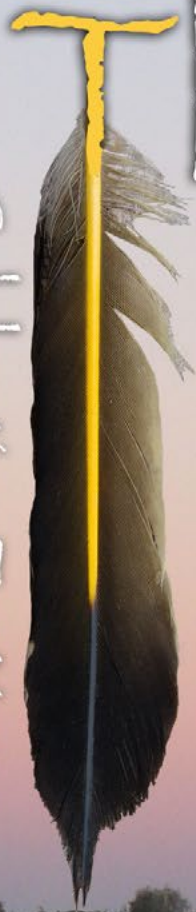


Special Issue—Volume 10 No. 3.

The Rectrix

A seasonal newsletter of the Missouri River Bird Observatory

Celebrating Ten Years

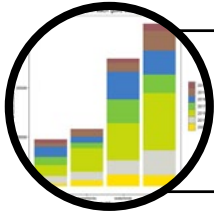


Our Mission



Conservation

To contribute to the conservation of Missouri's migratory and resident birds through scientific research, community outreach, and education.



Science

To gather information about avian communities and habitat use that will assist state, federal, and private natural resource managers in their efforts to implement conservation programs.



Education & Outreach

To provide opportunities for Missourians of all ages to learn about species and their habitats.



Advocacy

To advocate for sound, science-based conservation policy that benefits bird, other wildlife and environmental quality.

Staff

Dana Ripper Duke
Director/Founder

Erik Ost
Field Project Leader

Paige Witek
Education Coordinator

Ethan Duke
Director/Founder

Zeb Yoko
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Tree Swallow by Amy Watts



From Acorns to Oaks

The making of a bird observatory



The conservation of natural resources is the fundamental problem. Unless we solve that problem it will avail us little to solve all others.

~Theodore Roosevelt

“The mightiest oak was once a tiny acorn that stood its ground”.

The Missouri River Bird Observatory was once just the vision of two young biologists who, from their many experiences both nationally and internationally, had a very strong motivation to address the ecological issues of the planet we all call home. These two biologists were Dana Ripper and Ethan Duke. Though their backgrounds were very different,

their passion for environmental conservation was identical.

Dana is a native of Illinois but moved to Hong Kong with her family at an early age and attended elementary and middle school there. She chose to return to her home town of Naperville where she received her Bachelor's Degree in biology at North Central College. Although she earned the “Biology Student of the Year” in 1998, Dana missed her commencement ceremony as she was already off pursuing her career with a posting at



Long Point Bird Observatory in southern Ontario. It was evident early on that avian ecology and conservation would be her focus.

In 2000, Dana enrolled at Arkansas State University in pursuit of a Master's Degree in Wildlife Biology. Her thesis on habitat use by and conservation of the Hairy Woodpecker in western Washington State again took her to the top of her class and garnered awards. Several years of work in more than 10 states culminated in a position as a private lands conservation biologist at the Rocky Mountain Bird Observatory (now Bird Conservancy of the Rockies). While there, Dana learned about nonprofit management from her experienced supervisors. The move to Missouri in 2008 was a pivotal point in Dana's life. Her early work in central Missouri formed the vision for the founding of MRBO.



Major steps made along the way

- **SPRING 2009: GRAND PASS CA MONITORING STATION ESTABLISHED**
- **SPRING 2010: BANDING AT GRAND PASS WITH MISSOURI VALLEY COLLEGE INTERNS**
- **SPRING 2010: HI-LONESOME MASTER NATURALISTS BECOME INVOLVED**
- **FALL 2010: STARTED FALL BANDING OF SHOREBIRDS AND MIGRANTS AT GRAND PASS**
- **FALL 2010: LOCAL SCHOOLS BEGIN TO VISIT BANDING SITES**
- **FALL 2010: MRBO PROVES SAW-WHET OWLS ARE RELATIVELY COMMON IN MISSOURI**
- **WINTER 2010: BEGINNING OF BACKYARD BANDING CITIZEN SCIENCE PROJECT**
- **SPRING 2011: BEGINNING OF PURPLE MARTIN BANDING PROJECT**
- **SUMMER 2011: MRBO LAUNCHES FIRST NEWSLETTER, "THE RECTRIX"**
- **SUMMER 2011: LAUNCH OF AVIAN PRODUCTIVITY MONITORING ON PRAIRIES**
- **SPRING 2012: LAUNCH OF STATEWIDE WETLAND BIRD MONITORING**
- **SUMMER 2012: MRBO PIONEERS AUDUBON CONSERVATION RANCHING MONITORING**
- **SUMMER 2014: MRBO DEVELOPS NEW MONITORING TECH, LEADING THE WORLD**
- **SUMMER 2014: MRBO TAKES ON POLICY ADVOCACY ROLE TO DEFEND CONSERVATION**
- **SPRING 2015: BEGINNING OF BOTTOMLAND FOREST SURVEYS**
- **SPRING 2016: HEADQUARTERS OPENED IN ARROW ROCK**
- **SPRING 2017: LAUNCH OF YOUNG EXPLORERS' CLUB / DAY-CAMP**
- **SPRING 2018: ESTABLISHMENT OF MISSOURI YOUNG BIRDERS' CLUB**
- **SPRING 2019: FIRST ANNUAL BIRDS & BEES FESTIVAL**
- **SPRING 2020: COVID-ERA WEBINAR SERIES AND YOUTUBE CHANNEL STARTED**



Ethan grew up in the rural northern Appalachia region of Western New York State surrounded by a wealth of biodiversity. The many wonders of nature piqued his interest and provided countless experiences to interact with the environment. He is an experienced hunter, fisherman and outdoorsman.

Four years in the service of our country as a member of the US Air Force took Ethan overseas. During this time, he honed his innate skills for computer science and technology. After returning to the States, Ethan earned his Bachelor's Degree in Wildlife Management in 2006 from the State University of New York at Cobleskill. This led to extensive research and monitoring of several avian species. His assignments in field research for universities as well as state and federal agencies took him across the United States. Ethan's technological aptitude and experience has become an integral part in MRBO's work. One of his greatest passions is bioacoustics, which he used to further understandings of birds and with work by staff at MRBO has led to the launch of the Missouri's Bird Song website, mobirdsong.org.

Dana and Ethan



began speaking of the possibility of establishing a bird observatory in 2009. Like most fledgling businesses, work began on a very small scale. As early as spring of 2009, the field station that would become MRBO was established at Grand Pass Conservation Area. The station was launched in partnership

with the Missouri Valley College Biology Department and interns from MVC would be an integral part of the first years of operation. In spring of 2010, the first educational program event took place at Grand Pass with a visit to the site by 5th grade students from Marshall's Bueker Middle School. The program was very successful and opened the door to what was to become MRBO's education and outreach program, thus enhancing the existing scientific component.

Do what you can, with what you have, where you are.

~Theodore Roosevelt

In August of 2010 MRBO received its official designation as a 501(c)3 nonprofit organization. In the subsequent ten years, many interns and volunteers along with experienced biologists have joined together to take MRBO to where it is today. Partnerships with state and federal agencies, universities, other nonprofits, and citizens organizations have helped MRBO expand its conservation science, education and public outreach to every corner of Missouri as well as eastern Kansas and Nebraska. What was once a small research station on the banks of the Missouri River is now an organization with five full-time staff members, many successful field projects, and a record of delivering more than 100 education events a year.



Full-time Staff



Paige Witek

Education Coordinator

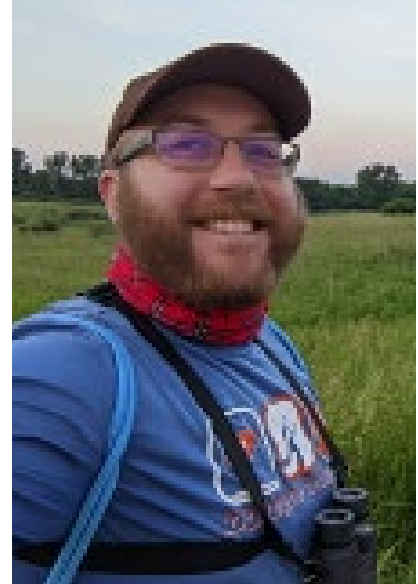
In March of 2017, Paige traveled from her hometown of Green Bay, Wisconsin in search of new adventures with MRBO as a seasonal educator. She returned in 2018 and became MRBO's first Education Coordinator. Paige graduated from the University of Wisconsin- Madison in May of 2016 with a B.S. Degree in Zoology and a Certificate in Environmental Studies. The origin of Paige's passion for conservation, birds and environmental education cannot be pinpointed to any one experience in her lifetime, but developed as a result of a hodgepodge of past experiences, including her work with zoos, wildlife rehabilitation and education centers, wildlife sanctuaries and studying abroad in Queensland, Australia. In 2019, she will be expanding MRBO's Young Explorers Club and the Missouri Young Birders' Club, which she launched in 2017 and 2018, respectively. Paige is truly excited to continue to inform and inspire others.



Erik Ost

Field Crew Leader / GIS

Erik was born in Maryland and raised in Northern Virginia. He graduated with a B.S. in Organismal Biology from Christopher Newport University in 2015. Growing up hiking and traveling to National Parks he developed a connection with nature and wildlife. During an Ornithology course in college, he found a passion for birding and avian conservation. His love of wildlife and commitment to conservation brought him to MRBO. Erik was a MRBO Wetland Surveyor in 2016 prior to spending time in Bolivia working with Blue-throated Macaws. He returned to MRBO as a Grassland Bird Technician in 2017. As of 2019, Erik has been serving as the project leader for our research and monitoring. He is also taking classes at Northwest Missouri State University and plans to achieve a M.S. in GIScience by the end of 2020.



Zeb Yoko

Conservation Science Communicator

Zeb grew up in Iowa then moved to Missouri to earn a B.S. in Biology from Truman State University. He was previously a Grassland and Wetland bird Surveyor with MRBO in 2014 & 2015. He sought other opportunities to broaden his experience profile after two seasons and went on to earn a M.S. in Environmental and Conservation Science from North Dakota State University. Zeb then returned to MRBO in a new role in 2020: Conservation Science Communicator. In this position, he will be working with all projects currently underway in some capacity. Zeb's primary focus will be on analyzing data collected and writing both technical reports and reports aimed to reach a broad audience promoting conservation. He will also assist with field surveying, education and outreach events and answering questions about conservation received by the observatory.

An Experienced and Dedicated Team



Letters from the Co-Founders

Dana Ripper

In one of Aldo Leopold's famous essays, *Whither Missouri*, the gentleman commonly known as the father of wildlife conservation expounded upon the richness of Missouri's natural resources and the conservation mindset of its citizens. I first read Leopold's essays when I was a biology undergraduate in northern Illinois. Whenever I could, I escaped the suburb where I lived to engage in multi-day forays into the Missouri countryside. At the time – the mid to late 90's - I did not understand all of the ecological and cultural forces that made Missouri different, I just knew that it was a much more natural, biologically diverse and relatively untamed place than I was used to. When in 2008 I got the chance to live in Missouri permanently, I jumped on it. After having spent several years in the high plains of the West by then, I was overjoyed to return to a place of rivers and green.

Founding the Missouri River Bird Observatory with Ethan Duke was a culmination of many factors – luck, being in the right place at the right time, and an extraordinary opportunity to fulfill a personal dream. What started out as a small avian research station on the Missouri River became an organization that took on a life of its own very quickly. Ethan and I often joked about MRBO being our child – yes, we had given birth to it, but it almost immediately took on

its own personality and growth trajectory. We've spent thousands of hours discussing how best to nurture this entity, and like all parents, hundreds more hours stressing about its growing pains, how forces beyond our control would affect it, and how to leave it the most enduring legacy possible. (We of course still don't have all the answers to the challenges MRBO faces, but we're nowhere near done!)

I've often thought that I would never want to try this experiment of creating a nonprofit conservation organization from scratch anywhere else in the country. MRBO was able to come into being and succeed over the past decade largely because of the amazing conservation community in Missouri. From the structure of our state's conservation agencies to the openness of other organizations to a new partner, I believe that Missouri was the right place – perhaps the only place - to launch this endeavor and have it come to fruition so clearly.

