

**Inventory of Distribution, Composition, and Relative Abundance of Mammals,
including Bats a Homestead National Monument of America**

Lynn Robbins

Southwest Missouri State University
Springfield, MO

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Heartland Network
Inventory and Monitoring Program
National Park Service
6424 W. Farm Rd. 182
Republic, MO 65738

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Summary

An inventory of the presence/absence of mammals (including bats) was conducted at Homestead National Monument of America from May 27 through June 1, 2004. An initial expected species list suggested 56 species as present or probably present at the park. Three species of mammals were added to the list, two were excluded due to lack of habitat and/or out of range, and sixteen species have a questionable status at the park. After revising the list, the inventory documented 24 of 41 (59 %) species listed as either present or probably present.

Species are typical of tall grass prairies and riparian forest areas. No state or federally listed species were observed. One species, the nine-banded armadillo was documented that was not expected. Three of the undocumented species are small carnivores and may be present occasionally or in small numbers.

Further sampling may add to the number of confirmed small mammals and continued observations by park personnel may add to the number of the larger species, especially if road kills on adjacent highways are identified and included. Sampling around park buildings may confirm the presence of one non-native mammal species expected to be present on the area.

Acknowledgements

Thanks to the Heartland Network Inventory and Monitoring Program for funding this project and Michael Williams in particular for his help throughout whole process. I would also like to thank my field crew consisting of John Timpone, Nate Nelson, and Miranda Milam. I thank the park staff for their assistance and advice during the sampling period.

Introduction

The U.S. Congress passed the 1998 National Parks Omnibus Management Act in response to concerns about the condition of natural resources within the national parks. The act requires each park to gather baseline inventory data on pertinent natural resources, data that will provide a pivotal step toward establishing an effective monitoring program, and further our ability to effectively manage and protect park resources. The National Park Service (NPS) responded with the Natural Resource Challenge program, including the establishment of biome-based inventory and monitoring networks. The Heartland Network, as part of the NPS Inventory and Monitoring (I&M) program, has undertaken inventories of vascular plants and vertebrates within fifteen parks in eight Midwestern states.

This inventory will verify the expected species list, provide a foundation for future monitoring, allow for the determination and implementation of monitoring regimes, and help better manage resources and predict the possible impacts of management decisions on mammals. In order for scientifically sound management decisions to be made, basic information on species occurrence, distribution, and ancillary environmental information are needed.

The goal of the inventory is to document 90% of the species that are reasonably expected to occur at the park. This inventory will provide data on mammal species composition, distribution, and relative abundance.

Study Area

Homestead National Monument of America, located in Gage County, Nebraska was established in March 1936. It commemorates the Homestead Act of 1862 and its effects upon the settlement of the West as well as advancements in agricultural technology. The Monument covers 78.8 ha (194.6 ac) of which the original Daniel Freeman homestead covers 65.9 ha (162.7 ac). Currently 40.5 ha (100 ac) of the original homestead have been restored to a native tall grass prairie; 24.3 ha (60 ac) of hardwood forest, and 1.2 ha (3 ac) of buildings, roads and trails.

Homestead's purpose is to interpret the history of the country resulting in and from the Homestead Act. Included is the function of preserving literature, agricultural implements, and a museum to interpret settlement, cultivation, and development of the West. Homestead's purpose is to commemorate the peoples whose lives were altered by the Homestead Act (Boetsch et al 2000).

The Monument is a "T" shape with a small parcel containing the Freeman schoolhouse 1/4 mile west. An estimated 35,000-40,000 people visit Homestead annually. Visitation is primarily during the summer months with dramatic increases during special programs; 27% of the visitors are from the local community; 4% have international origins; 66% of visitors identify the Monument as a day trip destination.

Homestead National Monument of America lies within the glaciated Drift Hill Region of Southeast Nebraska. Underlying formations, bedded limestone and shale, indicate that this area was once at the bottom of the ocean. The gently rolling topography of the Monument has an extreme relief of 21m (70 ft). The average elevation of this area is approximately 378m (1,260 ft) above sea level with the highest point on the Monument rising to 396m (1,320 ft).

