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THE RICHNESS AND RELATIVE ABUNDANCE OF SMALL MAMMALS IN OLD
SURFACE COAL-MINED SITES IN CRAWFORD AND CHEROKEE COUNTIES,
KANSAS

A Thesis Submitted to the Graduate School
in Partial Fulfillment of the Requirements
for the Degree of
Master of Science

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Pittsburg State University

Pittsburg, Kansas

May, 2016

THE RICHNESS AND RELATIVE ABUNDANCE OF SMALL MAMMALS IN OLD
SURFACE COAL-MINED SITES IN CRAWFORD AND CHEROKEE COUNTIES,
KANSAS

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THE RICHNESS AND RELATIVE ABUNDANCE OF SMALL MAMMALS IN OLD
SURFACE COAL-MINED SITES IN CRAWFORD AND CHEROKEE COUNTIES,
KANSAS

An Abstract of the Thesis by
Fabio Giacomelli

Species richness and relative abundance (RA) of the small terrestrial mammals were accessed in 20 different unreclaimed old coal mined sites in Crawford and Cherokee counties, southeast Kansas in 2014. Lines of Victor™ wooden snap-traps were set in three habitat types in each area: *grassy*, *brushy* and *forested* during 3-days period in each of the four seasons.

Southeast Kansas was heavily surface-mined (strip-mined) between the 1930's and the 1970's and many of these sites were not reclaimed (restored to the appearance of its original landscape). This has resulted in many types of altered habitats in this region such as strip-pits (usually long, narrow lakes), and a diversity of vegetative communities such as *grassy*, *brushy* and *forested* habitats categorized in this study. A total of 12 different species were collected. These species belong to two orders: Rodentia and Soricomorpha. Order Rodentia had 10 species represented in this study. Prairie vole (*Microtus ochrogaster*), pine vole (*Microtus pinetorum*), house mouse (*Mus musculus*), Eastern woodrat (*Neotoma floridana*), white footed mouse (*Peromyscus leucopus*), deer mouse (*Peromyscus maniculatus*), fulvous harvest mouse (*Reithrodontomys fulvescens*), plains harvest mouse (*Reithrodontomys montanus*), hispid cotton rat (*Sigmodon hispidus*) and meadow jumping mouse (*Zapus hudsonius*). Order Soricomorpha was represented by two species: Elliot's short-tailed shrew (*Blarina hylophaga*) and least shrew (*Cryptotis parva*). The richest habitat was *grassy* habitat where all twelve species (650 individuals)

were collected followed by *brushy* with ten species (483), and finally *forested* habitat with eight species (219) collected.

The most collected species were the deer mouse, 494 individuals, 36.54% RA. The least collected species were the house mouse, the plains harvest mouse and the meadow jumping mouse with only seven individuals for each species and 0.5% RA.

Most sites presented high richness and number of specimens collected. Although some sites show low richness and specimens collected, there were no apparent reasons for such results.

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CHAPTER I

INTRODUCTION

Several studies of small mammals have been conducted on unreclaimed strip-mined land. Mammal and plant species common name and scientific names will be used the first time the species is mentioned and then only common names will be used. A list of all common and scientific names can be found in the appendix B and C of this thesis.

Yeager (1942) reported that all native species were present in his study of unreclaimed coal strip-mined land in Vermillion County, Illinois. De Capita and Bookhout (1975) said in their study of “Small Mammal Populations, Vegetational Cover, and Hunting Use of an Ohio Strip-Mined Area” that they did not believe that strip-mined areas offer better habitats when compared with abandoned farmland, despite some favorable characteristics.

Sly (1976) and Hansen and Warnock (1978) claimed that while the numbers of white-footed mice (*Peromyscus leucopus*) increased as tree cover increased, deer mouse (*Peromyscus maniculatus*) numbers decreased as tree cover increased in their studies of “Small Mammal Succession on Strip-mined Land in Vigo County, Indiana” and “Response of Two Species of *Peromyscus* to Vegetational Succession on Land Strip-Mined for Coal in Fulton County, Illinois” respectively. Although their role in nature is important, few small mammal studies have been conducted in Crawford and Cherokee

counties in Southeast Kansas in the last three decades. Studies of small mammals conducted in these counties include the following. Brown (1959) studied the distribution and relative abundance of small mammals in the strip-mined area of Pittsburg, Kansas. Bingman (1963) conducted a small mammal census in the Pittsburg area from 1950 to 1962. Heacock (1965) studied the aspects of the ecology of small mammals in a strip-mined area. Ireland and Hays (1966) focused on the fulvous harvest mouse (*Reithrodontomys fulvescens*) in Crawford County. May (1970) studied the home range of small mammals in grassland areas. Irvin (1977) studied the circadian rhythms of the hispid cotton rat (*Sigmodon hispidus*). Fotouhi (1978) studied the mammals of the Natural History Reserve of Pittsburg State University. Cleveland and Hays (1979) reported the first record of the meadow jumping mouse (*Zapus hudsonius*) in Southeast Kansas.

Throughout most of the 20th century, Crawford and Cherokee Counties have undergone landscaping-altering coal mining (strip mining). This type of mining involves large shovels removing soil and underlying rocks down to commercially-viable layers of coal. The “overburden” was deposited in long ridges of soil and rock up to a mile long. These side-by-side ridges somewhat resemble a corduroy effect from an aerial view. Among these ridges are “strip-pits” - long relatively narrow lakes. Prior to state and federal laws taking effect in the late 1960’s and early 1970’s, these old mined lands were “unreclaimed,” that is the coal companies did not recontour them into something similar to the original landscape, nor did they (usually) replant any vegetation. The resulting landscape today is that of ridged land of poor soil, covered with a heterogeneous

mix of maturing trees, brush and grasses, intermixed periodically with mostly small, but occasionally large strip-pit lakes. These areas are of little agricultural value, but increasingly of value for fishing and hunting, and in some areas desirable for home-sites.

This study was located in the Mined Land Wildlife Area (MLWA), an area of some 45 unreclaimed sites scattered throughout Crawford and Cherokee Counties. These areas are owned and maintained by the Kansas Department of Wildlife, Parks, and Tourism (KDWPT) primarily as hunting and fishing lands that are open to the general public. Altogether there are around 5,600 hectares (14,000 acres) of land in the MLWA. There is considerable unreclaimed, reclaimed and unmined land in and around the MLWA in private hands.

One of the ecological problems noted in strip coal-mined areas is that none of the natural pedologic-geologic topsoil, subsoil and bed rock is left. Coal companies used power shovels to remove the soil into “gob piles” where the original topsoil is buried underneath ridges of subsoil, shale, rock and discarded coal waste (Yeager, 1942). This shoveling left behind strip pits formed by high hills and deep ditches that eventually became filled with water. The pyrite, an iron sulfide associated with the coal in a few areas, caused acidic pollution in the water and soil affecting cropland, native vegetation, drainage and aquatic wildlife (Brosius, 2005).

Today most of the strip pits in the MLWA support a great number of aquatic vertebrate and invertebrate life and these areas have great importance for public activity as hunting, fishing, camping and other non-consumptive activities. Considering the ecological and social importance of these areas, and the lack of recent studies regarding

the small mammal population, this study proposes to survey the small mammal population present in the Mined Land Area for its richness and relative abundance.

CHAPTER II

MATERIALS, METHODS AND DESCRIPTION OF STUDY SITES

The Kansas Department of Wildlife, Parks, and Tourism (KDWPT) has 45 mined-land areas in Crawford and Cherokee Counties; from these, 20 areas were chosen to serve as collecting sites. These 20 sites were all acquired by KDWPT between 1926 and 1981. After the first season (winter), collection had to be stopped in one of the sites (site #3) due to a project conducted by KDWP which disturbed the landscape and made the site unsuitable for my project.

