

**HERPETOFAUNAL SURVEY OF PRAIRIE RIDGE STATE
NATURAL AREA
JASPER AND MARION COUNTIES, ILLINOIS**

[Final Report]

Presented to:

Scott Simpson, PRSNA Manager and
The Illinois Department of Natural Resources

Daniel J. Olson
610 Bellerieve Dr.
Champaign, IL 61822

June 13, 1999

Study Areas: Prairie Ridge State Natural Area, Illinois. Formally the Jasper and Marion County Prairie Chicken Sanctuaries. The Illinois Department of Natural Resources, The Nature Conservancy, and AMEREN CIPS own specific management units.

Study Dates: May - July 1998 and March - June 1999

Study Objectives: To inventory the amphibian and reptile populations at Prairie Ridge State Natural Areas to provide (1) a baseline for biodiversity and site management analysis, (2) help establish new geographic or ecological distributions, and (3) serve as a point comparison through time, for future site surveys and to serve as a reference for other similar surveys in the Midwest.

Study Methods:

The survey was conducted over a two summer time period beginning in March and ending in July. This timeline encompasses the beginning and the height of breeding seasons for most of the herpetofauna found at PRSNA. Seven different collection methods were implemented. They included drift fences with pitfall traps for small reptiles and amphibians, herpetofaunal attractor panels (HAPs) for snakes, baited hoop nets for aquatic turtles, seining, dipnetting, random hand collection, and frog call surveys. All of these methods had little or no impact on the landscape of the preserve.

All individuals were marked with a unique number. Carapace notching was used on turtles, toe clipping for Anurans and lizards, and ventral scale marking for snakes. These marking techniques are minimally intrusive and allow for individual identification in the field. All individuals were released back to the site of collection unless found on the road.

Each species was assigned a classification based on the number of times observed. They include (VC) for Very Common, (C) for Common, and (UC) for Uncommon. The reader must keep in mind that numbers which imply uncommon for one group may in fact be considered common for another. An example of this would be a high trophic level predator such as the Prairie Kingsnake (*Lampropeltis calligaster*), which is typically seen in much fewer numbers than an insectivorous, lie and wait predator such as a bullfrog (*Rana catesbeiana*). Three bullfrogs at a wetland would be considered uncommon, where as three kingsnakes would be common. In addition, truly nocturnal or fossorial species such as the smallmouth salamander (*Ambystoma texanum*) could be easily underestimated if timing wasn't correct.

Results:

During the seven months of study, a total of nine volunteers participated in the capture of individuals, and the construction of traps. Twenty-six individual herps were salvaged (most from roadkills) and preserved for museum placement. A total of thirty different herpetile species were collected or observed on the Area. The total captures or observations (Table 1) of each species should be thought of as a minimum species

estimate. In several cases, we observed more individuals than we could correctly quantify using the method or effort available to us.

A total of seven ponds, three ephemeral pools, four wetlands, and twelve grass tracts were surveyed and listed below. Please also see attached map for location.

Ponds - (1-4) McCormick A, B, C, and F, (5) Fuson, (6) Soldner, and (7) INHS A

Ephemeral Pools - (1) INHS, (2) Mark 40, (3) McCormack

Wetlands - (1) Donsbach, (2) McCormick, (3) Walters, and (4) Loy

Grass Tracts - (1) Galbreath, (2) Winters, (3) Donnelly, (4) Walters, (5) Mark 40, (6) Mark 17, (7) Frohning, (8) INHS, (9) McCormick, (10) Donsbach, (11) Loy, and (12) INHS

FROGS AND TOADS

Anurans listed in Table 1 do not have a number captured or recaptured due to the different types of sampling used on these species. When encountered or caught, several individuals were weighed and measured, and all were examined for physical anomalies. These anomalies ranged from missing limbs due to predation events, to injuries from unknown sources. There were two cases of missing appendages classified as a "birth defect". This is well within the normal percentage of natural defects for a population. Further investigation into field notes will give us a better percent that I will present at a later date. Frog call surveys were also used in the early spring to help quantify relative abundance of Anuran populations. The standard Wisconsin survey was used (Mossman, et al, 1998). Areas were surveyed for five minutes. The calls were classified into three indices. The number 1 was assigned to areas where individuals could be counted; there was space between the calls. A rank of 2 was given when calls of individuals were distinguishable, but some calls overlapped. And 3 was a full chorus where calls were overlapping or overpowering calls of other species. Table 2 shows tracts surveyed and the call rankings for those areas. Table 3 is a table combining all areas surveyed within surveyed tracts in PRSNA

There was only one wood frog (*Rana sylvatica*) collected during the survey. However, tracts such as the Fuson (where the specimen was collected) and CIPS are excellent areas for this species. Because of their early, and extremely short breeding season (late January and early February), it would be easy to miss large populations of these animals.

