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MAMMALS OF THE NEWPORT CHEMICAL DEPOT, VERMILLION COUNTY, INDIANA

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ABSTRACT: A survey of the distribution and abundance of mammals at the Newport Chemical Depot, Vermillion County, Indiana, showed that at least 33 species of mammals from 14 families are present in the area, including the opossum, 2 shrews, 1 mole, 8 bats, 13 rodents, 6 carnivores, 1 rabbit, and the white-tailed deer. One federally endangered species, the Indiana bat (*Myotis sodalis*) is present, and one state species of special concern, the western harvest mouse (*Reithrodontomys megalotis*), a recent immigrant into the State, has expanded its range to the south and now occurs in the area. Because of its rich faunal and floral diversity, we recommend that the natural lands of the Newport Chemical Depot be set aside as a natural area when the plant ceases operations.

KEYWORDS: Mammals, Newport Chemical Depot, Vermillion County, Indiana.

INTRODUCTION

Both the Indiana Academy of Science's Committee on Biodiversity and Conservation and the Indiana Department of Natural Resources' Technical Advisory Committee on Mammals have recommended that the natural areas of Indiana be surveyed for their biotic diversity. In addition, the Department of Defense has recommended that areas under its control be surveyed, especially for federally endangered and threatened species. This study and similar studies at Newport on fishes (this issue), reptiles and amphibians (this issue), and birds (Chandler and Weiss, 1996) have been undertaken to partially fulfill these objectives.

The Newport Chemical Depot (formerly the Newport Army Ammunition Plant) is located southwest of Newport in northern Vermillion County, Indiana. The depot is a 2,874 ha former munitions manufacturing facility which currently houses the VX nerve agent in a small section of the plant. The depot has acted as both producer and/or repository for various military munitions since the early 1940's.

Approximately one-half of the depot is rented as agricultural land. The remainder of the Newport Chemical Depot is comprised of natural habitats, consisting primarily of grasslands and forest with a small amount of marsh and riparian habitat (Chandler and Weiss, 1996). The majority of the wooded area occurs along the riparian corridors of Little Vermillion Creek, Jonathon Creek, Little Raccoon Creek, and their tributaries (Figure 1). Grassy fields border these wooded areas. The large cultivated fields are located mainly in the depot's interior.