This study was conducted during 2014. After site selection, three habitats (*grassy*, *brushy* and *forested*) were selected in each site.

The trapping system used in this project was based on Ford (1977), using lines of wooden mouse traps, with the addition of rat traps. According to Perry *et.al*, (1996) a mix of mouse- and rat-size traps is more efficient to capture a better sample of species since mouse traps are not fully efficient to capture larger species.

One line composed of 180 Victor™ mouse traps (98x46mm) and 20 Victor™ rat traps (176x83mm) baited with peanut butter was set in each habitat. The line was set in such a way that each nine mouse traps was followed by one rat trap. Each trap was set about one meter apart. The three lines were checked daily, usually in the morning to avoid specimen spoilage, scavengers, and because most of the expected species are

nocturnal according to Fotouhi's (1978) study of the circadian rhythms of the hispid cotton rat. All traps from each habitat were picked up after the third night, so the total seasonal trapping effort was 1,800 trap-nights (TN) in each site. One trap-night is one trap set for one night. In the end of this project 136,800 TN was the total effort, this number is obtained by multiplying the number of traps in one area by the number of days the traps were set then multiplying the result by the number of areas and then multiply it by the number of seasons trapped (600 traps x 3 days x 19 areas x 4seasons = 136,800 TN). Relative abundance (RA) is calculated by dividing the number of individuals of a single species by the total number of individuals captured.

All specimens collected were stored in zip-lock bags with collecting data and taken to the laboratory where they were preserved in a freezer. The species of each specimen was identified and standard measurements were recorded (Hall, 1955). The identification was done using an electronic dichotomous key (Timm, Slade, and Pisani, 2005) and Peterson Field guide to Mammals of North America (Reid, 2006). Some specimens, from each species, with no skull or skin damage were preserved in the Pittsburg State University mammal collection.

The most common plant species, at each trap line, from each site, were collected and identified to characterize the vegetation composition of each line into three different habitats: *grassy*, *brushy* and *forested*. All specimens collected were preserved and added to the Sperry Herbarium at Pittsburg State University..

The most common species in each category were:

Grassy: Big bluestem (*Andropogon gerardii*), Indiangrass (*Sorghastrum nutans*), little bluestem (*Schizachyrium scoparium* var. *scoparium*), sericea lespedeza (*Lespedeza cuneata*) and switchgrass (*Panicum virgatum*).

Brushy: Eastern red cedar (*Juniperus virginiana*), Japanese Honeysuckle (*Lonicera japonica*), rough-leaf dogwood (*Cornus drummondii*), sericea lespedeza, smooth sumac (*Rhus glabra*) and sumac (*Rhus copallinum*).

Forested: Cottonwood (*Populus deltoides*) Osage orange, (*Maclura pomifera*) and pin oak (*Quercus palustris*).

Not all sites had all three habitats perfectly delineated and in some cases habitats were mixed. The predominant type of vegetation was used to determine to which category the site belonged. If the predominant vegetation were grass the habitat was categorized as *grassy*, if brush and shrubs the habitat was categorized as *brushy*, and if the predominant vegetation were trees, the habitat was categorized as *forested*.

Each site was trapped once each season (winter, spring, summer and autumn). The winter trapping was conducted from January 18th through February 16th. Spring trapping was conducted from April 19th through June 14th. In this season trapping had to stop twice for some weeks, and this is the reason it took longer than the other trapping. Summer trapping was done from September 11th through October 4th. Finally Autumn trapping was done from November 25th through December 20th. A total of 228 trap lines (136,800 trap-nights) were set during the period of this study.

The mapping of the study areas was conducted using a cellphone software called Backpacker GPS Trails Lite, version 5.7.1 on a Samsung Galaxy S3. The software is no longer available since April 2016. Each trap line was map separately and then joined in a

single map using a freeware called GPS Utility version 5.23. The last stage of the mapping process was conducted using Google Earth where the coordinates of all lines were transferred to a satellite image.

Site Description

Crawford and Cherokee Counties are located in the Southeast corner of the state of Kansas (Fig.1). Crawford County has an area of 1,541 square kilometers and lies on two different physiographic regions: the Cherokee Lowlands and the Osage Cuestas. Cherokee County has an area of 1,531 square kilometers and most of it lies on the Cherokee lowlands physiographic region, but the southeastern corner of it lies in the Ozark Plateau physiographic region.

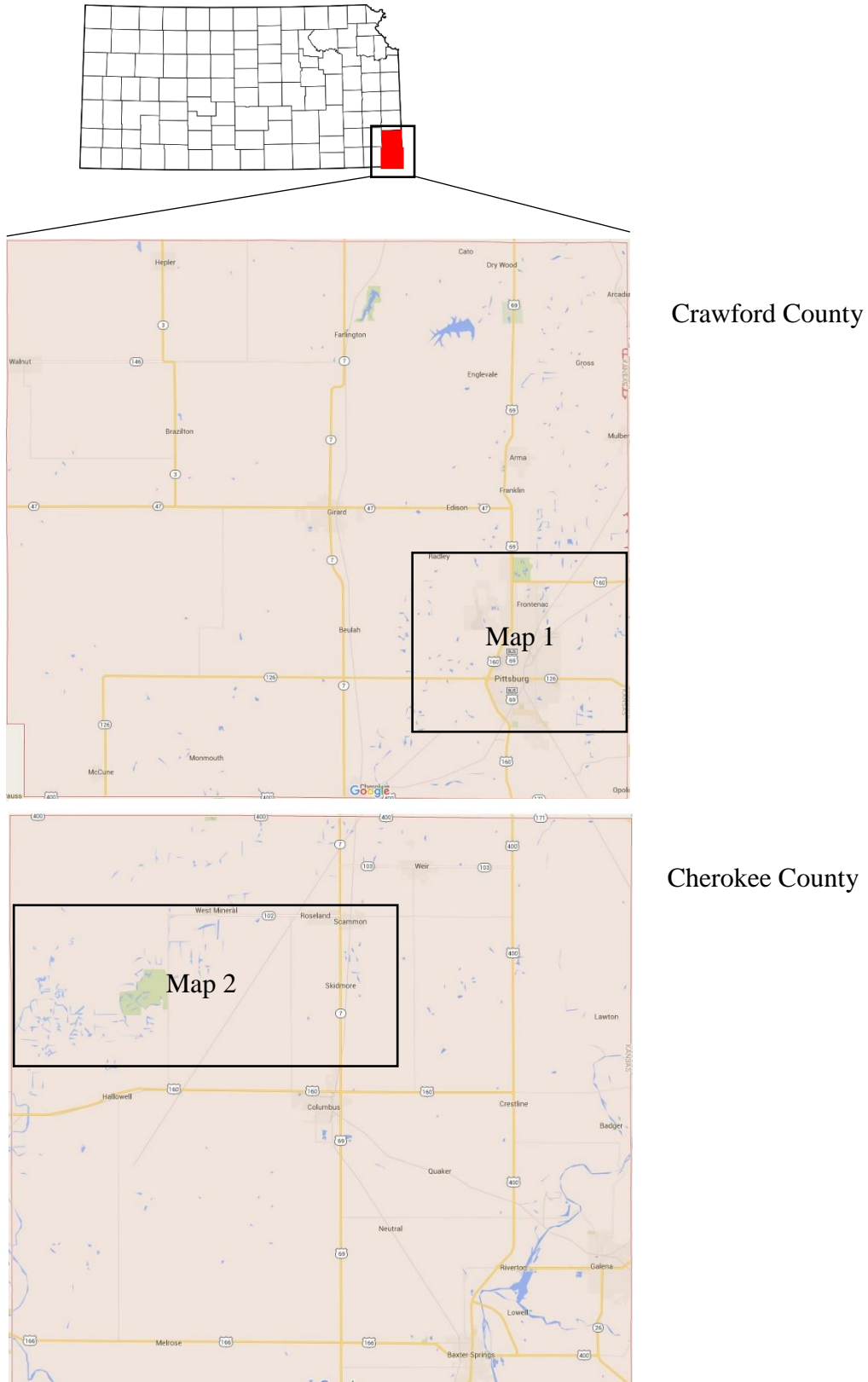


Figure 1. Outline map of Kansas and detailed maps of Crawford and Cherokee counties. Maps 1 and 2 are enlarged in Figures 2 and 3 respectively.