We are also lucky to be a bird-oriented organization. While MRBO's staff, volunteers, board and supporters care about and are keenly interested in all wildlife, birds are our "flagship" species. Pretty much EVERYBODY likes birds! They are beautiful, inspiring, fascinating, and easily accessible to anyone with a window to look out of. Therefore, MRBO is able to engage people in fun conversations and activities based on charismatic species that open the door to conservation.

There are still many challenges, as everyone who cares about wildlife and natural resources knows. Over the past decade we have seen public opinion shift somewhat towards an anti-conservation philosophy and an increased perception of conflict between wildlife and human interests. I say "perception" because people and wildlife all rely on the same ecological systems to sustain our lives, so conservation of these systems and their functions is not a genuine conflict. In response to the challenge of changing perceptions, MRBO recently embraced advocacy as part of our mission, dovetailing with science and education to form a more cohesive set of goals and associated strategic plan. We are working with many other organizations across the state and in the Midwest and mid-South regions to foster a public conservation philosophy that is a win-win for people, wildlife and the natural resources on which we all depend. This newsletter provides many specific examples of these efforts.

In closing, I would like to thank many people.

~My husband and best friend, Ethan Duke, without whom I never would have had the courage to found MRBO or undertake...well...any other inherently risky, highly ambitious endeavor.

~My family, particularly my mother who has always been one of MRBO's firmest supporters, and Ethan's family.

~My former supervisors at Rocky Mountain Bird Observatory, Seth Gallagher and Tammy VerCauteren, from whom I learned so much.
~All of the organizations and people listed in the last few pages of this newsletter, with a special shout-out to the following people who gave us support and advice at critical junctures of MRBO's creation and early development: Michele Reinke, Max Alleger, Gene Gardner, Brad Jacobs, Rick Thom, Edge Wade, June Newman, Susan Hazelwood, Jack Hilsabeck, Dave Rintoul, Justin Pepper, Carol Davit, Steve and Regina Garr, and the entire Hi-Lonesome Chapter of the Missouri Master Naturalists.

"Conservation, at bottom, rests on the conviction that there are things in this world more important than dollar signs and ciphers. Many of these other things attach to the land, and to the life that is on it and in it. People who know these other things have been growing scarcer, but less so in Missouri than elsewhere. That is why conservation is possible here. If conservation can become a living reality, it can do so in Missouri. This is because Missourians, in my opinion, are not completely industrialized in mind and spirit, and I hope never will be."

—ALDO LEOPOLD, 1938



**MRBO Co-founder and Director Dana
Ripper overlooking the organization's
namesake at Grand Pass Conservation Area**

Letters from the Co-Founders

Ethan Duke

We at MRBO are so very grateful for a decade of support from so many excellent people who also value nature. We all depend on it and in the end, it is all we really need. As MRBO has grown in scope, so too have the organization's Mission and core values. As individuals with unique backgrounds, supporters, partners and colleagues have grown together with shared values, hopes and visions.

I'm encouraged daily by the many ways you all help make this world a better place for future generations. Each of you reading this has a story to tell about why you care, and I hope that your stories will continue to grow as MRBO's has.

Your story may or may not begin like mine, but the diversity of stories give our mission strength. I was extremely fortunate to grow up in a rural northern Appalachia, where I could immerse myself in the outdoors. Missouri offers those same opportunities to most, but not all of its citizens. Together, we must continue our work make it possible for all Missourians to access the great outdoors. Our shared goals for conservation cannot be fully achieved without inclusivity, diversity, equity, and equality.

While it is true that I grew up in an idyllic geography, with an outdoor life that teemed with biological diversity, it has been starved of human diversity. For years I remained ignorant of the many people who grew up without the privilege of geography and identity that I have had and their oppression. Later in life I became more knowledgeable about the threats to environment and the flora and fauna I love. The solutions we pursue to solve the most pressing of environmental crisis are inextricably linked to systems of oppression we see on multiple cultural scales.

In order to understand this better, we need to dig deeper into our natural and cultural histories. In my case, I reflect back upon the land of my upbringing. It is known as the eastern triple divide and the top of a large portion of the main northeastern watersheds. This land was formerly land belonging to the Iroquois Federation. These great orators and diplomats of the Seneca, Cayuga, Onondaga, Oneida, Mohawk, and later in 1720 the Tuscarora, had a profound spiritual respect for the land as well as complex democratic governance that predated the US Constitution. The genocide inflicted on these peoples was swiftly followed by the complete destruction of the vast swaths of primitive, virgin forest. Following the massive clear-cut of culture and land, the oil boom gushed over the hills and throughout the watersheds.

Great natural icons of the area such as elk, Passenger Pigeons, and wolves quickly disappeared. These "canaries in the coalmine" are but a few of the indicators of the collapse of a once larger ecosystems that paralleled the demise of the pre-European settlement of human culture. Immigrants and the enslaved classes were the frontline communities living under the most unhealthy and oppressive circumstances. Where I grew up, the great wealth of industry was borne on the backs of Black, Irish and Italian people who dug canals, worked the fields and tanneries, and even kept households together.

By the time I was born, my hardworking grandparents had returned from World War II with the benefit of having the GI Bill for education and starting new homes. Black veterans were not given the GI Bill. I am even more thankful now for the blessed life of field and stream that my hardworking family provided me knowing that many did not have the same generational privilege. When your life isn't focused on immediate survival and strife, it is far easier to pursue happiness and work towards the ideal of an environmentally just world.

MRBO's core values recognize this and it is why we are working to make change within as we hold fast to the ideals of our nation's founding document. We have a unique right in the United States of America and that is the right to pursue happiness. Our friends who help us accomplish our mission do so knowing that the pursuit is defined by our value systems and the resultant happiness depends up our own perceptions of how well they are practiced. Hopefully, after reading this newsletter you can take in a few moments in nature and feel good about supporting good works that serve nature, people, and the greater good.

You deserve to feel good and in these difficult times it is necessary. The challenges we face are daunting but the solutions are within reach. The solutions that will address the existential threats to nature are wide ranging and there is a place for everybody to step in and help out in their own way.

In closing, I'd like to extend my deep thanks to you all. I would be far lesser person without my wife, partner, and best friend, Dana. My family in the northeast and Florida as well as the one I was adopted into through marriage have been a blessing. My good friends Chris and Beth have given me hope, strength and love beyond words. You'll find a special critter in the Memorial section of this newsletter, too. Thanks too to the planet for tolerating us all of these years and I'm looking forward to a brighter future for us all with shared heart and spirit.



MRBO Co-founder and Director Ethan Duke immersed in nature in remote, interior Belize.

MRBO's research and monitoring is covering ground where it matters from prairies to wetlands

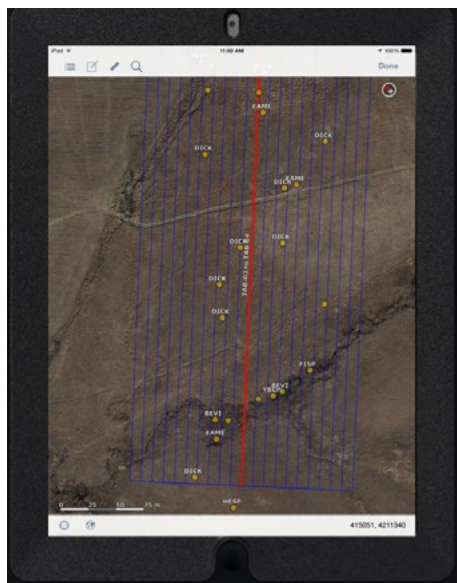


To Contribute to the conservation of Missouri's birds and their habitats **by gathering information about avian communities and habitat use that will assist state, federal, and private natural resource managers in their efforts to implement conservation programs.**

An evolving objective to meet the conservation needs of today's world. We need to be broad in scope, efficient, and strategic.

- **INNOVATION: HOW MRBO HAS BECOME A LEADER IN EFFICIENCY**
- **GRASSLANDS: MRBO'S GRASSLAND RESEARCH AND MONITORING**
- **WETLANDS: MRBO'S FOCUS ON PRIVATE WETLANDS**
- **BOTTOMLAND FOREST MONITORING**
- **THE BRIDGE: COMMUNICATING SCIENCE AND BRINGING IT TO THE PUBLIC**

Since 2012, MRBO has been working on improving bird survey methodologies and the presentation of results with a pioneer spirit. The objective is to measure and track bird populations, as accurately as humanly possible, in response to habitat management. Tackling frontiers in science is rewarding and exciting for MRBO, stakeholders, and supporters. How is bird data exciting? Think of the generations of field technicians that have spent countless hours with compass, pencil, and datasheets in hand. Think of the months and years spent entering data into legacy formats. Then, think of MRBO's technicians, covering tens of thousands of acres each year with mobile devices in hand and entering that data daily within a couple of seconds with the push of a button. This is why MRBO is the most efficient bird monitoring organization anywhere. We've blogged about it before at <https://mrbo.org/an-evolution-bird-survey-data-collection-using-ipads/> and presented on the topic in Sweden at



the International Bird Observatory Conference <https://mrbo.org/of-birds-food-and-biostatistics/> and yet, within the bird monitoring community use of modern technology to facilitate the data collection process is relatively rare. It takes time to understand the well-developed methods for conducting

bird surveys and data analysis. Each approach is often tailored by region, habitat, taxa, and information needs.

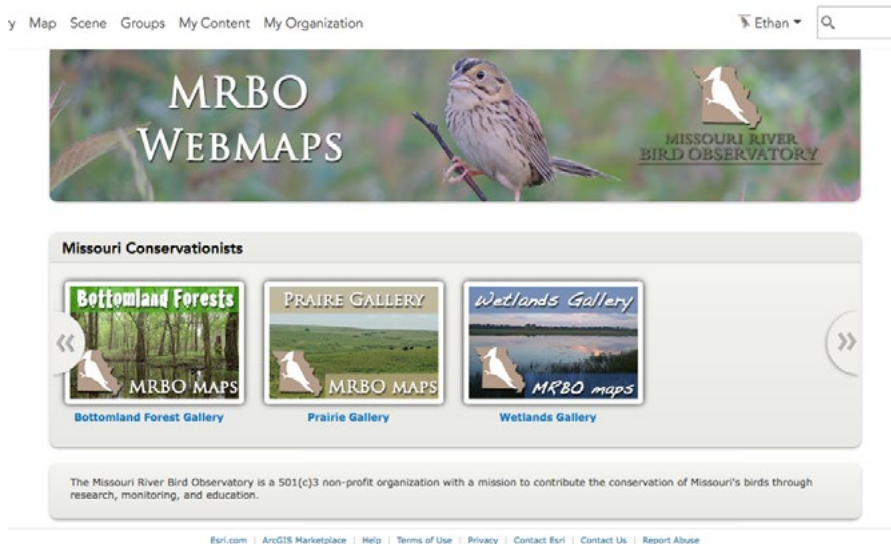
Distance sampling is one of the most commonly-used survey methodologies. Even though Distance sampling can provide incredibly robust statistics, we at MRBO have sought for and developed a way to improve data collection, analysis, and outputs. In short, we not only keep list of birds detected and respective distances, we also map them. Traditional Distance sampling results in estimates of density (birds per/acre) and abundance. Our data collection method provides these results with the added advantage seeing exactly where the birds are seen in the landscape. We have been using iPads on surveys for six years to collect data. Specifically, we use ESRI's software and applications, [Collector for ArcGIS](#) and [ArcGIS Desktop ArcMap](#) to conduct line-transect and point-count and prepare data for Distance sampling. Our GPS-enabled iPads are prepared with aerial imagery basemaps, elements of study



Innovation

design (transects and survey points), as well as feature collection services (i.e. bird and habitat) that work offline in remote settings. As surveyors walk a transect line they see where they are on the aerial imagery basemap and mark all birds where they are seen or heard. Since 2013, we have collected locations of hundreds of thousands of birds in Missouri's most imperiled habitats. Resulting density and abundance estimates as well as mapped bird locations are provided to landowners and land managers. In addition to the statistical analysis results, mapped results can be overlaid with

about 950 line transects and about fifty point counts. Traditionally, this would have required the design and printing of 1,000 datasheets. Additionally, it would have entailed hours of daily data entry with countless chances of errors in transcribing the data. Data entry now takes place in seconds without human error with the click of a button on an iPad. Field work just got a lot more fun. Distance sampling requires estimating the distance from subjects of study to the transect line or point count point location. People are notoriously bad at estimating distances precisely. With our method each bird is placed with



management and habitat information. Mapped individual bird points or collective “heatmaps” provide a compelling visualization of factors effecting shifts in occupancy from year to year. Maps can be made available via ArcGIS online in the form of webmaps or webapps. Some of our data are available in various formats at mrbo.maps.arcgis.com. In addition to more flexible outputs, the process has considerable advantages over traditional sampling methodologies. We save an extraordinary amount of time and resources. In any given year, we cover

much greater degree of precision. Survey crews can navigate and plan logistics much more efficiently without previously being oriented in an area. Data are saved on secure servers in the cloud and on multiple hard drive backups. It can seamlessly be pulled into the desktop environment and synched back to the cloud. There is tremendous flexibility in sharing data. So, where do we go from here? Since this methodology is so new, the many outputs and further uses of the data haven't been fully realized even by MRBO. Also, when more researchers are using these methods, datasets would

Science is not just a subject you took in school. It's life. We are wrapped by it, in it, with it. One's science literacy should never be viewed as a disposable dimension of one's mind - not in this, the 21st century, where the engines of tomorrow's economies will derive from wise investments and innovations in science and technology.