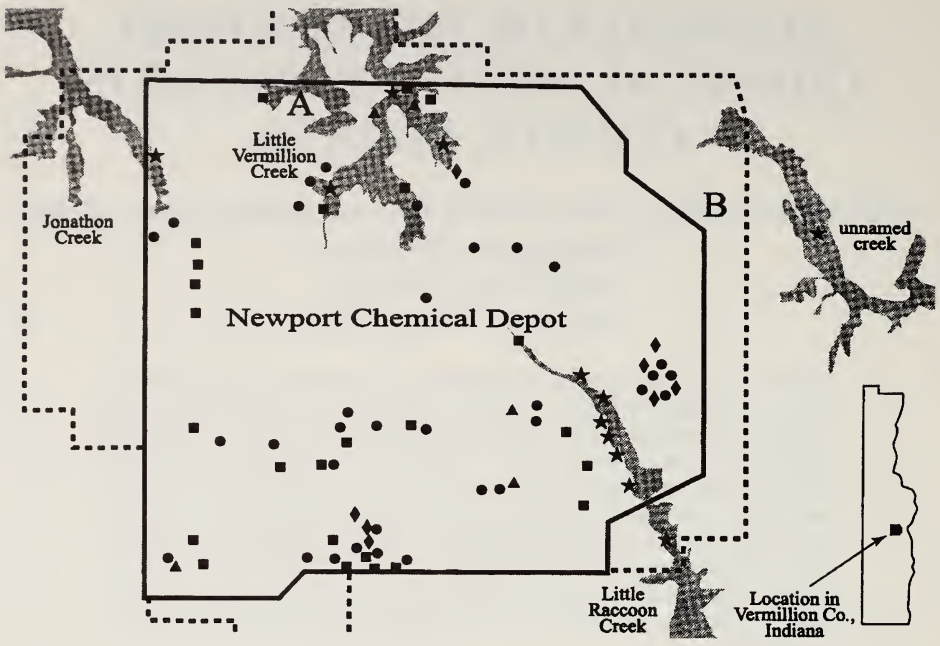

Fig. 1. Map of Newport Chemical Depot study area, Vermillion Co., Indiana. Dashed lines indicate the property boundary, and solid lines indicate the position of the perimeter fence. Little Vermillion Creek, Jonathon Creek, Little Raccoon Creek, and the unnamed creek are included to indicate riparian and wooded habitats. Locations of snap traps (●) rats traps (▲), live traps (■), drift fences (♦), and mistnet sites (★) are shown. Also included are roosts A and B of the Indiana bat, *Myotis sodalis*.

Pinkam, *et al.* (1976) reported 15 species of mammals from the depot (Table 1). Jackson and Whitaker (1987) summarized information on the distribution and abundance of endangered and threatened plants and vertebrates presumed present at the depot and within 20 km of its boundaries. They reported that *Myotis sodalis* and *Felis rufus*, federal and state endangered species, respectively, and two state listed species, *Nycticeius humeralis* (endangered) and *Taxidea taxus* (threatened), were the most likely of the listed species to occur at the depot. These authors identified 13 structures which might provide suitable roosting sites for bat colonies. They searched each structure but found no bats. PRC Environmental Management, Inc. (1997), surveyed the area specifically for bats by mistnetting. They found 6 species, including the federally endangered Indiana bat (*Myotis sodalis*). Two Indiana bats were radio-tagged and tracked to two maternity roosts, one inside and one outside of the depot's perimeter security fence. We undertook this study to assess the distribution and abundance of these and other mammals at the Newport Chemical Depot.

MATERIALS AND METHODS

A comprehensive survey of mammals was initiated at the Newport Chemical Depot in 1993-1994 (Whitaker, 1994) and completed in 1998. In addition,

Table 1. Summary of mammals known from the Newport Chemical Depot.

	Pinkam, *et al.*, 1976[a]	Combined Surveys, 1993-1994, 1998	PRC Env., 1997 (bats)	Assessment of of Abundance
Didelphimorphia				
Didelphidae				
Didelphis virginiania	•	15		Common
Insectivora				
Soricidae				
Blarina brevicauda	•	16		Common
Sorex cinereus		16		Common
Talpidae				
Scalopus aquaticus		numerous[b]		Common
Chiroptera				
Vespertilionidae				
Myotis septentrionalis		15	2	Common
Lasiurus borealis		10	5	Occasional
Myotis sodalis		4	4	Occasional
Pipistrellus subflavus		4	3	Occasional
Eptesicus fuscus		4		Occasional
Myotis lucifugus			1	Uncommon
Lasionycteris noctivagans			1	Uncommon
Lasiurus cinereus			1	Uncommon
Rodentia				
Muridae: Sigmodontinae				
Peromyscus leucopus	•	171		Abundant
Peromyscus maniculatus		86		Abundant
Reithrodontomys megalotis		16		Occasional
Muridae: Arvicolinae				
Microtus ochrogaster	•	157		Abundant
Synaptomys cooperi	•	27		Common
Microtus pennsylvanicus	•	12		Common
Ondatra zibethicus	•	2		Rare
Muridae: Murinae				
Mus musculus	•	8		Occasional
Dipodidae				
Zapus hudsonius		8		Uncommon

Table 1. *(continued)*

	Pinkam, *et al.*, 1976[a]	Combined Surveys, 1993-1994, 1998	PRC Env., 1997 (bats)	Assessment of of Abundance
Sciuridae				
Sciurus niger	•	61		Abundant
Tamias striatus	•	25		Abundant
Marmota monax	•	2		Rare
Spermophilus tridecemlineatus		2		Rare
Castoridae				
Castor canadensis		6		2 colonies
Lagomorpha				
Leporidae				
Sylvilagus floridanus	•	107		Abundant
Carnivora				
Procyonidae				
Procyon lotor	•	105		Common
Mustelidae				
Mustela frenata		3		Uncommon
Mephitidae				
Mephitis mephitis	•	18		Occasional
Canidae				
Canis latrans	•	78		Common
Urocyon cinereoargenteus		4		Uncommon
Vulpes vulpes		5		Uncommon
Artiodactlya				
Cervidae				
Odocoileus virginianus		numerous [b]		Abundant

[a]The species Pinkam, *et al.* (1976) report as present are indicated here with an "•."
[b]Does not indicate total count of individuals but numerous observations.

a special project on bats was carried out in 1997 (PRC Environmental Management, Inc.,1997), and data from this study are also included here.

