

RESULTS OF THE 2013 CONNER PRAIRIE BIODIVERSITY SURVEY, HAMILTON COUNTY, INDIANA

Donald G. Ruch¹: Department of Biology, Ball State University, Muncie, IN 47306 USA

Gail Brown: Conner Prairie Interactive Historic Park Program Developer, 13400 Allisonville Road, Fishers, IN 46038 USA

Robert Brodman: Biology Department, Saint Joseph's College, Rensselaer, IN 47978 USA

Brittany Davis-Swinford: Naturalist, City of Indianapolis Department of Parks & Recreation, Ornithology Center, Eagle Creek Park, 6519 Delong Road, Indianapolis, IN 46278 USA

Don Gorney: Amos W. Butler Audubon Society, Indianapolis, IN 46280, USA

Jeffrey D. Holland: Department of Entomology, Purdue University, West Lafayette, IN 47907 USA

Paul McMurray: Indiana Department of Environmental Management, 100 North Senate Avenue, MC65-40-2 Shadeland, Indianapolis, IN 46204 USA

Bill Murphy: 7835 Tufton St., Fishers, IN 46038 USA

Scott Namestnik: Orbis Environmental Consulting, Senior Botanist, P.O. Box 10235, South Bend, Indiana 46680 USA

Kirk Roth: Corradino, LLC, 200 S. Meridian Street, Suite 330, Indianapolis, IN 46225 USA

Stephen Russell: The Hoosier Mushroom Co., PO Box 3094, Bloomington, IN 47402 USA

Carl Strang: Naturalist, Forest Preserve District of DuPage County, P.O. Box 5000, Wheaton, IL 60189-5000 USA

INTRODUCTION

Conner Prairie is an interactive history park or a “living museum.” Located 6 km north of Indianapolis in Fishers, Indiana, the 850 acres that presently comprise Conner Prairie have a unique place in Indiana history. The property has been witness to many of the changes Indiana's environment has undergone—from the glaciers that shaped much of the Hoosier landscape to the slow influx of humans over the past 12,000 years and the cultural changes they have made to the terrain.

The first biodiversity survey (commonly called a BioBlitz) of Conner Prairie was conducted on 8–9 June 2013. The results of the Conner Prairie BioBlitz have provided a greater understanding

of the vast biological resources at the site. Further, the information gained by the event has and will continue to provide information on how to better conserve and interpret the natural setting. Lastly, the event has provided a unique snapshot on how human development impacts these isolated islands of natural habitat in an ever expanding suburban region. This manuscript will provide a brief history of Conner Prairie followed by a summary of the biodiversity survey and methods. For all of the information obtained at the BioBlitz, see the Indiana Academy of Science website at <http://www.indianaacademyofscience.org/> (hover over Events | click BioBlitz Archives | click Conner Prairie BioBlitz).

BRIEF HISTORY OF CONNER PRAIRIE

Conner Prairie traces its lineage to William Conner. Trader, interpreter, scout, community

¹ *Corresponding Author*: Donald G. Ruch, 765-285-8829 (phone), 765-285-8804 (fax), druch@bsu.edu.

leader, and entrepreneur, Conner came to central Indiana during the winter of 1800–1801 and soon fixed himself upon the land, including 200 acres of treeless “prairie,” now encompassed in the museum complex. He lived there until moving to Noblesville, Indiana in 1837. During his 37 year tenure on the prairie, he raised two families, built the two-story brick home that is one of Conner Prairie’s focal points, and helped shepherd the transition of Indiana from wilderness to settled state.

The land passed out of Conner family hands in 1871. Over the next six decades it was repeatedly bought and sold, becoming just another property with an ill-remembered heritage. Fortunately for history and historical preservation, the land, house and their accompanying heritage were purchased in 1934 by a man of vision who understood their importance, Eli Lilly. It was to be the first step in the shaping of Conner Prairie.

Mindful of its significance and crumbling condition, industrialist and philanthropist of history Lilly began a careful restoration of the Conner house immediately upon assuming ownership. Consulting experts, hiring contractors and sponsoring research, Lilly restored and furnished the home to a vision of what it may have been like when William Conner lived there. Lilly’s understanding of the house’s historic context led him to surround it with outbuildings of the period. Over the next few years he added a still house, spring house and loom house. A log cabin, barn and a recreated trading post were also added to the site, turning it into a nascent living history museum.

