

The Rectrix

A seasonal newsletter of the Missouri River Bird Observatory

Volume 5 No. 1 – March 2015



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

Notes from MRBO Staff



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On the cover

A White-throated Sparrow photographed by Steve & Regina Garr of Birds-I-View in Jefferson City. This individual was banded at the Birds-I-View Bird Garden in January 2012 and seen every winter since.

We at MRBO have enjoyed the winter and early spring with a host of education and outreach events. In this issue of the Rectrix, we are highlighting our winter project, Backyard Banding. Since 2011, we have spent each winter traveling to different venues throughout Missouri and color-banding individual birds at feeding stations. We have begun to amass resighting data from both resident and migratory birds. Some interesting observations have been made which we know will generate further questions and insights pertaining to this citizen science effort. We have found that one of the greatest successes of this project is that it has become a superb medium for the dialogue of conservation. From young to old, the up-close and personal viewing of birds fosters greater appreciation and understanding of Missouri birds. Conservation of birds requires empowering people with knowledge as well fanning the coals of passion. It is a rewarding experience to see parents and grandparents sharing nature with children — forging connections and memories that will see us through to a brighter future.

In addition to Backyard Banding around Missouri since November, we would also like to share a few other highlights of the season.

- » **Wilderness Wildlife Week Festival:** After a spree of report writing and data analysis for grassland bird monitoring reports, January was a welcome reprieve. Dana and Ethan headed to Pigeon Forge, Tennessee to present at Wilderness Wildlife Week. The venue hosts about 20,000 visitors and MRBO was there to present for eight days in row. Topics ranged from modern agriculture systems and conservation to bird songs and identification to native gardening. MRBO wasn't alone in representing Missouri Birds, as Steve and Regina Garr of Birds-I-View were there presenting, hosting a booth, and leading Owl Prowls.
- » **Interface 2015:** February was chock full of meetings for MRBO and we were pleased to once again to take part in Missouri's Department of Elementary and Secondary Education (dese.mo.gov) Interface Conference. We presented for four days on how to facilitate outdoor learning and teamed up with the Missouri Department of Conservation Educators to help make taking kids outdoors easier, more enjoyable, more rewarding, and less SCARY!
- » **Master Naturalists:** Once again we had several great rendezvous with Missouri Master Naturalist Chapters including Osage Trails and Meramec Hills. We appreciate the opportunity to speak about conservation and contribute to this worthwhile program.

With the conclusion of this winter's programs, we are transitioning towards spring migration and breeding season studies, as well as an expanded education and outreach program. MRBO's new seasonal educator Emily Wilmoth, will be conducting programs at Arrow Rock State Historic Site with the Friends of Arrow Rock (FAR), as well as other venues throughout the state. Several of our assistants will be returning for research and monitoring efforts in Missouri's most imperiled habitats - prairies, wetlands, and bottomland forests. Long-time MRBO staff member Veronica Mecko will once again be heading up prairie monitoring at sites in the Cole Camp and Grand River Grasslands. Happy Spring!

Left to Right: Dana at Springfield, Ethan and Veronica at Jefferson City (photos Dan Bernskoetter)



Upcoming Events

April 2nd in Jefferson City. Conservation Day at the Capitol, hosted by the Conservation Federation of Missouri. Join Missourians with interest in wildlife and natural resources as we speak with our legislators about the importance of conservation.

April 14th –June 30th in Arrow Rock. Ongoing programs for school classes and guided nature walks for all led by MRBO's educator, Emily Wilmoth. Contact the Friends of Arrow Rock office (660-837-3231) regarding School Programs, or Emily at education@mrbo.org to schedule a custom nature program.

April 11th in Carrollton. "Get to Know Your Missouri Birds", a morning class at the Carrollton Area Career Center (CACC). We will cover backyard bird ID for winter and spring, take a bird walk, and even do some mist-netting on the CACC's wooded trail. 10 a.m. – noon.

April 11th in Warrensburg. University of Central Missouri Bio-Blitz at Pertle Springs! All are welcome at this free event tailored to families. Activities will occur throughout the day. The MRBO banding station will operate from 7 a.m. – 10 a.m..

April 18th at Columbia Bottoms Conservation Area. MRBO will be conducting demonstrations for The Missouri Chapter of the Wildlife Society at their annual student meeting. This is an important event for wildlife students from across the region, who will network with wildlife professionals and be exposed to various research methods.

April 22nd in Moberly. An Earth Day Celebration for local school classes! Folks with the local DNR office have organized a fantastic event for 4th grade students, including stations on wildlife, birds, water quality, and other nature topics.

April 23rd & 24th in Columbia: Columbia Audubon Nature Sanctuary's "Band with Nature" event. Over the course of two days, 800 second-graders will see wild birds in hand, captivating raptors from MU's Raptor Rehab Program, and engage in more than eight different nature activity stations!

May 8th – 9th at Weston Bend State Park. Wings Over Weston festival at Weston Bend State Park. Join Burroughs Audubon, Master Naturalists, State Parks folks, and MRBO for the third year of this excellent festival. Many booths, demonstrations, vendors, games, and a native plant sale! On Friday May 8th we will host students from local 2nd-grade classrooms; Saturday is open to the public!