Snapback mousetraps were set at 11 sites in 1993 and at 23 in 1998, giving a total of 34 traplines. An average of 150 traps was set per site for a total of 15,300

trapnights. Traps were checked daily for at least 3 days and then removed. The traps were initially baited with peanut butter and then rebaited with oatmeal on successive days as needed.

Rat traps were set at 5 sites in 1998 and none in 1994 (Table 2). These traps were set specifically to capture southern flying squirrels (*Glaucomys volans*). An average of 15 traps were set per site. We searched for dead or dying trees which had obvious cavities and secured traps to their trunks with rope. Some traps were also set at the base of such trees. Protocol for checking these traps was identical to that used for the snapback mousetraps.

Livetraps were set at 5 sites in 1993, 8 in 1994, and 10 in 1998 (Table 2). An average of 14 livetraps was set per site. Three types of livetraps were used, two wire frame traps (Tomahawk and Havahart) and one trap constructed to capture least weasels. Traps were also set for Franklin's ground squirrels (*Spermophilus franklinii*) and thirteen-lined ground squirrels (*Spermophilus tridecemlineatus*). Livetrap sites were often maintained and sampled over longer periods to allow the animals to become familiar with these new additions to their environment.

A series of pitfall traps and drift fences were set to sample shrews. Traps (cans or plastic cylinders approximately 20 cm deep x 12 cm wide) were sunk in the ground with their mouths at the level of suspected travel routes typically used by shrews. These traps were often set under the bottom edge of a fallen log. Drift fences were also established (two 2.5 m x 0.6 m rectangular sections of plywood standing lengthwise on their edges to form a cross) with five pitfall traps buried per fence. Traps were partially filled with water to quickly drown trapped animals. These traplines were left in the field for extended periods of time (often up to two weeks) to increase the chance of capturing animals.

Mistnetting for bats occurred at 12 sites in 1993-1994, 12 in 1997 (PRC Environmental Management, Inc., 1997), and 10 in 1998 (Table 3), giving a total of 42 net nights (some sites were sampled multiple times). Thirty by 14 foot nets were set across streams which had canopy overhead. Bats use streams as flyways and foraging areas and, therefore, are often best sampled at these locations. Nets were operational from 1930 through 0100 hrs, on average. Bat detectors were used throughout netting to determine usage of the area by bats. Nets were checked with a flashlight for the presence of bats each time a call was heard or once every 5 to 10 minutes. Three known maternity colonies, one of the northern myotis found in 1993 and two of the federally endangered Indiana bat found during the 1997 bat survey, were monitored for colony size throughout 1997 and 1998. Additional colony counts were conducted by Phillip W. Cox of the Newport Chemical Depot in 1997.

Direct observation (both by ourselves and depot employees) allowed the documentation of various species not subject to capture in typical traps (deer, coyote, fox, etc.). The depot employees recorded all sightings of animals from January through August, 1993. Data from Pinkam, *et al.* (1976), employee reports, and our own observations from 1993-1994, 1997, and 1998 are summarized in Table 1.

Table 2. Mammals taken at the Newport Chemical Depot by various trapping methods.