Today, the vegetation of the Monument is roughly two-thirds reconstructed prairie and one-third woodland, the same general ratio of native prairie/woodland found by the surveyors (Boetsch et al 2000). The Freeman School grounds contain an approximate 0.75-acre remnant of untilled native prairie. The south and southeast upland slopes within the Monument contain the best examples of tall grass prairie. Big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), and Indiangrass (*Sorghastrum nutans*) are the dominant grasses. Common forbs include goldenrods (*Solidago* spp.), stiff sunflower (*Helianthus pauciflorus pauciflorus*), leadplant (*Amorpha canescens*), and roundhead lespedeza (*Lespedeza capitata*). The woodland and riparian vegetation consists primarily of oak (*Quercus* spp.), silver maple (*Acer saccharinum*), hackberry (*Celtis* spp.), and cottonwood (*Populus deltoides*). Native understory vegetation includes wild plum (*Prunus* spp.), dogwood (*Cornus* spp.), and coralberry (*Symphoricarpos orbiculatus*).

Environmental concerns at the Monument stem mainly from the current trend from agricultural land use. Agriculture dominates the area surrounding Homestead. Corn, wheat, and grain sorghum are the major crops. Two anhydrous ammonia fertilizer plants

operate north of the Freeman school. On the northeast, a 27-home residential subdivision borders the Monument. Water quality is another concern as Cub Creek winds through the Monument and is the drainage for several thousand acres of farmland. Homestead tests the water for key microinvertebrates during the summer to monitor the quality of the water.

Materials and Methods

Terrestrial mammals and bats were inventoried via pitfall traps, live-traps, mist nets, camera traps, and observations from May 20 through June 1, 2004. Sites were located in both prairie and forest representing different management units within the park. Within each vegetation type, both randomly and subjectively located sample points were deployed. Total sample effort for the park was roughly distributed among the management units proportionate to their area (see Table 1). A list of potential random inventory sites was chosen using a random point generator within ArcView. Navigation to, and data collection thereof, utilized a Garmin eTrex.

A pitfall array and transect of Sherman live capture and snap traps was used at each sample point unless otherwise noted. In addition to the pitfall traps and Sherman/snap trap transects in random areas, additional setups were placed in similar habitat, with the exception that these sites were chosen because they represented additional habitat variables or as areas possibly containing species of interest. These transects were designated as non random or select in nature. Camera traps and specialized traps were placed in areas of suspected activity.

The cross type design of pitfall traps was placed at each random site and selected point in the study area. Each cross type had a central pitfall and four drift fences extending 10 m in each cardinal direction. Additional pitfalls were at the end of each fence (Figure 2). Drift fences were at least 20 cm high to steer mammals into the pitfalls. Pitfall traps were at least 25.4 cm (10 in) in depth and 25.4 cm (10 in) wide (i.e. a 2-gallon bucket). Pitfalls were un-baited, kept dry, and checked at least twice a day so animals could be released alive. Pitfalls were used for five consecutive nights per transect. When the study was complete, pitfall stations were restored to their natural condition to the maximum extent possible (i.e. excavated material was used to refill holes).

Museum Special snap traps, Victor snap traps, and Sherman live traps were used on all trap transects. Each transect consisted of 20 Sherman live-traps, five Museum Special snap traps and five Victor snap traps, for a total of 30 traps. Two Sherman live traps and either a Museum Special or Victor snap trap were placed at each station, with these being no closer than one meter from each other and within two meters of the station point. Five nights of trapping yielded 150 trap nights at each transect. In addition, Victor mole traps were placed over mole runs when observed. These were all on forest edge or trails in the forest. Four camera traps were placed non-randomly throughout the riparian zone, and on some nights these were baited with mouse carcasses remaining after voucher specimens were preserved.

Following identification (following Bowles, 1975 and Schwartz and Schwartz 1995) and data collection, animals were released unharmed from live-traps except for those retained as voucher specimens. These were prepared as voucher specimens (Table 3). All traps were checked at least twice daily.

Mid-sized mammals were documented with photographs and road kills. The principle investigator worked closely with park staff regarding our activities to ensure that there were no negative impacts to the visitor experience.

