

The Rectrix

A seasonal newsletter of the Missouri River Bird Observatory

Volume 4 No. 2 - July 2014



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

Letter from a Home Gardener



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Missouri Valley College 2014

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ON THE COVER:

A Bell's Vireo nest located
in a riparian thicket at
Linscomb Wildlife Area, St.
Clair County.

Dear MRBO Members and Friends,

Sorry for the little bait-and-switch here! No, this letter is not from a star gardener that we've convinced to write for the *Rectrix*. Nor is the picture of me on the right at our home...though I hope our home will look like that some day, on a small scale. Ethan and I have five wonderful acres just outside of Marshall, in Saline County, Missouri. I simply want to share with you some of our adventures with landscaping and gardening and the effects our activities have had on our patch of home ground.

We have lived here for five years and in that time have learned that while landscaping is a joy, it can also be a full-time job in and of itself. Our five acres was originally covered with exotic ornamental plants around the house and fields of fescue, brome and timothy throughout the rest of the property. I will say that whomever did the original landscaping planned the bloom times perfectly so that from April to October there is always something in bloom – which is great for hummingbirds and butterflies! Our main goal has been to convert almost everything back to native plants both around the house and in the fields. I would say, after four years of a concerted effort, that we are about 20% there!

Because of native plant sales by folks like the Missouri Prairie Foundation, Runge Nature Center, Wings Over Weston and others, we have been able to get a huge variety of absolutely beautiful native flowering plants and grasses. We have adorned our yard with spiderwort, cardinal flower, rattlesnake master, several species of coneflower, Rudbeckia, and prairie dock, amongst many others. One of the pleasant surprises about gardening with natives (which, in retrospect, should have been obvious) is their extreme hardiness. The plants we put in during 2011 were sad and brown during the drought of that year and the next, but came up bravely every year, and are now thriving. I can't imagine any exotics planted during those drought years would survive so well, at least not without copious amounts of watering. In fact, of the more than 50 native plant seedlings I've put in around our back porch, every single one of them has survived – including a couple that did not deign to make an appearance for a year and then came back up when conditions were better!

The other "habitat management" activities we've initiated here are timed burning of our fields and sowing of native grass seeds. This has been more of a battle than some people experience since we have chosen not to use any chemical treatment. By all accounts, fescue really must be treated with Round-up at particular times of year to be truly eradicated (we recently attended an excellent presentation by Elizabeth Hamilton-Steele of Hamilton Native Outpost on native grassland restoration where we learned a great deal about this topic). However, Ethan and I are fighting the invasive-plant war organically, if not as effectively as possible. So far, just with prescribed fire, we have been rewarded by some regeneration from the native seed bank, including foxglove beardtongue, Rudbeckia, and slender mountain mint in our fields!

One difference we've witnessed already over the past five years is the increase in diversity and numbers of native birds. Our property-wide populations of breeding birds, not even including the familiar residents that frequent our feeders, has grown noticeably. We have six pairs of House Wrens, at least four Indigo Bunting territories, nesting Eastern Phoebe, Great-crested Flycatchers, and singing Yellow-billed Cuckoos and Northern Parula. As I write this, it is getting towards sunset and there are Barn Swallows, Purple Martins, and a Common Nighthawk foraging over the field. The happiest surprise of this summer has been the daily presence of a pair of Eastern Kingbirds. Since these breeding birds are almost exclusively insectivorous, and they are here feeding on our property, I hope and believe we are doing something right.

Sincerely,
Dana Ripper



Upcoming Events

July 26th in Arrow Rock. Visit with MRBO bander Veronica Mecko as she captures and bands Ruby-throated Hummingbirds at the [Arrow Rock State Historic Site](#) visitor's center! You are welcome any time between 9 a.m. - 11 a.m. to watch this delicate and amazing process. Learn more about the wonderous ecology of these tiny birds and their migratory patterns.

August 9th in Glasgow. The Glasgow Jamboree! MRBO will have a booth where families can build or take home nest boxes. We will also do an indoor presentation on Birds of the Missouri River just in time to take a break from the heat. 9:30 a.m. – 3:30 p.m.

