Birding and Herping the Ozark Glades

by Dr. Julie Jedlicka and Dr. Mark Mills

Exiting the curvy Ozark highway with our eyes focused on south facing slopes and a GPS unit, we (two college professors and 3 undergraduate assistants) pulled off the gravel road and bushwhacked through oak-hickory woodlands in search of glades and their associated wildlife. Glades are characterized as dry, rocky, open landscapes harboring a mix of prairie and glade flora and fauna. Due to a history of overgrazing, fire suppression, development, and other factors, glade habitat has decreased in Missouri in the past 200 years. Our task was to look beyond the plants and catalog the bird, amphibian, and reptile diversity that also call these ecosystems home. Our two year project, funded by the Missouri Department of Conservation, included sampling over 50 glades on conservation areas, including a number of designated Missouri natural areas including Caney Mountain Natural Area.

Some glade sites were less than an acre in size and when we found them, a dense thicket of oak brush and Eastern red cedar trees had invaded, blocking any sunlight from hitting the rocks below. On the other extreme, some sites were over 100 acres, and as we climbed the first hilly expanse and witnessed the morning fog rise, the sublime vastness of the vistas, the undulation of the hills, produced a strange desire to yodel. Other creatures besides us are drawn to these secluded, rocky meadows insisting on calling out their presence in a dawn chorus. Birds use Ozark glade communities throughout their life histories, and some of our state's rare breeding bird

Dr. Mills with a banded Prairie Warbler during the survey project.

Photo by Chris Watson

Photo by Dr. Mark Mills.

Yellow-breasted Chat being removed from mist net.

species call these habitats home. Early morning sampling is part and parcel of bird study, so our team regularly set out for the glades at 4:30 a.m. We sampled the birds using three different methods: (1) mist netting, (2) point counts, and (3) targeted playbacks. Consequently, while we were only able to spend a day or two at each glade, the combination of three methods gave us opportunities to sample the bird community hiding in the brush.

Mist netting is a hands-on sampling activity where a thin mesh net is opened, stretching from the ground to 10 feet high and is effectively invisible to birds. We checked the nets every 30–45 minutes, gently unwrapped the captured birds, then gathered as much data as possible including species, sex, age, fat, breeding status, wing cord (length), and weight. We then fit the birds with USGS-issued aluminum bands that allow researchers to trace those birds back to our study. For example, this year we banded a pair of Common Yellowthroat Warbler on May 18th at Danville Conservation Area. On May 24th, six days later, the male flew into a mist net in Michigan. Because we banded the bird in Missouri, we are able to follow that individual on its migratory path between its breeding and overwintering grounds, learning where it chooses to stop and for how long — important information for conservation and management.

The point counts we performed are standard avian sampling protocols, but instead of capturing birds physically, one uses avian vocabularies to record the songs, calls, and physical presence of birds in a radius (usually 50 meters) around your point location. MDC provided a list of 18 bird species to search for at all glade sites. If we did not record their presence during mist netting or point counts, we conducted a brief playback sampling where we turned on our portable speaker to play a recording of that species' song. Because many birds are territorial during the spring and summer months, the height of breeding season, an individual of that same species may react aggressively to the presence of this mimicked intruder by approaching quickly, singing loudly, and making their presence known.

On the list of target bird species, two of those species are on the National Audubon Society's 2016 State of the Birds Watch List[1], a

1 http://www.stateofthebirds.org

compilation that combines population data trends to identify bird species that are at risk of becoming threatened in the near future. One of those species, a treasure of the glades that was relatively common at all our sites (and makes birders in Northern Missouri jealous), is the Prairie Warbler. The male is flashy yellow with prominent black striping on the flanks and both a black eyeline and mustache stripe with a song a series of ascending buzz-like notes. Prairie Warblers are tail-waggers, greeting us as we entered the open glades. Since 1966, The North American Breeding Bird Survey estimates that the population of prairie warblers has declined by 66%. Fortunately, they remain prominent inhabitants on Missouri glades.

