

MAMMALS OF THE GOOSE POND FISH AND WILDLIFE AREA, GREENE COUNTY, INDIANA

John O. Whitaker, Jr. and Angela K. Chamberlain: Department of Biology, Indiana State University, Terre Haute, Indiana 47809

ABSTRACT. Mammals at Goose Pond Fish and Wildlife Area, just south of Linton, in Greene County, Indiana, were studied in July, 2010 in association with a general biodiversity survey there. Trapping for small mammals (3450 trap-nights) and 1 night of mist-netting for bats were carried out, and older records were accumulated. A total of 27 species of mammals are currently known from Goose Pond, the most common being the prairie vole, *Microtus ochrogaster*.

Keywords: Mammals, Goose Pond, Survey

In mid-July, 2010, approximately 100 scientists and naturalists converged upon the Goose Pond Fish and Wildlife Area, Greene County, Indiana to gather information on the biota present. Fourteen taxonomic groups were included in the biodiversity survey; we agreed to collect information on the mammals. Our objectives were to accumulate previous information, to obtain information on distribution and abundance of smaller mammals, and to gather information which could be used as baseline data for further studies there.

STUDY AREA

The Goose Pond Fish and Wildlife Area is in west central Indiana, just south of Linton (Map 1). Historically this area included much wetland which beginning in the early 1800's and continuing through the 1970's was gradually converted to farmland. By the early 1970's most of it was farmland and remained as such until 1999 when 7135 acres were enrolled in the Wetlands Reserve Program (WRP). The area was purchased by the Indiana DNR in 2005 and was transformed back into wetlands and grassland, and 1300 acres have been restored to prairie. There is relatively little wooded area, most of which is along streams or located in the extreme northwestern part of the property.

Corresponding author: John O. Whitaker, Jr, Department of Biology, Indiana State University, Terre Haute, IN 47809; Phone: 812-237-2383; Fax: 812-237-3378 (e-mail: John.Whitaker@indstate.edu).

