



Species List by Property

Kline Wetland

American Toad-*Anaxyrus americanus*-common
Bullfrog-*Lithobates catesbeiana*-common
Northern Green Frog-*Lithobates clamitans melanota*-very common
Northern Leopard Frogs-*Lithobates pipiens* (calls only)-uncommon
Spring Peepers-*Pseudacris crucifer* (calls only)-common
Midland Painted Turtles-*Chrysemys picta marginata*-common

Summary Total = 6 species, 5 amphibians and 1 reptile

Notes: Spring peepers and northern leopards were only heard calling at this wetland, no visual on either species was obtained.

Curtis Wetland

Bullfrog-*Lithobates catesbeiana*-tadpoles, heard calling-common
Eastern Gray Treefrog-*Hyla versicolor* (calls only)-uncommon
Northern Green Frog-*Lithobates clamitans melanota*-common
Northern Leopard Frog-*Lithobates pipiens*-uncommon
Spring Peeper-*Pseudacris crucifer* (calls only)-common
Western Chorus Frog-*Pseudacris triseriata* (calls only)-common
Wood Frog-*Lithobates sylvaticus*-uncommon
Eastern Red-backed Salamander-*Plethodon cinereus*-common
Unisexual Hybrid Salamanders-*Ambystoma spp.*-locally common (dependent on vernal pool)
Painted Turtle-*Chrysemys picta marginata*-common
Midland Brown Snake-*Storeria dekayi wrightorum*-2 DOR (dead on road)-fairly common

Summary Total = 11 species, 9 amphibians 2 reptiles

Notes: Eastern gray treefrogs, western chorus frogs, and spring peepers were only heard calling. The presence of unisexual hybrid *Ambystoma* indicates that another species of mole salamander [likely either blue-spotted salamander (*Ambystoma laterale*) or small-mouthed salamander (*Ambystoma texanum*)] has to be present, as female unisexuals must use a male member of one of the other species in the complex to reproduce.

Wilson Wetland

Northern Green Frog-*Lithobates clamitans melanota*-uncommon
Northern Leopard Frog -*Lithobates pipiens*-uncommon
Midland Painted Turtle-*Chrysemys picta marginata*-uncommon

Summary Total =3 species, 2 amphibians and 1 reptile

Notes: Spring peepers, western chorus frogs, and American toads were able to be heard calling in the landscape surrounding the property, but none seemed to be present on the property.

Sampling Methods and Areas

Three sampling days were conducted over the course of the spring, March 27, April 10, and April 17, 2016. On March 27 we focused on amphibians, listening for frog calls and looking for salamanders underneath logs, rocks, and other natural cover items the animals use for shelter. The weather on this day was partly cloudy and around 65 ° F. This was repeated on April 10, but conditions were rainy and about 40° F. On April 17 we continued searching for amphibians, but also waded into the wetlands to capture and identify turtles and frogs. We also searched for snakes by looking under natural cover items, checking perceived good basking areas, and performing visual scanning of vegetation and leaf litter. The weather on April 17 was sunny, and temperatures reached 80° F. Below are several maps representing the areas of most intensive sampling at each wetland.

Sampling Area Maps



Species Accounts

Spring Peeper (*Pseudacris crucifer*)



Spring peepers are small, ubiquitous treefrogs whose call is well known to outdoor enthusiasts in early spring. Thousands of frogs will congregate in shallow wetlands to breed every year. Like all amphibians, spring peepers are highly exposed to the environment due to their highly permeable skin. Pesticides, herbicides, water pollution, and habitat loss all may pose risks to spring peeper populations. Spring peepers do not live in wetlands year-round, but spend the summer and fall in forested habitat. Therefore, a minimum forested buffer of about 200 meters surrounding wetlands is best for maintaining high quality habitat for spring peepers (Semlitsch and Bodie 2003).