The land itself was not ignored. Carrying on another tradition, Lilly turned to agriculture and animal husbandry. Conner Prairie Farm became a showcase for the latest methods of raising crops and prize animals until it was phased out in the early 1970s. During this period, numerous barns, outbuildings, pastures, and fields dotted the landscape. Included in Lilly’s changes was the addition of the levy surrounding William Conner’s original treeless tract of floodplain along the White River.

Lilly, a great promoter of education, knew the value of Conner Prairie as a tool to inform the public about their shared history. He enthusiastically opened the site to the public. History-minded groups, individuals and countless schoolchildren were given tours and saw their heritage brought to life. Over the years

Lilly sought ways to broaden the educational possibilities of Conner Prairie, calling it “one of the most important historic monuments in the State of Indiana.” With this goal in mind, in 1964 Lilly transferred Conner Prairie to Earlham College, which continued to operate the farm and offer historic tours of the buildings and grounds. Conner Prairie explored various methods of interpreting the past for visitors. Regularly scheduled hours were established and added to the arranged visits. Special events like quilting bees and shows, craft demonstrations, and special holiday programs were added to the guided tours. Annual visitation increased from 2,800 in 1964 to over 28,000 in 1969.

As the ten-fold attendance increase indicated, there was great interest in the museum and its programs. By 1969 it was agreed that Conner Prairie was approaching a turning point. A decision had to be made about the site’s future. Working groups comprised of Conner Prairie staff and the Conner Prairie Advisory Council concurred that expansion was needed to place the museum in the forefront of the burgeoning outdoor museum movement.

As a result, planning for the recreation of a typical early 19th century Indiana village began. Research into the period was conducted and historic buildings from all over Indiana were moved to Conner Prairie. The village, now 1836 Prairietown, opened formally in March 1974 with six major buildings. Like the small communities it represents, Prairietown has grown over time and now contains over twenty main structures, which serve as homes or workplaces for its historic residents.

Conner Prairie’s other 800 acres have also undergone change. The present, modern Welcome Center (which replaced the barns and farmhouses that previously housed museum facilities) opened in 1988 and was remodeled in 1999. To ensure the Conner House would remain for future generations, a painstaking re-restoration and refurnishing of the home occurred from 1991 to 1993. Several other experiences have opened in the past 15 years, including The Lenape Indian Camp (opened in 2000), the 1859 Balloon Voyage (in 2009), Civil War Journey (in 2011), and new in 2013 was the Conner Prairie Nature Walk.

Conner Prairie’s continuing commitment to excellence has long been recognized, both by its peers (the museum has received multiple

Table 1.—Summary of taxa observed during the Conner Prairie Biodiversity Survey 8-9 June 2013.

Team	Leader	Taxa found/notes
Aquatic Macroinvertebrates	Paul McMurray	34 [4 county records]
Beetles	Jeffrey Holland	101 [26 families]
Birds	Don Gorney	92 [6 state listed species]
Butterflies	Kirk Roth	29 [8 not previously reported in county]
Fish	Robert Brodman	3 [common species]
Fungi	Stephen Russell	77 [earliest known report for 2 species of <i>Cantharellus</i> in Indiana]
Herpetofauna	Robert Brodman	15 [4 county records]
Singing Insects	Carl Strang	12 [5 singing insects, 7 others; first report of <i>Anaxipha vernalis</i> in Indiana; range expansion of 1 species]
Snail-killing Flies	Bill Murphy	7 [1 county record]
Spiders	Brittany Davis-Swinford	20 [all common species]
Vascular Plants	Scott Namestnik	458 [150 potential county records; 8 state listed species]

national awards from groups like the American Association for State and Local History and the American Association of Museums) and its approximately 350,000 visitors each year.

To learn more about Conner Prairie, the nation's finest outdoor living history museum, please visit the Conner Prairie Official Site at <http://www.connerprairie.org/>, the Fishers, Indiana website at <http://fishers-indiana.funcity-finder.com/conner-prairie/> and Wikipedia at http://en.wikipedia.org/wiki/Conner_Prairie.