May 16th in Arrow Rock. The wonderful world of Hummingbirds! Join MRBO hummingbird bander Veronica and bird rehabilitator Leah for presentations on hummingbirds of North and Central America. The programs will be followed by Ruby-throated Hummingbird banding and the chance to see a very special guest – Tuck, a non-releaseable, rehabbed hummingbird who now lives with Leah!

May 23rd & 30th in Arrow Rock. Saturday morning bird hikes for campers, visitors, and residents! Join Emily at the Arrow Rock campground check-in station at 8 a.m. for a guided bird walk through Arrow Rock's many wooded trails. All ages welcome.

June 6th at La Gemme Prairie. MRBO will join the Missouri Prairie Foundation's Bio-Blitz team for another summer Blitz! This great MPF event is free, open to the public, and sure to be another excellent event for learning and camaraderie. Find out more information at www.moprairie.org/events/

New events are added regularly to our website – please check www.mrbo.org for updates!

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Photo from Chris Bothwell.

A Year in the Life of Prairie Birds

In a recent report, *Breeding Season Productivity and Migration Monitoring of Grassland Birds in the Cole Camp/Green Ridge Prairie Complex*, we shared information from spring and fall migration monitoring and the subset of breeding season MAPS studies of several prairies in central Missouri. Here, we provide excerpts from that report to give our members an overview of MRBO's research on grassland bird habitat preferences and migration timing during their yearly cycle.

The decline of prairie bird populations has paralleled prairie habitat loss. According to the NABCI's State of the Birds Report 2014, prairie obligate species' populations have declined by as much as forty percent from 1968 to 1990. This decline has plateaued at low population levels, with a few species such as Northern Bobwhite Quail, Greater Prairie Chicken, Eastern Meadowlark, Loggerhead Shrike and Bobolink still declining or in dire straits. In Missouri, stemming the decline of some prairie obligates, such as Henslow's Sparrow, was accomplished by a concerted effort between the Missouri Department of Conservation, private landowners, NRCS Farm Bill programs, and various NGOs.

Due to the continued threats to grassland birds, it is becoming increasingly important to further understand prairie bird habitat associations and response to various planting mixes and management actions. Bird conservationists are still striving to understand habitat associations of most bird species throughout their full-year life cycle. Studies of bird migration and habitat associations of migrants are even more challenging than assessing breeding season habitat use. The Missouri River Bird Observatory (MRBO) has been employing various survey methodologies to examine the linkages between habitat, management, and bird density. Advances in technology have afforded much progress in data collection, analysis, and data sharing since MRBO began investigating prairie birds in 2011.

MRBO piloted spring migration banding and observational stations in the Cole Camp/Green Ridge area in 2013. The original station sites in 2013 included the southeast corner of Hi-Lonesome CA and the north-central portion of Mora CA. The Mora site has undergone an extensive native reseeding effort and we anticipated that yearly monitoring of spring migrant use of this area would be of interest to the MDC. This site was used again for 2014 monitoring. Prior to the 2014 season, Area Manager Steve Cooper advised that Bruns Tract was undergoing several management actions. We therefore established a spring 2014 monitoring station in a central area that would afford sampling of three different habitat types and management regimes. Mora and Bruns Tract banding stations were each operated every other day, weather permitting, from 6 April to 8 May. Each station had 12 nets that were operated for a maximum of 5 hours each morning; early closure due to wind speed was a frequent challenge at these sites.

Operators of the Bruns Tract and Mora stations kept a daily log of all birds seen or heard in the area. These are a standard addition to banding stations that increase the amount of available data for sites where bird captures are low. In complement, capture data add to the daily totals by documenting birds that typically display secretive, quiet behavior during migration, such as LeConte's and Grasshopper Sparrows.

Measuring birds' reproductive success in a specific geographic area helps determine if they are reproducing enough to maintain stable populations. The Monitoring Avian Productivity and Survivorship (MAPS) Program is a preeminent breeding season monitoring program in the western hemisphere aimed at obtaining such vital rates via bird-banding and associated ageing, sexing, and mark-recapture rates. The program is coordinated by the Institute for Bird Populations (birdpop.org) and has been running since 1989. The MAPS protocol is designed to measure long-term demographic changes, return rates, and breeding success within a selected site. Important data gleaned from MAPS operation includes age and sex ratios of the sampled population, post-breeding survival of adults and fledglings, return rates, and measures of body condition.

2014 was the fourth year of operation for MRBO's three MAPS project sites located in the Cole Camp/Green Ridge prairie complex. Grandfather, Paint Brush, and Ionia Ridge CAs provide the opportunity to intensively study grassland bird productivity, survivorship, and condition at three extremely different grassland sites. Ionia Ridge, under MDC management since 2008, is a heterogeneous mix

From left to right: Henslow's Sparrow at Mora Conservation Area in September; a Merlin captured at Bruns Tract in April; the view at Paint Brush Prairie in early August.