August 23rd in Columbia. Annual Missouri Bird Conservation Initiative Conference. Everyone interested in the development of conservation partnerships for Missouri's birds is welcome to attend. The theme of this year's conference is Research, and Veronica will present four years of MRBO's breeding grassland bird data. See www.mobci.org for more information.

September 13th in Arrow Rock. If you didn't make it in July, here's another chance to join bander Veronica as she captures, bands, and measures Ruby-throated Hummingbirds during migration! 9:00 – 11:00 a.m. at the Arrow Rock State Historic Site.

September 18th in Springfield. We have been invited to give a presentation to the Greater Ozarks Audubon Society on our Northern Saw-whet Owl work! Please see <http://www.greaterozarksaudubon.org> for more information and events presented by this excellent Audubon chapter.

September 23rd in Warrensburg. Learn to identify our Missouri birds! Join MRBO's Dana Ripper at the Trails Library at 2 p.m. for a seminar on bird identification in fall and winter, a discussion on attracting birds to your backyard, and a question-and-answer session.

September 27th at Prairie State Park. The Prairie State Park Jubilee! Join MRBO and many other fun and educational demonstrations for a day on the prairie! The Jubilee runs from 10:00 a.m. to 4:00 p.m..



New MRBO Members

Thank you to our new members!

The following individuals & families have joined MRBO since the publication of our spring newsletter.

Contributors

Dianne & Allen Poe, Lee's Summit MO
Linda Williams, Kansas City MO

Supporters

Susan Dyer, Lee's Summit MO

Individuals & Families

The Frey Family, Washington MO

Grassland Bird Surveys 2014



Eastern Meadowlark. Photo from Tom Halfen of Jefferson City.

This was our third year of grassland bird surveys in partnership with the Missouri Department of Conservation and the National Audubon Society. We started with seven private properties in 2012 and now survey more than 50 public and private grasslands each year. There are two main components to this project. The first is to determine the quality of habitat provided by private lands involved in the Audubon Prairie Bird Initiative. This is a program designed to certify cattle producers as bird friendly, carrying with it an Audubon seal and associated increase in beef profits for the landowner. The second component is to investigate the complex interactions of habitat type (e.g., unplowed prairie vs. native warm-season planting) and management regime (e.g., prescribed fire and grazing) on bird density and abundance on both public and private lands. The potential conservation effects of these surveys

has led us to implement a strict protocol for collecting and analyzing data.

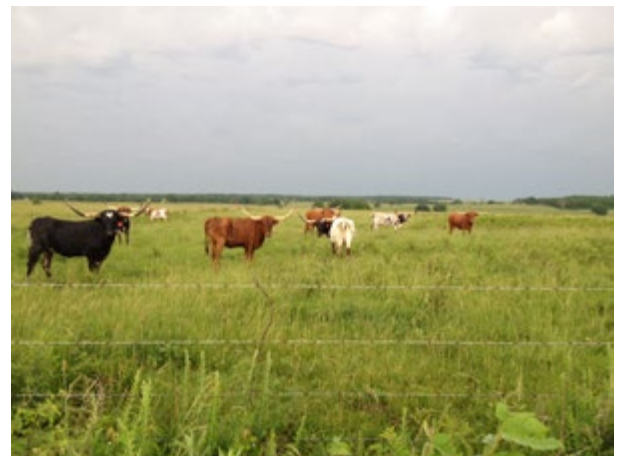
Each property contains several survey transects that MRBO observers walk while recording all birds seen and heard. This process has been made vastly simpler by the modification of an iPad application by MRBO's Ethan Duke. While we previously printed and carried with us hundreds of paper data sheets upon which we marked bird locations on aerial photos, we now simply head into the field with just an iPad and binoculars. The iGIS app modified by Ethan allows us to track our exact location on a property and use the touch-screen to mark the location of every bird. This information is then directly imported into ESRI's ArcGIS, which generates the birds' distance from transect line (needed for density and abundance statistics), as well as producing a nifty map of all the birds on each property. It is especially pleasing to meet with Area Managers or private landowners and hear their explanations of why certain species would be in particular areas. For example, they'll say things like, "Oh, sure, there would be lots of Henslow's Sparrows there, I haven't burned that area in a couple of years".