SUMMARY OF RESULTS AND METHODS

The BioBlitz attracted over 40 scientists, naturalists, students, and others volunteering their time and expertise to make the event an overwhelming success. Food and lodging for the participants were provided through the generous support of Conner Prairie and The Indiana Academy of Science (IAS).

The 11 teams and their leaders reported 848 taxa (Table 1).

Aquatic macroinvertebrates.—Aquatic macroinvertebrates and adult Odonata (dragonflies and damselflies) were collected at a large pond located 0.6 km northwest of the Conner Prairie welcome center (39.98909 N, -86.032369 W). A D-frame aquatic dipnet with 500 μ m mesh was used to sample aquatic macroinvertebrates from different aquatic habitats around the margin of the pond (i.e., emergent vegetation, sand, logs). Collected specimens were identified to lowest practical taxon by use of standard texts (Merritt et al. 2008; Thorp & Covich 2001). A total of 23 taxa

were identified, representing five classes of invertebrates, 13 families, and at least 17 genera. These taxa are characteristic of lentic and slow-moving lotic bodies of water in this area. No new or unusual species were recorded. Adult odonates were collected from the shoreline around the pond by use of a large aerial net and identified using regional texts (Curry 2001; Glotzhober & McShaffrey 2002). A total of 11 species representing three families were recorded. Most of these species are common inhabitants of lentic waterbodies, although *Argia apicalis* and *A. moesta* are more commonly associated with lotic environments (such as the nearby White River). Four odonate species (*Argia moesta*, *A. tibialis*, *Ischnura posita*, and *Libellula incesta*) are new records for Hamilton County, Indiana (Abbot 2007). Representative voucher specimens of both aquatic macroinvertebrates and adult Odonata will be deposited in the Purdue Entomological Research Collection (PERC) at Purdue University.

Beetles.—Many of the beetles were collected at lights set up to attract beetles at night into the open areas between different forested habitats. These lights ran from approximately 9 PM until 2 AM and consisted of two sets of two UV lights, one 400 W mercury vapor light, and two 1000 W metal halide lights. Beetles were also collected by hand and by sweeping and beating vegetation. The complete effort totaled approximately 40 person-hours.

We found 101 species of beetles in 26 families. The level of diversity was slightly lower than expected for this level of collecting effort, but

that was to be expected given the highly modified landscape surrounding Conner Prairie. However, we undoubtedly only captured a small proportion of the beetle species present. The most interesting occurrence during the survey was the spectacular density of Tricoptera (caddisflies) that were attracted to a metal halide light placed behind the large bandshell. This 1000 W light was reflected from the white surface and likely attracted caddisflies from a very large area, resulting in an extremely dense insect cover across most of the bandshell cover. Voucher specimens of most species were deposited in the Purdue Entomological Research Collection (PERC) at Purdue University. Some species not represented by vouchers at the PERC were retained in the personal collections of R. Michael Brattain and Robert Turnbow.

Birds.—The Bird Team had sufficient observers to cover all areas of the Conner Prairie property. The early June date for the Biodiversity Survey was ideal for detecting birds because it coincided with the period of peak breeding activity. Birds were identified by sight or by song or call note. Consequently, the survey was not limited to territorial or singing males, but this demography constituted the majority of records. In an attempt to capture as much baseline data as possible in this two-day survey, team members counted individual birds and noted any specific breeding activity by species. Bird diversity was found to be high, with a total of 92 species observed on or flying over the property. Approximately 90 percent of the species were presumed to be nesting on Conner Prairie property, with the remainder representing late migrants or birds that likely utilize the site for foraging only. Both forest and prairie habitats were important contributors to species diversity. Prairie areas produced most of the expected species, including Sedge Wren and Henslow's Sparrow, both listed as State Endangered. Four additional non-prairie species found on the survey are listed as State Special Concern, i.e., Bald Eagle, Red-shouldered Hawk, Common Nighthawk, and Hooded Warbler. One prairie species, Bobolink, was observed outside of property boundaries by only a few hundred meters.