Additional species were added to the inventory list based on observation records presented to me by the Natural Resource Manager. These records represent sightings from 1982 through 1991 and are denoted by an asterisk (*) next to the species name in Table 2. These species were not documented by other methods.

Vouchers consist of photographic evidence or whole animals. For small mammals, an attempt was made to include each sex and a juvenile. All live trapped individuals not needed as vouchers were identified, aged and sexed, and released at site of capture. Voucher specimens were prepared as skin and skull or in fluid. All biological voucher specimens are deposited at the Museum of the High Plains, Fort Hays State University, Hays, Kansas.

Bats were surveyed in all likely habitats, including riparian forest corridors, service roads between the forest and prairie and park land. Mist-nets were the primary survey method, but Anabat II[®] detectors were placed in these same areas. Qualitative and quantitative analyses for species identifications were performed on all recorded call sequences (Murray et al. 1999, 2001; Britzke et al. 2002).

Mist nets were made of the finest, lowest visibility commercially available 2 ply, 50 denier nylon (denoted 50/2) of approximately 38 mm. These nets conform to the USFWS standards recommended for Indiana bat (*Myotis sodalis*) surveys (U.S. Fish and Wildlife Service 1999). Nets were placed in corridors such as streams or trails approximately perpendicular across the corridor. Nets were set to fill the corridor from side to side and from stream (or ground) level up to the overhanging canopy. A typical set was seven meters high consisting of nets "stacked" on top one another and up to 18 meters wide (different width nets were used as the situation dictates).

Sample period began at sunset and continued until captures ceased, or activity ceased based on the bat detectors. Nets were checked at intervals of no longer than 20 minutes and disturbance was minimized near the nets, other than to check nets and remove bats. Netting and recording occurred during periods of no precipitation, when temperatures were above 10 degrees Celsius, with little wind, and under the canopy if the moon was half full or more.

The number of sampling sites and locations within the units were chosen based on discussions with park personnel and previous experience. Therefore, all plots were non-random.

Specimens were identified following Bowles, 1975, and Schwartz and Schwartz, 1995.

The principle investigator worked closely with park staff regarding our activities to ensure that there were no negative impacts to the visitor experience. All persons

involved with trapping followed the American Society of Mammalogists “Guidelines for the Capture, Handling, and Care of Mammals”

<http://www.mammalsociety.org/committees/comanimalcareuse/98acucguidelines.PDF>

Results

An initial expected species list suggested 56 species as present or probably present at the park. Three species of mammals were added: short tailed shrew (*Blarina brevicauda*), eastern red bat (*Lasiurus borealis*), and nine banded armadillo (*Dasypus novemcinctus*). Two species were excluded due to lack of habitat and/or out of range and sixteen species have a questionable status at the park (Table 2). After revising the list, the inventory documented 24 of 41 (59 %) species listed as either present or probably present.

Overall, more than 271 individuals representing 14 species were captured (Tables 3 and 4). Three times the number of individuals was recorded in live traps (i.e. pitfalls and Shermans) versus snap traps (116 and 39, respectively). Sherman traps were the most effective live traps resulting with more than twice as many captures than pitfalls. The white footed mouse (*Peromyscus leucopus*) was the most common species trapped in Shermans (51 individuals) whereas the common shrew (*Sorex cinereus*) was the most common species trapped in pitfalls (30 individuals). Museum Special and Victor snap traps captured almost the same species and number of individuals (22 and 16, respectively). Western harvest mice (*Reithrodontomys megalotis*) were only captured in Museum Special type of snap traps. About the same number of white footed mice were captured in each type of snap trap. One eastern mole (*Scalopus aquaticus*) was captured in a mole trap and the skunk (*Mephitis mephitis*) was observed.

Anabat II[®] detectors documented more species and numbers than mist nets. Evening bats (*Nycticeius humeralis*) were the most caught individuals and the eastern red bat was the least caught. Only fifteen bats were documented with mist nets. These consisted of twelve evening bats and four northern myotis (*Myotis septentrionalis*). Two of the three female northern myotis were pregnant and all evening bats were pregnant. No Indiana bats were documented.

Discussion

The number of species documented during this inventory is a good reflection of the methods that were utilized in the available habitat. Other species may be added as park personnel or visitors continue to report their sightings, or if similar studies are done at different times of the year. The armadillo has been reported in Nebraska, the actual documentation within the Monument was unexpected.