Species	Number of Individuals		Number of Lines	
	Total	Number/100 TN[a]	Total	Lines (%)
Results from 34 mouse snaptrap lines				
Soricidae				
Blarina brevicauda	14	0.41	7	21%
Sorex cinereus	3	0.09	2	6%
Muridae: Sigmodontinae				
Peromyscus leucopus	166	3.13	24	71%
Peromyscus maniculatus	86	1.62	17	50%
Reithrodontomys megalotis	16	0.30	8	24%
Muridae: Arvicolinae				
Microtus ochrogaster	156	2.94	23	68%
Synaptomys cooperi	27	0.51	9	26%
Microtus pennsylvanicus	12	0.23	5	15%
Muridae: Murinae				
Mus musculus	8	0.15	5	15%
Dipodidae				
Zapus hudsonius	8	0.15	6	18%
Sciuridae				
Tamias striatus	3	0.06	3	9%
Results from 15 livetrap lines				
Didelphidae				
Didelphis virginiana	9	0.60	5	33%
Muridae				
Microtus ochrogaster	2	0.13	2	13%
Sciuridae				
Tamias striatus	19	1.27	8	53%
Sciurus niger	1	0.07	1	7%
Leporidae				
Sylvilagus floridanus	1	0.07	1	7%
Procyonidae				
Procyon lotor	2	0.13	1	7%

Table 2. *(continued)*

Species	Number of Individuals		Number of Lines	
	Total	Number/100 TN[a]	Total	Lines (%)
Mustelidae				
Mustela frenata	2	0.13	2	13%
Mephitidae				
Mephitis mephitis	1	0.07	1	7%
Results from 5 rat trap lines				
Muridae				
Peromyscus leucopus	5	2.22	4	80%
Sciuridae				
Tamias striatus	1	0.44	1	20%
Results from 11 drift fence/pitfall lines				
Soricidae				
Sorex cinereus	13	1.18	5	45%
Blarina brevicauda	2	0.18	2	18%
Muridae				
Microtus ochrogaster	1	0.09	1	9%

[a] TN = Trapnights.

RESULTS

Thirty-three species of mammals (Table 1) were recorded during the studies conducted in 1993-1994, 1997, and 1998, including one federally endangered species, the Indiana myotis (*Myotis sodalis*), and one species of state special concern, the western harvest mouse (*Reithrodontomys megalotis*).

Didelphimorphia

Didelphidae (Opossums). Opossums (*Didelphis virginiania*) were common at the Newport Chemical Depot. Nine individuals were taken in livetraps, and all were released. Most were captured in the northeastern corner of the plant. Numerous individuals were observed along roadsides throughout the survey, including six individuals observed by depot employees.

Insectivora

Soricidae (Shrews). At least two species of shrews are present at the depot. Sixteen individuals of both the short-tailed shrew (*Blarina brevicauda*) and

masked shrew (*Sorex cinereus*) were captured (Table 1) in both wooded habitat (*B. brevicauda*, $n = 4$; *S. cinereus*, $n = 13$) and open areas with dense ground cover (*B. brevicauda*, $n = 12$; *S. cinereus*, $n = 3$). We expect that two additional shrew species are present, the southeastern shrew (*Sorex longirostris*) and least shrew (*Cryptotis parva*), although no individuals were taken.

Talpidae (Moles). One species of mole, the eastern mole (*Scalopus aquaticus*), occurs at the depot. Although no individuals were captured in traps, we did observe one individual on the bank of a stream, and numerous runways of this species are found throughout the depot.

Chiroptera

Vespertilionidae (Mouse-Eared Bats). Bats are not abundant at the depot, probably because of the relatively small amount of scattered woodland (PRC Environmental Management, Inc., 1997). However, 8 species of bats are now known to occur there (Table 3).

The most abundant bat mistnetted at Newport was the northern myotis, *Myotis septentrionalis*. Seventeen individuals of this species were netted along streams (Table 3). In addition, on 1 June 1993, a maternity colony of this species was found in building 121C. At that time, about 100 individuals were present. We examined building 121C on 7 occasions in 1998 for the presence of northern bats (Table 4). The maximum number of bats found was 46. On other occasions, fewer bats were observed, and, on one occasion, only 2 were found, indicating that the colony must be using multiple roosts during the summer. Bats banded approximately three miles away at Copperhead Cave (an abandoned clay mine) have been observed in building 121C, indicating that at least some individuals from building 121C probably hibernate at Copperhead Cave.

The second most abundant bat at the depot was the red bat, *Lasiurus borealis*. Fifteen individuals were taken. The red bat is a solitary, migratory species that lives and has its young among the foliage of trees. One hoary bat (*Lasiurus cinereus*) was found dead on plant property in the late summer of 1996.