In total 4 areas surveyed in this project were located in Crawford County (Fig.2) and fifteen in Cherokee County (Fig.3)

Before coal mining started in Southeast Kansas, the landscape was different from what it is today. The main physiographic region in these two counties is the Cherokee Lowlands, which is composed by gently sloping planes with perennial streams, deep and fertile soils nourished the tall grass prairies composed of little bluestem, big bluestem and Indiangrass. Today the land use and land cover are a mix of cropland, grassland and scattered woodland (Kansas Native Plant Society, 2016). The climate in Crawford and Cherokee Counties has an average temperature of 13.3-14.4 degrees Celsius, and a precipitation average of 101.6 – 114.3 cm (Goodin *et.al.* 1995). All sites were mapped using a Global Positioning System (GPS) system.

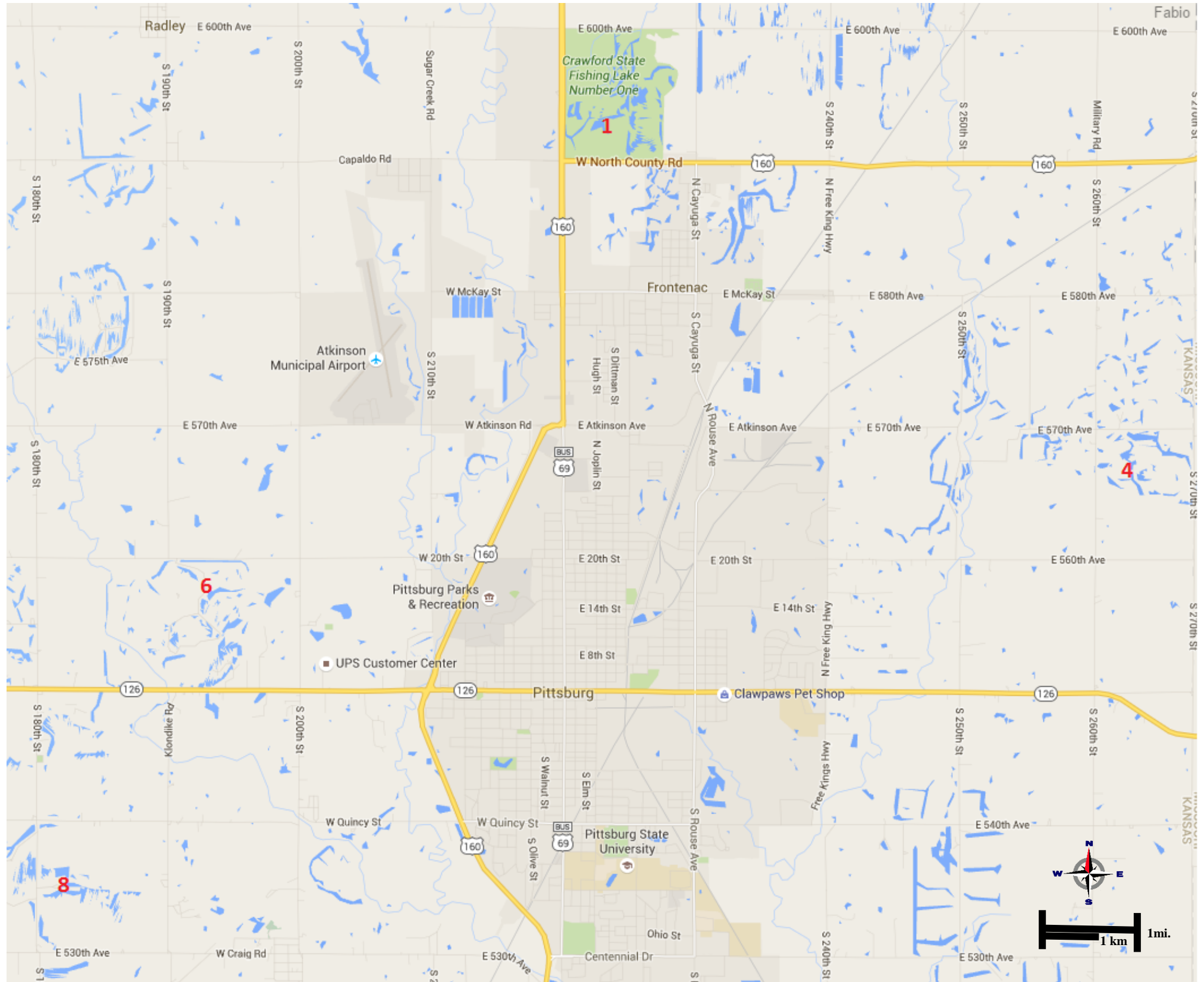


Figure 2. Map of trapping sites 1, 4, 6 and 8 located in Crawford County, KS.