Expected Species

Twenty of the 41 expected species are considered present at the National Monument at some time during the year or in the near past. Six of these are based on sightings by visitors or park personnel. Of the six species that are suspected of being present but were not confirmed, three are carnivores that are probably present in suitable habitat in southern Nebraska and may be added to the list as more observations or studies are made in or near the Park. The coyote (*Canis latrans*) was observed within a mile of the park as a roadkill.

Three bat species are listed as probably present, with two of these possibly being present only during spring and/or fall migration (*Lasionycteris noctivagans*, *Lasiurus cinereus*). The third species (*Pipistrellus subflavus*) may be a resident of the area, but our techniques did not document its presence. Status of the little brown bat (*Myotis lucifugus*) is questionable.

Of the remaining species listed as probably present (one species is listed as probably present by park staff) and those listed as unconfirmed (see Table 2), they may also be added to the Park list in the future. However, the small size and isolated nature of the prairie and forest habitats may limit the colonizing ability of some of these species. Some of these species may only be occasional visitors, but may be documented in adjacent areas using road kill data or from future studies. In order to document the presence or absence of the non native house mouse (*Mus musculus*) trapping should be carried out in and adjacent to the park headquarters and residences.

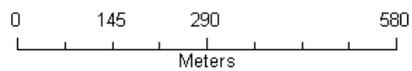
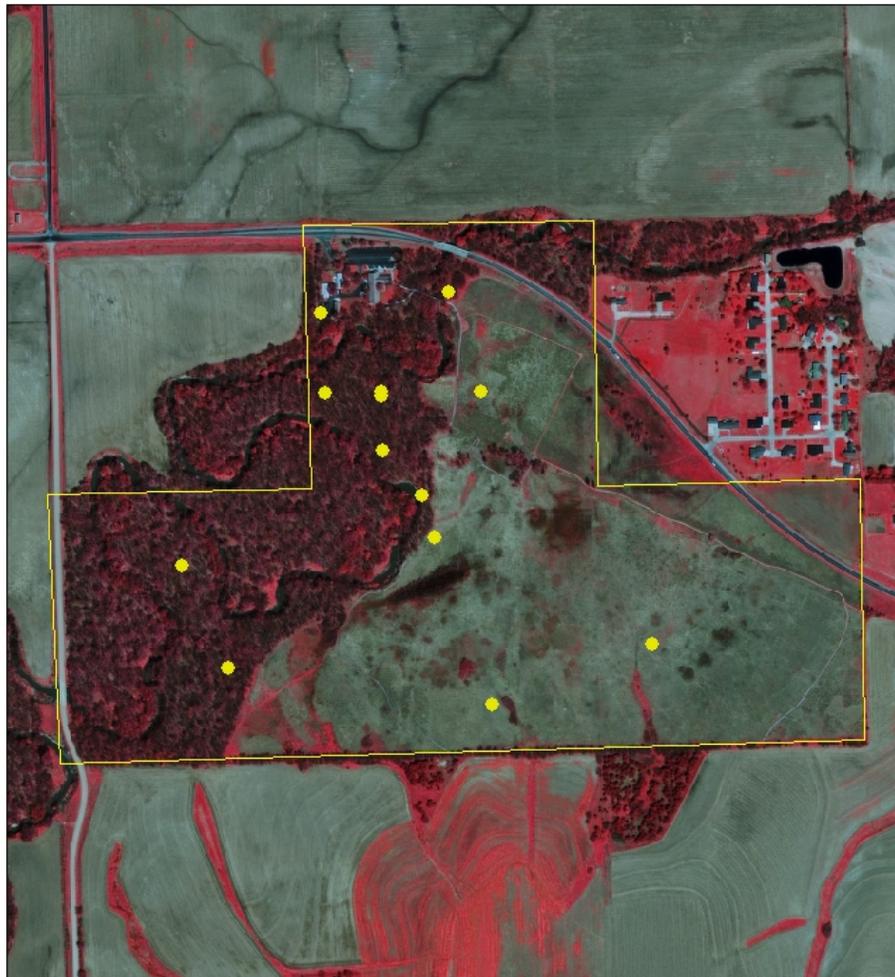
Conclusions

The National Monument has a very good representation of available and historic habitat variables. However, because of its small size and isolation from comparable habitats, it is unlikely that a significant number of additional species, now designated as probably present, will be added to the species list. No changes in the management plans are recommended, but I encourage the personnel to continue to maintain the habitat diversity of the prairie area and to keep a riparian buffer and forested area along both sides of Cub Creek.