The federally endangered Indiana bat (*Myotis sodalis*) was unknown from the area prior to 1997 when a male and a female were netted along Little Vermillion Creek near Miller's cemetery and two females were netted along an unnamed creek just east of State Route 63 (PRC Environmental Management, Inc., 1997). These two females were equipped with radio-transmitters and were tracked to two roost trees, one sugar maple (*Acer saccharum*) within the depot's north boundary (Roost A) and one slippery elm (*Ulmus rubra*) just outside the northeast perimeter's security fence (Roost B; Figure 1). Four *M. sodalis* (2 females and 2 males) were captured in 1998. One female was taken along Little Vermillion Creek, while the other female and both males were taken along Little Raccoon Creek, all within the depot's perimeter fence. Dusk counts at Roosts A and B were conducted in 1997 and 1998 (Table 4). A total of 8 individuals of *M. sodalis* was taken in mistnets at the depot.

Table 3. Bats taken by mistnetting (32 sites, 42 net nights) at the Newport Chemical Depot (data from all surveys combined).

Species	Number of Individuals		Number of Lines	
	Total	Number/Net	Total	Lines (%)
Vespertilionidae				
Myotis septentrionalis	17	0.40	5	16%
Lasiurus borealis	15	0.36	11	34%
Myotis sodalis	8	0.19	6	19%
Pipistrellus subflavus	7	0.17	5	16%
Eptesicus fuscus	4	0.10	3	9%
Lasionycteris noctivagans	1	0.02	1	3%
Myotis lucifugus	1	0.02	1	3%

Table 4. Dusk counts of northern myotis in storage building 121C and Indiana myotis at two roost sites (A and B) near the north fence at the Newport Chemical Depot.

Date	Northern Myotis at Building 121C	Indiana Myotis at Roost A	Indiana Myotis at Roost B
1997			
June 6		22[a]	
June 11		21[a]	16[a]
June 18		20[b]	
June 28		33[b]	
July 31		50[b]	
1998			
May 18	30		
June 1	18	9	
June 22	2		5
June 23			7
June 26		16	
July 17			13
July 20	31		
July 21		0	
August 17	27		
August 18	43		
August 19	36		
September 9			0

[a]Counts conducted by PRC Environmental Management, Inc. (1997).
[b]Counts conducted by Phillip W. Cox of the Newport Chemical Depot.

The eastern pipistrelle (*Pipistrellus subflavus*) was taken 7 times during the survey. One pregnant female was radio-tagged and tracked to a shagbark hickory (*Carya ovata*) where it was found roosting in a cluster of dead leaves with one other bat. Although we think most pipistrelles roost in trees, this is the first verified record of female pipistrelles doing so.

Four big brown bats (*Eptesicus fuscus*) were taken in 1994. This species most commonly roosts in man-made structures and is rarely found in tree cavities. Of the 10 species of bats still present in Indiana, *E. fuscus* is the only one believed not to be undergoing a population decline.

The little brown bat (*Myotis lucifugus*) was captured just once during the survey in 1997 (PRC Environmental Management, Inc., 1997). This species is common in Indiana and, during the summer, is mostly associated with man-made structures.

One silver-haired bat (*Lasionycteris noctivagans*) was captured on 6 June 1997 (PRC Environmental Management, Inc., 1997). This migratory species summers to the north of Indiana and winters from central Indiana southward. This individual was taken on 6 June 1997 and was probably a late migrant.

Rodentia

Muridae: Sigmodontinae (New World Mice). The most abundant species of small rodent at Newport was the white-footed mouse, *Peromyscus leucopus*. One hundred seventy-one individuals of this species were taken at 24 of 34 snap trap sites and 4 of 5 rat trap sites (Table 2). *Peromyscus leucopus* is an abundant species throughout Indiana (Mumford and Whitaker, 1982). Although mainly a woodland species, we found individuals in both woodland and grassy fields throughout the Newport Chemical Depot.