A Year in the Life of Prairie Birds

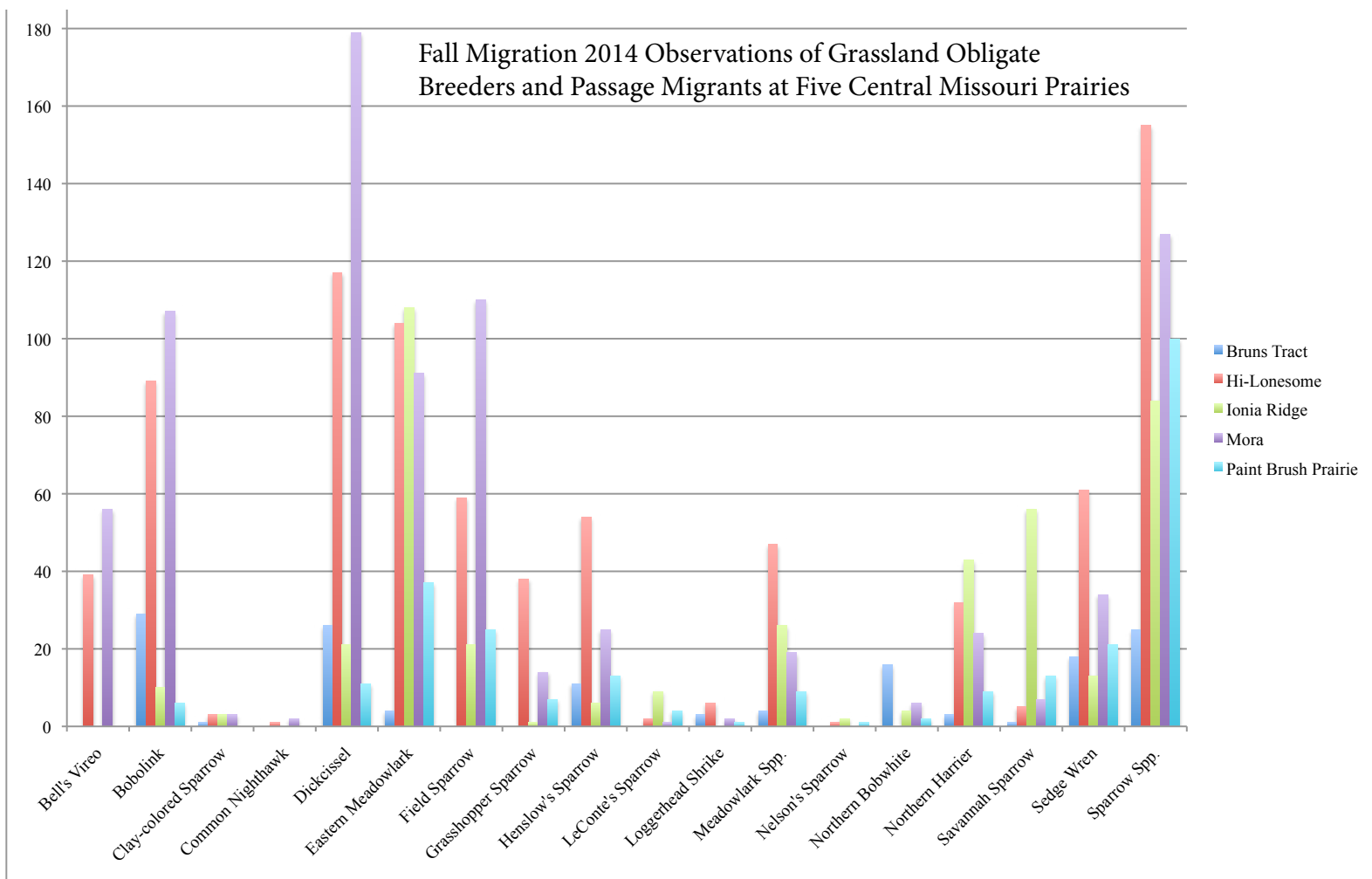
of habitat patches. Cool-season grasses, recent warm-season grass planting, former row crop, and remnant prairie are all represented. Paint Brush Prairie displays extremely high floristic diversity, contains a 74-acre designated natural area containing over 200 species of native plants, and has been managed by the MDC since 1978. The native, unplowed Grandfather Prairie, at 80 acres, contains a bird community that reflects the presence of nearby shrub- and forest-edge. All three sites are surrounded by an agricultural landscape, with adjacent fields row-cropped or managed for hay production.

We have expanded on the banding effort by conducting spot-mapping of all birds at each site during operation. This affords us visual overlays of grassland bird territories based on eight samples throughout the season. These data are comparable to presence data gained from banding as well as survey data derived from transect surveys conducted as part of the larger monitoring program. We believe that a combination of banding and survey data is necessary for continued examination of demographic rates. Accordingly, in 2015 we will be conducting weekly transect surveys at Grandfather, Paint Brush, and Ionia Ridge CAs in addition to continuing the standardized MAPS protocol. While surveys do not allow for assessing recapture and return rates, we anticipate that age ratio information can be documented throughout the breeding season, thereby providing a larger-scale estimate of productivity rates for each site.