~Neil Degrasse Tyson

be easily combined. Furthermore, there are piles of data on paper, floppy disks, CD ROMs, Zip Drives, and hard drives in unusable legacy formats. These data could be digitized in varying degrees of spatial accuracy to become more useful and relevant. Perhaps, some of the money saved by organizations using these methods could be spent on the task of digitizing legacy data.



Grasslands

Many readers are aware of MRBO's involvement in Missouri grassland bird population monitoring efforts. Beginning in 2012, MRBO has conducted breeding bird surveys on most of the remaining fragments of Missouri grasslands. A large chunk of these surveys take place on conservation areas that are part of priority geographies designated by the MDC, but MRBO also monitors land owned by The Nature Conservancy, Missouri State Parks, Missouri Prairie Foundation, and private land as part of the Audubon Conservation Ranching Program (ACRP). These efforts have taken MRBO across state-lines into Kansas and Nebraska as the need to monitor and conserve grassland birds extend beyond just our state.

Over time, MRBO's grassland bird conservation efforts have expanded to include migration monitoring, nest-monitoring, and quail covey counts. Grassland-oriented projects have expanded so much so that the fieldwork side of MRBO is mostly dominated by grassland conservation efforts. However, the need for MRBO to increase its presence in grassland conservation is paramount. Considering the 2019 State of the Birds report, which showed the grassland bird guild suffered the steepest declines of any guild, MRBO would like to ramp up our involvement to contribute to the reversal of this trend. As the ACRP increases in popularity, MRBO will be there to show how ranching practices can be both economical and ecologically sustaining. Additionally, it would be of great interest to expand our monitoring presence to more areas that fall outside priority geographies to assess how other grasslands that may be more fragmented and less intensely managed are faring. This could include grassland conservation areas within the Ozarks and grasslands in neighboring states. After many years of collecting data from

the nest-monitoring and fall migration projects, MRBO now has the capacity to analyze this through a more scientific lens. Currently, the MRBO team is working on this. We hope this analysis will provide land managers and the scientific community robust information that can be used to help shape future grassland conservation efforts.



Dickcissel by Russell Kinerson

Since 2016, MRBO has operated a grassland bird nest monitoring project in southwest Missouri. The project is conducted in conjunction with the MDC's 15-year study of the effects of patch-burn grazing on grasslands.



In addition to its extensive grassland bird surveys, from 2011 to 2016 MRBO also operated three MAPS stations at grassland sites, such as Ionia Ridge CA pictured above. MAPS = Monitoring Avian Productivity and Survivorship, a national program of the Institute for Bird Populations.

Henslow's Sparrow by Andrew Reago & Chrissy McClaren



Wetlands

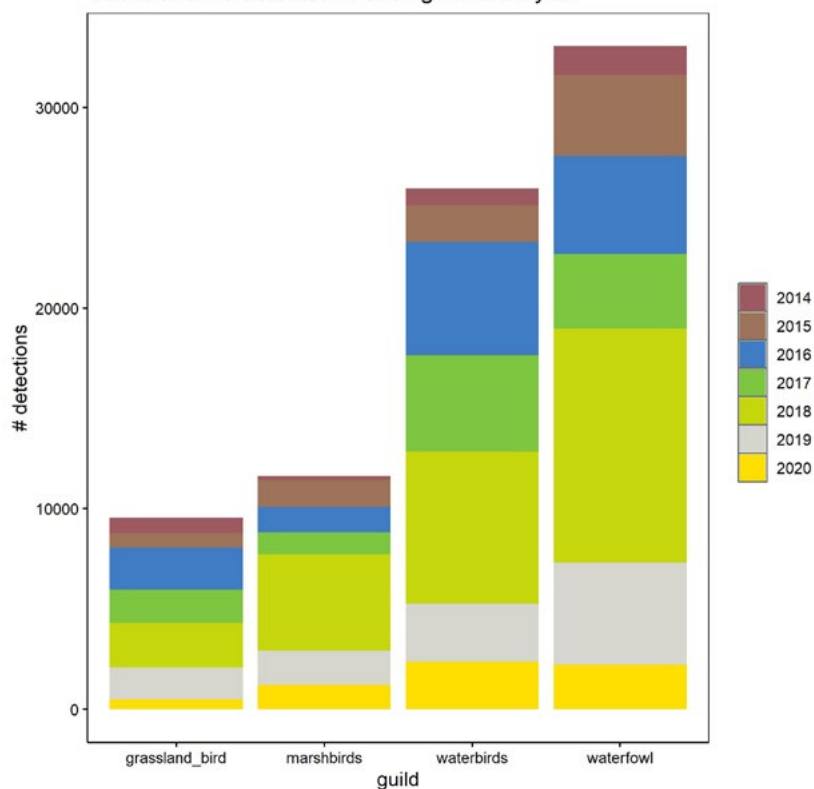
The Missouri River Bird Observatory has been involved in wetland bird surveying across the state of Missouri since 2012. Following a consensus that the historic breeding bird survey was not sufficient for secretive marsh bird species (point count surveys are ineffective for birds that attempt to remain hidden in the tall reeds often found within wetlands), MRBO worked to pilot a marsh bird survey program in Missouri in 2012 that had been rolled out across several states. Then, after two field seasons of this test protocol, we developed and implemented a more effective survey protocol of our own. This survey method began in 2014 and runs through today. A hybrid method of walked transects with an audio playback point was developed to address the shortcomings of point count surveys.

With the original goal being to provide a more accurate depiction of wetland bird populations in Missouri, an additional, equally important objective of this project is to inform landowners about the diversity of birds that thrive in the quality wetland habitat they provide. Thirteen private properties were surveyed on multiple visits in the first year of the project, totaling 12,000 acres and nearly 5,000 birds surveyed by MRBO staff. Sites are revisited on a one- or two-year rotation, and additional sites have been added. Surveys were expanded to 60 sites and 19,000 birds by 2019. A grand total of over 120,000 birds have been observed over the duration of this project, spanning nearly 150 private properties.



Great Blue Heron by Clay Guthrie

Count of birds detected in each guild each year





Little Blue Heron by Paul Moffett

Forests

Missouri is blessed by an abundance and diversity of forests, from the Ozark uplands to the riparian and swamp forests associated with lowlands. Since the logging boom of the 19th and early 20th century, Missouri foresters have successfully developed sustainable practices that are economically beneficial while being ecologically sound. Today, foresters with agencies such as the MDC, DNR and US Forest Service implement forest management with goals of restoring or improving biodiversity as well as maintaining natural forest processes such as fire and flooding. MRBO has worked with the MDC and DNR to examine the effects of management on forest bird populations.

From 2015 to 2017, MRBO conducted 166 point counts at bottomland forest sites throughout the Missouri bootheel. Here are some highlights:

- » A total of 3,090 bird detections were documented across all study sites. Of these, 2,877 were collected during the official survey period while on point counts, including 988 priority species detections.
- » Several priority species were detected in relatively high numbers, including Acadian Flycatcher ($n = 321$), Yellow-billed Cuckoo ($n = 157$), Prothonotary Warbler ($n = 170$) and Eastern Wood-Pewee ($n = 167$).
- » Occupancy (i.e., percentage of point-count plots occupied) and relative abundance (i.e., mean number of detections per point) were calculated for priority species at all sites.
- » Overall, few significant differences were found in bird occupancy or density between treatment and control stands, between treatment types, and within stand characteristics. While in some cases this may be an artifact of sample size, there were only a few species for which significant differences in density occurred. Yellow-billed Cuckoo had a significantly higher density in Control stands while Acadian Flycatcher and Eastern Wood-Pewee had significantly higher densities in Treatment stands. The priority species guild showed very similar rates of occupancy, relative abundance and density across all variables.

Bootheel Bottomlands



Ozark Uplands



In 2016 and 2017, MRBO worked with the Missouri DNR to assess bird response to forest management in St. Joe and Washington State Parks. St. Joe surveys were designed to examine control stands vs. stands treated by fire. Washington State Park surveys were conducted as a baseline census. Here are some results:

- » A total of 1,230 bird detections were recorded throughout the St. Joe study area representing 56 species, including 595 detections of 13 restoration target species and 188 detections of 8 regional priority species.
- » Several restoration target species were detected in relatively high numbers, including Eastern Wood-Pewee ($n=156$), Blue-gray Gnatcatcher ($n=84$), Red-eyed Vireo ($n=76$), and Summer Tanager ($n=76$).
- » Acadian Flycatcher, Blue-gray Gnatcatcher, Eastern Wood-Pewee, Red-eyed Vireo, and Summer Tanager populations were relatively high and evenly distributed across sites.
- » MRBO worked with a volunteer from the St. Louis Audubon Society to conduct a census at Washington State Park. A total of 1,332 individual birds of 90 species were detected, including many target species.

Prothonotary Warbler and Kentucky Warbler by Andrew Reago & Chrissy McClaren





Bridging the Gap from Science to Education

In the first several years of its operation, MRBO had a few projects that began as research pursuits but immediately **bridged the gap between science and outreach**. The most publicly visible of these bridges were bird-banding efforts that took place in backyards, businesses and on public lands throughout the state. In fact, between MRBO's Backyard Banding program, Purple Martin colony banding program and Northern Saw-whet Owl migration monitoring, by 2015 we had banded birds in more than 90 locations across Missouri.

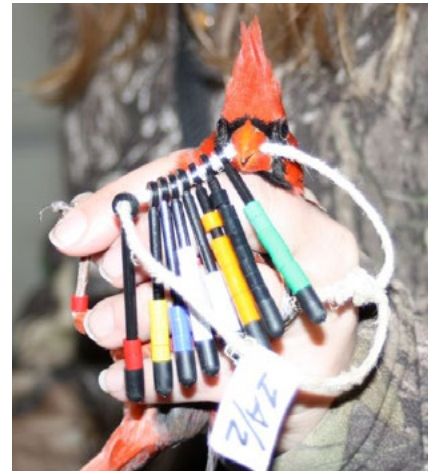
Backyard banding started off because of a conversation on Dana and Ethan's back porch one day in fall of 2010. They were musing on what the actual population of Downy Woodpeckers was in the immediate vicinity – was it substantially more than the maximum of three or four observed at one time at the feeders? Ethan had read some research from the 1940's and 50's in which ornithologists, paying extremely detailed attention to unique head markings, were able to tell individual Downies apart. After trying

this for a while, Dana and Ethan eventually decided that color-banding backyard birds and then recording observations of color bands would be far more efficient. They also thought other people might have the same question about exactly how many individuals of a species were really around, along with how long do backyard birds live and how often do they come to the feeders? With this, the Backyard Banding was born. Within a year, MRBO would be color-banding birds at private homes, nature centers, schools and assisted living communities all over the state.