The deer mouse (*Peromyscus maniculatus*) is widely distributed across the State, especially in cultivated and sparsely grassy habitats (Mumford and Whitaker, 1982). The deer mouse was common at the depot although not as abundant as *P. leucopus* or *Microtus ochrogaster*. Eighty-six individuals of *Peromyscus maniculatus* were caught at 17 of 34 snap trap sites (Table 2). This species was most abundant in natural grassy and cleared agricultural fields.

The western harvest mouse (*Reithrodontomys megalotis*) is present in relatively low numbers. Sixteen individuals were captured at 8 of 34 snap trap sites (Table 2). These captures extend to the south the known distribution of this species in Indiana. Harvest mice were taken mainly in the southern and southeastern parts of the depot, where their primary habitat, grassy field, is most common (Mumford and Whitaker, 1982).

Muridae: Arvicolinae (Voles). The prairie vole (*Microtus ochrogaster*) is abundant in Indiana (Mumford and Whitaker, 1982) and was captured almost as frequently as *P. leucopus* at the depot (Table 1). This vole was present at 23 of 34 snap trap sites and 2 of 15 live trap sites, resulting in a sample of 157 individuals. This species was taken primarily in grassy fields, its preferred habitat (Mumford and Whitaker, 1982).

The southern bog lemming (*Synaptomys cooperi*) is often difficult to capture as it is generally not attracted to trap bait (Mumford and Whitaker, 1982). Nevertheless, we captured 27 individuals at 8 of 34 snap trap sites (Table 2). The preferred habitat of *S. cooperi* is grassy fields with green vegetation, and we found this species exclusively in such habitat. We also observed its distinctive bright green pellets in grassland runways at six sites.

The meadow vole (*Microtus pennsylvanicus*) is apparently uncommon at the depot. We caught 12 individuals at 5 of 34 snap trap sites (Table 2). Meadow voles are common throughout the northern two-thirds of Indiana, especially in moist grassy fields, but occur less abundantly in the southern one-third of the State (Mumford and Whitaker, 1982). One would expect higher numbers of *M. pennsylvanicus* at the depot as adequate habitat (moist grassy fields, fence row, and fallow fields) exists. Meadow voles undergo periodic population cycles, reaching population "highs" every 3-4 years. This species may have been at the low phase in its population cycle during our survey.

Two muskrat (*Ondatra zibethicus*) sightings were reported by plant personnel (Whitaker, 1994). We did not observe any muskrats during our survey and believe the species is uncommon in the area.

Muridae: Murinae (Old World Mice). The house mouse (*Mus musculus*), an introduced species from the Old World, was the least common murid rodent found at the depot. We captured 8 individuals at 5 of 34 snap trap sites (Table 2). This species is common in Indiana, where the mouse is found most often in man-made structures and cultivated fields with much grassy cover (Mumford and Whitaker, 1982). One specimen was captured in a grassy field.

Dipodidae (Jumping Mice). The meadow jumping mouse (*Zapus hudsonius*) is uncommon at the depot. We trapped 8 individuals at 6 of 34 snap trap sites (Table 2). All individuals of this species were trapped in an old field, its preferred habitat (Mumford and Whitaker, 1982). Eight of the 34 snap trap sites were set prior to the emergence of *Z. hudsonius* from hibernation in late April, partially explaining its relatively low abundance.

Sciuridae (Squirrels and Their Allies). The most common sciurid rodent observed at the depot was the fox squirrel (*Sciurus niger*). Although only one individual was captured in a livetrap, numerous individuals were observed in the depot's woods, including 61 reports by depot employees.

The eastern chipmunk (*Tamias striatus*) is also common at the site. Twenty-three individuals were captured, 19 from 8 of 15 livetrap sites, 3 from 3 of 34 snap trap sites, and 1 from 1 of 5 rat trap lines (Table 2). Eastern chipmunks were commonly observed in wooded areas of the depot throughout the survey, including 2 reports by depot security guards.

Two individuals of the woodchuck (*Marmota monax*) were reported by plant personnel. This species is a rare resident at the depot.

Castoridae (Beaver). We observed a recently constructed beaver dam and two individual beavers (*Castor canadensis*) at the pond created by the dam (Figure 1). In addition, four depot employees reported beavers at the small pond pro-

duced by the dam. We assume the population is relatively small, consisting most likely of two colonies. The second colony is located south of the former RDX burning grounds where a Clemson Beaver Pond Leveler has been constructed.