Summer Tanagers also proved to be a common glade species. Males are the only completely red bird in North America and the females are mustard yellow. Both sexes communicate with each other often with loud "Chicki-tuki-tuck" calls. This species is a specialist at catching bees and wasps. Summer Tanagers catch the insects in mid-air, bring them to a branch, and rub their prey's abdomen against the branch to remove the stinger before eating it. Because the Summer Tanager specializes in forest gap and edge habitat, they are readily found in and around glades.

Late spring and into the breeding season, secretive birds ramp up their activities and undertake overt displays. Ten months out of the year, elusive Yellow-breasted Chats hide their yellow breasts and grey heads (with white spectacles) in dense scrub looking for insects and berries. However, when they arrive on their breeding grounds in spring, usually in shrubs associated with glades and glade edge habitat, males sing a loud, complex array of cackles, gurgles, whistles, and screams that remind some of improvisational jazz. While the musical complexity of the Yellow-breasted Chat call remains amazing, I find more impressive the flying courtship displays the male undertakes. In the heat of the day, the male descends quickly from a high perch and conspicuously swoops downwards with exaggerated wing beats while singing. This action is then repeated multiple times. One would never know that these birds are normally quite difficult to find outside the short courtship window.

Recent fossil, genetic, and morphological evidence now clearly positions birds as the only living descendants of dinosaurs. No longer in Class Aves, all birds are in Class Reptilia (Subclass Aves) and are more closely related to Tyrannosaurus Rex than T. Rex was to Stegosaurus. To reflect this lineage and our sampling of the glades, we now present a brief example of how we sample non-avian reptiles and amphibians (also called herps, collectively) on the glades and present a few key findings.

Just as flashy and beautiful as any glade bird is the Eastern collared lizard. The large turquois green males proudly sit on large rocks bobbing their heads, performing lizard "push-ups," and surveying their territories. In fact, the poster child (or should we say "poster herp") for certain good quality glade habitat in the Ozarks is the collared lizard. In the past two years, we documented collared lizards at 12 of the 53 glades we sampled. While collared lizards are a signature glade species, their range does not occur throughout the Ozarks.

Much less obvious, but no less impressive, are the herps that spend most of their time hiding under rocks or underground. The variable ground snake and the red milk snake are quite colorful but seldom seen members of the glade natural community. Much more drab snakes such as the flat-headed snake and the rough earthsnake are gray, tan, or brown and quite small.

We documented 20 species of herps inhabiting Missouri glades, including those men-

tioned above. The most common species was the prairie lizard (commonly called a fence lizard), found in a variety of habitats throughout southern Missouri. These hot and often dry habitats do not seem like ideal habitats for amphibians, but we routinely discovered pickerel frogs on our surveys. We also documented various glade-dwelling invertebrates such as tarantulas, scorpions, black widow spiders, and lichen grasshoppers.

Similar to the birders, the herp team systematically searched the glades using standardized methods. Spacing ourselves in a line along a transect across the glade, we visually searched for active or less secretive organisms and lifted rocks and logs, being careful to place each item back into its original position. We tracked the numbers of items we lifted, as well as how much time we spent searching so we could standardize our search effort to compare glades throughout the Ozarks. State Herpetologist Jeff Briggler provided collection records from the last five years; this valuable historical data were particularly helpful because it provided a longer sampling history of the herp community to supplement our two-year study period.

How does Missouri manage and maintain good, high-quality glade habitat throughout the Ozarks? Depending on the glade's current condition and history, the typical management practices include cedar removal and prescribed fire. Because many of the plant and animal species living on glades are prairie species, it is not surprising that fire plays an important role. As part of our research, we confirmed that glades actively managed with fire contained the highest species richness of native plants and, coincidentally, attracted the most herp and bird species. These globally significant natural communities harbor rich floral and faunal diversity, and are well represented in the Missouri Natural Areas Program.

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Eastern collared lizards can be found sunning on some Ozark glades.

Photo by Chris Watson