MRBO's Purple Martin banding project began with a call from a local Purple Martin "Landlord" asking if we could help him track his colony. Upon further research, we determined that this was a fairly common monitoring method among Purple Martin researchers. The Purple Martin Conservation Association helped MRBO establish a robust banding program in 2011 that we operated until 2014. During that time, MRBO banders placed standard USGS along with custom-coded Missouri bands on over 3,000 Purple

Martins! The vast majority of these were nestlings. Over 110 banded birds were reported to MRBO in subsequent years. Most of these were documented as return to their natal colonies, but we also received several reports from other colonies in Missouri and a few out-of-state reports. The most remarkable record we've received to date was of a Martin banded in Platte City, Missouri in July of 2013 that was just reported in Holcomb, Kansas on June 26th, 2020.

In August 2010, Dana attended a raptor workshop in Stevens Point, Wisconsin led by Gene Jacobs, who had been banding **Northern Saw-whet Owls** for over 25 years. At that time, there were very few records of Saw-whets in Missouri; most had been reported by



intrepid birders who had tales of crawling through pine thickets to find this very small owl. Mr. Jacobs advised MRBO to try capturing Saw-whet Owls despite their perceived scarcity south of the Great Lakes states. The standard method for Saw-whet capture is to use a very loud broadcast of the species' mating call to attract individuals that are present in or actively migrating through an area. In mid-October 2010, Dana and Ethan were trained by another experienced raptor bander, Jerry Toll of Hitchcock Nature Center, in southwest Iowa. Later that month, we first attempted to catch this species at locations outside of Marshall and Warsaw, Missouri and were successful in both locations! The experience of handling these tiny, charismatic owls was so astonishing and inspiring that MRBO has operated Northern Saw-whet Owl banding seasons every year since. Throughout the 10 autumn banding seasons to date, we have captured more than 240 Northern Saw-whet Owls in Missouri. Most of these were unbanded at the time we caught them, but we've also captured owls that were previously banded in Minnesota, Ontario and Saskatchewan. We've had "our" owls recaptured at banding stations in Wisconsin, Iowa, Michigan and Ontario.

In 2015, the banding operation morphed from a general research study of the species' abundance and distribution in Missouri to more of an education and outreach endeavor. For several years MRBO has opened its owl banding station to visitors during every night of operation. At our Arrow Rock location, we host over 100 visitors each season.





Northern Saw-whet Owl by Linda Williams



Education

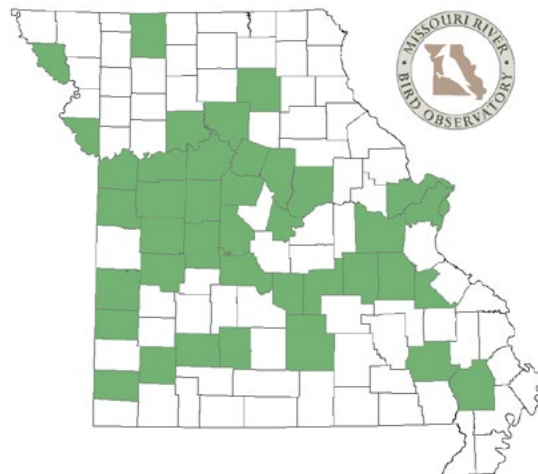
To Contribute to the conservation of Missouri's birds and their habitats **by providing opportunities for Missourians of all ages to spend more time outdoors and to learn about species and habitat conservation.**



Who cares?

Conservation work requires more than great scientific research and monitoring. The data collected have no value just sitting in a database. To make a difference, conservationists must reach out to the public

and encourage them to think about conservation. This is why MRBO places a great emphasis on education and outreach. People are motivated to conserve the plants, animals and land they appreciate, and appreciation requires knowledge and understanding. In addition to protecting our natural resources, a connection with nature and spending time outdoors has been shown to improve mental, emotional and physical health. Birds are an excellent educational tool because they inspire people of all ages to spend more time in the outdoors, be more aware of their surroundings and care more about the quality of Missouri's natural resources.

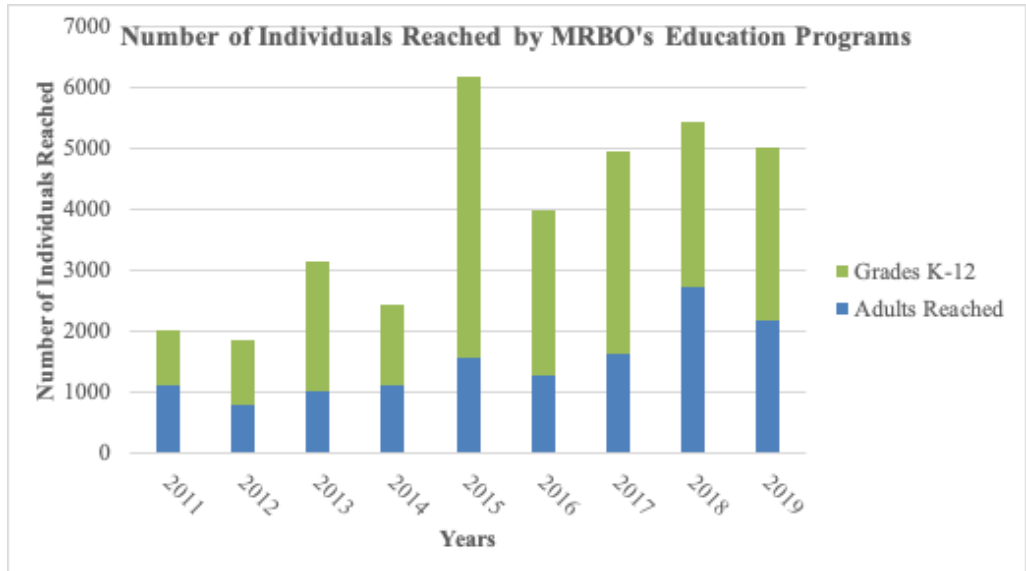


The geographic scope of MRBO's education programs in Missouri 2011-present.



Marshall school students with Dana and Ethan at Grand Pass Conservation Area in 2012. These kids are now old enough to vote!





Our challenge isn't so much to teach children about the natural world, but to find ways to sustain the instinctive connections they already carry. ~Terry Krautwurst



MRBO Education Coordinator Paige Witek and members of the Young Explorers' Club getting caught in the rain at the Arrow Rock State Historic Site





Young Explorers' Club

In the summer of 2017, MRBO launched the Young Explorers' Club in Arrow Rock

to provide an opportunity for students in the surrounding areas to learn about the nature that surrounds them. Every year since its inception, the camp has morphed and grown to provide even more positive experiences for the campers, staff, volunteers and community as a whole. The camp's programs and activities are focused on exploration, improving observational and outdoor skills, encouraging critical thinking, increasing knowledge of Missouri's native species, physical activities and, of course, having fun. Each day has a special topic for campers to explore and put their new or honed skills to use in understanding the facets of. Topics range from the basic ecosystem to animal behavior, adaptation and propagation and cultural and natural history. Camp is further enriched by the individual volunteers and organizations who donate their time and expertise to give guest presentations related to a vast range of subjects related to nature.

In 2020, our Young Explorers Camp took on a completely different appearance due to the COVID-19 global pandemic.

MRBO created a virtual summer camp.

Each student who registered received an 'Exploration Kit' in the mail with all the tools and instructions for individual nature exploration and discovery. We also provided a number of instruction videos online for campers who wanted to go the extra mile. On Friday of each week we held optional Virtual Chat Sessions to discuss what everyone discovered and provide an opportunity for the campers to ask questions and play games to get to know one another. At the close of the one-month camp, **each participant became a Certified Young Explorer and received a certificate** from the Missouri River Bird Observatory. There were two camp sessions held over the summer with a total of 56 participants. Home Camp turned out to be a very positive undertaking. MRBO was able to reach a greater number of campers who were in more diverse locations both in Missouri and across the country. For more information about YEC visit: <https://mrbo.org/young-explorers-camp/>.





MISSOURI YOUNG BIRDERS CLUB



The first young birders club in the USA was started by six students in Ohio with the assistance of the Black Swamp Bird Observatory. They formed what is known as the Ohio Young Birders Club. Since then, young birders clubs have sprung up all over the country with the help of a toolkit developed by the Black Swamp Bird Observatory and the Cornell Lab of Ornithology. In 2018, MRBO hosted the Spring Meeting for the Audubon Society of Missouri. During the conference, MRBO spearheaded a workshop to launch the Missouri Young Birders Club (MYBC).

The MYBC is a program starting out under the umbrella of MRBO with a mission to bring together young Missourians to enjoy, experience and conserve Missouri's birds and other wildlife. The MYBC is part of a framework called the Young Birders Network (YBN) which is comprised of Young Birders Clubs from around the world. The YBN thrives under the philosophy that encourages this next generation of naturalists to grow their interest in the natural world.

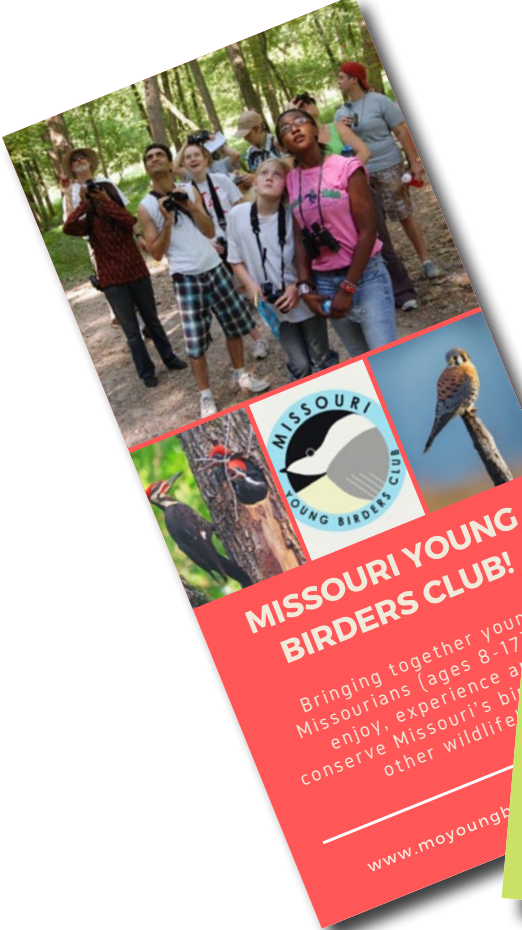
Our vision for the Missouri Young Birders Club is to have a club that is by kids and for kids. Empowering Missouri's youth is a large part of the MYBC mission. Members are involved in making decisions for all aspects of the club, as well as having the opportunity to mentor younger naturalists. The club provides field trips to local birding areas and opportunities for members

to get involved with various aspects of conservation.

At present, we are recruiting students ages 8 to 17 years old with a goal to establish local chapters throughout the state. Currently, we have three local chapters at various stages of development serving Kansas City,

Central Missouri, and St. Louis. These chapters are guided by adult members and led by youth members. Members not only enjoy and experience Missouri's birds, but also take action to conserve their habitats. Visit <https://www.moyoungbirders.org> for more information.





Our Vision

The Missouri Young Birders Club (MYBC) provides field trips to local wildlife areas and opportunities for members to get involved with conservation, such as assisting with habitat restoration projects, taking part in citizen-science programs such as eBird and FeederWatch, and the opportunity to mentor younger naturalists. Youth members will be involved in making decisions for all aspects of the club. Empowering Missouri's youth is an important part of the MYBC's mission. All skill levels and outdoor interests are welcome!

**MISSOURI
YOUNG BIRDERS CLUB**

Contact

Find more information:
www.moyoungbirders.org
www.facebook.com/moyoungbirders
www.instagram.com/moyoungbirders

Questions?
 Paige Witek
 State Coordinator
paige.witek@mrbo.org
 660-837-3888



DO YOU LIKE BIRDS?