We are working with the Missouri Department of Conservation to overlay all of the bird locations and density statistics with very specific management information. This will allow Area Managers to target their management activities with the goal of increasing populations of prairie-obligate birds on Conservation Areas. We are also working with Max Alleger of the MDC and Chris Woodson of the Partners for Fish and Wildlife Program to develop a "Bird-O-Meter" for private lands. One of the needs for the Prairie Bird Initiative certification program is a quantifiable measure of what exactly constitutes bird-friendly habitat management for a private producer. We will be taking into account species' range-wide and Missouri conservation status, current and potential threats to their populations, and their historic ranges. We must also adjust for private property acreage. The Bird-O-Meter is an exciting development that will further the implementation of bird-friendly certification amongst landowners and Audubon's partners. Look for our big Grassland Survey Project Report to come out this fall.



There were five of us that completed all the grasslands surveys this year, the permanent MRBO staff and two seasonal technicians. We began on May 14th in the southernmost survey areas. Last year, due to observations of previous spring migrations and breeding seasons, we began surveys on May 2nd – which turned out to be too early, as we had a very late summer and our surveyors experienced snow on May 3rd! We wanted to avoid a bad timing situation this year and so elected to begin later, shortening our peak breeding season window from mid-May to the end of June. With a great deal of ground to cover in six weeks, we spread out all over the state and got to it. None of us were home more than seven days total in the six-week survey season. There is no way to overstate our luck when it came to weather, as we had very few rain-out days and even fewer days where the wind was too strong to survey. This allowed us to cover a large number of properties across the state.

We also had two sites, Schell-Osage Conservation and Linscomb Wildlife Area, that were surveyed twice at the request of the MDC Wildlife



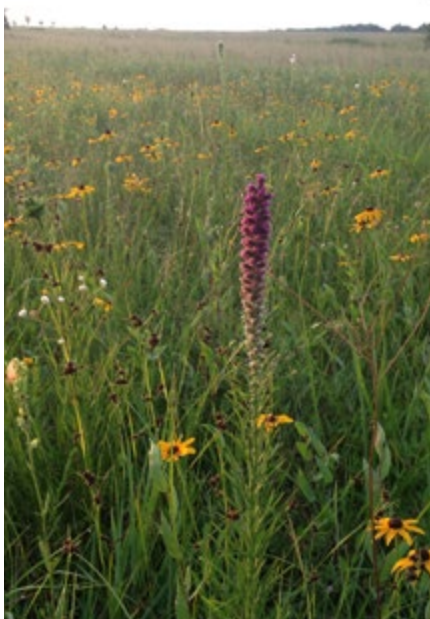
We were glad these longhorns were on the *other* side of the fence!

Division. Those areas will be undergoing massive prairie restoration efforts over the next five years, and it was important to collect a replicate set of data for comparison purposes. We are now compiling the huge overall data set and will be performing analyses over the next couple of months. MRBO's Directors are once again headed to the University of St. Andrews in August, this time to attend an Advanced Distance Sampling training that will allow us to thoroughly analyze the complex interactions between management practices and bird density. Our aim is to provide the MDC and Partners for Fish and Wildlife staff with exact prescriptions for increasing the populations of our species of greatest conservation concern.



Some of the areas we surveyed are in need of, and are slated to undergo, restoration by the MDC. *Left*, a corn field on a Conservation Area (CA). The MDC's Wildlife Division plans to reduce crop acreage on CAs to increase habitat diversity for a variety of wildlife. *Right*, native prairie plants such as coneflower and Rudbeckia indicate that this area of Helton CA was once open grassland. Sumac control is in the works for Helton.