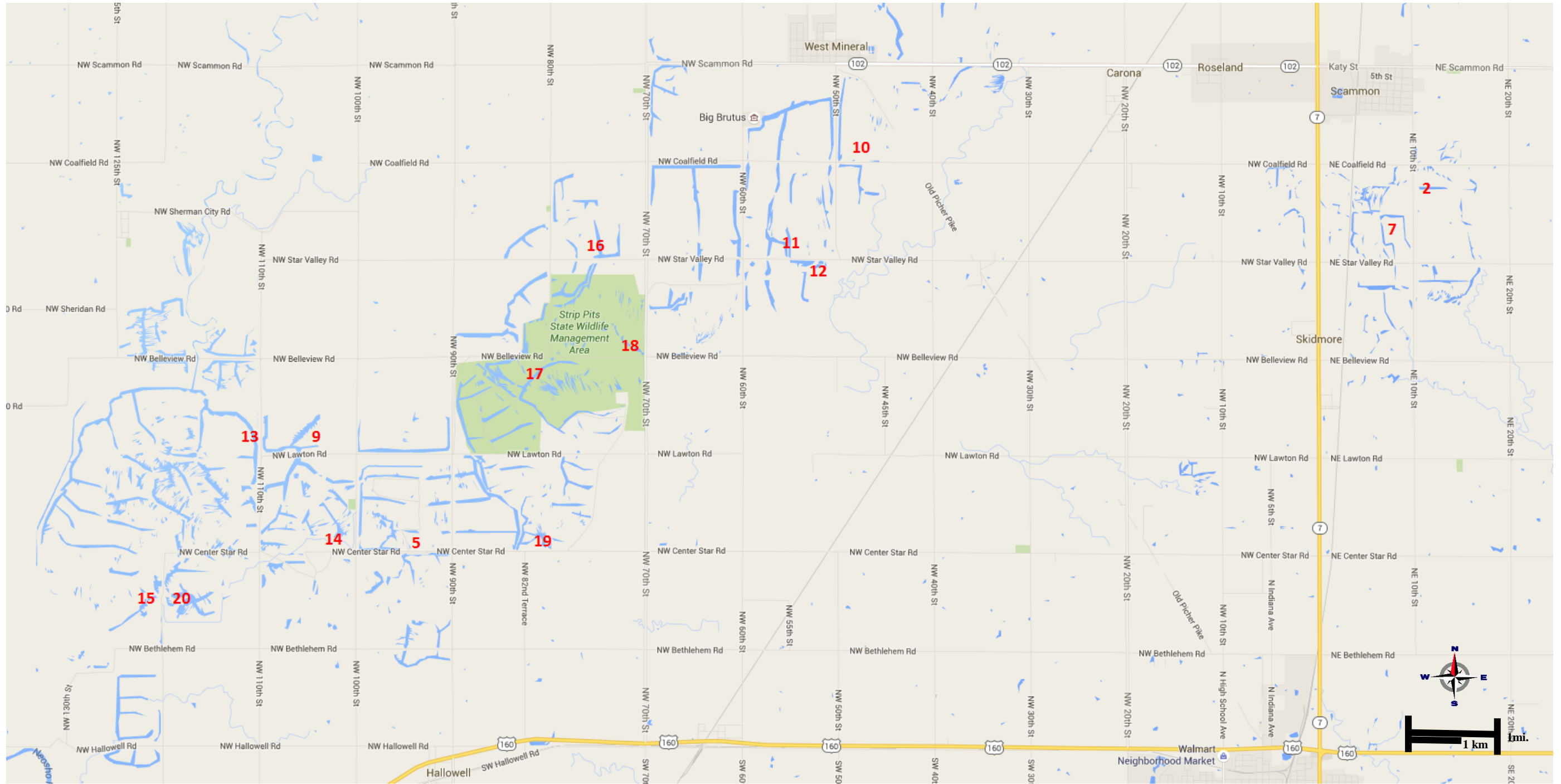


Figure 3. Maps of trapping sites 2,3,5,7,9-20 located in Cherokee County, KS.

Site 1

This site corresponds to the Mined Land Wildlife Area (MLWA) #1. The site is located northeast of the intersection of Highway 69 and West North County Road/Highway 160 in Crawford County, Kansas (Fig. 4).

The trap line in the *grassy* habitat was located in the southern part of the site where a grass field runs along the West North County Road/Highway 160. The most common plants in the *grassy* habitat were little bluestem, Indiangrass, yellow foxtail (*Setaria glauca*); longspike tridens, (*Tridens strictus*) and prairie bundle flower (*Desmanthus illinoensis*).

The trap line in the *brushy* habitat was located on the top of a spoil bank along the east side of the maintained road in the area. The *brushy* habitat abuts with a grass habitat also along the road. In the *brushy* habitat, the most common plants were prairie bundle flower; rough-leaf dogwood, smooth sumac, Indian grass, and big bluestem.

The *forest* trap line was located on the west side of the maintained road. This trap line started in the bottom between two spoil banks and ended in the top of the southern spoil bank. The most common plants in the *forested* area were cottonwood and catalpa (*Catalpa speciosa*). The understory was composed of buckbrush (*Symphoricarpos orbiculatus*) and Japanese honeysuckle. While mapping this habitat, after trapping was done, the location was flooded.

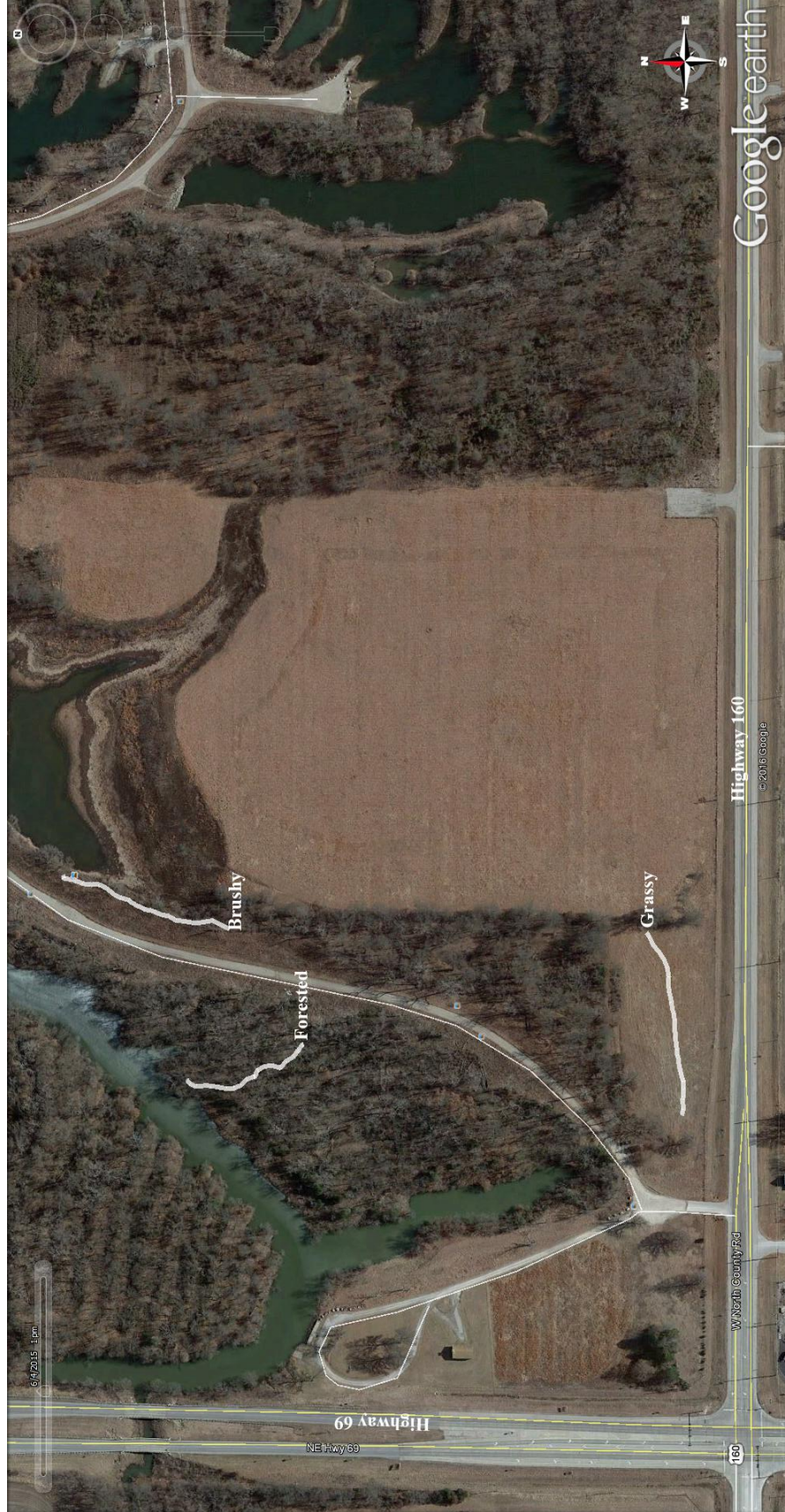


Figure 4. Trapping site #1 (MLWA #1) with the trap lines for each habitat.

Site 2

This site corresponds to MLWA #13 located southeast of the intersection of Coalfield Road with Northeast 10th Street in Cherokee County, Kansas, 1.6 km south of Scammon (Fig. 5).

The trap line in the *grassy* habitat was in a grass field in the western part of the site along Northeast 10th street. The most common plants in this area were split-beard bluestem (*Andropogon ternarius*), little bluestem, sericea lespedeza, and Indiangrass.

The *brushy* habitat trap line started along the boulder line surrounding the campground area and followed a trail that led to the forest. The most common plants in this area were woodoats (*Chasmanthium latifolium*), sericea lespedeza, willow-leaf American-aster, (*Symphyotrichum praealtum*), white oldfield American-aster (*Symphyotrichum pilosum*), smooth sumac, and Japanese honeysuckle.