The season of fall migration represents a relatively drawn-out time period where birds may make short movements of dispersal or long-distance movements towards a far-away wintering ground. The imperative driving quick migration towards breeding territories is not present; therefore, birds tend to stage and stopover for longer time periods in fall than in spring. This allows for a closer examination of habitat associations, information which is generally lacking for grassland birds.

In 2014, we conducted our third year of fall migration and early winter surveys from 1 September – 15 November on Hi-Lonesome Prairie, Mora, Paint Brush Prairie, Ionia Ridge, and Bruns Tract CAs. Each site was visited at least once per week during the season, providing a picture of migrant timing over the course of the fall. Using mapping features on iPads developed for the 2014 breeding season, we also documented exact locations of all birds at each site in relation to line transects. This provided us with spatial information displaying migrants' use of each site and the ability to create density kernel maps for portions of highest use. Additionally, we were able to generate density metrics for each CA and in many cases identify the portions of Area that supported the highest density of grassland obligate migrants. To read the full report and view more example graphs, data tables and figures, please visit:

<http://mrbo.org/wp-content/uploads/2015/03/MDC-Cole-Camp-Green-Ridge-2014-Report.pdf>





By Dana Ripper

Sometime during the autumn of 2010, Ethan and I were observing Downy Woodpeckers at our backyard feeding station. After some contemplation, we figured we had about three to four pairs of Downies – six or eight individuals. Ethan had read somewhere (which later turned out to be Lawrence Kilham's excellent *Woodpeckers of Eastern North America*, 1966) that each Downy Woodpecker has a unique pattern of black and white markings on the back of its head. This would allow an astute observer, armed with pencils and sketch paper, to draw the head patterns, remember them, and thus identify each individual Downy in the backyard. Ethan started drawing. After studious observations of several birds, he said, "you know, we could just color-band them. I bet other people would be interested in this too – we could color-band in other folks' backyards as well and they could track their own birds!". Immediately, MRBO's Backyard Banding program was born.

Questions about how many Downy Woodpeckers are really in one backyard, whether that White-throated Sparrow is the same one that wintered here last year, and how long our backyard birds

actually live could be answered by this method. Best of all, unlike regular banding studies where one has to re-capture the bird to view the tiny little 9-digit number on the federal band, with color-banding you do not have to catch the same birds again. An observer with a decent pair of binoculars can view the unique color-combinations on individual birds at their feeders and keep track of the individuals' lives. As this idea grew into a plan to color-band all species captured at feeders so that we and others could track returns and longevity, we checked with the federal Bird Banding Lab, which authorizes all such tagging activities. The BBL was not impressed with our plan to band any and all species captured! As it turns out, so many studies use this method that there was danger of putting the same color-band combination on birds as other researchers – which would cause a problem if the color-marked bird then migrated back to someone's study site. The BBL allowed us to choose 10-15 species for color-banding permission, and provided us with contact information for folks with whom our studies might overlap. For example, a graduate student at the University of Missouri was color-marking Red-bellied Woodpeckers throughout the Columbia area as part of a suburban habitat study; we were careful to avoid using the same color-band combinations as she did.

The original species we settled on were American Goldfinch (AMGO), Black-capped Chickadee (BCCH), Carolina Chickadee (CACH), Downy Woodpecker (DOWO), Eastern Bluebird (EABL), Hairy Woodpecker (HAWO), House Finch (HOFI), Northern Cardinal (NOCA), Red-breasted Nuthatch (RBNU), Red-bellied Woodpecker (RBWO), Slate-Colored Junco (SCJU), Tufted Titmouse (TUTI), White-breasted Nuthatch (WBNU), White-crowned Sparrow (WCSP) and White-

Color-banded birds around Missouri. From left to right: White-breasted Nuthatch in Marshall, Slate-colored Junco at Burr Oak Woods (photo Michael O'Keefe), Carolina Chickadee at Birds-I-View (photo Dan Bernskoetter), Downy Woodpecker in Gravois Mills (photo Chris Bothwell).



What's In a Banding Demo?

MRBO banding demonstrations take place all over the state and can be tailored to fit almost any situation. Often, the capture and banding take place at feeders during the winter season. This has two benefits: it's almost guaranteed that birds will be captured, and is a likely place where banded birds will be seen again. However, sometimes MRBO uses banding demos in other situations, such as at a Conservation Area or State Park during a school field trip or public event. An example of this is Columbia Audubon's Banding With Nature event, at which MRBO operates one of many educational stations that several hundred elementary students rotate through during a field trip. This event involves setting up six to eight mist-nets at the Columbia Audubon Nature Sanctuary and trying to place those nets in areas likely to have high bird traffic.