Butterflies (Fig. 1).—A total of 295 butterflies of 27 species were detected during the BioBlitz. The most abundant species was the Cabbage White (*Pieris rapae*), with 170 individuals seen. This species may be expected to be



Figure 1.—Silver-spotted Skipper (*Epargyreus clarus*). Photo taken by Kirk Roth.

common in Conner Prairie as a result of the abundance of mustard species, which are a common host plant. Additionally, farmers in the Pioneer Village noted that they were familiar with the “green worms” on their cabbage, which are very likely the larvae of this species.

Other butterfly species were observed to be benefitting from the Pioneer Village plantings. The flower gardens were frequented by several skipper species, including Silver-spotted (*Epargyreus clarus*), Zabulon (*Poanes zabulon*), and Peck's Skippers (*Polites peckius*). A second-instar Black Swallowtail larva was noted on fennel (*Foeniculum vulgare*) in one of the gardens. Several gardeners indicated that the larvae occur there every year that fennel is planted.

Butterfly numbers were low in the prairie areas. The few major nectar sources included patches of thistle (*Cirsium* sp.) or scattered Red Clover (*Trifolium pratense*). Few classic sources of prairie nectar, such as milkweeds (*Asclepias* sp.), mountain-mint (*Pycnanthemum* sp.), Wild Bergamot (*Monarda fistulosa*), Purple Coneflower (*Echinacea purpurea*), and others were noted to be in bloom. Eastern Tiger Swallowtail (*Papilio glaucus*) and Great Spangled Fritillary (*Speyeria cybele*) are normally common and conspicuous butterflies; they were notably absent from the count, possibly a result of the scarcity of favored nectar sources such as those above. Several woodland species were present in small numbers. The lone Northern Pearly-eye (*Lethe anhedon*) and Mourning Cloak (*Nymphalis antiopa*) were found in the south forested



Figure 2.—Spiny Softshell (*Apalone spinifera*); a Hamilton County record. Photo by J. Horton.

area. Most Eastern Comma (*Polygona comma*) and Zabulon Skipper sightings were in the wooded White River floodplain. Summer Azures (*Celastrina neglecta*) were reliably found nectaring at blooming dogwood and scattered at forest edges. Most skippers were found by chance encounters in grassy areas rather than at nectar sources. Even though only a few individuals of skippers were observed, they represented nine different species.

The observations at the Conner Prairie BioBlitz include sightings of some species not listed for Hamilton County in Shull's (1987) or Belth's (2013) comprehensive books on the butterflies of Indiana. This lack of information probably resulted from a scarcity of sampling in Hamilton County, as many of these species are not uncommon in the state but are small or otherwise inconspicuous. The species not listed in Belth or Shull are Northern Pearly-eye (*Lethe anthedon*), Common Sootywing (*Pholisora cattulus*), Zabulon Skipper (*Poanes zabulon*), Least Skipper (*Ancyloxypha numitor*), Delaware Skipper (*Anatrytone logan*), Dun Skipper (*Euphyes vestris*), Tawny-edged Skipper (*Polites themistocles*), and Crossline Skipper (*Polites origenes*). Belth included each of these species in

maps of nearby Marion County, which is less than 6 km south of Conner Prairie.

Fungi.—Early June is nearing the end of a lull in the fungal world. The spring mushrooms are coming to an end, but the summer mushrooms have yet to fruit in abundance. That being said, Conner Prairie provided a fantastic species diversity for the time period. Two collectors spent a total of about 6 hours on the property collecting the listed species. The majority of the species encountered can be found commonly throughout much of the state. No specific genera were over-represented in numbers on the grounds. Of special note were two species of Chanterelles—*Cantharellus "cibarius"* and *C. minor*. All varieties of Chanterelles lack well defined, blade-like gills, which is one of the key defining features of the genus. While both of these edible species are fairly common, the dates on which they were observed during the BioBlitz were the earliest known by the team leader for Indiana. They most commonly begin presenting in mid to late July.

Herpetofauna (Fig. 2) and fish.—Amphibians and reptiles were surveyed by a combination of methods. Terrestrial and wetland habitats were

sampled by visual searches and sample cover objects. Calling frogs were identified, and wetlands were sampled for larvae by use of dip nets. Turtles and larval amphibians were also sampled by use of turtle traps and minnow traps in wetlands, ponds, and the river. The complete effort totaled approximately 40 person-hours and 35 trap-days.