All of us felt very fortunate to be able to see so much of Missouri and experience the gamut of prairie habitat types. Sometimes we walked pleasantly through grasses and blooming wildflowers on perfect May mornings, counting singing Henslow's Sparrows. Sometimes we literally hacked our way through sumac, vines, and blackberry bushes that were over our heads. Sometimes we started the day soaked from head to foot from surveying in a cornfield slated to be restored to native grass. And often, especially in the prime remaining prairies such as Wah-kon-tah, Taberville, Diamond Grove, and Dunn Ranch, we would look around in amazement and think "this is my job!!".



Blazing Star blooms proudly amongst Brown-eyed Susans and asters at Clear Creek Conservation Area.

We are grateful to these organizations for their support of the Grassland Bird Survey Project.



Grassland Bird Surveys By the Numbers

MRBO Staff: 5

Total Field Days: 137

Properties Surveyed: 54
30 Public
24 Private

Acres Directly Surveyed:
11,467

Miles of Transect
Walked: 143.75

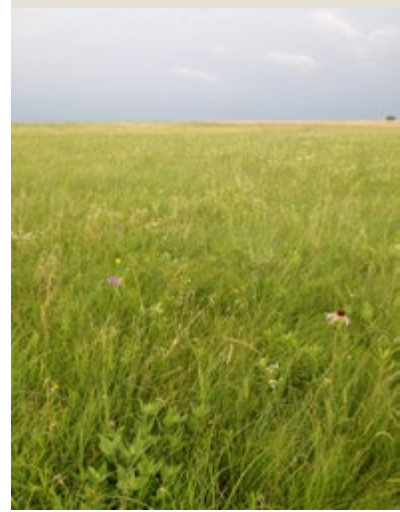
Number of Target
Bird Detections: 10,308

Number of Non-Target
Bird Detections: 4,797

Number of Ticks
Encountered: 1,387
(Number Found
Embedded: at least 100)

Number of Cattle
Stampedes Avoided: 6

Knowing we are
contributing to prairie
conservation: priceless.



Wetland Bird Surveys 2014



As many of our readers know, MRBO has been involved in surveys of wetland birds for three years. Originally, this project was aimed at assessing the abundance and distribution of rails and bitterns in Missouri, and was a regional effort developed by the US Fish and Wildlife Service. In 2012 and 2013, we found that the regional protocol was not effective enough in Missouri and this year we modeled the wetland bird surveys after the successful grassland surveys.



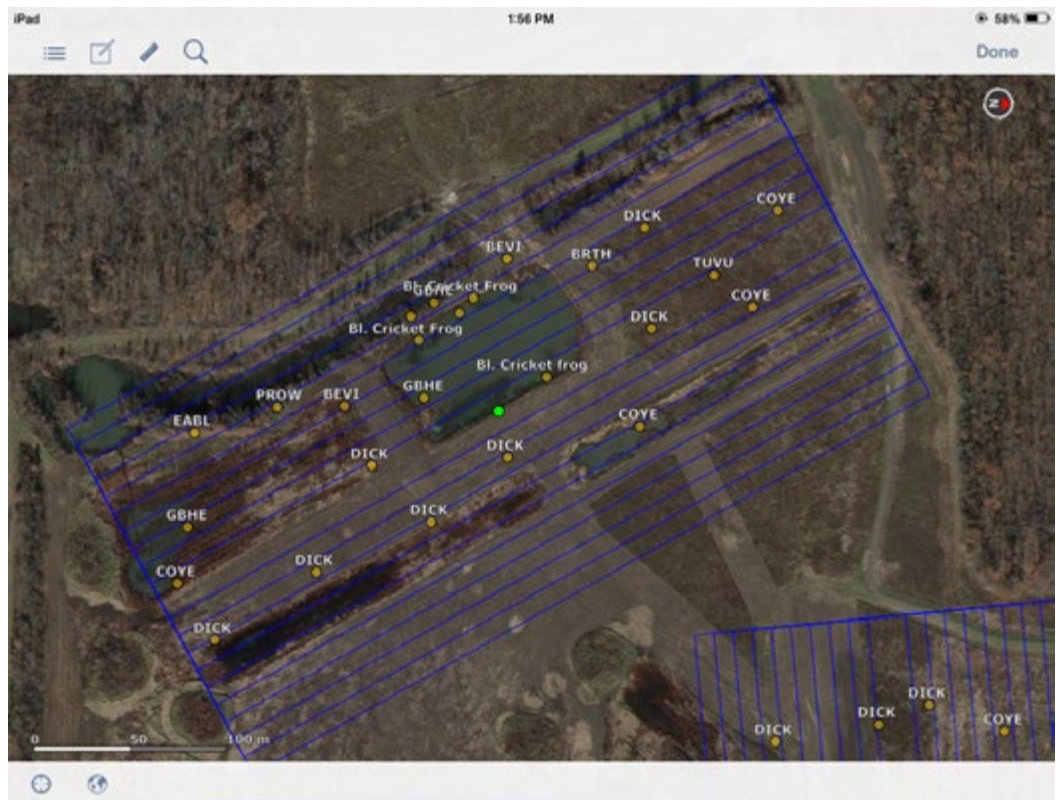
Dana enjoys an early morning survey in the Bootheel in April.