Missouri River Bird Observatory



**Bringing together young
Missourians to enjoy,
experience and conserve
Missouri's birds and other
wildlife.**



-
- ### 10 REASONS TO JOIN MYBC:
1. It's fun!
 2. You get to be outside and explore!
 3. You get the chance to enjoy the many unique species of birds in Missouri.
 4. You'll be surprised how much you can learn in so little time!
 5. You get to meet other young Missourians with your same interests.
 6. You get to be involved in conservation!
 7. You will become a part of a supporting community of bird enthusiasts
 8. You will be a part of the decision-making process.
 9. You get to experience and learn about all Missouri's wildlife
 10. Your involvement with the club can be all your own.



Bringing together young Missourians (ages 8-17) to enjoy, experience and conserve birds and other wildlife!



Join us!

Contact:
 Paige Witek
paige.witek@mrbo.org

Online:
www.moyoungbirders.org

**Missouri
Young
Birders
Club**



A long-term goal of MRBO has been to organize a festival that highlighted Missouri's native pollinators, plants, birds and other wildlife, and we believe we accomplished just that with the first annual Birds and Bees Festival. Our first ever festival was a smash! The inaugural event took place on May 11th, 2019 in conjunction with Arrow Rock's Garden Market and Vintage Bazaar and included the entire Main Street of Arrow Rock. Despite an unusually cold, wet day for Missouri in May, over 750 people attended.

There was something for everyone at the Birds and Bees Festival, including vendors, activities, games, guided hikes, seminars and tasty, bird-friendly food from Patchwork Family Farms and The Root Cellar. We had 40 terrific vendors including Birds-I-View, Ned's Nesting Boxes, Natural Soaps and More, Sow Wild Natives, Sunrise Gardens, Claire's Garden, Prairie Bird Pastures, Jim Rathert Photography, the Mizzou Raptor Rehab Project, Missouri Master Naturalists, Birds and Beans Coffee and many more.

Plans were in place for a 2nd Birds and Bees festival on May 9th 2020; these plans were interrupted by the coronavirus pandemic. The festival will be back next year bigger than ever. Mark your calendars for Saturday, May 8th, 2021!





Place-based Nature Education



MRBO's facility at Arrow Rock State Historic Site

Thanks to a fortunate partnership with the Friends of Arrow Rock (FAR) and the Arrow Rock State Historic Site (ARSHS), MRBO has a long-term lease on a historical home that provides us with a meeting space and a place to invite groups for educational events. The home – known as the Lawless House for the original owners– is a 1903 construction that sits directly adjacent to approximately 40 acres of grassland on which the ARSHS is reconstructing a native prairie.

MRBO honors the historical and cultural context of the home and property as well as the natural aspects of the area. One of the outbuildings on the property, known affectionately as the Chicken Coop, serves as an outstanding semi-outdoor classroom at which we host school classes, summer day campers and small public groups for education events. Since 2016, we have hosted hundreds of people of all ages for

nature education events.

This location will be the future home of our Nature School, which will provide outdoor, place-based learning for rural students of Saline and surrounding Counties. Nature School curricula are developed in accordance with Missouri Department of Elementary and Secondary Education learning standards. Multi-day student experiences deliver an immersive, inquiry-focused complement to in-classroom learning. MRBO's Nature School is a developing partnership with several agencies and local school districts, and is modeled on the Columbia Nature School established in 2019.



The BirdHouse



Over this last decade, as MRBO grew from a two-person startup to an organization with five full time employees, seasonal crews of five to eight field biologists and many volunteers, it became obvious more space was needed. In late spring of this year, the rambling old house at 406 Main Street in Arrow Rock was donated to MRBO. This opened the door to new opportunities.

The new facility, which has already taken on the nickname of “The BirdHouse” will provide much needed expanded office space, a visitor center that features a library bursting with conservation material, displays focused on bird habitats and behavior, an indoor viewing area for backyard birdwatching and a gift shop.

That's just the main level. The lower level will include a hands-on learning center for educational programs and a separate conference area that will be available for use by community groups. The upstairs will provide accommodations for MRBO's Education Coordinator and visiting staff.

A virtual tour will be livestreamed for MRBO's virtual 10th Anniversary Celebration on September 13th 2020. We will welcome visitors to The BirdHouse as soon as possible!



Moving into the virtual landscape



The coronavirus pandemic has made for an interesting 10th Anniversary year. For an organization that typically conducts around 100 education and public outreach events each year, the inability to gather in large groups caused a significant shift in activities. Fortunately, MRBO has a creative, adaptable staff that quickly changed course in early April to adapt to the current environment. We began brainstorming new methods around the questions such as, how do we continue to reach people with our mission and our message? How do we do so in a way that meets people where they are? One solution that seemed obvious was to start providing online presentations, in a variety of formats, on various topics we thought people might be interested in. We wanted topics that not only provided facts, but also provided ways to interact with the outdoors on a more personal, individualized basis.

It took some time to figure out (and we are still improving constantly), but it has paid off by providing our existing supporters, as well as new audiences, with more information about birds and MRBO's work and it has given us some current and meaningful work to do. Since mid-April of this year MRBO has delivered 18 weekly webinars plus hosted several interactive events for kids, families, private landowners, and the general public. We've also worked with several partners to conduct online events. Recordings of almost all of these various events can be found on the MRBO website or on YouTube.

In addition to webinar and interactive meeting formats, we have found social media to be a key player in the game of continuing to reach new audiences. One aspect of social media that we have developed are short, fun, educational videos not only for platforms like YouTube, but for Facebook LIVE, Snapchat, Instagram and TikTok. MRBO's growing experience and

competence in the virtual realm will be key to our next endeavor: at the time of this writing, we are developing a series of online lessons for teachers that each address one or more of Missouri's Grade Level Expectations. Lessons will consist of videos, worksheets, supporting activities (typically an outdoor exploration or inquiry) and quizzes. As teachers grapple with many challenges this autumn, MRBO will be there to lend some support. We anticipate that even in a post-pandemic world, MRBO will continue to offer virtual education and outreach opportunities to audiences that we may not always be able to reach in person.





Advocacy

To Contribute to the conservation of Missouri's birds and their habitats **by advocating for sound, science-based conservation policy that benefits birds, other wildlife and environmental quality.**

- **PROTECTING CONSERVATION: MISSOURI CONSERVATION IS UNDER ASSAULT**
- **PLASTICS: A LOCAL & GLOBAL PROBLEM NEEDS APPROPRIATE CONTROL**
- **BIRDSAFE: DOCUMENTING PROBLEM AREAS AND ADVOCATING SOLUTIONS**
- **CLIMATE CHANGE: WHY WE NEED IMMEDIATE ACTION NOW**
- **WHY EQUITY, DIVERSITY, INCLUSION AND JUSTICE IS A CENTERPOINT**

To sit home, read one's favorite paper, and scoff at the misdeeds of the men who do things is easy, but it is markedly ineffective. It is what evil men count upon the good men doing.

~Theodore Roosevelt

Aldo Leopold penned, "One of the penalties of an ecological education is that one lives alone in a world of wounds. Much of the damage inflicted on land is quite invisible to laymen. An ecologist must either harden his shell and make believe that the consequences of science are none of his business, or he must be the doctor who sees the marks of death in a community that believes itself well and does not want to be told otherwise."

Today, we can affirm the perpetual, 'invisible to the laymen' damage to the land, but we no longer live alone with our knowledge. We at MRBO understand that environmental solutions requires continual, active civic engagement and a core commitment to equality, equity, diversity, and inclusion. As we collectively and individually



(L:R) Former MRBO Board Chairman Gene Gardner and biologist Nic Salick with Ethan during the first CFM Conservation Day at the Capitol in Jefferson City.

move towards addressing the existential threats of climate change, over-production and consumption of goods, and direct causes of bird losses we will never be alone. We have allies.

In February 2019 the MRBO Founders proposed, and the Board of Directors approved, adding advocacy to the MRBO mission statement. Thus Advocacy joined Science and Education as the pillars of MRBO's strategic framework and activities. Along with other active Missouri organizations and individuals, we work to inform citizens and legislators about science-based conservation policy that benefits both people and wildlife.



(L:R) Ethan and Dana with then-Senior Adviser to the Treasury and current MRBO Board Vice-Chairman, David Pearce, at the Capitol Treasury office.



In 2014, we at MRBO became aware of a deceptive policy platform that could jeopardize Missouri's natural resources and began taking a more active role in advocating for better policies. When we saw a supportive letter written in the Missouri Wildlife magazine, we knew we had to respond. The following letter from MRBO was sent out to tens of thousands of Missourians. Too little to late to win that close battle, but we won't give up the fight for Missourians and the environment.

The Missouri River Bird Observatory (MRBO) thanks CFM for the opportunity to provide a viewpoint of Amendment 1 in opposition to that which appeared in the [recent Missouri Wildlife](#). Like most CFM affiliates, MRBO is a conservation organization. We often work with private landowners to improve wildlife habitat quality and increase economic incentives for farmers and ranchers engaged in good stewardship. MRBO is also pro-hunting and fishing, and we know that without sportsmen and resource-conscious landowners, little wildlife habitat would remain in Missouri.

From a conservation perspective, Amendment 1 stands in stark contrast to the [Leopoldian land ethic](#) and is likely to jeopardize Missouri's soil, water, and wildlife resources. Giving an entire industry constitutional immunity from local, citizen-led regulation is not conservation-oriented action.

"Right to Farm" is a Trojan horse. Evidence of the negative effects of GMOs, pesticide/herbicide use, and concentrated livestock operations on [wildlife](#) and [human health](#) continues to mount. Amendment 1 fails to define "farmers and ranchers" and will allow corporations, regardless of size or ownership, the constitutional right to operate as they see fit, even if Missouri's citizens determine that their practices are harmful. The idea that "Missourians know best for Missouri" is a Pro-1 argument and is a legitimate point against unwanted federal intervention. However, Amendment 1 would do exactly the opposite: it will strip Missouri of its authority to hold these corporations accountable for damage to Missouri's resources and remove Missourians themselves from the process of reasonable regulation.

From a citizens' perspective, the basic case against Amendment 1 is this: our Constitution is not meant to protect one particular group of people. There is inherent danger in allowing deep-pocketed special interest groups on any side of an issue to gain power by disarming the citizenry. The Pro-1 tactic, cleverly camouflaged as "the Right to Farm", is another attempt to nullify the means with which we defend our land, our natural heritage, and ourselves. Proponents invoke words like "personal

property rights" and "defending our freedom", phrases designed to rally us under a common banner. This Amendment will actually render Missouri citizens forever without rights to regulate corporate agribusiness if this legislation is enshrined in our Constitution.

From a family farm perspective, Amendment 1 is ingeniously written and cleverly campaigned. Who wouldn't vote to protect Missouri's farming and ranching families' rights? Proponents claim to be "trying to protect the little guy". Yet, the corporations driving the Pro-1 campaign have responsibility to shareholder profit, not to family farmers or rural communities. [We all must consider who would be the true beneficiaries of this legislation.](#) Many of the "little guys" needing protection are Missouri's growing number of organic farmers and livestock producers who, under Amendment 1, would have absolutely no recourse if their crops or feed were destroyed by products manufactured by large agribusiness.

Proponents advertise that we need this Amendment to counter the attacks by animal rights groups against livestock producers. There is no language in proposed Amendment 1 that addresses this issue particularly, as would be expected if the actual goal is to protect rightful individual and family operations from said attacks. If there is truly a danger to small farms from these special interest groups, why not craft legislation aimed at exactly that protection?

"...the "Right to Farm" constitutional amendment is a horrible idea that supports corporate interests at the expense of family farms, the environment and democracy..."
~The Missouri Rural Cusis Center

Instead of supporting an amendment that puts the interests of a few ahead of the well-being of the many, we suggest honest discussions free from the roughshod run over Missouri soil that is Amendment 1. We can work on legitimate economic incentives for Missouri's family farms and ranches. There are win-win situations where producers, rural communities, and Missouri's natural resources all benefit.



Single-Use Plastics

Plastic production and waste have become critical issues to address in the 21st century. Most people are aware of the harmful and essentially ugly effects of non-biodegradable litter ending up in rivers, oceans and across the landscape. Many have seen the footage of huge floating trash piles in the Atlantic Ocean or seen disturbing images of marine wildlife that ingested or became entrapped in plastic. But it's not just the fate of plastic waste that's the problem – it's the entire life cycle of these petroleum-based products.