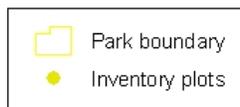
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Homestead NM of America



1:8,098



Map produced by: Heartland Network
Inventory and Monitoring Program

Data source: National Park Service

Figure 1. Map of Homestead NM of America showing mammal inventory plots.

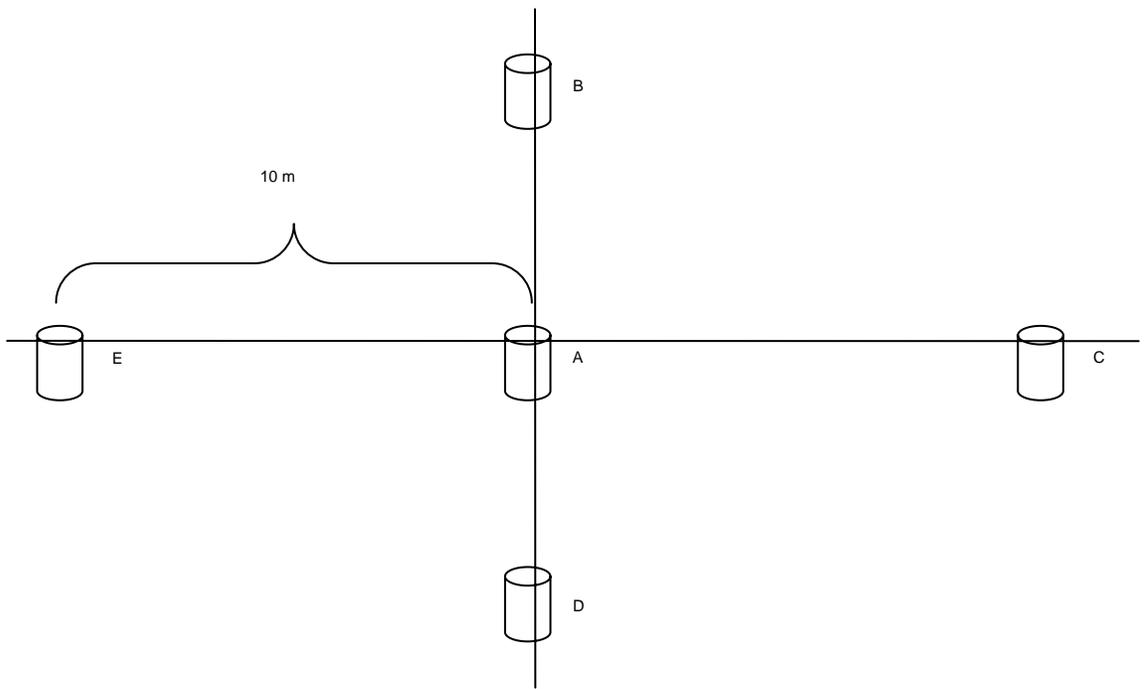


Figure 2. Cross-type design for pitfalls used at Homestead NM of America.

Table 1. Effort of each trap type/transect at Homestead NM of America.

Park	Unit	Acres	Number of random sample points		Number of subjective sample units		Total Trap Nights	
			P	S	P	S	Pitfall	Transect
HOME	Prairie	100	2	2	2	2	100	600
HOME	Hardwood forest	60	2	2	2	2	100	600
					C	M	Camera	Mole trap
					4	4	16	8

P=pitfall arrays; S=Sherman/Snap transects, C = Camera trap, M = Mole trap

Table 2. List of potential or expected mammal species at Homestead NM of America.