Only three American toads (*Bufo americanus*) were collected during the survey, and all were captured on the CIPS tract. These also have a very early breeding season and would be easy to miss on call surveys. All other frog and toad species were found on almost every tract surveyed, including the gray treefrog on tracts isolated from treelines and woodlots.

SALAMANDERS

The diversity of salamanders at this site was expected. Almost all tracts have been intensively cropped at some point in the last 50 years which will greatly impact total numbers of these animals. Although the total captures for adult salamanders were low, evidence of their high numbers was present. Ditches, tire grooves and temporary pools on the site were surveyed in late February. Thousands of smallmouth salamander egg masses were recorded on almost every tract. While seining the Mark 40 pond in early

1998, we collected approximately five larval smallmouth salamanders per pass for a total of 25 individuals.

There was one Tiger Salamander (*Ambystoma tigrinum*) identified in 1998 on Marion County's Loy wetland. That particular area has historically been a low, wet area so it is easy to imagine that there is a viable population at or around that wetland.

The one woodland, or Plethodon, species was captured on the Fuson tract. This species is not indicative of the prairie, but the Fuson has a large portion of acreage in relict oak savanna and woodlot remnants. These wooded areas are where all of the slimy salamanders (*Plethodon glutinosus*) were found.

LIZARDS

Lizards are not overly abundant at the site. As one would expect, their numbers increase on tracts that have wooded edges, or timber structure. Only two species of lizards were found at the site. The fence lizard (*Sceloporus undulatus*) was again found in the wooded area of the Fuson. There were also five-lined skinks found on the CIPS and the McCormick tracts. Broad headed skinks have also been seen at the site in the past (Esler, pers. com.), but were not collected during this survey.

SERPENTS

A large amount of effort was put into collection of snakes for density estimates. This information will be used later as part of a large avian survey of the area. Line transects and herpetofaunal attractor panels (HAPs) were used very successfully. The diversity of snakes in the area was expected. There are large numbers of garter and prairie kingsnakes, but the abundance decreases significantly for the other six species.

One objective for the survey was to locate and estimate a density for the state endangered Kirtland's snake (*Clonophis kirtlandi*) that were relocated some years ago to the Marion County INHS tract. Using line transects and HAPs, we were unable to relocate any of the translocated individuals. This, however, is not an indication that they are gone from the site. The area of release is suitable for this species, and Kirtland's have been found in several of the surrounding counties. It is even possible that at one time the translocation area contained viable populations.

TURTLES

Turtles also received a large amount of collection effort. The box turtles were collected by hand either during transect or random searching. Most others were collected using hoop nets.

I believe the box turtles need special attention at PRSNA. Throughout the state, herpetologists are beginning to realize a drastic decline of ornate box turtles. Many of our individuals were found killed or injured by vehicles and farm implements. None of the individuals were younger than seven years of age.

Finding a Blanding's turtle (*Emydoidea blandingi*) was a very unexpected treat. Although there was only one collected during the survey, and never recaptured, there is no reason to believe that there are not more on or adjacent to the area.

The species list presented for the site is not unusual, but there are some finds of interest. The Blanding's turtle extends the range in Illinois, further to the south (Smith,

1961). In addition, it was recently added to the Illinois Endangered Species Protection Board list of threatened species making management practices for this species a priority. The Spring peeper (*Pseudacris crucifer*), common musk turtle (*Sternotherus odoratus*), slimy salamander, red-eared slider (*Trachemys scripta*), fence lizard, American toad and wood frog are all Jasper county records. All of the records can be found vouchered at the Illinois Natural History Survey museum, less the wood frog and American toad.

A total of 2,695 trap hours were accumulated for aquatic hoop and fyke nets, baited with sardines. An additional 192 hours were logged using trammel nets. Further, pitfall traps with drift fences were in use for 848 hours. Hundreds of hours were spent running transects and collecting by hand turtles and snakes. Call surveys detected eight of the ten Anurans on the site.