The herp team found a total of 150 herps of 15 species, including 37 reptiles representing eight species and 113 amphibians representing seven species. *Acris blanchardi* is a species of special concern in Indiana; during the last two to three decades, it has declined greatly throughout the northern half of its geographic range. The species was common at every wetland and pond surveyed at Conner Prairie. *Plestiodon fasciatus* was very common in most open terrestrial habitats. Four species [*Plestiodon fasciatus*, *Apalone spinifera* (Fig. 2), *Trachemys scripta elegans*, and *Plethodon cinereus*] represent new Hamilton County records. Minnow traps caught several species of fish, including Rock Bass (*Ambloplites rupestris*), Bluegill (*Lepomis macrochirus*), and Large-mouth Bass (*Micropterus salmoides*).

Voucher specimens of *Plestiodon fasciatus* were deposited at the Indiana State Museum (INSM 71.2013.129). Voucher specimens for *Trachemys scripta elegans* (SJCZC R322) and *Plethodon cinereus* (SJCZC A350) were deposited in the Saint Joseph's College zoological collection in Rensselaer, Indiana. All other species were documented/vouchered by images and retained by Robert Brodman.

Singing insects (Fig. 3).—A total of 12 person-hours were spent searching for singing insects, mainly in the prairie area. Less than one hour was spent in forested areas, where the season was too early to expect members of this group. Methods mainly were walking the mowed lanes, looking and listening, with some time spent stalking and sweep-netting for the spring trig cricket, and a few checks of the beetle team's light stations after dark.

The timing of the Conner Prairie BioBlitz was early enough in the season so that the only adult singing insect species found were those that overwinter as nymphs. Three of these species are regarded as common (spring field cricket, green-striped grasshopper, and sulfur-winged grasshopper), although only one individual of the last species was observed. One locally distributed group of Roesel's katydid



Figure 3.—Green-striped grasshopper (*Chortophaga viridifasciata*). Photo by Carl Strang.

nymphs, found by the botany team, adds Conner Prairie to the known southern boundary of that species' range in Indiana. Roesel's katydid is a European insect that still is expanding its range from its introduction site in Québec, Canada. The most interesting find was a small cricket commonly heard singing in the prairie. This proved to be the spring trig, a species identified only by that common name and the temporary designation "*Anaxipha* n. sp. G" in the Singing Insects of North America website, hosted by the University of Florida. The species since has been named *Anaxipha vernalis* (Walker & Funk 2014). This apparently is the first observation of the species in Indiana, although in time it probably will prove to be widely distributed and common, at least in the southern part of the state.

Snail-killing [Sciomyzid] flies.—Twelve individuals of seven species of Sciomyzidae (snail-killing flies) were found. Considering the scarcity of suitable habitat (standing water: marsh, swale, fen, bog, etc.) at the BioBlitz site, the number of species found was surprisingly high. A cold water seep west of White River produced *Tetanocera loewi* Steyskal, a new species of sciomyzid for Hamilton County. This is the southernmost Indiana record of this northern species; the previous southernmost record was from Tipton County. The four



Figure 4.—Fire Pink (*Silene virginica*). Photo by Scott Namestnik.

Trypetoptera canadensis (Macquart), a floodplain predator of pulmonate terrestrial snails, were found precisely where that species would be expected to occur — in the vernal flooded zone between the artificial levee and the natural sand dike along White River. The guild of species found indicated a healthy population in the floodplain and a possible glacial refuge along the seep.

Spiders.—Spiders were surveyed on Sunday, June 9, from 9 AM to 2 PM. A total of 19 spider species and 1 harvestman species were recorded. Restrooms, barns, prairie, ponds, and the attic of the China House were surveyed. If the BioBlitz had taken place a few weeks later, it is estimated that the spider count would have doubled.

Vascular Plants (Fig. 4).—Meander surveys following the methods of Goff et al. (1982) were conducted. Approximately 109 person-hours were spent conducting the survey. Additional time was spent identifying unknown plants in the laboratory.