The *forested* habitat trap line started in the valley between two spoil banks and followed the valley for half of its length, then continued up on the eastern spoil bank and followed the top of it until the end of the line. The most common plants in this area were white mulberry (*Morus alba*), hickory (*Carya sp.*), and pin oak. The understory was composed of bush honeysuckle and woodoats.

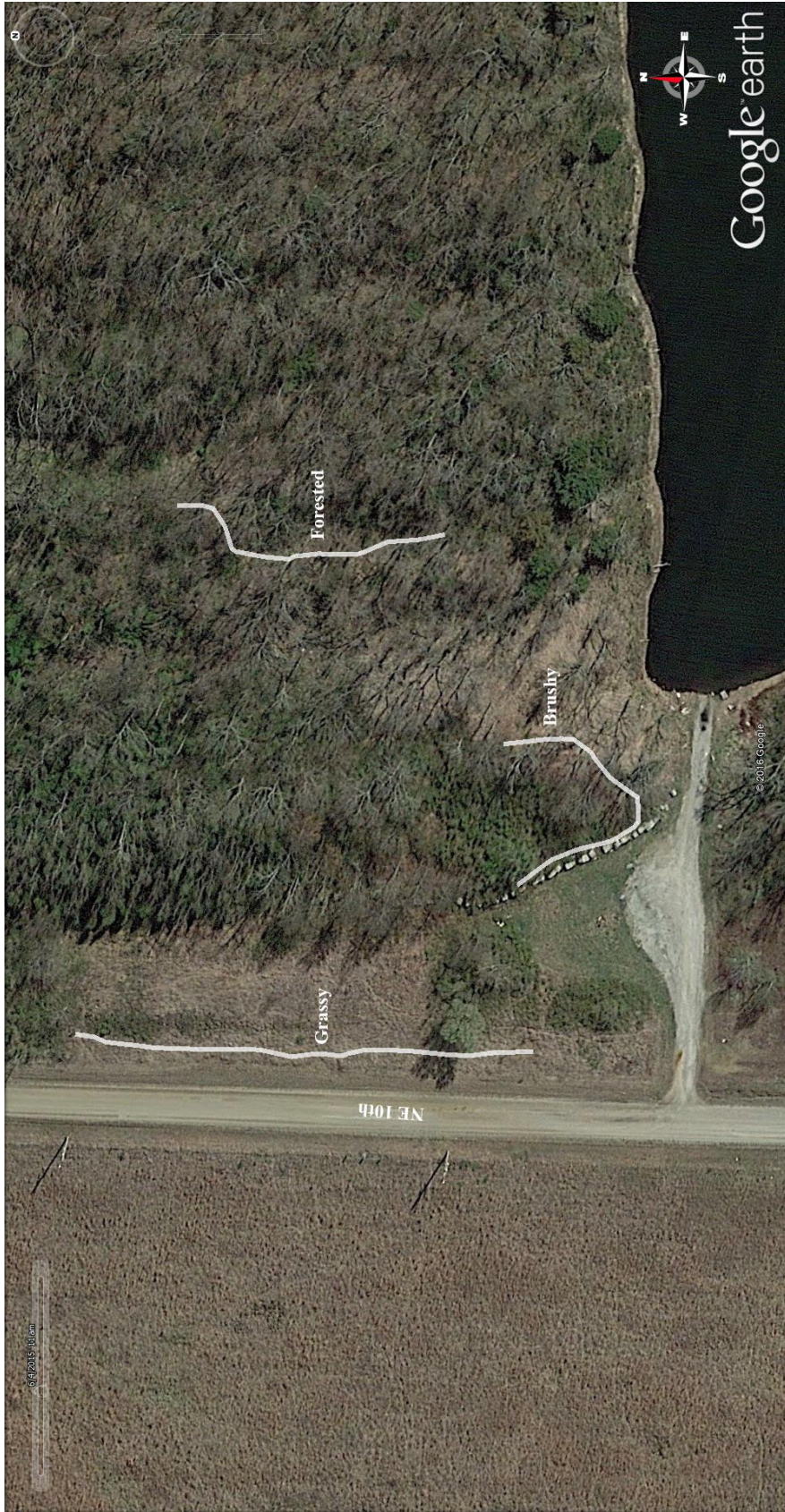


Figure 5. Trapping site #2 (MLWA #13) with the trap lines for each habitat.

Site 3

This site corresponds to MLWA #17 located northwest from the intersection of Northwest 40th Street and Kansas 102, one km east of West Mineral, Cherokee County, Kansas. Because this site was disturbed (all the vegetation was removed), except for the first trapping effort, no more collections were conducted in it. No description based on the current plant community would accurately represent the vegetation present before the disturbance.

Site 4

This site correspond to the MLWA #4, located southeast of the intersection of 260 Road with 570 Road in Crawford County, Kansas, 6.4 km east of Pittsburg (Fig. 6).

The *grassy* habitat in this site is located along a power line right-of-way. The most common plants in this area were little bluestem, Indiangrass, goldenrod (*Solidago sp.*).

The trap line in the *brushy* habitat followed a trail leading southeast. The most common plants in this area were rough-leaf dogwood, smooth sumac, crown vetch (*Securigera varia*), trumpet vine (*Campsis radicans*), and common buttonbush (*Cephalanthus occidentalis*).

The *forested* habitat was located south from the entrance trail. The most common plants in this area were silver maple (*Acer saccharinum*), pin oak, Japanese honeysuckle, and trumpet vine. Once again, as in the *forested* habitat from site #1, while mapping this habitat after all trapping was conducted it was flooded.



Figure 6. Trapping site #4 (MLWA #4) with the trap lines for each habitat.

Site 5

This site corresponds to the MLWA #24. It is located northeast of the intersection of Northwest 100th Street and Northwest Center Star Road in Cherokee County, Kansas (Fig. 7).

The *grassy* habitat is located between a gravel road that gives access to the site and a strip pit. The line of traps was on average about three meters from the water. The most common plants in this area were switchgrass, field paspalum (*Paspalum laeve* var. *laeve*), yellow foxtail, and purpletop tridens (*Tridens flavus* var. *flavus*).

The *brushy* habitat was also along a gravel road. The trap line was on average 2.5 m from the water. The most common vegetation was silver beard grass (*Bothriochloa laguroides*), rough-leaf dogwood, Eastern red cedar, switchgrass, and sumac.

The *forested* habitat was closer to the Northwest Center Star Road than the other two habitats. This trap line was inside a patch of forest close to one of the entrances of the property. Less than half of the line was near a strip pit located on the west side of the line. This part of the line was located on top of a spoil bank. The most common plants in this area were; sugar-berry (*Celtis laevigata* var. *laevigata*); buckbrush and slippery elm (*Ulmus rubra*).



Figure 7. Trapping site #5 (MLWA #24) with the trap lines for each habitat.

Site 6

This site corresponds to MLWA #6 and serves as the district headquarters for KDWPT. The site is about 3.5 km west of the 69 Highway bypass, south of East 560th Avenue in Crawford County, Kansas (Fig. 8).

The *grassy* habitat is in a grassland on the north side of the property, between East 560th Avenue and the access road. The most common plants in this area were big bluestem, little bluestem, and Indiangrass. After the collecting was over, the area was visited to be mapped and it was found that sericea lespedeza had invaded the area.

The *brushy* trap line was in the edge of a brush line and a patch of grass along the access road. This trap line was about five meters from water, on average. The most common plants in this area were Russian olive (*Elaeagnus umbellate*), and bush honeysuckle (*Lonicera maackii*).