We met with representatives of the Natural Resources Conservation Service (NRCS) in December and requested that they provide us with 10 properties they would like surveyed. In Missouri, private lands programs such as the Wetland Reserve Program (WRP) are administered by several biologists in joint NRCS-Missouri Department of Conservation positions. These biologists have intimate knowledge of their programs, the lands they work on, and the landowners they work with. Therefore, the biologist from each region was asked to provide suggestions of one or more wetland properties that were of particular interest.

Landowners were contacted via a mailed request form. Based on the landowner response rate in previous years, the NRCS sent request forms to 15 landowners. All 15 responded in the affirmative! These WRPs were located all over Missouri, and ranged in size from 43 to 2100 acres. We were able to visit 10 of the WRPs three times, once in April, May and June. This provided us with a snapshot of bird use on each of the properties during migration, early breeding season and post-nesting. The remaining five WRPs were surveyed twice each, once in late April and once in June.

Similar to the grasslands project, transects were laid on each property and observers walked the transects recording all birds seen and heard. This was a departure from previous protocol, which involved walking to a randomly-selected point and recording only target species during a 12-minute survey period. The new transect design provides us with thorough coverage of each property, and the inclusion of all bird species provides us with a data set that can be used to assess each WRP's value as bird habitat. One similarity between 2014 and previous seasons was that we still used a FoxPro game caller to broadcast the vocalizations of a sub-set of target species: Least and American Bittern, King, Yellow, Virginia, and Black Rail, and Sora. This broadcast was performed at the mid-point of each transect.

A transect is pictured in the photograph on the right representing data collected during a late-June WRP survey. The image was taken directly from the data collection program. The green dot in the middle is the playback point, and you can see each of the non-target species detections placed with their four-letter Alpha Codes. This example demonstrates how data collected during a transect sample can be displayed and presented. We are able to leave the field each morning and immediately visit with the landowner, showing





A kettle of Turkey Vultures soars over a Vernon County wetland just before dawn.

him or her the birds located on the property that day. While many of the target species are rare and were detected in low numbers, we are still able to demonstrate the importance of wetlands to many species. On the particular property pictured, there were also many Prothonotary Warblers, Great Blue Herons, and Great Egrets documented throughout the 1400-acre wetland. Several target species were found there during April and May surveys.

Similar to the grassland bird data, we will be compiling and analyzing the wetland data over the next couple of months. We are assisted in this effort by a Master's Degree student from the University of Central Missouri who will be investigating the target species data using Occupancy Modeling, a statistical system employed for rare and hard-to-detect species.