Western Chorus Frog (*Pseudacris triseriata*)



The western chorus frog is another small treefrog that is closely related to and shares very similar life history characteristics with the spring peeper. This species tends to be more abundant in the bottomland floodplains. Like all amphibians, the western chorus frog is sensitive to water pollutants and herbicides/pesticides. Habitat loss may also pose threats to this species. Like the spring peeper, a minimum buffer of about 200 meters of terrestrial habitat is best for maintaining high quality wetlands with western chorus frogs (Semlitsch and Bodie 2003).

Northern Leopard Frog (*Lithobates pipiens*)



The Northern Leopard Frog is a common semiaquatic frog found throughout the northern United States and Canada. This species typically occupies wet meadows and wetland edges where it hunts insects and smaller frogs. Populations of this species have been declining, due to the combined effects of habitat loss, water pollution, and spread of disease. Though still relatively common, this species is listed as a species of special concern in Indiana, Leopard frogs benefit from a large buffer around wetlands, at least 200 meters (Semlitsch and Bodie 2003).

American Toad (*Anaxyrus americanus*)



The American toad is a common denizen of many habitats throughout the United States, including yards and gardens. Many boys have been scolded by their mothers for picking up a toad for fear of getting warts, thankfully that is just a myth. American toads are well adapted to live in a variety of environments, and are typically one of the most common anurans in an area. American toads congregate in wetlands to breed in April to May, giving off long melodic trills. Massive schools of small black tadpoles will soon follow. American toads have adapted well to development, but a buffer of about 200 meters around wetlands would probably benefit them.

Northern Green Frog (*Lithobates clamitans melanota*)



Northern green frogs are common pond frogs in most of the eastern United States. One can walk along a pond and hear the surprised frogs give their alarm calls as they escape into the water. Green frogs are sensitive to the same pollutants and pesticides as other amphibians, but seem to be more tolerant. Green frogs adapt readily to urban koi ponds, swimming pool covers, or even tire ruts.

Wood Frog (*Lithobates sylvatica*)



Wood frogs are small frogs native to northern North America, famous for their ability to freeze solid during hibernation and come back to life after they thaw in spring. High concentrations of glucose and other sugars in their blood allow them to do this. Wood frogs are very dependent on ephemeral wetlands to breed in, and do not tolerate fish in breeding ponds. Wood frogs undergo seasonal migrations in spring alongside mole salamanders, which put them at risk when crossing roads. Vehicular mortality, habitat loss, and disease are the biggest threats to this species.

American Bullfrog (*Lithobates catesbeianus*)



Bullfrogs are large ubiquitous pond frogs originally native to the eastern United States, but have been since been spread by humans across the globe. Bullfrog tadpoles take two years to mature, so last year's tadpoles can commonly be seen sunning themselves in the shallows of ponds and lakes in early spring. Bullfrogs have surprisingly large home ranges, which can put them at risk of vehicular mortality.

Eastern Gray Treefrog (*Hyla versicolor*)



Gray Treefrogs are common boreal frogs throughout the eastern United States. Specialized toe pads allow them to scale bark, grasses, and even glass effortlessly. Their excellent camouflage lets them sit unseen with the lichens and mosses on tree bark. Treefrogs are primarily nocturnal. During warm spring and summer nights, the frogs descend from the trees down to the wetlands to breed, often in very temporary locations such as tire ruts or pool covers. Though they have adapted readily to live in developed areas, treefrogs are sensitive to pesticides and herbicides. A buffer of ~200 meters around wetlands would be beneficial for treefrogs (Semlitsch and Bodie 2003).

Unisexual Polyploid Salamanders (*Ambystoma* spp.)



This group of salamanders is actually a species complex, likely formed by the interbreeding and backcrossing of a group of five species, the streamside salamander (*Ambystoma barbouri*), tiger salamander (*Ambystoma tigrinum*), small-mouthed salamander (*Ambystoma texanum*), Jefferson salamander (*Ambystoma jeffersonianum*), and blue-spotted salamander (*Ambystoma laterale*). Curiously, populations today are all female. Females can use sperm from any of the species above to trigger the embryos' development, but the male's genes are not included—offspring are clonal. These salamanders are in the family Ambystomatidae, which are known as the “mole salamanders” due to their fossorial habits. This is true of unisexuals, often only coming to the surface once a year to breed. Mole salamanders breed in ephemeral wetlands, relying on the wetland's temporary status to prevent fish predation on larvae. Salamanders migrate to wetlands to breed on rainy nights in early spring, often times crossing roads to get to breeding ponds. Roadside mortality can be significant in this time. Road signs, underpasses, and seasonal road closures all have been done to reduce salamander mortality as well as act in the interest of human safety. Mole salamanders have been documented moving vast distances to get to breeding ponds, as far as 620 meters (Orloff 2011). Large buffers around wetlands and tracts of forest are required for maintaining populations of mole salamanders.