The *forested* trap line was west of the access road. The most common plants in this area were hickory, bush honeysuckle, bur oak (*Quercus macrocarpa*), and pin oak.

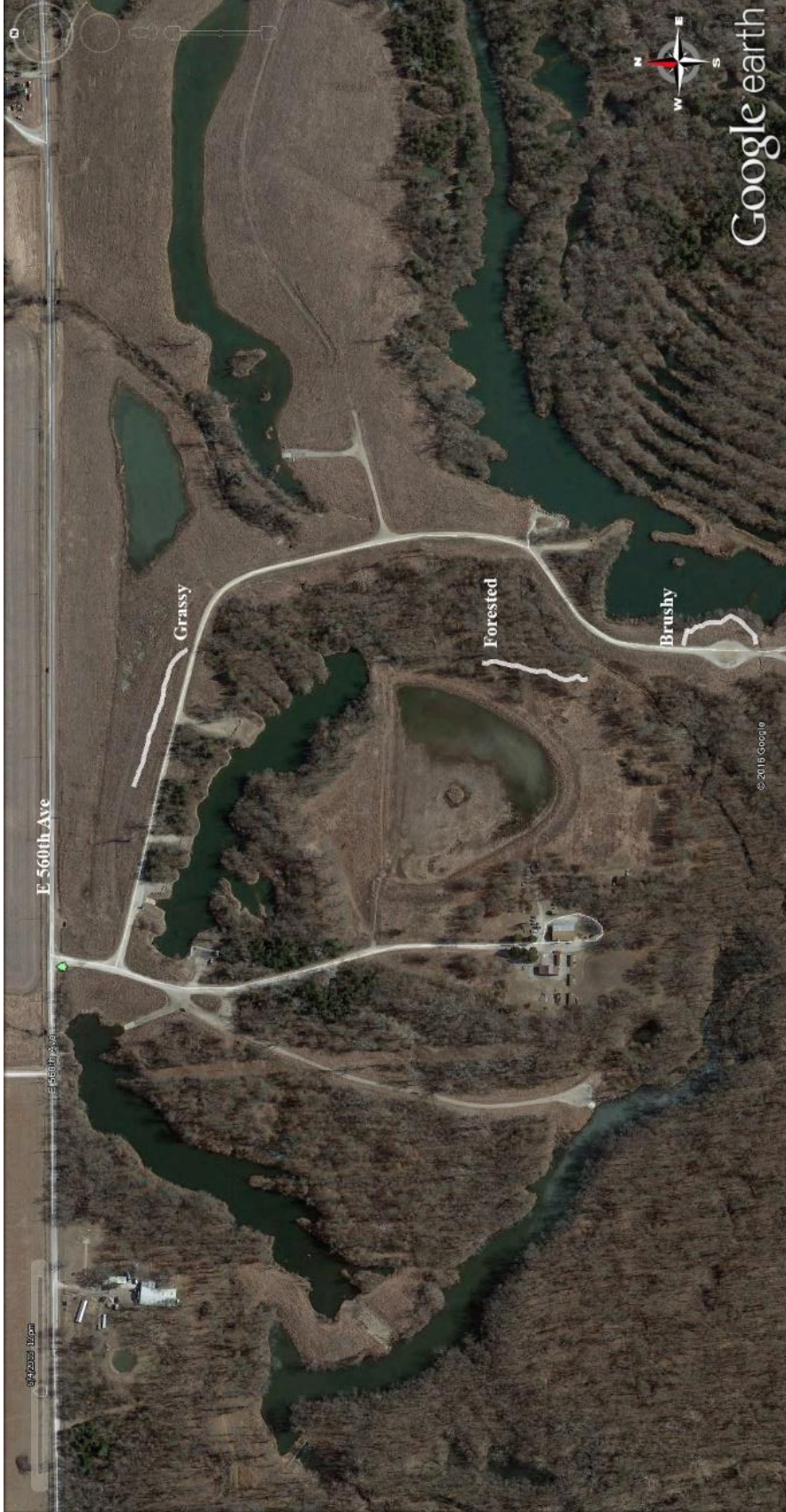


Figure 8. Trapping site #6 (MLWA #6) with the trap lines for each habitat.

Site 7

This site corresponds to MLWA #12 and is located northwest of the intersection of Northeast Star Valley Road and Northeast 10th Street, about two kilometers south of Scammon in Cherokee County, Kansas (Fig. 9).

The *grassy* habitat was a grassland in the northeast corner of the property along Northeast 10th Street. The most common plants in this area were big bluestem, little bluestem, and willowleaf American aster.

The *brushy* trap line was along the main strip pit in the north of the property. The most common plants in this area were sericea lespedeza, Japanese honeysuckle, pin oak, and sumac.

The *forested* trap line was in the south part of the property. As with the *forested* habitats from sites 1 and 4, when mapping this habitat after all collecting was done, this area was found flooded. The most common plants in this area were rough-leaf dogwood, and pin oak. The ground was covered by leaf material and no understory vegetation was present, probably due to the flooding.



Figure 9. Trapping site #7 (MLWA #12) with the trap lines for each habitat.

Site 8

This site corresponds to MLWA #8 located northeast of the intersection of South 180th Street and East 530th Avenue about 1.8 km from Chicopee, Crawford County, Kansas (Fig. 10).

The *grassy* trap line was located south of the access road. The trap line was about 12 m from a wetland. The most common plants in this area were big bluestem, side-oats grama (*Bouteloua curtipendula* var. *Canadensis*), prairie bundle-flower, and crown vetch.

The *brushy* trap line was in a *brushy* habitat that abuts with forest in the north side and grass in the south. The most common plants in this area were Eastern red cedar, bush honeysuckle, little bluestem, and Indiangrass.

The *forested* trap line was located on an abandoned road between two strip pits, about 25 m from the water. The most common plants in this area were bush honeysuckle, smooth sumac, and elm (*Ulmus* sp.), while the understory was covered by sericea lespedeza.