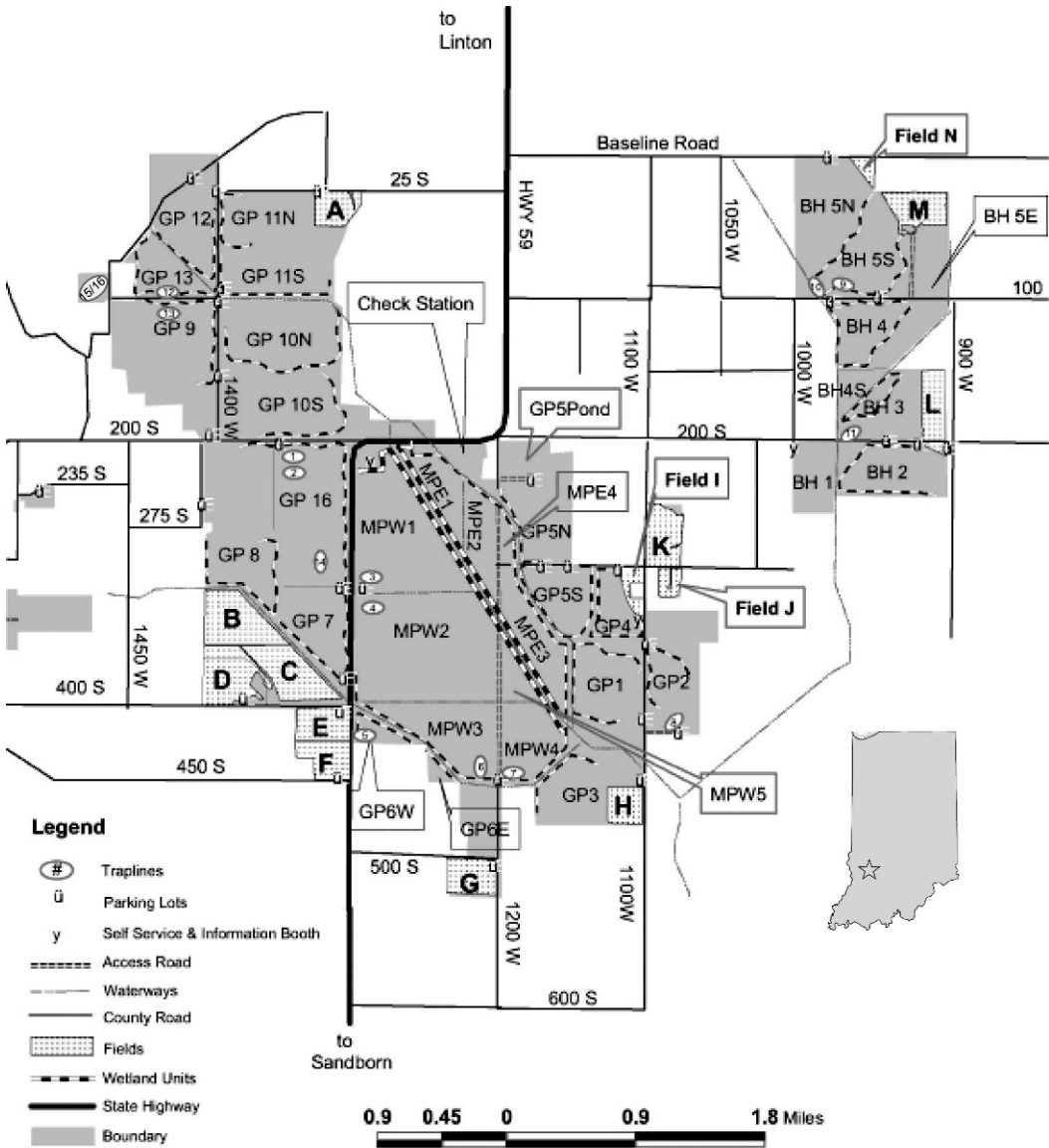
METHODS

Small mammal trapping was conducted from 12 to 17 July 2010 and one night of mist-netting for bats was conducted on 20 July. Small mammal trapping occurred in 15 lines of 50–150 traps. In addition, one line of 26 snap-back rat traps was used for one night in the woods located in the northwest corner of the property (line 16, see Map 1). The total number of trap-nights for the study was 3450. The mean number of small mammals per 100 trap-nights was 8.9. These data were for a limited time; however, we believe this study provides a good estimate of the small mammal community present and that these numbers can be roughly compared with those of some other described small mammal communities in Indiana.

A total of 867 snap-back mouse traps was set in 14 separate lines in the open fields and along the wetlands of Goose Pond (Map 1). In addition, two lines of mouse traps and one line of 26 rat traps were set in the biggest wooded area on the property, the woodland across the road and west of GP13. Mouse traps were baited with peanut butter and oatmeal. The rat traps were set for flying squirrels and were baited with apple. In addition, information on larger species was gathered from Brad Feaster, the property manager of Goose Pond Fish and Wildlife Area. Mist-netting for bats was undertaken on one night. The net was positioned across the wooded stream in area MPW4.

RESULTS

A total of 306 small mammals, including 8 species, was caught while trapping and netting



* Modified from IDNR Goose Pond FWA Waterfowl Draw Map.

Map 1.—Goose Pond Fish and Wildlife Area, Greene County, Indiana, with location of traplines indicated.

during this work (Table 1). The most abundant small mammal at Goose Pond is clearly the prairie vole, *Microtus ochrogaster*. It far outnumbered all other species combined, 257 (81.3% of total captures) to 47. Because this species rarely occurs in cultivated habitats, prairie voles must have been abundant in the dry fields present between the agricultural lands when the area was cultivated, and rapidly

spread when these areas were converted from open lands back to fields and wetlands. The other grassland vole present is the meadow vole, *Microtus pennsylvanicus*, which occurs in more lush, moist grasslands. The fact that so few meadow voles were taken during this work suggests that not much moist grassland was present during the time the area was in agriculture.

Table 1.—Mammals currently known from Goose Pond Fish and Wildlife Area as of July 2010.