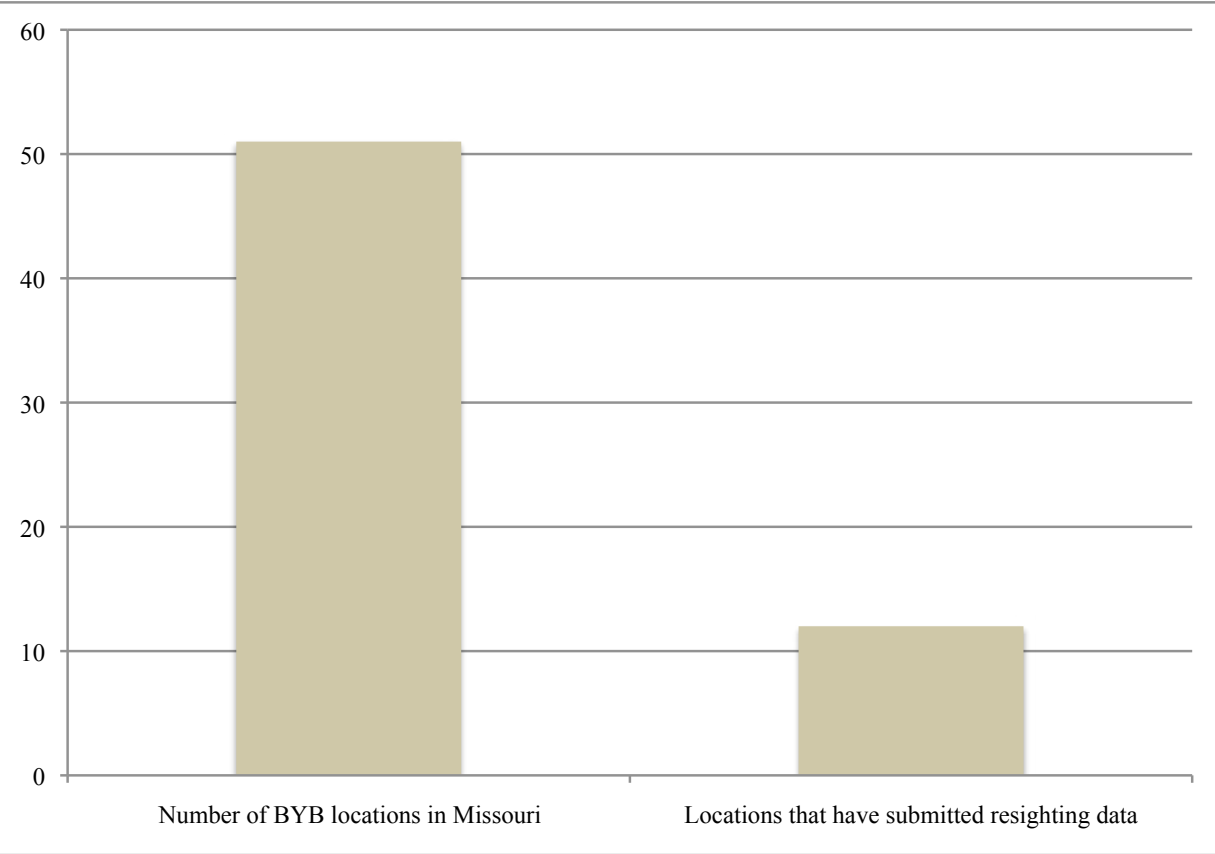
Our banding demonstrations almost always take place at sites where the general public is invited or as part of an informational session for a group (e.g., Master Naturalists, K-12 students, university students). At public events, anyone who would like to view banding can arrive at any point during the advertised period. During the demo, we discuss the ID features of the birds in hand, the process and function of banding, and the general ecology of the species present.

Banding generally lasts from two to three hours and is planned, depending on the season, to coincide with the safest time of day for birds. In winter, for example, we catch birds during the midday period when it's warmest and after they've had their morning feeding. In other seasons, we try to schedule banding for about an hour after sunrise, when birds are most active.

The primary purpose of banding demonstrations is, of course, education. It's a great way to get people to really think about birds and their lives. There's no substitute for up close and personal views of wild birds to awe people of any age.

throated Sparrow (WTSP). Most of these are the most common winter visitors to bird-feeders. An exception is the Red-breasted Nuthatch, which is only common in Missouri during irruption years; we wanted to see if individual RBNUs returned to the same locations if several years elapsed in between. One species, the American Goldfinch, we have since ceased color-banding since most observers had a hard time seeing the bands on their tiny, oft-hidden legs.

In answer to our original question, during the winters of 2010 and 2011, we banded 26 Downy Woodpeckers in our own backyard. So much for three or four pairs! With these and other exciting results in hand, we took our show on the road to various private homes and public venues throughout Missouri. To date, we have done Backyard Banding at more than 50 locations around the state. Some of these, like Wildcat Glades Audubon Nature Center and Burroughs Audubon Library, are public centers where volunteers and visitors have taken up resighting activities. A few were businesses, like Birds-I-View in Jefferson City and Hillerman's Nursery in Washington, where patrons have the chance to look for banded birds when they come to store events. Finally, many of the venues were private homes where families, do resighting as part of their daily or weekly activities. Notably, some households have used the resighting data as part of their homeschool science curriculum.