Management Implications:

Without a doubt the implementation of several wetlands on the site have tremendously boosted the population sizes of many herpetile species. Three that have taken great advantage of the wetlands are the bullfrog, cricket frog and the painted turtle. Any additional wetland should be welcomed.

The need for more upland ephemeral pools is very important. From our surveying and the results of other similar surveys, we believe it is imperative to initiate a series of ephemeral pools on the site. Species such as salamanders, chorus frogs, and toads will only use small ephemeral pools for breeding. These are easily constructed at minimal costs. In addition, Johnson (1998) from the Missouri Department of Conservation, has set forth a series of habitat improvement guidelines for constructing ephemeral pools. These pools imitate buffalo wallows and are presumed to have been found on ridge tops or upper slopes of hills. I believe placement of these ephemeral pools in several groups or series will benefit a variety of herps as well as other plants and animals.

There is also a desperate need for basking areas for turtles. These areas are vital for two reasons. The first is physiology. Vitamin assimilation via the sun in turtles as well as other herps, is the key to good health and reproduction. The second is to avoid predation. Having logs in the middle of open water allows for better vigilance, and easy access to the safety of water. On several occasions, turtles were found along the shoreline with limbs or heads missing. I suggest a program to place several basking logs (at least three) in all of the wetlands. This too will be of minimal cost, by using stumps and logs from recently cleared treelines within PRSNA. The basking logs should be long and stretch far into the water on the wetlands since the depth and size of the wetland will be highly variable throughout the year. Johnson also offers advice on this in the aforementioned publication.

One of the hardest things for a manager to do is figure out where the fine line is that separates needed management practices from intensive, possibly counterproductive management. Prescribed burning, and mowing are necessary for such a diverse place. However, these management practices can also be detrimental to small highly fragmented populations that occur here. Burning has been proven to have minimal impact on herps, but in our study we found five ornate box turtles (21%) that appeared to be killed by a field disk used to make fire breaks.

We have made recommendations in the past to include mowing into the annual management routine to provide specific habitat for birds. Both short and tall mowing has proven to be a very effective management tool for birds. At the same time, mowing can also be a problem for species such as snakes and especially turtles. On several occasions after mowing, we collected snakes that had been killed via the mower blade or simply run over by the tractor. In addition, we have found both Eastern and ornate box turtles hit by the mower.

I suggest a few things. First that short mowing be kept to a minimum. Second is to keep annual mowing regimens at a height of thirteen inches or more. And as always, if natural disturbance such as fire can be used, make that a preference.

In conclusion, PRSNA is a very unique area in the Midwest not only for plants and birds, but also for the reptiles and amphibians that are geographically located in south central Illinois. Every species of reptile and amphibian that one can expect to be there is there in relatively fair numbers. Providing the proper habitat for these few vertebrates will no doubt help bring greater diversity of other animals to this site.

Literature Cited:

Smith, Phillip. 1961. The Amphibians and Reptiles of Illinois. IL Nat. His. Surv. Bull. 28:1.

Mossman, M.J., L.M. Hartman, R. Hay, J.R. Sauer, B.J. Dhuey. 1998. Monitoring long-term trends in Wisconsin frog and toad populations. In: Status and Conservation of Midwestern Amphibians. Ed. Michael J. Lannoo. Univ. of Iowa Press. Pp169-198.

Johnson, T.R. 1998. Amphibian and Reptile Management Guidelines. Conservation Commission of the State of Missouri. Pp 15.

Acknowledgements:

I would like to personally thank the Department of Natural Resources and the Small Wildlife Preservation Fund for financial support, as well as the Department of Natural Resources and Environmental Sciences at the University of Illinois, and the Department of Biological Sciences at Eastern Illinois University for financial and equipment assistance. Thanks also to Scott Simpson and Terry Esker for allowing me access to a fantastic study site. And a big thank you to Jeff Walk and Eric Kershner, for advice and data, and their summer bird crews for hours of volunteer work.

TABLE 1 - Species list and relative abundance of reptiles and amphibians at Prairie Ridge State Natural Area, Jasper and Marion Counties Illinois as of June 4, 1999.