Scientific name	Common name	Snap trap lines																TOTAL		
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16			
<i>Microtus ochrogaster</i>	Prairie vole	35	19	4	11	5	21	8	13	5	6	1	17	10	102			257		
<i>Microtus pennsylvanicus</i>	Meadow vole	7				2							1		1			11		
<i>Mus musculus</i>	House mouse		1	1	1		1	1	1	3	2	1						10		
<i>Peromyscus leucopus</i>	White-footed mouse				1				4	5						4	1	10		
<i>Cryptotis parva</i>	Least shrew													1				6		
<i>Blarina brevicauda</i>	Northern short-tailed shrew						1					2	1				1	5		
<i>Peromyscus maniculatus</i>	Prairie deer mouse		2				1								1			4		
<i>Synaptomys cooperi</i>	Southern bog lemming													1				1		
Bats captured 26 July 2010 in mist net at Goose Pond area MPW4 stream located along trap line 7																				
<i>Perimyotis subflavus</i>	Eastern pipistrelle																		1	
<i>Lasiurus borealis</i>	Red bat																		1	
Mammals observed or on record at Goose Pond FWA as of July 2010																				
<i>Didelphis virginiana</i>	Opossum																			
<i>Scalopus aquaticus</i>	Eastern mole																			
<i>Myotis lucifugus</i>	Little brown bat																			
<i>Sylvilagus floridanus</i>	Cottontail																			
<i>Tamias striatus</i>	Eastern chipmunk																			
<i>Sciurus niger</i>	Fox Squirrel																			
<i>Marmota monax</i>	Woodchuck																			
<i>Castor canadensis</i>	Beaver																			
<i>Ondatra zibethicus</i>	Muskrat																			
<i>Canis latrans</i>	Coyote																			
<i>Vulpes vulpes</i>	Red fox																			
<i>Lynx rufus</i>	Bobcat																			
<i>Procyon lotor</i>	Raccoon																			
<i>Mustela nivalis</i>	Least weasel																			
<i>Mustela vison</i>	Mink																			
<i>Mephitis mephitis</i>	Striped skunk																			
<i>Odocoileus virginianus</i>	White-tailed deer																			
																		Total mammals collected:		306

Two other small mammals are associated with agricultural habitats, the prairie deer mouse, *Peromyscus maniculatus*, and the house mouse, *Mus musculus*. In Indiana they are the only small mammals regularly found in cultivated fields (Whitaker & Mumford 2009). The prairie deer mouse is the only small mammal in Indiana that occurs in increased numbers in areas with decreased vegetative cover. It lives in cultivated areas all year, uses the soil as its cover, and feeds on leftover crops and weed seeds. By contrast, the house mouse is often abundant when there is much ground cover between the rows of crops, especially of yellow foxtail (*Setaria lutescens*). Once the crops are harvested, the prairie deer mice remain, but the house mice leave and search for grassy areas with good cover. At Goose Pond it appears that these two species are a holdover from previous agricultural use of the land, and we suspect they will decline in response to the restoration program.

Two species of shrews were caught, the short-tailed shrew, *Blarina brevicauda*, and the least shrew, *Cryptotis parva*. The short-tailed shrew is usually most abundant in moist and wooded areas, whereas the least shrew, unlike most other shrews, is found in dry fields. At Goose Pond, the least shrew was found in greater numbers than the short-tailed shrew; this is probably due to the previous agricultural and dry field history of the area. No long-tailed shrews (genus *Sorex*) were taken at Goose Pond, although two species are possibilities, the masked shrew, *Sorex cinereus*, and the southeastern shrew, *Sorex longirostris*. It was surprising that neither was taken. Two separate eastern mole burrows, *Scalopus aquaticus*, were found on the dike about 1 mile south and 1 mile east of the headquarters building. This species is usually found in relatively dry open habitats. However, it seems to be quite rare at Goose Pond probably because so much of the land is now lush grasslands and wetlands.

Both species of *Peromyscus*, the prairie deer mouse, mentioned above, and the woodland form, the white-footed mouse, *Peromyscus leucopus*, were taken at Goose Pond. However, few white-footed mice were caught, probably because there is so little woodland area on the property. All white-footed mice taken were along wooded areas.

The most interesting species of small mammal known from Goose Pond were the least shrew (discussed above), the bog lemming,

Synaptomys cooperi (one taken by us and one taken by Dale Sparks), and the least weasel, *Mustela nivalis*. The bog lemming is widespread and quite rare, but seldom taken, because it does not respond well to bait. Likewise the least weasel is difficult to trap. Most individuals are found when they become trapped in recently dug postholes or graves, fall into swimming pools, or are hit by cars. The least weasel feeds mostly on voles, therefore has an abundant supply of food at Goose Pond.

The beaver *Castor canadensis*, muskrat *Onatra zibethicus*, white-tailed deer *Odocoileus virginianus*, and coyote *Canis latrans* are other species that are common at Goose Pond. The coyote is the major large predator, and may limit the fox population. Mink, *Mustela vison*, are quite common at Goose Pond, as is the cottontail rabbit, *Sylvilagus floridanus*.