Top 5 Reasons a Color-banded Bird may not be seen again

Observer Effort

There are significant differences in the amount of time, the season, and the time of day that BYB participants spend looking for color-banded birds at their feeders. Any of these factors can contribute to not seeing a banded individual again.

Home Range Fluctuations

All birds have home ranges – areas they move throughout the day, week or season. These tend to be smaller during breeding season as birds stick closer to their nest site. While the exact boundaries of any bird's home range are unknown, some birds may only visit a particular feeding station on occasion. If we happened to catch a bird for which the feeding station was on the periphery of its home range, it may be a long time before that bird is seen again, if ever.

Passage Migrants & Dispersers

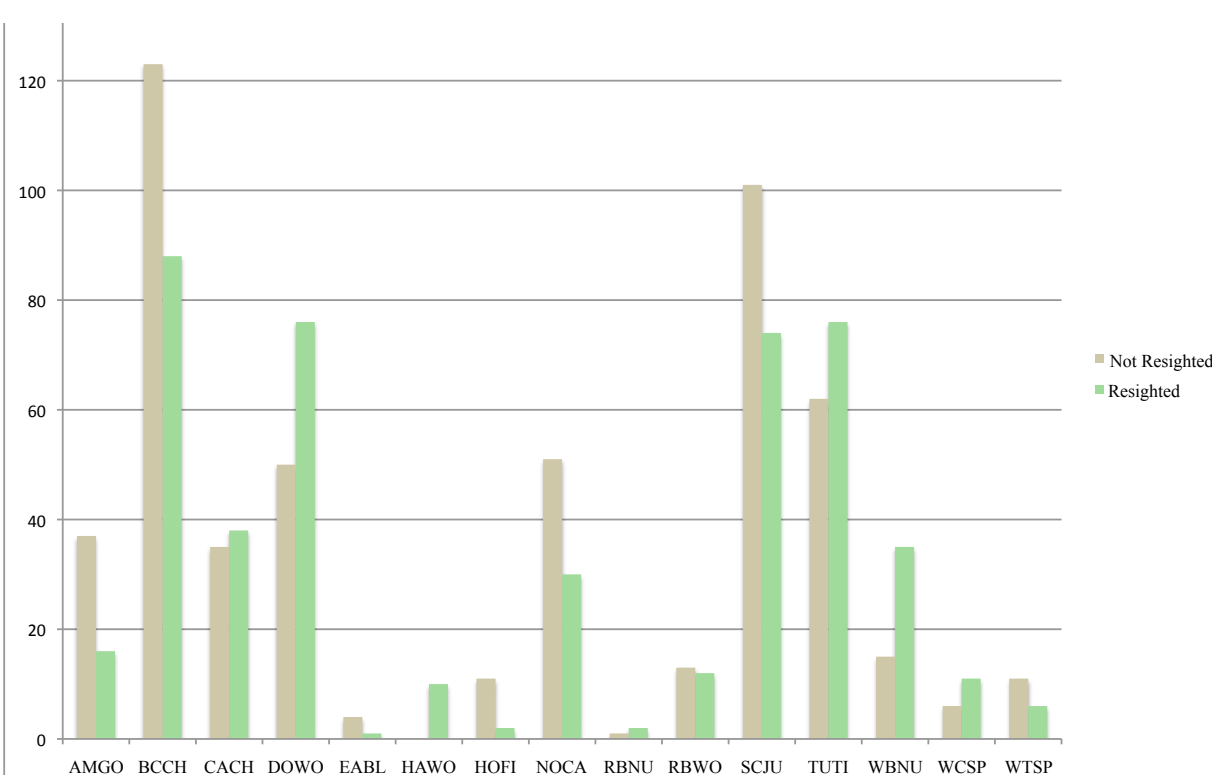
Some of the birds captured during a BYB event may just have been moving through the area temporarily, whether as part of a migratory movement or while dispersing from their natal area (place of birth).

Loss and Fading of Bands

At many places where we have banded multiple times over the years, we have recaptured birds that have either lost their color-band or the color has faded to the point of being unrecognizable. Cardinals, particularly, are very good at getting rid of their color-bands. They are able to simply crunch them off, so it's pretty much up to the bird itself whether or not that band stays on. We have also started to see woodpeckers that have lost their color-bands after four years. Faded or lost color-bands get replaced if a bird is recaptured.

Worst Case Scenario

The bird had to leave the area to find other resources or died. Many studies of banding, plus our own observations of just-banded birds returning to feeding stations within an hour, indicate that this scenario is not likely because of the banding itself. Wild bird encounter many perils: extreme weather, loss of roost sites, exhaustion during migration, and predation. The latter is especially likely in urban and suburban backyard sites where outdoor cats are common.