MRBO is working to inform people on this most ubiquitous of consumer products and the extensive harm it is causing our environment. We have advocated against proposed legislation in Missouri to expand our existing law that forbids communities, counties or municipalities from banning or taxing plastic bags – that's right, a ban on plastic bags. Even if residents of a town wanted to vote for disincentivizing plastic bag use – and it is the town that must fund waste management – by existing Missouri law they are not allowed to do so. Lobbyists and lawmakers at the Missouri State Capitol attempt each year to get this legislation expanded to all forms of plastic – from straws to cups to Styrofoam. This is the opposite what we need to move away from single-use plastic items, towards reusable and genuinely recyclable products.

In May 2020, MRBO sponsored a screening of *The Story of Plastic*, a fascinating documentary about how single-use plastics are produced, distributed and eventually “disposed” of. What was once a product of convenience that ushered in a new throwaway lifestyle for developed nations in the 1940's and 50's is now a driving force for an industry that plans to significantly increase single-use plastic produced from fracked gas. From the extraction of its components to its eventual fate in a landfill, incinerator or the environment, it has become clear that plastic is one of humankind's most destructive choices. After more than 200 registrants watched the *The Story of Plastic* movie screening, MRBO hosted a panel discussion with partners from Stream Teams United, Missouri River Relief and Johnson County Community College Zero Waste Coordination staff. [We highly recommend watching the movie and doing what you can to reduce your own consumption of single-use plastics.](#)

9% of plastic ever made has been recycled.

50% of the plastic ever made has been produced since 2010.

In 2015, the fossil fuel industry embarked on a massive build-out of plastic production infrastructure. Over \$200 billion has already been invested in hundreds of facilities, including 300 in the United States.

The goal? To increase the production of single-use plastics made from shale gas by-products by at least one-third globally, and by almost 75% in the U.S.



The industry is aware of the enormous problem of plastic pollution on land and in waterways, and sometimes invests in cleanups and local recycling infrastructure. However, industry lobbyists continue to undermine localities' attempts to reduce plastic use. In Missouri legislative hearings, for example, one can find lobbyists for the Missouri Petroleum Marketers Association present in support of bills to expand the state's “ban on plastic bans” previously discussed.

Much of the plastic that the American and European public sent to recycling facilities was offshored to China. In 2018, Beijing banned almost all plastic imports, which has left the US market for recyclables in a huge lurch. Most exported plastic is now going to facilities in developing Asian countries with few to no environmental regulations, resulting in an even dirtier end-life result for the world's plastic waste.

“We aren't going to recycle our way out of the amount of plastic waste that's produced. It's

like trying to empty an overflowing bathtub with a spoon while the tap is still running at full throttle.” ~The Story of Plastic

Individual actions help significantly. However, the onus must be placed on the producers; this is how we turn off the tap. The concept is known as Extended Producer Responsibility - the responsibility for cleaning up the expensive and environmentally damaging mess resulting from plastic production and waste.

The solution is a circular economy as pictured (below) with renewable resources used to create reusable or efficiently, effectively recyclable products.

The #breakfreefromplastic movement is a global movement to build a future without plastic pollution. There is legislation by this name under consideration in the United States Congress.

Resources for further reading:

Columbia University

<https://blogs.ei.columbia.edu/2020/02/20/plastic-production-climate-change/>

Center for International Environmental Law

<https://www.ciel.org/issue/fossil-fuels-plastic/> and <https://www.ciel.org/reports/fuelingplastics/>

American Chemistry Council

<https://plastics.americanchemistry.com/Education-Resources/Publications/The-Rising-Competitive-Advantage-of-US-Plastics.pdf>

The Story of Plastic

<https://www.storyofplastic.org>



#BirdSafeKC

Raising public awareness of avian window collisions in Kansas City and encouraging personal action in residential as well as commercial settings

Encouraging metro area residents and building owners to extinguish lighting at night, particularly during spring and fall migration

Publicly commending companies and individuals that take steps to mitigate window strikes.

In spring 2019, volunteers conducted a total of 122 surveys of 12 buildings and associated structures such as pedestrian skybridges. During April and May, 51 bird carcasses were documented representing 19 species, plus specimens that were unidentifiable due to carcass condition.

Fall 2019 surveys included several of the same buildings, plus the establishment several new routes (e.g., downtown, Longview Community College) and the consolidation of clusters of sites into logical routes (e.g., Crown Center, Ward Parkway). Volunteers conducted more than 200 surveys of six routes and an additional four individual buildings.

A total of 228 bird carcasses were recorded representing 54 species plus those unidentifiable. Thirteen window-struck birds were also reported to BirdSafeKC from buildings that were not regularly surveyed, which we term incidental reports.

Based on the 2019 dataset, some patterns have emerged regarding the windows that are particularly strike-prone. 2020 surveys will further elucidate these trends and allow us to target windows for mitigation in partnership with building owners and managers.



The glass of both residential and commercial buildings poses a significant risk to birds, particularly migrants. Transparent glass causes birds to attempt to fly “through” to the other side, while reflective glass can provide a disorienting view of vegetation that, to a bird, looks like a real object they desire to reach for foraging or shelter. As a taxonomic group, birds had literally millions of years of existence prior to the proliferation of glass across the planet – and our most densely populated cities are often right in the middle of migratory pathways. The proximity of birds to potential window-strike zones is compounded by the fact that many species migrate at night. The illuminated glow of urban and suburban areas can disorient migrants, particularly on nights with a low cloud ceiling, causing them to descend into developed areas.

Based on an extensive examination of avian migratory and survey data along with the relative illumination levels of urban areas and their geographic locations in migratory pathways, it was recently determined that **Kansas City ranks 7th in the top 10 most dangerous cities in the country for migrating birds in terms of window collisions** (Horton et al. 2019). This information, along with a variety of anecdotal reports from Kansas City residents regarding bird strikes, inspired the Missouri River Bird

Observatory to partner with Burroughs Audubon Society and Johnson County Community College to launch the **BirdSafeKC** initiative in early 2019.

GOAL

Significantly **reduce the bird mortality** caused by building collisions in the Kansas City metro area by:

Documenting locations in the metro area that are most prone to bird strikes, identifying specific windows or portions of windows that are most problematic



Working with building owners and managers to employ cost-effective solutions, such as closing blinds, turning off lights and treating windows at the most strike-prone sites



Climate Change

In late 2016, MRBO and River Bluffs Audubon Society (RBAS) partnered on an outreach grant opportunity offered by the National Audubon Society. We developed a number of Missouri-specific materials for the public that interpreted climate data and projected effects of climate change on local bird populations. We also worked with Dr. Michael Urban and Dr. Tom Bonnot of the University of Missouri to offer a series of workshops on climate change. These were open to anyone who wanted to attend, and we had a turnout of several hundred over three workshops. Two were held in Jefferson City and an additional presentation was held in Arrow Rock.

Dr. Urban provided clear, concise background information on anthropogenic causes of climate change and instability. Dr. Bonnot provided specific examples of how shifting climate patterns, particularly

temperature and rainfall, were already affecting bird populations in the Missouri Ozarks. Both professors were (and are) nonpartisan in their presentations of climate data and therefore did not discuss the policies that would address this issue. The received many compliments their delivery of succinct, understandable climate cause-and-effect information.

Since that time, MRBO has refined the resources we developed with RBAS and has incorporated current, ever-more-precise climate data into our public outreach materials and presentations for adults. A local example of climate instability is the three major flooding events (2011, 2015, 2019) and two intense drought years (2012, 2013) we've witnessed in Missouri just since MRBO's founding.

CLIMATE TALKS IN JEFFERSON CITY, MO



MISSOURIANS &
CLIMATE CHANGE
KNOW THE TOPIC

Tuesday, February 2nd

"The Science Behind Climate Change"

Tuesday, March 1st

"Effects of Climate Change on Missouri's Birds and Other Wildlife"



**The Climate
Reality Project®**

As more and more scientific studies and climatological forecasts have predicted, the global climate is changing. To better understand the challenges and solutions this crisis presents, MRBO was fortunate as an organization to be able to attend a recent virtual training with the Climate Reality Project's Leadership Corps. Educational sessions with

climate advocacy leaders across the globe were followed by breakout sessions with passionate attendees from all over the US and Missouri, with the purpose of networking into more local projects. After an intensive nine-day training, MRBO staff graduated as certified Climate Reality Leaders. We plan to conduct acts of leadership such as hosting presentations, creating resources such as reports and factsheets and meeting with policy influencers and elected officials. Look in the near future for a MRBO webinar

addressing climate change as one of our first actions! If you are interested in hosting a presentation or would like to learn more about the Climate Reality Project, feel free to reach out to us.



Equity, Diversity and Inclusion in Conservation

“This country will not be a permanently good place for any of us to live in unless we make it a reasonably good place for all of us to live in.”

~Theodore Roosevelt

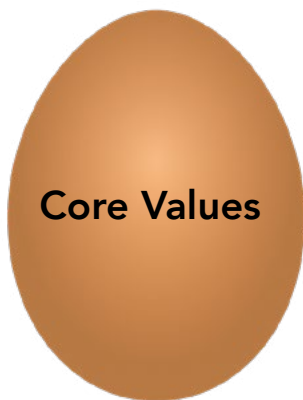
MRBO embraces and encourages equity, diversity and inclusion (EDI). What do we mean by this? How do we achieve greater equity, diversity and inclusion? Of course, the answer is not a simple one, but we at MRBO believe it is important in achieving our mission. We believe that success in conservation depends on inclusive efforts that incorporate multiple views and perspectives, and we are not the only ones who think this way. Many groups are taking a closer look at their role in EDI efforts to ensure longevity and stay relevant with their communities, officials, and funders.

Incorporating EDI into an organization’s practices and processes requires attention to organizational culture, volunteer and staff skills and capacities, understanding one’s communities, and navigating differences in experience, culture and tradition. It is no easy task, but we believe it is important to successfully achieve MRBO’s mission. Why? All biologists know that biodiversity in natural ecosystems strengthens that ecosystem and, similarly, the diversity of human experience strengthens conservation efforts for the benefit of nature and all human beings. Protecting and conserving the environment transcends cultural, social and political boundaries, and so will MRBO in order to expand our network’s reach and engage more people in protecting birds and habitat.



Students from the Youth Empowerment Program with MRBO Education Coordinator Paige Witek

In autumn of 2019, the MRBO staff and board went through a several-month examination of the organization’s strategic plan and core values. Working together, we developed not only a strategy for moving forward efficiently but we identified the philosophical underpinnings that are most important throughout our work. See more at: mrbo.org/mrbo-strategic-framework.



- Robust data and scientific integrity
- Time- and cost-efficiency and use of technological innovations
- Fostering the formation of partnerships
- Embracing and encouraging equity, diversity and inclusion
- Empowering and providing opportunities for young people

I cannot consent to take the position that the door of hope — the door of opportunity — is to be shut upon any man, no matter how worthy, purely upon the grounds of race or color. Such an attitude would, according to my convictions, be fundamentally wrong.

~Theodore Roosevelt



A Decade of

Over the years, MRBO has developed a priceless flock of partners and volunteers. MRBO's citizen science projects, such as BirdSafeKC and Backyard Banding, along with many of our education programs, would not be possible without people such as Sherry Leonardo and Michael O'Keefe, who have been with MRBO for many years, along with newer but equally dedicated volunteers such as Theresa Enderle and many on the BirdSafe crew. We are so appreciative of your time and talents.

Volunteer Appreciation



Amongst our earliest partners are the great people of the Missouri Master Naturalist community. The two pictures above show members of the Hi-Lonesome Chapter . Many Master Naturalists have volunteered generous amounts of time and energy to MRBO.



Partnerships

The challenges we face as a conservation community require all of us to work together to amplify our message, as well as craft and deliver viable solutions. Our partnerships are built on trust and respect. MRBO considers monetary aspects through the lens of getting work done. The greatest value that our partnerships bring are found in the abilities and passions of individuals. Many partnerships formed over the past decade have been in-kind verbal agreements. Our contractual partnerships have been based on efficiently accomplishing specific tasks with monitoring and research objectives. When MRBO is contracted for work, we strive for excellence and go above and beyond. Both contracts and informal in-kind agreements are a continuance of a perpetual trust and common understanding that we greatly appreciate and cherish. MRBO would not exist without the partners with whom we work to accomplish our shared goals. So, to our feathered friends past and present —thank you!