A total of 458 vascular plant taxa (451 identified to at least the species level), 336 (73%) of which are native to Indiana, were observed during the two-day Conner Prairie BioBlitz. The vascular plant families represented by the most taxa were the Aster Family (Asteraceae, 55 taxa), the Grass Family (Poaceae,

49 taxa) and the Sedge Family (Cyperaceae, 40 taxa); the Sedge genus (*Carex*) was the best represented genus, with 34 taxa observed. A total of 150 potentially new species for Hamilton County, Indiana were documented. Eight species on the list of Indiana Endangered, Threatened, Rare, and Watch List species were noted: Wood's Stiff Sedge (*Carex woodii* Dewey [State Watch List]); Wild Sensitive Plant (*Chamaecrista nictitans* (L.) Moench [State Watch List]); Pink Turtlehead (*Chelone obliqua* L. var. *speciosa* Pennell & Wherry [State Watch List]); Ginseng (*Panax quinquefolius* L. [State Watch List]); White Pine (*Pinus strobus* L. [State Rare]); Great White Lettuce (*Prenanthes crepidinea* Michx. [State Watch List]); False Hellebore (*Veratrum woodii* J.W. Robbins ex Alph. Wood [State Watch List]); and Downy Yellow Violet (*Viola pubescens* Aiton [State Watch List]); plants listed as Watch List have enough known occurrences to have been removed from the Endangered, Threatened and Rare list and are no longer actively tracked by the Indiana Department of Natural Resources – Division of Nature Preserves. The White Pine (state rare) observed on the site was likely planted or an escape from a planting. The Wild Sensitive Plant (state watch list) observed on the site was likely introduced in the prairie creation seed mix.

The vascular plant communities at Conner Prairie consisted primarily of old field and planted tallgrass prairie. Agricultural field and developed/cultural areas also made up a large percentage of the property. Smaller portions of the property were comprised of upland forest, a pond in the upland forest, riverine woods, herbaceous floodplain, emergent wetland and pasture. With the exception of the upland forest and riverine woods, the plant communities at Conner Prairie were dominated by common early successional and disturbance-tolerant plant species. The riverine woods consisted of a mix of species common in floodplain communities in central Indiana, with few clear dominant species. The richest and most interesting plant community observed on the property was the Sugar Maple (*Acer saccharum* Marshall ssp. *saccharum*) dominated upland forest located at the south end of the site. Floristic Quality Assessment of the upland forest had a mean Coefficient of Conservatism (C) value of 3.3 and Floristic Quality Index (FQI) of 58.9. Areas with FQI values of 45 or

greater are thought to possess natural area potential, though sites with mean C values less than 3.5 are not (Swink & Wilhelm 1994). In particular, the bluff above the White River and the adjacent steep slope provided unique habitat where several conservative plant species were observed. Shallow ravines and seepages along streams in the upland forest also were of interest. Overall, the mean C value calculated for the compiled inventory at Conner Prairie was 2.8, and the FQI was 60.0.

Numerous invasive species were identified. In the upland forest, invasive species of most concern included Tree-of-Heaven (*Ailanthus altissima* (Mill.) Swingle, rare), Garlic Mustard (*Alliaria petiolata* (M. Bieb.) Cavara & Grande, uncommon), Oriental Bittersweet (*Celastrus orbiculatus* Thunb., uncommon), Winged Euonymus (*Euonymus alatus* (Thunb.) Siebold, rare), Border Privet (*Ligustrum obtusifolium* Siebold & Zucc., uncommon), Common Privet (*Ligustrum vulgare* L., uncommon), Japanese Honeysuckle (*Lonicera japonica* Thunb., uncommon), Amur Honeysuckle (*Lonicera maackii* (Rupr.) Herder, uncommon), Honeysuckle (*Lonicera* L., uncommon), Reed Canary Grass (*Phalaris arundinacea* L., locally common/abundant), Multiflora Rose (*Rosa multiflora* Thunb., uncommon) and Common Periwinkle (*Vinca minor* L., locally common/abundant). Invasive species of most concern in the riverine woods included Tree-of-Heaven (rare), Garlic Mustard (common), Hungarian Brome (*Bromus inermis* Leyss., common), Winged Euonymus (uncommon), Dame's Rocket (*Hesperis matronalis* L., rare), Common Privet (rare), Reed Canary Grass (common), Golden Bamboo (*Phyllostachys aurea* Carrière ex A. Rivière & C. Rivière, locally common/abundant) and Multiflora Rose (uncommon). Hungarian Brome (common), Field Thistle (*Cirsium arvense* (L.) Scop., common) and Reed Canary Grass (abundant) posed the greatest ecological threat in the herbaceous floodplain area. Reed Canary Grass (uncommon) was of most concern in the emergent wetland community. Invasive species of concern in the old field/planted prairie areas included Hungarian Brome (locally common/abundant), Musk Bristle Thistle (*Carduus nutans* L., uncommon), Field Thistle (locally common/abundant), Bull Thistle (*Cirsium vulgare* (Savi) Ten., uncommon), Poison Hemlock