To date, three species of bats have been found on the property. We captured and released a red bat, *Lasiurus borealis*, and an eastern pipistrelle, *Perimyotis subflavus*, by mist-netting along a wooded stream at trapping area 7 (Map 1). In addition, there is a large barn at the area headquarters with a population of little brown bats, *Myotis lucifugus*. Brad Feaster counted approximately 100 individuals coming from this barn one evening in July 2010. Red bats normally roost among the leaves of trees, pipistrelles live in clusters of dead leaves, and little brown bats almost always form their roosts in human structures. Bats are probably relatively scarce at Goose Pond due to the limited amount of woodland habitat which could provide roost sites. However, Goose Pond should be a good foraging area for bats because of the open wetlands and fields.

There is no information about mammals of the Goose Pond area prior to its transformation to wetland. However, Dale W. Sparks used mouse-traps in March 2007 to capture 42 small mammals, white-footed mouse (14 individuals), prairie deer mouse (8), house mouse (8), prairie vole (4), meadow vole (4), and southern bog lemming (1). He also reported the coyote, the opossum, the cottontail, and the eastern mole. Brad Feaster, the property manager of Goose Pond Fish and Wildlife Area, provided additional information on some of the larger species (Table 1).

Goose Pond is a newly established site. Sites comparable to Goose Pond where we have adequate data are Willow Slough Fish and Wildlife Area, Newton County (Whitaker,

2004) and Newport Chemical Depot, Vermillion County (Veilleux et al. 1998). As Willow Slough is in the northwest part of the state, several species occurring there would not be expected at Goose Pond. These include the thirteen-lined ground squirrel *Spermophilus tridecemlineatus*, Franklin's ground squirrel *S. franklinii*, red squirrel *Tamiasciurus hudsonicus*, and the plains pocket gopher *Geomys bursarius*.

Only eight species of small mammal were trapped at Goose Pond, whereas 13 were trapped at Willow Slough and 11 at Newport. While the higher number of species caught at the latter two sites may reflect the greater amount of work done there, they are likely due to the longer availability of natural habitats. All eight species of terrestrial small mammals taken at Goose Pond were also taken at Willow Slough and with the exception of the least shrew were also captured at Newport. Species taken at Willow Slough and Newport but not at Goose Pond were the masked shrew *Sorex cinereus*, the western harvest mouse *Reithrodontomys megalotis*, and the meadow jumping mouse *Zapus hudsonius*. The masked shrew and meadow jumping mouse should eventually appear at Goose Pond as will the western harvest mouse which first appeared at Willow Slough about 1969. It has been extending its range and has currently reached northern Clay County. Because they are primarily woodland forms, the short-tailed shrew and white-footed mouse were taken in relatively low numbers at Goose Pond. The higher numbers for the least shrew and the bog lemming at Goose Pond are probably, at least partly, attributable to the fact there is a great deal of dry open grassland at Goose Pond.

Of the larger mammals, most of those at Newport and Willow Slough were the same as those at Goose Pond. This is probably because larger mammals have greater dispersal powers and can reach a newly created area rather quickly. However, of interest is the fact a bobcat, *Lynx rufus*, a species which has been increasing in Indiana over the past few years, was observed at Goose Pond but not at the other two areas,

Species likely to be found at Goose Pond.—This was a short term study providing a valuable snap-shot of the abundance and diversity of the site. In addition to the previously mentioned species, others not found but likely to occur on the site are the gray fox *Urocyon cinereoargenteus* (although it is becoming increasingly uncommon in Indiana) and the New York

weasel *Mustela frenata*. The meadow jumping mouse was not taken during our trapping; this was unexpected as meadow jumping mouse habitat is excellent at Goose Pond. Also, neither of the long-tailed shrews, *Sorex cinereus* or *S. longirostris* were taken. Any of the following bats could occur: the northern myotis *Myotis septentrionalis*, the Indiana myotis *Myotis sodalis*, the big brown bat *Eptesicus fuscus*, and the hoary bat *Lasiurus cinereus*. The silver-haired bat, *Lasionycteris noctivagans* could be present during spring and fall migration. Other mammals that might be expected are the southern flying squirrel *Glaucomys volans*, the woodland vole *Microtus pinetorum*, Norway rat *Rattus norvegicus*, the river otter *Lontra canadensis*, and the badger *Taxidea taxus*.

Similar studies, perhaps every five years, would be extremely valuable and interesting to show further development of the mammalian community.

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