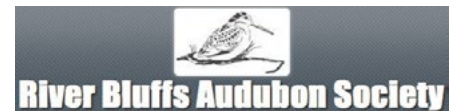
Pat Jones



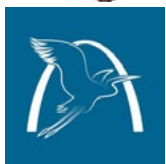
Buckner Foundation



Hi-Lonesome, Osage Trails, Meramec Hills, and Lake of the Ozarks Chapters



ARIC



UPPER MISSISSIPPI / GREAT LAKES JOINT VENTURE



A Decade of Opportunities

Where are these MRBOers now?

We are always delighted to hear from our past employees and see where they've flown to once their temporary assignments were over. We haven't forgotten about them and we are proud to have helped them and been helped by them.

MRBOers 2011-present

Aaron Stelker, Father of two, Austin, TX.

Alexandra Mayes, School Community Coordinator at Lincoln Parks and Recreation, Lincoln, NE.

Allen Hamilton, Wildlife Assistance Biologist at the Florida Fish and Wildlife Conservation Commission, Fort Myers, FL.

Andrea Ambrose, Environmental Educator at the Pennsylvania Game Commission, Harrisburg, PA.

Andrew Vo, English Teacher, Taiwan.

Araks Ohanyan (below left, with Katie Leonard center and Heather Desorcie on the right), Graduate student at Arkansas Tech University, Russellville, AR.



Bethany Thornton, Senior Gardener at Lauritzen Gardens, Omaha's Botanical Center, Omaha, NE.

Bo Brown, Field Biologist/Musician, Rogersville, MO.

Brittney Woody, Production Clerk at Smithfield, Brookfield, MO.

Carl LaRicca, Grassland Bird Surveyor for the Atwell Group, Norfolk, NE.

Carly Stumpner, Field Biologist at Western Ecosystems, Laramie, WY.

Cassandra Ziegler, Graduate Assistant at Duquesne University, Pittsburgh, PA.

Chris Gobin, Whereabouts unknown.

Curt Vandenberg, Whereabouts unknown.

Daniel Cardoso, Academic Coordinator at Next Level Sports and Viking Learning Center in, Rio de Janeiro, Brazil and Marshall, MO.

Devin Couture, Research Biologist at Stantec, Olathe, KS.

Emily Koch, Undergraduate Student in Agricultural Education at the University of Missouri, Columbia, MO.

Emily Wilmoth, Program Director at All Hands and Hearts, Long Beach, CA.

Eric Hall, (below) Volunteer Naturalist in Pittsburgh, PA and Quivira NWR, KS



Estephy Sabin Figueroa, Biological Science Technician at the Bureau of Land Management, Roseburg, OR.

Garrett Behrends, Pursuing Master's degree in Avian Genomics on Ethiopian highland birds at Texas Tech University, Lubbock, TX.

Gavin Clark, Auctioneer at the Iman Auction Company, Salisbury, MO.

Heather Desorcie, Facilitator of Learning at Tiff Nature Preserve Buffalo, Niagara, NY.

Jacob Hennig, Musician, St. Joseph, MN.

Jarrod Messman, (below) Greater Sage-Grouse Field Crew Leader for USGS and Great Basin Bird Observatory, Monitor Valley, NV.



Jean Favara, Vice President of Conservation at St. Louis Audubon Society, St. Louis, MO.

Joanna Klass, Animal Keeper for Woodland Park Zoo, Seattle, WA.

Joseph Mosley, Undergraduate in Biology at the University of Missouri, Columbia, MO.

Josh Smith, Biological Specialist at SWCA Environmental Consultants, Guymon, OK.

Kalen Brady, (below) Geographer at USGS, Greater St. Louis, MO area.



Katie Leonard, Graduate Student in Ecology and Evolutionary Physiology at Simon Fraser University, Burnaby, BC.

Ken Levenstein, Senior Biologist/Project Manager at JACOBS Engineering Group, Los Angeles, CA and San Juan, PR.

Klee Bruce, Information Technology student at Ozarks Technical Community College, Springfield, MO.

Kyla Yuza-Pate, Undergraduate in Animal Ecology at Iowa State University, Ames, IA.

Mark VanderVen, (below) Pittsburgh, PA.



Matthew Longabaugh, Field Technician, Returning to MRBO in Fall 2020, El Dorado Springs, MO.



Matthew Sim, Biological Monitor at the Gulf South Research Corporation, Rio Grande Valley, TX.

Matthew Spinnenweber, Graduate student studying environmental engineering at the Missouri University of Science and Technology, Rolla, MO.

Nicholas Salick, Development Director at The Nature Conservancy, Council Bluffs, IA.



Nicholas Wiram, Zoology Undergraduate at Southern Illinois University, Carbondale, IL.

Patrick Clark, Field Biologist for Western Ecosystems, Montana.

Philipp Maleko (below), Graduate Student studying the breeding ecology and conservation of Nordmann's Greenshanks and Common Redshanks in the Russian Far-east. University of Florida, Gainesville, FL.



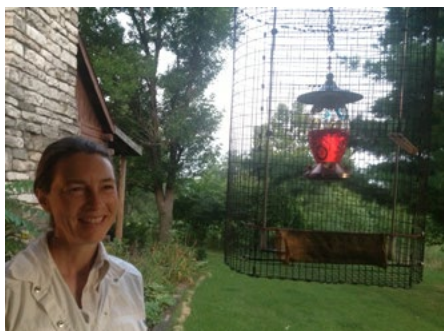
Stephanie Putnam (below), Staff Biologist at TRC, Austin, TX.



Tami Courtney, Sales Account Manager for Republic Services, Kansas City, MO.

Vanessa Armentrout, Biological Science Technician for the U.S. Forest Service, Umpqua National Forest, OR.

Veronica Mecko, Missouri Department of Conservation, Jefferson City, MO.



Will Britton (below right, with Erik Ost left and Andrew Vo center), Field Technician for HawkWatch International and Bird Conservancy of the Rockies, many states.



Zoe Ward (below), Biology Undergraduate at Western Kentucky University, Bowling Green, KY.



A Decade of Men

We have been fortunate to have exceptional mentors who have given us advice, hope, and insights over the years. Our friends in conservation have always been there to help us navigate complex challenges to MRBO, vet new ideas, and support us when we need it most. We find it important to recognize these individuals on this tenth anniversary. Thank you, friends.



Max Alleger, Southwest Regional Administrator for the Missouri Department of Conservation has helped us understand the needs of diverse stakeholders, design MRBO's entire grassland bird program, develop relevant communications, and give deep understanding of in the field of conservation.

I love the energy, enthusiasm and expertise that Dana, Ethan and the MRBO team bring to conservation in Missouri! Beyond an incredible depth of knowledge about birds and their habits, Dana's organizational skills and the Ethan's tech tools have combined to give us a much deeper understanding of the birds that call Missouri home. The work ethic of the entire team, and their growing role in education and conservation advocacy make the Missouri River Bird Observatory an increasingly important conservation partner. I look forward to continuing to work together! ~Max



Carol Davit, Executive Director of the Missouri Prairie Foundation, has taught us much about prairie conservation and has been a role model through her amazing work within the conservation advocacy community. She has supported MRBO and helped grow the confidence of its staff on numerous occasions when we needed it most.

The Missouri Prairie Foundation is grateful for the thorough breeding bird surveys that the MRBO team conducts on the prairies we own and manage. These scientific data are an important part of fulfilling our prairie stewardship goals. MRBO combines strict adherence to the scientific process with tender and sincere love of birds—these are powerful forces it effectively shares with natural resource professionals, adults, and children to contribute to Missouri's conservation ethic. ~Carol



Mary Nemecek, Conservation Chair of Burroughs Audubon Society is a force of nature in her own right. While balancing a professional career outside of conservation, she does as much work for conservation as anybody in the field. Her tireless work in advocacy and her dedication to conservation non-profit organizations nearly matches her passion for gulls. *It has been an honor and joy to work with the dedicated, passionate staff at MRBO. Dana, Ethan, Paige, and all the other staff, seasonal and long-term, make a difference every day in the protection and awareness of our natural world. ~Mary*



Edge Wade, Conservation Partnership Coordinator for the Missouri Birding Society, has been a dedicated force for good within the Missouri bird conservation community for decades. She is passionate and fierce, full of humor and wit, and has an undying love of birds. She's played a pivotal role in helping MRBO understand Missouri's birding community as well as the Missouri Bird Conservation Initiative.

Brad Jacobs introduced Ethan and Dana to me when they attended their first MoBCI conference. Brad, in his characteristic understating manner, described the role he expected them and the fledgling MRBO to play in the future of Missouri's bird data gathering, conservation, and education. I recall that as I welcomed them to the Missouri birding community their demeanor underscored what Brad had predicted, and I had a buoyed confidence in the future of Missouri bird conservation. In the intervening years, that confidence and my respect for Ethan, Dana, and the team they have put together at MRBO has grown at every experience with them in my role as Missouri Birding Society (formerly ASM) conservation partnership coordinator. It has been a joy to watch MRBO grow in scope and to see the benefits of their work to Missouri's people and natural resources. Bring on the next decade! ~Edge



tors and Friends

Bob and Pat Perry, Missouri Master Naturalists, have been consummate advocates for conservation and exceptional friends. They have helped MRBO reach school children and Master Naturalist in the Rolla area since the earliest years. Their wisdom and insights match their hospitality, warmth, and love. We first became aware of MRBO in May 2010 when we were hosting two researchers from Alberta and they were looking for a place to band black-capped chickadees. We were referred to Dana and Ethan and their Grand Pass CA banding station. While participating in a Bioblitz at the Bray CA in Rolla, we met them in person for the first time. Discussing birding with them caused us to get involved in MRBO's Backyard Banding program. They banded at our house on December 11, 2011 for the first time and we have been involved with them ever since. In addition to banding at our place, they travelled to Rolla and banded birds at Truman Elementary school three different times. On those occasions, they educated all the third and fourth graders about birds and their migratory habits reaching over 175 kids each time. We believe in their hard work and have supported their education efforts monetarily. We have also designated them as a beneficiary in our trust. ~Bob & Pat



Gene Gardner, retired Wildlife Diversity Chief for MDC and Liz Cook, retired GIS Specialist for the Missouri NRCS, were among the first people to recognize MRBO's potential and provided a foundation for the organization's beginnings and continued success. Both Gene and Liz were instrumental in MRBO receiving its first contracts for research and monitoring. They also served on the MRBO Board of Directors – Gene as Chairman from 2015-2018 - and continued their guidance even after leaving the Board to pursue worldwide travel opportunities.

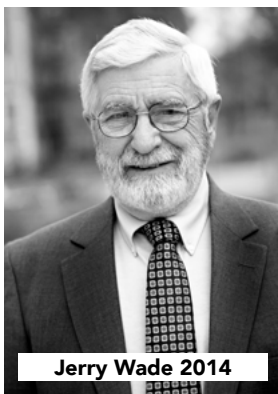
From MRBO's rather humble beginnings in 2010 to the present day, Dana's and Ethan's vision and leadership continues to establish MRBO as one of the premier conservation NGOs conducting bird monitoring projects in grasslands, bottomland forests, wetlands and elsewhere. MRBO is also well-known for their excellent youth education programs, college-level training courses, and field-related training sessions for Master Naturalists and The Wildlife Society. MRBO conservation partners routinely include a diverse spectrum of state and federal agencies and fellow NGOs. It has been our sincere honor to have been a part of MRBO and we have enjoyed our personal and professional relationship with Dana and Ethan through the years. We are so happy to have seen MRBO grow from a fledgling organization into a soaring success! We are also grateful to all those Board members who have played an important part in MRBO's development, and most certainly for their service and friendship. We are confident that MRBO will continue to make major contributions toward bird conservation and education for many more years to follow. Happy 10th Anniversary MRBO!! ~Liz & Gene



Steve and Regina Garr, Birds-I-View proprietors, were some of our first partners in the education and outreach realm. When we met them, we were doubtful that anyone could really be as kind and giving as the Garrs. After all these years, it turns out they truly are!