Lagomorpha

Leporidae (Rabbits and Hares). The only rabbit occurring at the depot is the eastern cottontail, *Sylvilagus floridanus*. One individual was captured in a livetrap, we observed numerous individuals, and the Newport security guards reported 105 sightings, indicating that this species is very common at the depot.

Carnivora

Mephitidae (Skunks). During our survey, one striped skunk (*Mephitis mephitis*) was caught in a livetrap, and we observed one live individual. In addition, sixteen reports of *M. mephitis* were made by plant personnel.

Mustelidae (Weasels and Their Allies). The long-tailed weasel (*Mustela frenata*) was taken three times at the depot, two in 1993-1994 (Whitaker, 1994) and 1 in 1997 (the individual caught in 1997 was taken during a separate research project by the first author; Tables 1, 2). This species should be relatively common in the area as suitable habitat and prey species are available.

Procyonidae (Raccoons). The raccoon (*Procyon lotor*) is common at the Newport Chemical Depot. Two individuals were captured in livetraps, and many individuals were observed throughout the plant during the survey, including 103 reports by depot security guards.

Canidae (Dogs, Foxes, and Coyotes). The coyote (*Canis latrans*) is abundant at the depot. We observed numerous individuals while driving through the area and heard many calls during evening survey work. One was observed capturing a *Microtus* during winter in patchy, heavy grass.

Both the red fox (*Vulpes vulpes*) and gray fox (*Urocyon cinereoargenteus*) were reported by plant personnel (5 and 4 individuals, respectively). Each species is most likely an uncommon resident, possibly due to competition with the increasing population of coyotes.

Artiodactyla (Even-Toed Hoofed Mammals)

Cervidae (Deer and Their Allies). The white-tailed deer (*Odocoileus virginianus*) is abundant at the depot. We observed individuals throughout the survey from nearly all areas. The depot allows hunting to help control the deer population.

Other Species of Mammals

Eight species that could reasonably occur at the depot were not documented during this survey. The southeastern shrew (*Sorex longirostris*) and least shrew (*Cryptotis parva*) should occur on site. The Norway rat (*Rattus novegicus*), southern flying squirrel (*Glaucomys volans*), and pine vole (*Microtus pinetorum*)

would also seem to be probable residents. The least weasel (*Mustela nivalis*) and mink (*Mustela vison*) are believed to occur at the depot. Also, there is a remote possibility that the bobcat (*Lynx rufus*) may be found as limited habitat is available, and this species has been on the increase in recent years. One bobcat was taken in adjacent Parke County two miles northwest of Bridgeton between Big Raccoon and Little Raccoon Creeks on 30 December 1987.

Three species of mammals not verified during this survey were reported by Newport personnel. These species include the badger (*Taxidea taxus*), gray squirrel (*Sciurus carolinensis*), and thirteen-lined ground squirrel (*Spermophilus tridecemlineatus*). The presence of these three species needs verification. In addition, 3 house cats and 4 domestic dogs were observed in the area.

DISCUSSION

The natural areas at the Newport Chemical Depot provide excellent habitat for a diverse group of mammals. At least thirty-three species of mammals from fourteen families are represented, including one federally endangered species (*Myotis sodalis*) and one species of special concern in Indiana (*Reithrodontomys megalotis*). The many stands of forest provide excellent habitat for many woodland species and roosting habitat for bats. Old field and grassland provide habitat for many rodent species, including the western harvest mouse. Both habitat and prey diversity provide the resources necessary for the maintenance of healthy predator populations.

The depot has a directive to dispose of the VX nerve agent by 2007 in accordance with the Prohibition of Chemical Weapons Treaty. Once the nerve agent has been eliminated, the installation will begin to close. The information gained from this study will be useful in making recommendtions for its ultimate use when the depot ends operation. The depot is a large, biologically valuable area, and the site is close to Indiana State University which has a strong ecology program. Therefore, we recommend that the natural lands at the depot be permanently set aside as a natural area when the depot ends operations.

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