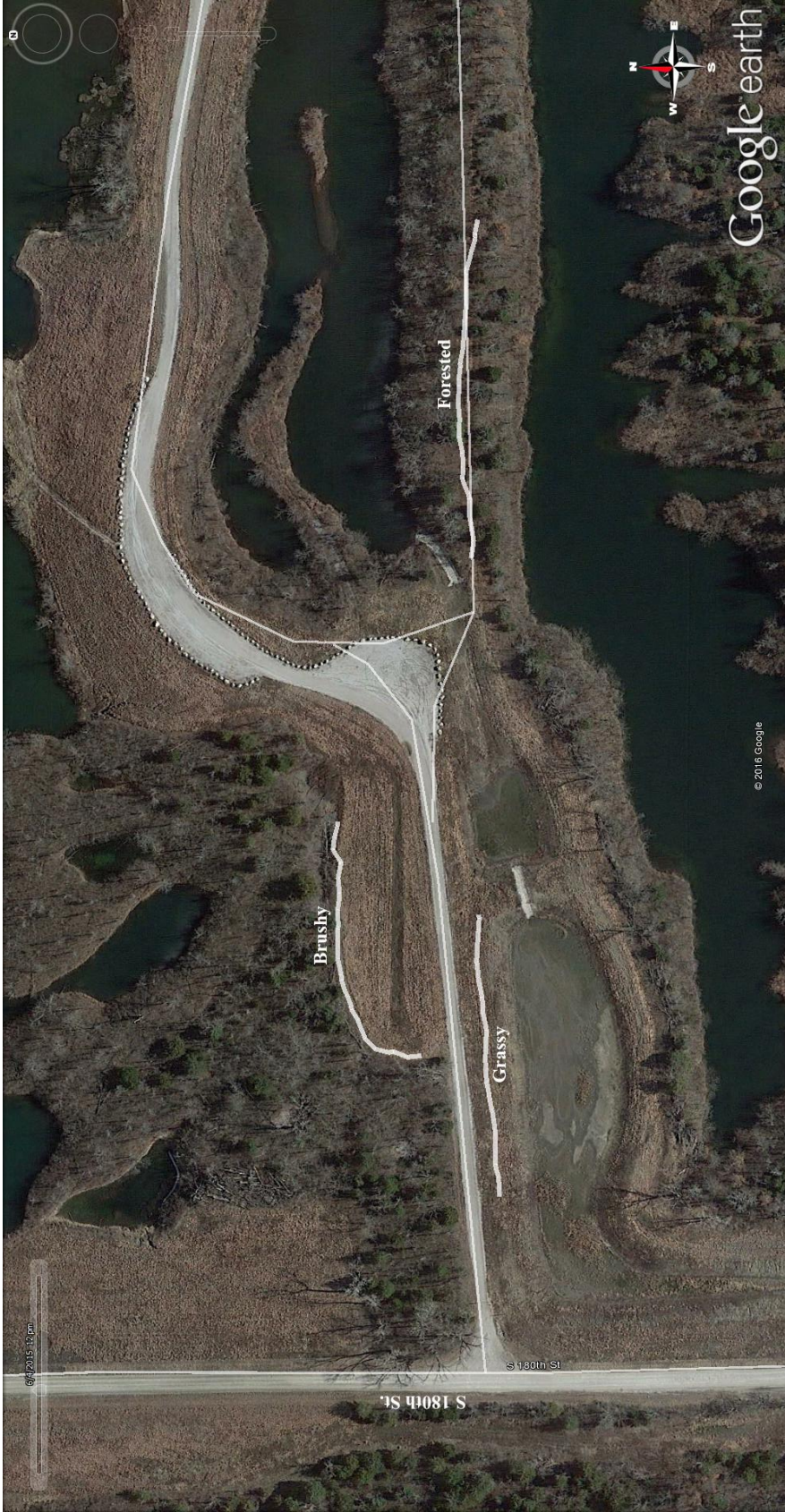


Figure 10. Trapping site #8 (MLWA #8) with the trap lines for each habitat

Site 9

This site corresponds to MLWA #34 and is located northeast of the intersection of Northwest 110th Street and Northwest Lawton Road in Cherokee County, Kansas (Fig. 11).

The *grassy* trap line was set in a grass field in the southeast corner of the property. The line was set about 15-20 m from the road, and it was about 100 m from the nearest strip pit. The most common plants in this area were big bluestem, smooth sumac, little bluestem, goldenrod, and Indiangrass. After the collections were over, sericea lespedeza started taking over the area.

The *brushy* trap line was set on the top of the hill northeast of the *grassy* trap line, along a patch of brush that abuts with the grass field. The closest point to the water was about 50 m. The most common plants in this area were rough-leaf dogwood, wild goose plum (*Prunus hortulana*), little bluestem, crown vetch, and goldenrod.

The *forested* habitat trap line was set in the patch of forest surrounding the cemetery on the site, 30-50 m from water. The most common plants in this area were Japanese honeysuckle, black cherry, black locust, buckbrush, and elm.

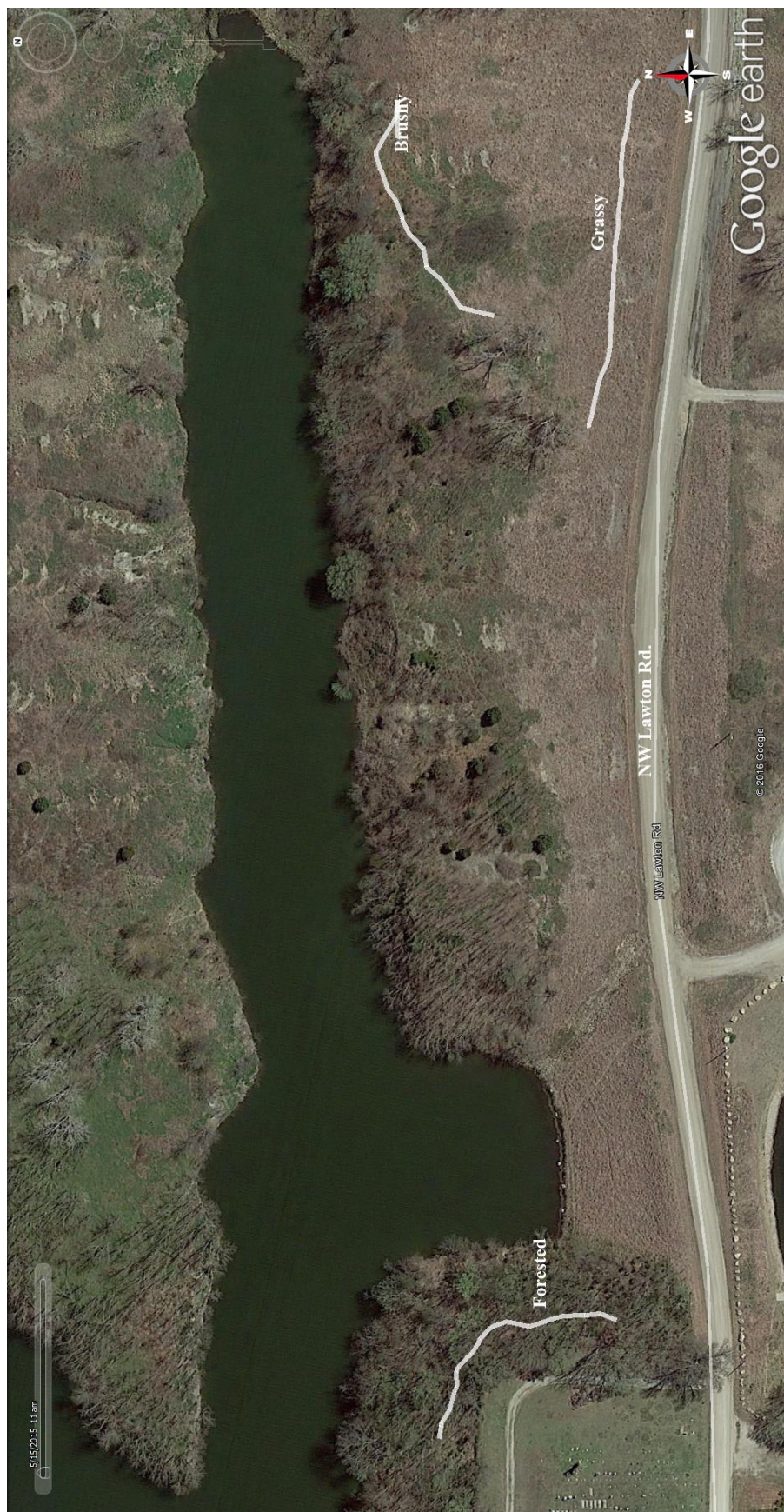


Figure 11. Trapping site #9 (MLWA #34) with the trap lines for each habitat.

Site 10

This site corresponds to MLWA #18, and it is located 1.6 km south of West Mineral, Kansas, on the northeast side of the intersection of Northwest 50th Street and Northwest Coalfield Road in Cherokee County, Kansas (Fig. 12).

The trap line in the *grassy* habitat was located in a patch of grass along Northwest 50th Street, about 25 m from water. The plant community in this habitat was dominated by bristly foxtail (*Setaria parviflora*) and Indiangrass.

The *brushy* habitat trap line was set just north of Northwest Coalfield Road. The most common plants were rough-leaf dogwood, Eastern red cedar, smooth sumac, and Indiangrass.