Mentors In Memoriam



**I hold it true, whate'er befall;
I feel it, when I sorrow most;
'Tis better to have loved and lost
Than never to have loved at all.
~Alfred Lord Tennyson**



THE FUTURE

of the Missouri River Bird Observatory

THINKING
FOR THE NEXT
10
YEARS

Science

While continuing to collect data on bird populations in order to monitor long-term trends, MRBO will use what we have already learned in the first decade to inform habitat management and conservation policy. MRBO's grasslands and wetlands projects are key to this effort as we come to the table with land managers to implement data-driven practices. Building on existing relationships, particularly with the private landowners that possess the vast majority of Missouri's land, MRBO will assist in the direct improvement of habitat and in the engagement of landowners in conservation practices and programs. Using advances in technology and methodology, we will refine and expand the field studies that serve our land management partners' data needs. With our plentiful and growing information about Missouri's most imperiled natural communities, MRBO is also in a key position to effectively communicate conservation science to the public.

Education

While continuing, and continually evolving, MRBO's delivery of nature education events across the state, a major focus of the next decade is the establishment of a Nature School in rural central Missouri. In partnership with school districts in Saline County and the surrounding area, the Nature School will provide an immersive outdoor experience

for students that compliments their in-classroom curriculum. We already have a great location (please see page 30). Realizing the Nature School goal will require building upon existing partnerships with other NGOs, multiple agencies, school superintendents and teachers, parents and the community. MRBO will need additional staff members skilled in curriculum development within the place-based learning concept. We are confident that that foundation is already in place for this endeavor and that the first pilot season of the Nature School will take place in 2021.

Advocacy

Over the past decade MRBO staff have worked tirelessly to expand and deepen our partnerships with both a traditional cohort (such as other conservation organizations) and non-traditional partners (such as family farm organizations). Within this broad community, we are building a unified force for conservation advocacy. MRBO and partners already engage fellow citizens in advocating strong, science-based ecological policy and have plans in place to increase this civic engagement. At the time of this writing, the United States is at a watershed moment. People realize that their vote does count and that their voice will be listened to by elected officials. The next decade is crucial for coming together in a completely non-partisan manner to protect our natural resources, restore wildlife habitat, and provide a clean environment for people and all life.



Great Blue Heron by Tom Tucker



A Decade of Support



Pileated Woodpecker father and sons by Marvin DeJong



IVORY-BILLED WOODPECKER

Estate of Loretta Benedetti

Bob & Pat Perry

Diane Benedetti

Pat Jones

Steve & Anita Byers

Tom Tucker & Tina Yochum-Magaz



PILEATED WOODPECKER

Laura Robinson

Tom & Margaret Hall



NORTHERN FLICKER

Anonymous

Anonymous

Dave & Anita Hartwig

Warren & Denise Loveland



RED-HEADED WOODPECKER

Dana & James Hoisington
 Dess Caylor Trust
 Donnie & Kim Nichols
 Linda Williams
 Lyn Vreeland
 Steve & Regina Garr/Birds-I-View
 Susan Hazelwood
 Terri Trantow & Paul Witek
 Whitney & Debbie Kerr



RED-BELLIED WOODPECKER

Brad & Suzanne Wright
 Brad and Linda Nicholson
 Bruce Satterlee & Mandy Dorrance
 Carol Davit & Mike Leahy
 Donna & John Huston
 Doug Anning & Kirk Isenhour
 Ellen & Michael Merriman/The Merriman Foundation
 Jack Duncan & Family
 Julie & Ted Fisher
 Kathy Freeze
 Kevin Christian/KD Christian Construction
 Mark Belwood
 Mark Bowman
 Mary Wight-Carter & Bart Carter
 Paul & Kim Ratcliffe
 Randy Haas
 Timothy Donze
 Valerie Vreeland & Charlie Yazak



HAIRY WOODPECKER

Bill & Carol Edson
 Bill Moran
 Charles & Susan Linn
 Dianne Van Dien & Don Shelden
 Gene Gardner & Liz Cook
 June Newman
 Karen Miller
 Kathy Digges
 Mark & Stacey Thompson
 Patty Wilson
 Rick Oddo
 Robert Hansen
 Rockne & Luann Corbin
 Sue Kelly
 Tom & Roxanne Stockdall



YELLOW-BELLIED SAPSUCKER

AJ Bone and Sue Bone
 Amy Petersen
 Andrew Kinslow
 Andrew Reago & Chrissy McClaren
 Betsy Garrett
 Bill & Jan Mees
 Bill & Jennifer True
 Bob Estes
 Chris & Zoe Purdy
 Dave & Janice Erickson
 Dave Christie/Christie Development Associates LLC
 Dave Rintoul
 David & Teresa Pearce
 Dianne & Allen Poe
 Edge Wade

Emily Burke
 George Hamilton
 Hilary Peck & Family
 Jack Hilsabeck
 Janice Greene
 Jean Leonatti
 Jeff Cantrell
 Jim & Timmie Wiant
 John & Charlotte Pickard
 Kalen Brady
 Karen & Terry Stair
 Karen O'Donnell
 Kate Corwin
 Kathy Borgman
 Kathy Cary
 Katie Koch
 Katie Shannon
 Keith & Leslie Anderson
 Kelee & Steve Heiffus
 Kirby McCullough & Dan Auman
 Klaire Howerton
 Kyna Iman
 Leslie & Nick Huston
 Lisa Berger
 Marc & Diane Prigmore
 Marie & Yusuf Hasan
 Mark & Barb Lockhart
 Mark & Renee Freeman
 Mary Ann Keeney
 Mary Nemecek
 Michael Morgart & Family
 Mike & Elizabeth Stoakes
 Myra & Truman Christopher
 Norm & Beth Stucky
 Pat & Charlie Cooper
 Richard & Nelda Forry
 Rick Wilhoit
 Ryan Steffens
 Shelby Gregory
 Sherry Leonardo
 Steve and Debbie Martin
 Steve Schnarr & Mel Cheney
 Susan Dyer
 The Gearin Family
 Toni Blackwood

Trevor Ratliff
Veronica Mecko
Whitney and Day Kerr



DOWNY WOODPECKER

Albert Darling
Alie Mayes
Anna, Abigail, and Jonah Poe
Araks Ohanyan
Becky Day
Beverly Powell
Blaine McBurney
Bonne Terre
Carie Wright
Carolyn Flynn
Cassie Ziegler
Charles Coker Jr.
Chet Breitwiser & Rodney Starns
Chris & Lisa Waters
Chris Waters
Cindy Imhoff & Family
Cindy Stevens
Community Bank of Marshall
Dale Zank/State Farm Insurance
Dana Micklos in honor of Sue Kelly
Dana Myers
Dave & Janice Erickson
David & Molly Niven
David & Ruth Cott
Dennis Figg
Don Kurz
Doug Bannister
Doug Doughty
Dr. Allan Wilson
Dr. Jane Waller, DVM
Dr. Wayne Morton
E. Gibson Kerr
Ed Smith

Elizabeth Fuemmeler
Frederick Thompson
Friends of Arrow Rock
Georgana Cochran
Ginny & Zack Frey
Harley Winfrey
Harold Draper
Hawley Peichl
Hugh Jefferies
India McCullough
Jake Thoenen & Tim Thoenen
James Allinder
Jamie Coe
Jan Neale
Janetta Smith
Janne Potter
Jennifer & Caroline Tieman
Jerry Combs
Jessie Dryden
Joann Billington
Judy & Ernest Smith
Karen Meyer
Kathy Gates
Lara Landrum
Laura Lee Grace
Laura Ost
Laurie Kleen
Lee & Jacob Walter
Linda Hoffman
Linda Melkersman
Linda Tossing
Louise Wilkinson
Lucy Fletcher
Lynda Lieberman
Lynn Richardson
Marge Lumpe
Mariella Kerr
Mark Zurbrick
Marsha Richeson
Marti Hodge
Max Alleger
Melissa Lewis
Meramec Hills Master Naturalists in honor of Pat Perry
Meredith Donaldson

Michael Kateman
Michael O'Keefe
Michele Reinke
Mindy White & Zane Atkins
Nathaniel Peters
Neal & Gail Vreeland
Oak Duke
Pat Wood in memory of Elouise Douglas
Patty Orsborn
Paul Crombie in honor of Lori Kleekamp
Paul Moffett
Rachel Ann Wykes
Rad Widmer
Randy Harlin
Randy Poletis
Richard Mendenhall
Robert Middleton
Roger & Cherise Still
Sandi Hillerman McDonald
Sara Cheek
Sarah Beier
Sarah Kendrick
Sarah Read
Scott & Kerri Bruce
Sean & Andrea O'Daniels
Sean Cook
Sherry Walton
Steve and Ann Smith
Steve Rinne
Theresa Enderle
Tim Hickok/Flint Hills Falcons LLC
Todd Hartley
Venture Crew 84
Virginia Emley
Westport Garden Club



Downy Woodpecker by Cheng Duon



Where is the man who would stand by and watch as a marvelous creation of nature - of no harm to man's interests and of no intrinsic commercial value - be forced into the vortex of extirpation without even raising his voice in protest?

~Dr. Arthur A. Allen, Cornell University, regarding the Ivory-billed Woodpecker, 1944

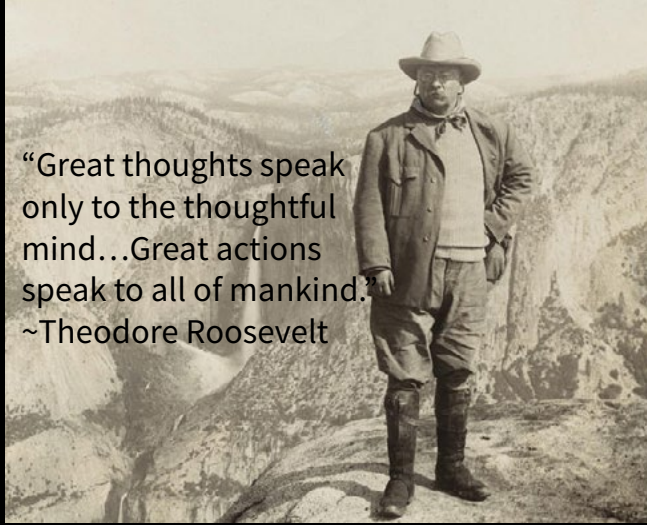
Together we can leave a legacy

There are a few who will be fortunate enough to look back at their childhoods and fondly remember jumping into a crystal clear river for a swim or casting a lure into a freshwater lake teeming with a vast array of fish. Perhaps another memory may be of a walk through an old forest or across a native prairie filled with flowering plants and a symphony of songbirds, insects and frogs.

Many of us though may remember our rivers flowing with toxic waste and our lakes literally on fire from petrol-chemical pollution. The Great Lakes became the Great Dead Lakes. Our forests and fields were under siege for what some would call progress but it was a progress at a cost to our health and well-being.

Two generations ago, ordinary citizens rallied for the formation of legitimate government agencies to monitor and cut back the pollution that resulted from

“Great thoughts speak only to the thoughtful mind...Great actions speak to all of mankind.”
~Theodore Roosevelt



the industrial revolution. There were many success stories that were celebrated but some of those successes have now been pushed back resulting in a landscape that is unhealthy for all living species.

Organizations like the Missouri River Bird Observatory are now working in concert with others to conserve and restore natural habitats through sound scientific practices,

education and advocacy. Future generations should be able to experience nature and all of its wonders in reality, not in virtuality.

Help is needed to protect the environment. Your legacy will aid in advocacy, education, and conservation science efforts to preserve the riches of our land so the natural beauty we once enjoyed will not disappear. Including the Missouri River Bird Observatory in your Estate Plan will help our work go on in support of the conservation efforts of today to make the world a better place tomorrow.



MISSOURI RIVER BIRD OBSERVATORY



WE ARE HERE



BECAUSE THEY ARE NOT