ORDER	SPECIES	# INDIVIDUALS	# OBSERVATIONS	RANK
Anura	Bullfrog (<i>Rana catesbeiana</i>)	*	*	VC
	Southern Leopard Frog (<i>Rana sphenoccephala</i>)	*	*	C
	Crayfish Frog (<i>Rana areolata</i>)	*	*	UC
	Wood Frog (<i>Rana sylvatica</i>)	*	*	UC
	Northern Cricket Frog (<i>Acris crepitans</i>)	*	*	VC
	Western Chorus Frog (<i>Pseudacris triseriata</i>)	*	*	VC
	Spring Peeper (<i>Pseudacris crucifer</i>)	*	*	VC
	Gray Treefrog (<i>Hyla chrysocelus/versicolor</i>)	*	*	UC
	Fowler's Toad (<i>Bufo woodhousei fowleri</i>)	*	*	VC
	American Toad (<i>Bufo americanus</i>)	*	*	UC
Caudata	Smallmouth Salamander (<i>Ambystoma texanum</i>)		3	3 C
	Tiger Salamander (<i>Ambystoma tigrinum</i>)		1	1 UC
	Slimy Salamander (<i>Plethodon glutinosus</i>)		4	4 UC
Testudines	Painted Turtle (<i>Chrysemys picta marginata</i>)	*		72 VC
	Common Snapping Turtle (<i>Chelydra serpentina</i>)		20	25 VC
	Red-eared Slider (<i>Trachemys scripta</i>)		6	6 C
	Common Musk Turtle (<i>Sternotherus odoratus</i>)		3	3 UC
	Blanding's Turtle (<i>Emydoidea blandingi</i>)		1	1 UC
	Eastern Box Turtle (<i>Terrepena carolina</i>)		43	45 UC
	Ornate Box Turtle (<i>Terrepena ornata</i>)		47	52 UC
Serpentes	Garter Snake (<i>Thamnophis sirtalis</i>)		107	121 VC
	Prairie Kingsnake (<i>Lampropeltis calligaster</i>)		63	65 VC
	Blue Racer (<i>Coluber constrictor</i>)		8	9 C
	Rough Green Snake (<i>Opheodrys aestivus</i>)		2	2 UC
	Brown Snake (<i>Storeia dekayi</i>)		3	3 UC
	Eastern Hognose Snake (<i>Heterodon platyrhinos</i>)		3	3 UC
	Black Rat Snake (<i>Elaphe obsoleta</i>)		1	1 UC
	Northern Water Snake (<i>Nerodia sipedon</i>)		5	5 C
Squamata	Fence Lizard (<i>Sceloporus undulatus</i>)		1	1 UC
	Five-lined Skink (<i>Eumeces fasciatus</i>)		5	5 UC
TOTAL	Species = 30	~ 326		427

* Denotes that data is not yet available for those species.

~ Individuals captured does not include *C. picta*.

Table 2 - Locations and rankings of frog call surveys at Prairie Ridge State Natural Area 1999.

Tract	Date	Species	Rank
McCormick F	7-Feb	Spring Peeper	1
	7-Feb	Chorus Frog	2
	7-Feb	Southern Leopard	1
McCormick E	7-Feb	Spring Peeper	3
	7-Feb	Chorus Frog	2
	7-Feb	Southern Leopard	1
CIPS	7-Feb	Crayfish Frog	1
	1-Mar	Spring Peeper	3
	1-Mar	Chorus Frog	3
Fuson	1-Mar	Crayfish Frog	2
	1-Mar	Southern Leopard	2
	1-Mar	Spring Peeper	3
Walters	1-Mar	Chorus Frog	3
	1-Mar	Crayfish Frog	1
	1-Mar	Southern Leopard	1
McCormick E	1-Mar	Nothing Heard	0
	1-Mar	Spring Peeper	2
INHS	1-Mar	Chorus Frog	3
	8-Mar	Chorus Frog	2
	8-Mar	Spring Peeper	2
Walters	8-Mar	Southern Leopard	1
	12-Mar	Spring Peeper	3
	12-Mar	Chorus Frog	2
Fuson	12-Mar	Southern Leopard	1
	12-Mar	Crayfish Frog	1
	31-Mar	Spring Peeper	3
Mark 40	31-Mar	Chorus Frog	1
	31-Mar	Southern Leopard	2
	31-Mar	Crayfish Frog	2
CIPS	31-Mar	Spring Peeper	2
	31-Mar	Chorus Frog	2
	31-Mar	Southern Leopard	2
McCormick D	31-Mar	Nothing Heard	0
	1-Apr	Spring Peeper	2
	1-Apr	Crayfish Frog	2
	1-Apr	Chorus Frog	2
McCormick F	1-Apr	Southern Leopard	2
	1-Apr	Nothing Heard	0
McCormick E	1-Apr	Southern Leopard	1
	1-Apr	Spring Peeper	2
	1-Apr	Chorus Frog	2
	1-Apr	Crayfish Frog	2