Family	Scientific Name	Common Name	Abundance	Old	New	Author
Canidae	<i>Canis latrans</i>	Coyote	-	1	2	No
	<i>Urocyon cinereoargenteus</i>	Gray fox	-	1	1	No
	<i>Vulpes vulpes</i>	Red fox	-	1	2*	No
Castoridae	<i>Castor canadensis</i>	Beaver	-	1	2	Yes*
Cervidae	<i>Odocoileus hemionus</i>	Mule deer	-	1	?	No
	<i>Odocoileus virginianus</i>	White-tailed deer	C	1	2	Yes
Dasypodidae	<i>Dasypus novemcinctus</i>	Nine banded armadillo	-	na	2	Yes
Didelphidae	<i>Didelphis virginiana</i>	Virginia opossum	C	1	2	Yes*
Felidae	<i>Lynx rufus</i>	Bobcat	-	1	1	No
Geomyidae	<i>Geomys bursarius</i>	Plains pocket gopher	-	1	2*	No
Heteromyidae	<i>Chaetodipus flavescens</i>	Plains pocket mouse	-	1	?	No
	<i>Chaetodipus hispidus</i>	Hispid pocket mouse	-	1	?	No
Leporidae	<i>Lepus californicus</i>	Black-tailed jackrabbit	-	1	?	No
	<i>Lepus townsendii</i>	White-tailed jackrabbit	-	1	?	No
	<i>Sylvilagus floridanus</i>	Eastern cottontail	C	1	2	Yes*
Molossidae	<i>Tadarida brasiliensis</i>	Brazilian free-tailed bat	-	1	?	No
Muridae	<i>Microtus ochrogaster</i>	Prairie vole	U	1	2	Yes
	<i>Microtus pennsylvanicus</i>	Meadow vole	C	1	2	Yes
	<i>Mus musculus</i>	House mouse	-	1	1	No
	<i>Ondatra zibethicus</i>	Muskrat	C	1	2*	No
	<i>Onychomys leucogaster</i>	Grasshopper mouse	-	1	?	No
	<i>Peromyscus leucopus</i>	White-footed mouse	A	1	2	Yes
	<i>Peromyscus maniculatus</i>	Deer mouse	C	1	2	Yes
	<i>Rattus norvegicus</i>	Norway rat	-	1	2*	No
	<i>Reithrodontomys megalotis</i>	Harvest mouse	C	1	2	Yes
	<i>Reithrodontomys montanus</i>	Plains harvest mouse	-	1	?	No
	<i>Sigmodon hispidus</i>	Hispid cotton rat	-	1	?	No
	<i>Synaptomys cooperi</i>	Southern bog lemming	-	1	?	No
Mustelidae	<i>Lutra canadensis</i>	River otter	-	1	?	No
	<i>Mephitis mephitis</i>	Striped skunk	C	1	2	Yes
	<i>Mustela frenata</i>	Long-tailed weasel	-	1	1	No
	<i>Mustela nigripes</i>	Black-footed ferret	-	1	0	No
	<i>Mustela nivalis</i>	Least weasel	-	1	2	Yes
	<i>Mustela vison</i>	Mink	-	1	2*	No
	<i>Spilogale putorius</i>	Spotted skunk	-	1	?	No
	<i>Taxidea taxus</i>	Badger	-	1	2	Yes*

Table 2. List of potential or expected mammal species at Homestead NM of America (cont.).