Eastern Red-backed Salamander (*Plethodon cinereus*)



The eastern red-backed salamander is a common small woodland salamander found throughout the eastern United States. In some forests, they are estimated to be the most abundant vertebrate. Red-backs are in the family Plethodontidae of lungless salamanders, which respire entirely through the skin. This subjects them to the environment, making them a good indicator of forest health. Pesticides often eliminate red-back populations. Red-backs do not have an aquatic larval stage, and so only depend on hardwood forests. Because their home ranges are very small, often less than 5 m², and the fact that they do not require water to breed, red-backs are able to subsist in fragmented forest patches where other species are not.

Midland Brown Snake (*Storeria dekayi wrightorum*)



The midland brown snake is a common small snake that occupies a wide variety of habitats, but is particularly fond of wet prairies and meadows. These small snakes feed on slugs, worms and insects, and usually max at a foot in length. Because of their diet, brown snakes are sensitive to pesticides. Vehicular mortality and habitat loss are also potential threats to brown snake populations.

Midland Painted Turtle (*Chrysemys picta marginata*)



The midland painted turtle is a common “pond turtle” in the midwest. Large groups of this species can often be seen basking on logs and shores of lakes and ponds. Though this species is very abundant and tolerant of development, they face significant threats in the form of vehicular mortality. This is especially crucial to females in the nesting season. Females often travel great distances in search of the best nesting location, taking them across roads, where many are killed. This can lead to highly male skewed populations, leading to problems with fecundity of populations. This can be addressed by posting signs warning motorists of turtle crossings, and reduced speed limits on roads with high amounts of turtle traffic. Painted turtles have very large home ranges of 29000+ m² (Rowe et al 2010). Thus, it is best to keep habitats as connected and linked as possible. The midland painted turtle may also be threatened by competition with invasive red-eared sliders (*Trachemys scripta elegans*).

Literature Cited

Semlitsch, R. D. and J. R. Bodie. 2003. Biological criteria for buffer zones around wetlands and riparian habitats for amphibians and reptiles. *Conservation Biology* 17:1219-1228

Rowe, J. W. and S. F. Dalgarn. 2010. Home range size and daily movements of midland painted turtles (*Chrysemys picta marginata*) in relation to body size, sex, and weather patterns. *Herpetological Conservation and Biology* 5:461-473

Orloff, S. G. 2011. Movement patterns and migration distances in an upland population of California tiger salamander (*Ambystoma californiense*). *Herpetological Conservation and Biology* 6:266-276.

Photos from the Field



Purdue students (left to right) Zach Truelock, Lexi Eiler, and Cole Jones with a midland painted turtle found at the Kline Wetland.



Purdue students (left to right) Zach Truelock, Landon Neumann, and Morgan Sussman with a midland painted turtle found at the Wilson wetland.



Ephemeral pond/floodplain at the Curtis wetland. Spring peepers, wood frogs, and unisexual polyploid salamanders breed in this area.

Northern Green frog larva and adult from the Curtis wetland.





Juvenile wood frog found at the Curtis wetland.



American toad found at the Kline wetland.



DOR (dead on road) midland brown snake found at the Curtis wetland.



Juvenile midland painted turtle found at the Kline wetland.



Unisexual polyploid salamander found at the Curtis wetland.



Northern green frog found at the Wilson wetland.



Northern leopard frog found at the Curtis wetland

Eastern red-backed and unisexual hybrid polyploid salamanders found at the Curtis wetland.