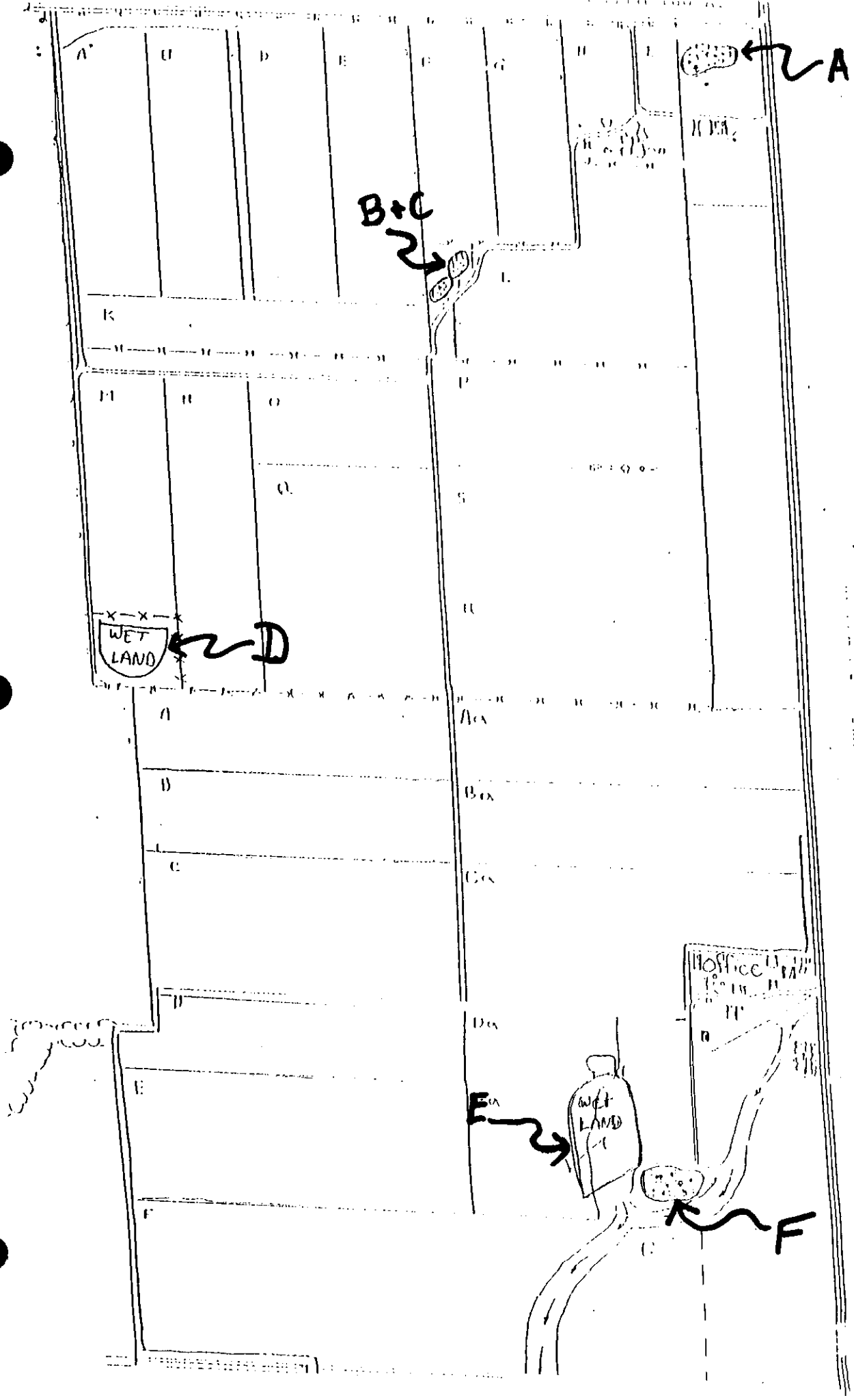
Tract	Date	Species	Rank
Fuson	2-Apr	Chorus Frog	3
	2-Apr	Spring Peeper	3
	2-Apr	Crayfish Frog	3
McCormick B,C	2-Apr	Southern Leopard	2
	8-Apr	Spring Peeper	2
McCormick B,C	8-Apr	Chorus Frog	1
	13-Apr	Bullfrog	1
McCormick B,C	13-Apr	Chorus Frog	1
	13-Apr	Spring Peeper	1
	30-Apr	Cricket Frog	1
Walters	30-Apr	Fowler's Toad	2
	30-Apr	Cricket Frog	2
McCormick E	30-Apr	Fowler's Toad	2
	30-Apr	Cricket Frog	2
Fuson	30-Apr	Fowler's Toad	1
	Apr-31	Cricket Frog	3
CIPS	Apr-31	Fowler's Toad	2
	3-May	Cricket Frog	3
Mark 40	3-May	Fowler's Toad	2
	3-May	Cricket Frog	1
McCormick B,C	3-May	Fowler's Toad	1
	5-May	Cricket Frog	2
Walters	5-May	Fowler's Toad	2
	5-May	Cricket Frog	2
Donsbach	5-May	Cricket Frog	3
	5-May	Fowler's Toad	2
INHS	11-May	Cricket Frog	2
	11-May	Fowler's Toad	2
CIPS	18-May	Cricket Frog	3
	18-May	Cricket Frog	3
Fuson	18-May	Fowler's Toad	2
	18-May	Fowler's Toad	2
Mark 40	20-May	Cricket Frog	2
	20-May	Fowler's Toad	1
McCormick B,C	22-May	Cricket Frog	3
	22-May	Fowler's Toad	1
	22-May	Bullfrog	1
Walters	22-May	Cricket Frog	3
	22-May	Fowler's Toad	1
Donsbach	22-May	Bullfrog	2
	22-May	Cricket Frog	3
Donsbach	22-May	Fowler's Toad	2
	22-May	Bullfrog	2