Family	Scientific Name	Common Name	Abundance	Old	New	Author
Procyonidae	<i>Procyon lotor</i>	Raccoon	C	1	2	Yes
Sciuridae	<i>Cynomys ludovicianus</i>	Black-tailed prairie dog	-	1	?	No
	<i>Glaucomys volans</i>	Southern flying squirrel	-	1	1	No
	<i>Marmota monax</i>	Woodchuck	U	1	2*	No
	<i>Sciurus carolinesis</i>	Gray squirrel	-	1	?	No
	<i>Sciurus niger</i>	Fox squirrel	C	1	2	Yes
	<i>Spermophilus franklinii</i>	Franklin's ground squirrel	-	1	1*	No
	<i>Spermophilus tridecemlineatus</i>	Thirteen-lined ground squirrel	C	1	2	Yes
	<i>Tamias striatus</i>	Eastern chipmunk	-	1	?	No
Soricidae	<i>Blarina brevicauda</i>	Short-tailed shrew	U	na	2	Yes
	<i>Blarina carolinesis</i>	Southern short-tailed shrew	-	1	0	No
	<i>Cryptotis parva</i>	Least shrew	-	1	1	No
	<i>Sorex cinereus</i>	Masked shrew	C	1	2	Yes
Talpidae	<i>Scalopus aquaticus</i>	Eastern mole	C	1	2	Yes
Vespertilionidae	<i>Eptesicus fuscus</i>	Big brown bat	C	1	2	Yes
	<i>Lasionycteris noctivagans</i>	Silver-haired bat	-	1	1	No
	<i>Lasiurus borealis</i>	Eastern red bat	C	na	2	Yes
	<i>Lasiurus cinereus</i>	Hoary bat	-	1	1	No
	<i>Myotis septentrionalis</i> (syn. <i>M. keenii</i>)	Northern myotis	C	1	2	Yes
Vespertilionidae	<i>Myotis lucifugus</i>	Little brown bat	-	1	?	No
	<i>Nycticeius humeralis</i>	Evening bat	A	1	2	Yes
	<i>Pipistrellus subflavus</i>	Eastern pipistrelle bat	-	1	1	No
Zapodidae	<i>Zapus hudsonius</i>	Meadow jumping mouse	C	1	2	Yes

A=Abundant, C= Common, U= Uncommon. “Old” indicates the status prior the inventory, “New” the status after the inventory. Values for Old and New follow Boetsch et al (2000): a “1” is used to indicate that a given species is expected, “2” indicates that the species was observed; “#*” indicates species reported by park personnel and visitors between 1982 and 1991; “0” indicates not to be expected; “?” indicates a questionable status. Author=whether species was documented (*=sign or heard).

Table 3. List of animals captured by trap type at Homestead NM of America.

Method	Scientific Name	Common Name	Number
Pitfall	<i>Sorex cinereus</i>	Common shrew	30
Pitfall	<i>Zapus hudsonius</i>	Meadow jumping mouse	3
Pitfall	<i>Microtus ochrogaster</i>	Prairie vole	2
Pitfall	<i>Reithrodontomys megalotis</i>	Western harvest mouse	1
Pitfall	<i>Blarina sp.</i>	Shrew	1
		Total	37
Sherman	<i>Peromyscus leucopus</i>	White footed mouse	51
Sherman	<i>Zapus hudsonius</i>	Meadow jumping mouse	12
Sherman	<i>Peromyscus maniculatus</i>	Deer mouse	6
Sherman	<i>Microtus pennsylvanicus</i>	Meadow vole	4
Sherman	<i>Reithrodontomys megalotis</i>	Western harvest mouse	3
Sherman	<i>Spermophilus tridecemlineatus</i>	Thirteen lined ground squirrel	2
Sherman	<i>Sorex cinereus</i>	Common shrew	1
		Total	79
Museum Special	<i>Peromyscus leucopus</i>	White footed mouse	10
Museum Special	<i>Reithrodontomys megalotis</i>	Western harvest mouse	8
Museum Special	<i>Microtus pennsylvanicus</i>	Meadow vole	2
Museum Special	<i>Zapus hudsonius</i>	Meadow jumping mouse	2
		Total	22
Victor	<i>Peromyscus leucopus</i>	White footed mouse	13
Victor	<i>Microtus pennsylvanicus</i>	Meadow vole	2
Victor	<i>Zapus hudsonius</i>	Meadow jumping mouse	1
		Total	16
Observation	<i>Dasypus novemcinctus</i>	Nine banded armadillo	1
Observation	<i>Mephitis mephitis</i>	Skunk	1
		Total	2

Table 3. List of animals captured by trap type at Homestead NM of America (cont.).

Method	Scientific Name	Common Name	Number
Mole trap	Scalopus aquaticus	Eastern mole	1
Anabat	Nycticeius humeralis	Evening bat	>45
Anabat	Eptesicus fuscus	Big brown bat	17
Anabat	Myotis septentrionalis	Northern myotis	12
Anabat	Lasiurus borealis	Eastern red bat	4
		Total	>78
Mist net	Nycticeius humeralis	Evening bat	12
Mist net	Myotis septentrionalis	Northern myotis	4
		Total	16

Table 4. List of photographic and specimen vouchers at Homestead NM of America.