The goal of this year's surveys and reporting is to examine the habitat types and hydrological regimes

that result in the highest wetland bird densities, and provide that information to NRCS biologists and the private property owners. One of the most significant relationships we're

King Rail, photographed by Missouri's Noppadol Paothung. The King Rail is one of our survey target species, along with Black, Yellow, and Virginia Rails. All of these species are rare and declining in Missouri, especially during the breeding season, and are notoriously difficult to find. Collectively these Rails, along with Least and American Bitterns, are known as "secretive marshbirds", a fitting name for birds that are generally very shy and reside in habitat that is difficult for humans to access. Noppadol's amazing King Rail photos are testament to his remarkable skill and patience.



investigating is the interaction between water control (e.g., when a WRP is flooded vs. when the water is drained out) and habitat structure. Many of Missouri's rare and declining wetland birds need shallow water with some emerging vegetation to be present throughout the breeding season. Often, land managers will drain the water out of a wetland in April; this is a common practice on Conservation Areas as well as private WRPs. This action may provide mudflat habitat for migrating shorebirds, but leaves little to no water for breeding wetland birds unless Missouri is treated to an unusually rainy summer.

Thank you, MRBO Members and Board of Directors. The wetland survey project was entirely funded by your donations in 2014.

Our appreciation also goes out to the landowners who are maintaining this crucial bird habitat.

Due to the inherently variable nature of wetlands, these surveys were fraught with logistical challenges. Everything from impassable roads to perimeter ditches over our heads to thigh-deep mud was possible on any given day. All of this made the wetland survey days some of the greatest field days ever. When it's taken you over an hour to walk into your first transect just to get started, you know you're somewhere special that hardly any human ever sees. Water is Life.

Wetland Bird Surveys By the Numbers

MRBO Staff: 5
(The same 5)

Total Field Days: 68

Properties Surveyed: 15

Acres Directly Surveyed:
2017

Miles of Transect
Walked: 76.5

Number of Target
Bird Detections: 401

Number of Non-Target
Bird Detections: 3,181

Number of Ticks
Encountered: 0

Number of Water Snakes
Avoided: 83

Deep ditches crossed on
floating logs: 9

Speaking with Missouri
landowners about wildlife
conservation: priceless.



Bird Banding: Research & Monitoring



MRBO's bird banding projects have become significantly more focused over the past four years. Because it is a relatively invasive method of study (it is more stressful to birds than, say, an observer walking through a bird's territory), we have narrowed the focus of our banding studies to use the method only under certain circumstances. These are: during migration when many species and individuals can not be detected by surveys alone, during the breeding season when determining age and sex ratios is necessary to draw conclusions about reproductive success, and for educational purposes. All of these situations are rooted in the goal of contributing to conservation.

Our head bander, Veronica Mecko, has been safely and effectively banding birds in the Cole Camp Prairies area this year to answer several research questions. For two years she has led an investigation of grassland birds during migration, a time of year for which very little is known about habitat use and what exactly constitutes "good habitat". Veronica is also currently leading the fourth year of our breeding season project, Monitoring Avian Productivity and Survivorship, also focused on grassland birds (for more on MAPS, please see www.mrbo.org/MAPS and stay tuned for the results of Summer 2014 in our next newsletter!).

MDC Grassland Biologists and Area Managers are interested in the migration and breeding season data because there are big information gaps in our knowledge of how birds are using our prairies and what management regimes result in high-quality migration and breeding habitat. In addition to running mist-nets, Veronica and her crew also document every bird seen and heard around the banding stations. Below, Veronica describes the spring migration banding and some of the interesting and exciting captures and observations from this year.



Veronica Mecko (center, examining a bird) operates the Cole Camp area banding stations with the help of many volunteers, including (from left) Roxanne Stockdall, Kim Nichols, Sue Kelly, Donnie Nichols, and Dan Kelly. For more about the many dedicated volunteers that assist at the grasslands banding stations, please see page 11.



The 2014 grassland spring migration banding sites were Mora Conservation Area, the second year for this site, and Bruns Tract Conservation Area, a new area for spring migration banding. MRBO staff had the help of several Master Naturalists from the Cole Camp Chapter (please see page 11).