Table 3 - Range of chorus survey on each tract at Prairie Ridge State Natural Area, Jasper and Marion Counties, Illinois.

Tract	Bullfrog	Chorus	Cricket	Crayfish	So. Leo.	Sp. Peep	Fowler's
McCormick	1	1 to 3	1 to 3	1 to 2	1 to 2	1 to 3	1 to 2
CIPS	*	3	3	2	2	3	2
Fuson	1	1 to 3	2	1 to 3	1 to 2	3	2
Walters	2	2	2 - 3	1	1	3	2
INHS	*	2	*	0	1	2	2
Mark 40	*	2	1 - 2	2	2	2	1 to 2

* Denotes several individuals seen but no call survey was done during the breeding season.

Appendix A - Map of Account of Tract Surveyed by the State of Michigan, showing the location of surveyed wet areas.



Budget

Illinois Wildlife Preservation Funds Requested:

Labor				
18 days @ \$28.00 / day	\$504.00	504.00	504.00	
Travel				
400 miles @ \$0.30 / mi	\$120.00	120.00	120.00	
Equipment				
1 Snake hook	\$25.00	25.00	25.00	
2 Wire Traps (materials)	\$25.00	0.00		
1 Hoop net (materials)	\$30.00	30.00	30.00	
Commodities				
Trap Baits	\$10.00	25.00	25.00	
Notebooks/Markers/Pencils/	\$10.00	0.00		
Marking Flags and Tape	\$15.00	0.00		
Netting Twine	\$30.00	15.00	15.00	
Subtotal Funds Requested	\$769.00		\$769.00	

Funds Provided:

2 Assistants		Volunteer
Herp. Attractor Panels		\$20.00
1 pH Meter		\$40.00
1 Seine Net		\$55.00
Marking/Measuring Supplies		\$120.00
4 Pitfall Traps with Drift Fences		\$150.00
4 Hoop Nets		<u>\$200.00</u>
Subtotal Funds Provided		\$585.00
Total Funds for Project		\$1354.00