Scientific Name	Type	Habitat	Comments
<i>Blarina brevicauda</i>	Skin&Skull	Prairie	Pitfalls
<i>Bufo</i> sp	Photo	Forest	Captured by hand in forest
<i>Bufo</i> sp	Photo	Forest	Captured by hand in forest
<i>Microtus pennsylvanicus</i>	Skin&Skull	Prairie	Pitfall, Museum Special, and Sherman traps
<i>Microtus pennsylvanicus</i>	Skin&Skull	Prairie	Museum Special, Victor, and Sherman traps
<i>Microtus pennsylvanicus</i>	Skin&Skull	Prairie	Museum Special, Victor, and Sherman traps
<i>Mustela nivalis</i>	Skin&Skull	Forest edge	Specimen found dead by park personnel
<i>Myotis septentrionalis</i>	Photo	Forest trail	Caught in mist net across forest trail
<i>Nycticeius humeralis</i>	Photo	Forest trail	Caught in mist net across forest trail
<i>Nycticeius humeralis</i>	Photo	Forest trail	Caught in mist net across forest trail
<i>Odocoileus virginianus</i>	Photo	Prairie	Camera trap in prairie
<i>Peromyscus leucopus</i>	Skin&Skull	Forest	Museum Special, Victor, and Sherman traps
<i>Peromyscus leucopus</i>	Skin&Skull	Forest	Museum Special, Victor, and Sherman traps
<i>Peromyscus leucopus</i>	Skin&Skull	Forest	Museum Special, Victor, and Sherman traps
<i>Peromyscus maniculatus</i>	Skin&Skull	Prairie	Sherman traps
<i>Peromyscus maniculatus</i>	Skin&Skull	Prairie	Sherman traps
<i>Procyon lotor</i>	Photo	Cub Creek	Photo of raccoon track along creek
<i>Reithrodontomys megalotis</i>	In Fluid	Prairie	Museum Special, Victor, and Sherman traps
<i>Reithrodontomys megalotis</i>	Skin&Skull	Prairie	Museum Special, Victor, and Sherman traps
<i>Reithrodontomys megalotis</i>	Skin&Skull	Prairie	Sherman traps, Museum specials, and Pitfalls
<i>Reithrodontomys megalotis</i>	In Fluid	Prairie	All types of traps
<i>Scalopus aquaticus</i>	Skin&Skull	Forest trail	Mole trap, runways seen across trails
<i>Sciurus niger</i>	Photo	Forest	Photo trap near headquarters
<i>Sorex cinereus</i>	Photo	Prairie	Pitfall trap in prairie
<i>Sorex cinereus</i>	Skin&Skull	Forest	Pitfall, Museum Special, and Sherman traps
<i>Sorex cinereus</i>	Skin&Skull	Forest	Pitfall, Museum Special, and Sherman traps
<i>Sorex cinereus</i>	In Fluid	Forest	Pitfall, Museum Special, and Sherman traps
<i>Sorex cinereus</i>	Skin&Skull	Prairie	Sherman traps and Pitfalls
<i>Sorex cinereus</i>	In Fluid	Prairie	Sherman traps and Pitfalls
<i>Sorex cinereus</i>	In Fluid	Prairie	Sherman traps and Pitfalls
<i>Sorex cinereus</i>	In Fluid	Prairie	Sherman traps and Pitfalls
<i>Sorex cinereus</i>	In Fluid	Forest	Sherman traps and Pitfalls

Table 4. List of photographic and specimen vouchers at Homestead NM of America (cont.).

Scientific Name	Type	Habitat	Comments
Sorex cinereus	Skin&Skull	Prairie	Sherman traps and Pitfalls
Spermophilus tridecemlineatus	Photo	Prairie	Sherman trap
Thamnophis sp	Photo	Prairie	Sherman trap
Zapus hudsonius	Skin&Skull	Prairie	Museum Special, Victor, and Sherman traps
Zapus hudsonius	Skin&Skull	Prairie	Museum Special, Victor, and Sherman traps
Zapus hudsonius	In Fluid	Forest	All types of traps