From observations of birds in the field and birds that have been banded at **Mora CA**, April 2014 migration showed some differences from 2013. This was unexpected as no new management practices were implemented in the area of the banding station. We observed and banded fewer Field Sparrows than in 2013 but we did have two return Field Sparrows that had originally been banded in 2013. On

April 6, the first bird captured at Mora was a Field Sparrow banded on April 28, 2013. A second Field Sparrow banded at Mora on April 30, 2013 was recaptured on April 16 of this year.

In 2014 we banded more Song Sparrows and Swamp Sparrows at **Mora CA** than in 2013. Also, these species arrived earlier, with Swamp Sparrows captured on April 6 compared with an earliest-capture date of April 20 in 2013. We have also recaptured more Song Sparrows and Swamp Sparrows than in 2013 and these recaptured

birds have added fat and gained weight, suggesting they are remaining in the habitat longer than in 2013 before they continue with migration. Two LeConte's Sparrows were banded at **Mora CA** this year, and one of these was recaptured later in the season. Several sparrow species that were banded at Mora in early- to mid-April 2013 were not even observed at the site until early May 2014: Savanna Sparrow, Henslow's Sparrow and Grasshopper Sparrow. Other species observed throughout the latter part of April included Lincoln's Sparrow, Common Yellowthroat, American Goldfinch, Myrtle Warbler and White-eyed Vireo.



Bruns Tract CA provides significantly different habitat than Mora CA, with less brush and shrubs and almost no trees. Since over the fall and winter of 2013-2014, this area had various management actions implemented with a section being burned and another section being mowed. The net array incorporated all of the differently-managed areas in order to investigate which species were associated with each management type. In April we observed more of a variety of birds moving through **Bruns Tract** than documented at Mora CA. Also, greater diversity of species have been banded, but unlike Mora we recaptured very few banded birds at Bruns Tract.



American Tree Sparrows were still present when we began monitoring at **Bruns Tract** and we banded six of this species. While the Tree Sparrows moved on north, the Swamp, Song and Savanna Sparrows moved in and we banded several of each of these species each week. April 8 was the first day Henslow's Sparrows were heard, April 15 was the first Field Sparrow heard, April 22 was the first day for Grasshopper Sparrows, while Common Yellowthroats and Dickcissels arrived on May 1. Early on the morning of April 25 we were surprised to find a Western Palm Warbler in one of the nets in the burned area at Bruns Tract. Additionally, we observed Northern Harriers almost every day we are monitoring at Bruns Tract including two of this species at the same time on May 1. Other exciting observations were an Upland Sandpiper and five Scissor-tailed Flycatchers on April 27 and an Osprey on May 1.

Spring 2014 Banding By The Numbers

Total Banding Days from April 7 - May 7: 24

Mora: 13

Bruns Tract: 11

Total Birds Banded: 115

Mora: 47

Bruns Tract: 68

Total Bird Detections: 939
(plus 4,250 Red-winged Blackbirds)

Mora: 612

Bruns Tract: 387



Upper right, Savanna Sparrow at Bruns Tract. Center right, Eastern Meadowlark at Ionia Ridge. Lower right, Brown Thrasher at Bruns Tract.

Bird Banding: Education & Outreach

We have found bird banding to be a very effective method of engaging people of all ages in the love of birds. Who can resist seeing a beautiful wild bird up close? Often, we are also able to speak with attendees of banding demonstrations about the conservation of Missouri's birds and how they can contribute. Here are just some of the educational events we have accomplished since our spring newsletter:

March 7th & 8th at Prairie Fork Conservation Area. A [Flying WILD](#) certification workshop Friday night, and teacher training on Saturday, where teachers learned to use birds as a unique part of their curricula.

March 14th in Jefferson City. More than 30 people visited us at the [Birds-I-View](#) store for an afternoon of banding in the Bird Garden.

March 15th in Blue Springs. This was the last in our series of winter banding demonstrations at [Burroughs Audubon Library](#). Almost 40 adults and children attended.



Ethan enjoys a Kentucky Warbler with a group of fourth-graders at the annual Wings Over Weston festival at Weston Bend State Park.