(*Conium maculatum* L., rare), Autumn Olive (*Elaeagnus umbellata* Thunb., rare), Quack Grass (*Elymus repens* (L.) Gould, locally common/abundant), Yellow Sweet Clover (*Melilotus officinalis* (L.) Lam., uncommon), Reed Canary Grass (rare), Bradford Pear (*Pyrus calleryana* Decne., locally common/abundant), Multiflora Rose (rare) and Johnson Grass (*Sorghum halepense* (L.) Pers., common). Many of these same invasive species were observed in the pasture area, and although this area has no resemblance to a natural community, invasive species here provide a seed source for infestation into natural communities.

Summary.—To obtain a complete picture of the biodiversity found at Conner Prairie would require a long term seasonal survey. Nevertheless, this two-day survey in June revealed the remarkable species richness and the inherent value of this historic site. Highlight species reported included the Spiny Softshell turtle, Sedge Wren, Henslow's Sparrow, Zabulon Skipper, Roesel's Katydid, Elegant Stinkhorn fungus, Pink Turtlehead, and False Hellebore. Of the 15 species of reptiles and amphibians reported, three species of reptiles and one species of amphibian were new species records for Hamilton County. Of the 458 taxa of plants, 150 represent potentially new Hamilton County records, and eight species are on the Indiana Endangered, Threatened, Rare, or Watch List. Eight butterfly species had not been recorded previously from Hamilton County. Likewise, four records of aquatic macroinvertebrates were new for Hamilton County. Steve Russell, the mushroom team leader, said that "Conner Prairie provided a fantastic species diversity for the time period." Among the 92 species of birds observed, two were on the endangered list and four were species of special concern. As expected, the plant team found species diversity to be relatively low in the restored prairies. However, they found incredible species richness in the woodlands, especially in the woods at the southern end of the property that slopes down to the White River.

LITERATURE CITED

- Abbott, J.C. 2007. Odonata Central: an online resource for the distribution and identification of Odonata. Texas Natural Science Center, The University of Texas at Austin. At: <http://www.odonatacentral.org> (Accessed 10 July 2013).

- Belth, J.E. 2013. Butterflies of Indiana – A Field Guide. Indiana University Press, Indianapolis, Indiana. 323 pp.
- Curry, J.R. 2001. Dragonflies of Indiana. Indiana Academy of Science, Indianapolis, Indiana. 303 pp.
- Glotzhober, R.C. & D. McShaffrey. 2002. The Dragonflies and Damselflies of Ohio. Bulletin of the Ohio Biological Survey, New Series 14: 1-364.
- Goff, F.G., G.A. Dawson & J.J. Rochow. 1982. Site examination for threatened and endangered plant species. Environmental Management 6: 307-316.
- Merritt, R.W., K.W. Cummins, & M.B. Berg (eds.). 2008, An Introduction to the Aquatic Insects of North America, 4th ed. Kendall/Hunt Publishing Company, Dubuque, Iowa. 1158 pp.
- Shull, E.M. 1987. The Butterflies of Indiana. Indiana Academy of Science, Indianapolis, Indiana. 262 pp.
- Swink, F. & G. Wilhelm. 1994. Plants of the Chicago Region, 4th ed. Indiana Academy of Science, Indianapolis, Indiana. 921 pp.
- Thorp, J.H., & A.P. Covich (eds.). 2001. Ecology and Classification of North American Freshwater Invertebrates, 2nd ed. Academic Press, San Diego, California. 1056 pp.
- Walker, T.J. & D.H. Funk. 2014. Systematics and acoustics of North American *Anaxipha* (Gryllidae: Trigonidiinae). Journal of Orthoptera Research 23: 1-38.

Manuscript received 14 March 2015, revised 28 April 2015.