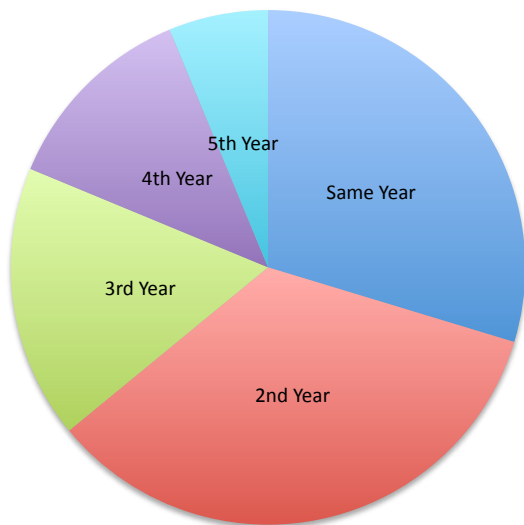
Proportions of color-banded birds resighted or not at locations that actively engage in resighting efforts, 2011 to early 2015.

As Backyard Banding evolved over the past five years, we have learned a great deal not just about the birds being studied but also about what constitutes a good BYB event (see sidebar: *What's in a Banding Demo?*). There have been challenges as well as successes involved with the program. One challenge to all observers, including ourselves, was getting the knack of reading color-bands. This is especially difficult in the quick-moving Chickadee species and the short-legged Downy Woodpeckers. In most cases, an observer has to see both legs to get a true read on the color-band combination, and sometimes the birds just won't cooperate. There are several people I'd like to mention as having taken the time and overcome the frustration of building resighting skills: Sherry Leonardo of Burroughs Audubon, Steve and Regina Garr of Birds-I-View, Pat Perry of Rolla, Ginny and Zack Frey of Washington, Mary Ann Keeney of Sweet Springs, Joann Billington of Gravois Mills, and the volunteers of Wildcat Glades. Happily, those who are keeping track of their backyard birds have grown to love the activity and each individual bird that they know personally.

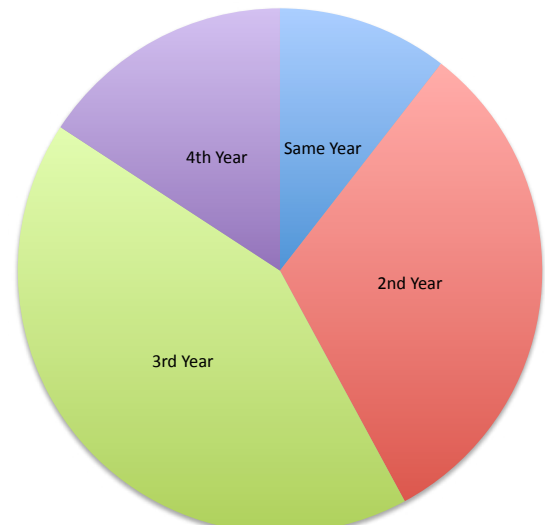
One very real challenge from a programmatic standpoint is ensuring that we only color-band at places where the residents, staff or volunteers will follow up with resighting. During the past two winters, if we did not get a firm commitment that folks at a venue will engage in resighting efforts, we still provide a public banding demonstration for the education value but do not use color bands. There is no reason to place additional bands on a bird if that bird will not be further studied. Also, color bands are relatively expensive, and there is no reason to waste resources!

Back to our own backyard, where we know the birds the best. Some of the original Downy Woodpeckers banded during the 2010-2011 winter, a few of them already two or three years old when banded, are still around at the date of this writing in March 2015. We tend to see most of our color-banded birds during periods of really cold weather, although there are individuals, such as a green-banded White-breasted Nuthatch, that we see every time we watch the feeders. There are some five-year old Black-capped Chickadees still popping around out there. We have an orange-banded White-throated Sparrow that has returned every winter since we banded him in early 2011 and several Slate-colored Juncos that are on their second or third winter here. Like Steve and Regina Garr with their green-banded White-throated Sparrow on the cover of this newsletter, it gives us great joy that a long distance migrant would choose to winter in our backyard every year. And, it is continually amazing that these little birds can fly hundreds of miles and find the same small area again!

Resightings of birds in years since original banding date. Data are expressed as a proportion of total observations of each species.



Individual Downy Woodpecker resightings by time at Marshall, MO (2011-early 2015).



Right: Individual Carolina Chickadee resightings by time at Rolla, MO (2011-2014).

One of the other great things about engaging in the BYB program at our own home is knowing just what all the resighting entails. Like all of our participants, we are not able to do resighting every single day of the year. Like most, our resighting activities tend to be concentrated in the winter months when bird activity at the feeders is highest and when our own schedule is such that watching color-banded birds is easier. We also do resighting in spring and fall, but quite little during summer when field work takes us away from home for considerable periods of time. This personal knowledge of observation timing and frequency (called “observer effort” in citizen science programs) allows us to more accurately examine the resighting data that comes from the project as a whole.

While the data collected over the past five years have told an interesting story and have raised even more questions, the biggest success of the BYB program has been the outreach component. BYB is now concentrated on venues that are open to the public or to certain groups by invitation, and that means that every banding event is an education and outreach opportunity. I would estimate that over the past few winters we have reached about 3,000 people during banding events. For example, just last weekend at Springfield Nature Center, approximately 150 people attended our banding demo

throughout the day – these folks ranged in age from one to 80. The project has given us a forum to discuss the lives of individual birds, the hardships they sometimes endure throughout the year and their conservation plights; hopefully this gets people thinking about birds as unique creatures and ways to help them. There have been many young people at BYB events who learned that being a wildlife biologist is actually something they can do with their future. And overall, I believe that literally thousands of people have come away from Backyard Banding events simply liking birds more.