A young lady from St. Louis county holds a Purple Martin nestling during our one & only Purple Martin banding of 2014.

Photos from Gary Nickelson, the St. Louis Martin Landlord who hosted the event for his neighbors & their families.



April 12th in Warrensburg. MRBO staff and volunteers (see page 11) provided banding demonstrations to attendees of the very popular University of Central Missouri's Annual Bio-blitz.

April 18th at Mora Conservation Area. Calhoun High School students and teachers visited our spring migration banding station, and were treated to several seldom-seen sparrows and discussions of scientific research and monitoring.

May 3rd & 4th in Jefferson City. MRBO joined the Audubon Society of Missouri for its annual [Spring Meeting](#). ASM sponsored a bird-banding demonstration open to the public, where we discussed the wonders of migration!

May 9th & 10th at Weston Bend State Park. Our fourth time at the excellent Wings Over Weston event, we showed a wonderful variety of migrant songbirds to 200 elementary students on Friday and more than 100 festival attendees on Saturday.



People of all ages enjoy seeing birds in hand! *Left*, Ethan and Veronica showed many local and migrant birds to a group of kids in Marshall's Butterfield Youth Services summer camp. The students were also treated to demonstrations and discussions of: Missouri mammals by MDC Agent Andrew Mothershead, Missouri snakes by Master Naturalist Elizabeth Stockdall, and aquatic organisms and stream quality by Master Naturalists Roxanne & Samantha Stockdall. *Right*, Dana discusses a Henslow's Sparrow with attendees of the Missouri Prairie Foundation's Bio-Blitz, held at Gay Feather Prairie in early June.

Meet the Staff & Volunteers

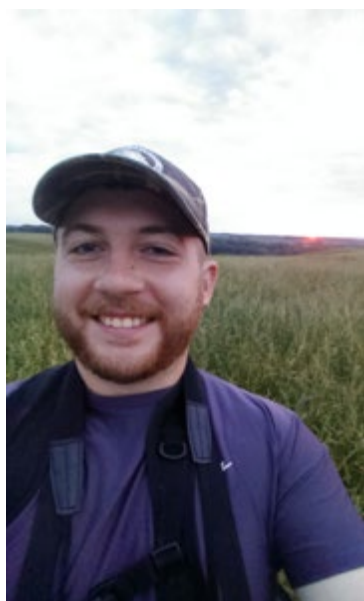
We are often asked, “how does such a small organization get so much done?” The answer to that question is the people on this page, as well as a few not pictured here: the Stockdall Family, Ruth & Gerald Schlomer, Gail Walton, and Chris Edmondson. Our thanks go out to each and every one for their dedication and hard work on behalf of Missouri birds.



Volunteer Tami Courtney (*left*) works with MRBO Educator Alie Mayes (*center*) and volunteer Ryan Steffens (*right*) during spring migration. Tami and Ryan have continued to help at the grassland banding stations throughout the summer.



Master Naturalist Renee Freeman (*left*) is a long-time friend and supporter of MRBO. Here, she is pictured with our 2014 Volunteer of the Year, Master Naturalist Sue Kelly (*right*) on Grandfather Prairie. Sue has devoted hundreds of hours to helping with our grassland banding projects.



Technician Zeb Yoko enjoys one of many early mornings out on prairie surveys. Zeb is a recent graduate of Truman State University in Kirksville, and did an excellent job during his first field position.



Technician Kalen Brady (*left*) examines a Red-headed Woodpecker with Ethan (*right*). Kalen is a recent Missouri Valley College graduate who has worked on many MRBO projects over the past two years, including grassland and wetland surveys.



Left to right: MRBO Educator Alie Mayes, Project Coordinator Veronica Mecko, and MRBO Volunteers Sherry Leonardo and Michael O’Keefe working the UCM Bio-Blitz public event in Warrensburg. Readers from the Kansas City area will be familiar with Sherry and Michael, who help us all winter at Burroughs Audubon Library. Sherry also volunteers at many other MRBO events and enters all of our data into CACHE-SPARKS!

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>*

The Mystic Plains, Adair County

