* bring more fun into people's lives! We at MRBO thought long and hard about the kinds of gifts we'd like to receive and they all seem to come down to just a few categories: more time to spend outdoors, more knowledge about Missouri's wildlife, and more things to help birds. It was difficult to narrow it down, but we present the following list of stores or organizations that we feel are worth our holiday spending.

- For those who love to learn, you can do no better than browsing the MDC's Nature Shop, either on-line or at the nearest MDC office. In addition to having every possible book on Missouri nature and its inhabitants, you will know that you are supporting the best state conservation agency in the country.



- If you are looking to give the bird-lovers in your life a gift (or perhaps want to inspire someone to increase their enjoyment of birds), try giving bird feeders or nest-boxes. These can provide hours of delight throughout the whole year. You can build your own or purchase them at many different stores, such as Orscheln's or Wild Birds Unlimited. Our favorite source for high-quality bird products of all kinds is Birds-I-View in Jefferson City. Also, Ned's Nesting Boxes in Sullivan makes the widest variety of quality birdhouses we've ever seen – and they will ship! Folks at both Birds-I-View and Ned's regularly engage in all manner of pro-bono conservation education work.

**Birds-I-View**



**Ned's Nesting Boxes**

For the best conservation gifts of all, consider making a donation in the name of your friend or family member. It's not only a great gift for "those who have everything", it's one of the best things you can do to truly effect conservation. Below, we provide links to some of the best conservation organizations we know. MRBO staff have worked directly with these organizations for research or education purposes, and we can personally vouch for the excellent work they do.



- Missouri River Relief is an exceptionally well-run organization that not only cleans up hundreds of tons of trash from the Big Muddy, it offers an amazing array of educational activities and events. We're often told that people don't know how we do it at MRBO, *we* have no idea how River Relief does all that they do.



- Greenworks in Kansas City is another tiny organization that accomplishes a huge amount of outreach – and affects a lot of kids' lives. Greenworks' environmental education and internship programs for KC high school students are world-class and give us all hope that future conservation will be carried on by diverse urban leaders.



- The Nature Conservancy in Missouri manages some of our highest-quality wildlife habitat. It does this by rigorously applying science, hard work, and dedicated funding to its mission of saving the world's last great places. So often, large world-wide conservation organizations are uninvolved in the Missouri landscape – not so of TNC. *Comnient ionsent, tore netus, nimporrym ra a alit quo optatiur, offictem.*

*Neque laccusae. Ut intint lique placcus ut untis etur?*



# giving thanks

The following individuals and organizations have joined MRBO or renewed their memberships since the publication of our last newsletter. The crucial support from MRBO's members continues to make our education program possible and also allows MRBO to continue its support of interns and aspiring young biologists.

## Stewards

The Duncan Family, Platte City MO  
Bob & Pat Perry, Rolla MO  
Sophie Ryan, Lamoni IA



## Supporters

Jeff Cantrell, Neosho MO  
Marie & Yusuf Hasan, Kansas City MO  
June Newman, Carrollton MO  
Valerie Vreeland & Charlie Yazak, Wellsville NY

## Individuals and Families

Carol Davit, Jefferson City MO  
Dr. Janice Greene, Springfield MO  
Mary Ann Keeney, Sweet Springs MO  
Mary Nemecek, Kansas City MO  
Gary Nickelson, St. Louis MO

Coupled with membership funds, a generous grant from the Audubon Society of Missouri enabled MRBO to launch an extensive wetland bird survey project on private lands in 2014. This project would not have been possible without member and ASM support. ASM also funded grassland bird surveys in the Mystic Plains on private restoration sites and enabled MRBO staff to conduct landowner outreach related to the project.



As always, we are very grateful for the enormous support received from the Missouri Department of Conservation.





# 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 Saw-whet Owl research in 2012, and allowed us to run at full capacity in all other projects.*

## Membership Level

## Includes

☐ Student \$20

MRBO e-newsletter & water bottle

☐ Individual or Family \$50

MRBO e-newsletter & hat or mug

☐ Supporter \$100

MRBO printed newsletter  
your choice of T-shirt, mug or hat

☐ Contributor \$250

MRBO printed newsletter  
your choice of MRBO item

☐ Steward \$500+

all above gifts, plus custom field program  
tailored to your interest.

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Email: \_\_\_\_\_ Choice of MRBO item: \_\_\_\_\_

*Please send this sheet with check addressed to: Missouri River Bird Observatory  
27331 Highway WW, Marshall MO 65340. Or join via Paypal at <http://www.mrbo.org/Pages/membership.html>*

## Diamond Grove Prairie Conservation Area