A Black-capped Chickadee flies to freedom at the Birds-I-View Bird Garden. Photo from Dan Bernskoetter.

THE 'TRILLING' PINE WARBLER

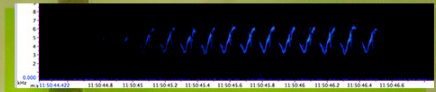


PHOTO BY: KEN THOMAS - WIKIPEDIA

By Ethan Duke

During a recent Backyard Banding session with Meremac Hills Master Naturalists in Rolla, a trilling bird song was heard. We pondered, “Who is making that sound?” Admittedly a bit rusty this spring, I wavered between a loud Junco and Chipping Sparrow. Neither really fit the bill. Leave it to Master Naturalists to spot the bird and out come of the field guides, quickly narrowing it down to a Warbler. Surrounded by a beautifully restored short-leaf pine forest, the apropos and resounding answer became the Pine Warbler (*Setophaga pinus*).

There it was, in all its glory — striking yellow-green plumage, a broken eye-ring, wing-bars, and even yellow feet. Soon after, with parabolic reflector in hand, those trills were captured for addition to the growing list of birds recorded in Missouri and housed on xeno-canto.org. This online archive is easy to query by species and/or locale. Thanks to the support of the Audubon Society of Missouri (mobirds.org), we have begun to catalogue Missouri birds and will house them on Xeno-Canto (XC) for all to enjoy and use as they wish. It will be a true source for sounds of Missouri’s birds and archive for all time. The recording of this Pine Warbler is available on XC at <http://www.xeno-canto.org/232794>, with the sound and sound spectrogram available to all.

Looking at the range maps, this species’ close affinity to pines is evident, and the Pine Warbler proves to be one more species back in good numbers in Missouri thanks to forest stewardship. When the last large stands of shortleaf pine were taken in the late 1940’s, we lost our Red-cockaded Woodpeckers and Brown-headed Nuthatches. Years later, with those stands making a comeback and the Pine Warbler giving its stamp of approval, we have hope for recolonization.

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Sharing bird sounds from around the world

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XC232794 • Pine Warbler • *Setophaga pinus*

XC232794

0:00 0:43

Pine Warbler (*Setophaga pinus*) • song
Ethan Duke

Recording data

Recordist	Ethan Duke
Date	2015-03-23
Time	11:30
Latitude	37.831
Longitude	-91.7525
Location	Cold Spring (near Rolla), Phelps County, Missouri
Country	United States
Elevation	360 m
Background	Hairy Woodpecker (<i>Picoides villosus</i>) Carolina Chickadee (<i>Parus carolinensis</i>) Tufted Titmouse (<i>Parus bicolor</i>) Mourning Dove (<i>Zenaidura macroura</i>)

MRBO Membership Reaches New Heights

The following individuals and organizations have joined MRBO or renewed their memberships since the publication of our winter newsletter. The crucial support from MRBO's members continues to make our on-going education and outreach programs possible. Last year, membership funds also supported our wetland bird research, which has now become a large project in partnership with the NRCS, MDC, and private landowners.

Mandy Dorrance & Bruce Satterlee
Arrow Rock

Karen & Terry Stair
Lee's Summit

Ryan Steffens
Cole Camp

Carol Davit
Jefferson City

Steve Schnarr
Columbia

Don Shelden
Raytown

Randy Haas
Joplin

Dana Micklos
Setauket, NY

Dianne Van Dien
Raytown

Sue Bone
Jefferson City

In honor of Sue Kelly, MRBO Volunteer of the Year 2014

Senator David & Mrs. Teresa Pearce
Warrensburg

AJ Bone
Jefferson City

Mary Wight-Carter
Midlothian, TX

Bill Mees
Columbia

Susan Dyer
Lee's Summit

Michael, Therese & Kayla Morgart
Dixon

We would like to recognize some individuals and organizations that have consistently and generously supported MRBO over the past five years. Sometimes this support has come as direct funds, other times as donations of volunteer time, needed supplies, or lodging for MRBO staff. These folks have all reached a special status of membership beyond our highest level. Extra special thanks go out to:

Steve & Regina Garr, Birds-I-View, Jefferson City

Bob & Pat Perry, Rolla

Sherry Leonardo, Grandview

Sue Kelly, Warsaw

Michael O'Keefe, Independence

Jeff Cantrell, Neosho

Mary Ann Keeney, Sweet Springs

The Duncan Family, Platte City

Donnie & Kim Nichols, Warsaw

Sophie Ryan, Lamoni IA

Kathy Borgman, Arrow Rock

Burroughs Audubon Society, Kansas City

River Bluffs Audubon Society, Jefferson City



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>

Birds as Art: A Northern Harrier hunting Ionia Ridge Conservation Area