The *forested* habitat trap line was set on the top of a spoil bank. Two species of trees were dominant in this habitat, Osage orange, and pin oak.



Figure 12. Trapping site #10 (MLWA #18) with the trap lines for each habitat

Site 11

This site corresponds to MLWA #42 located in Cherokee County, Kansas. It is delimited by Northwest Coalfield Road in the north, Northwest 50th Street in the east, Northwest Star Valley Road in the south and Northwest 60th Street in the west (Fig. 13).

The trap line in the *grassy* habitat was set in a grass field north of the Northwest Star Valley Road. The most common plants in this area were Canadian horseweed (*Erigeron Canadensis*), little bluestem, Harger's goldenrod (*Solidago canadensis* var. *hargerii*), and Western rough goldenrod (*Solidago radula*).

The trap line in the *brushy* habitat was set along a patch of brush, northwest from the access road. This habitat abuts a *grassy* habitat. The most common plants in this area were Russian olive, American pokeweed (*Phytolaca americana* var. *Americana*), aromatic sumac (*Rhus aromatica*), and blackberry (*Rubus* sp.).

The *forested* habitat trap line was set on the top of a spoil bank. The most common plants in this area were, sugar-berry, rough-leaf dogwood, Eastern red cedar, bush honeysuckle, pin oak, and buckbrush.

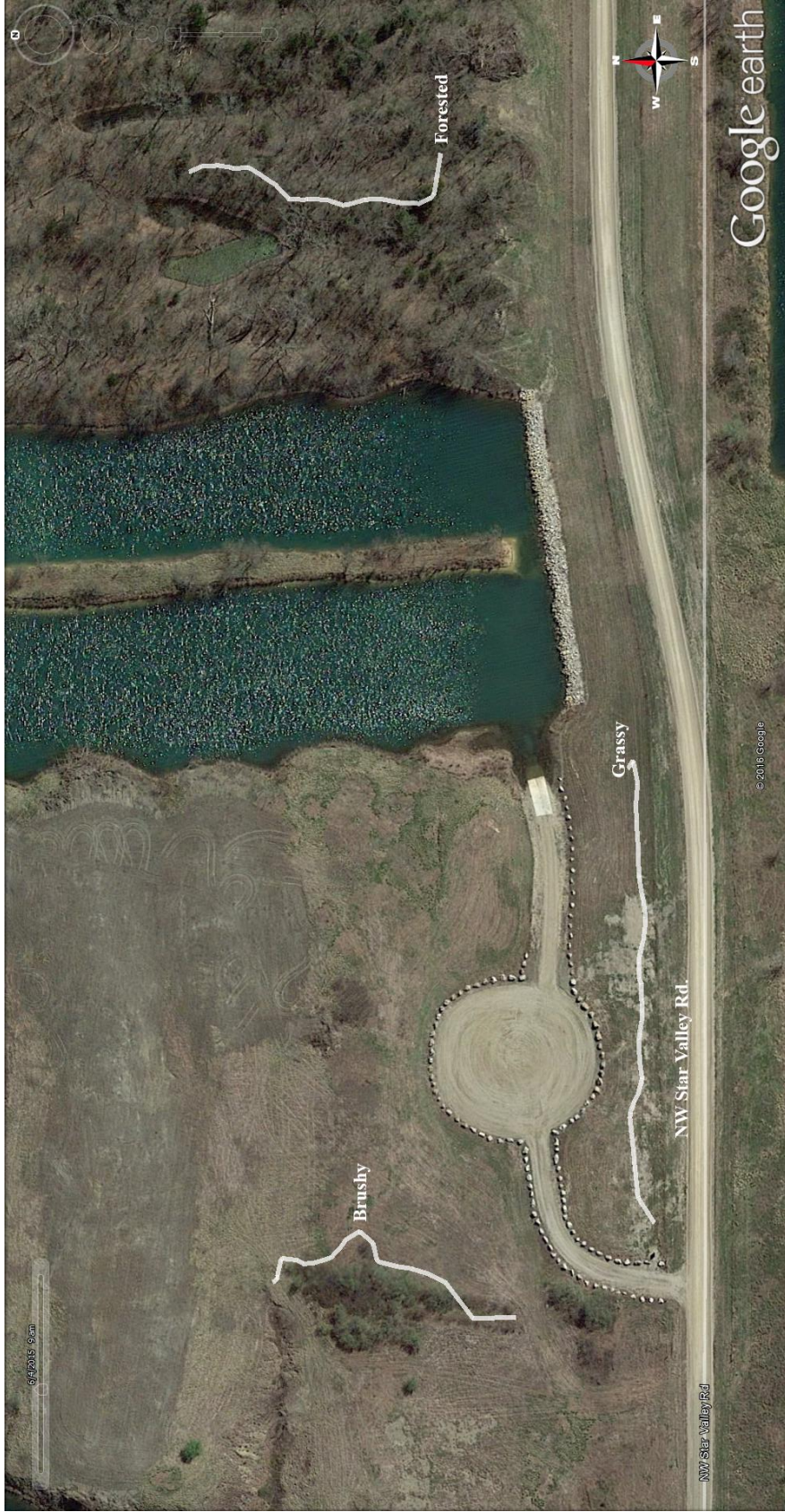


Figure 13. Trapping site #11 (MLWA #42) with the trap lines for each habitat.

Site 12

This site corresponds to MLWA #38, and it is located southeast of the intersection of Northwest Star Valley Road and Northwest 60th Street in Cherokee County, Kansas (Fig. 14).

The *grassy* habitat trap line was set along the access road in a grass field, about 700 m from Northwest Star Valley Road. The most common plants in this area were switchgrass, little bluestem, and Indiangrass.

The trap line for the *brushy* habitat was also set along the access road, about 200 m from Northwest Star Valley Road. The most common plants in this area were rough-leaf dogwood, switchgrass, black locust, little bluestem, and Indiangrass.

The *forested* habitat trap line was set in a patch of forest south of the *grassy* habitat trap line. The dominant tree species in this area was the black locust, while the understory had two common species, crown vetch and buckbrush.



Figure 14. Trapping site #12 (MLWA #38) with the trap lines for each habitat.

Site 13

This site corresponds to MLWA #33, and it is located southwest of the intersection of Northwest Belleview Road and Northwest 110th Street in Cherokee County, Kansas (Fig. 15).

The trap line for the *grassy* habitat was set in a patch of grass east of NW 110th St. The most common plants in this area were big bluestem, silver beard grass, fall panicgrass (*Panicum dichotomiflorum*), switchgrass, and purpletop tridens.

The *brushy* trap line was set on an animal trail in a patch of *brushy* vegetation along the margin of the strip pit. The dominant plant in this area was rough-leaf dogwood, while sericea lespedeza dominated the understory and open spaces.

The *forested* trap line was set on the top of a spoil bank between two strip pits. The most common plants in this area were sweet gum (*Liquidambar styraciflua*), sycamore, white oak, pin oak and red oak (*Quercus rubra*). Sericea lespedeza was present in open spaces, but overall the ground was covered in leaf matter.



Figure 15. Trapping site #13 (MLWA #33) with the trap lines for each habitat.

Site 14

This site corresponds to MLWLA #30, and it is located northwest of the intersection of NW 100th St. and NW Center Star Rd in Cherokee County, Kansas. This area is known for Trout Lake, the only lake from all the MLWA suitable for trout (Fig. 16).

The *grassy* habitat line of traps in this site was divided in two, one west and one east of the entrance road. The west part of the line was farthest from water, about 30 m, and the east part of the line ran along the strip pit. The most common plants in this area were silver beard grass (*Bothriochloa laguroides* var. *torreyana*), switchgrass, black locust, yellow foxtail, and purpletop tridens.

The *brushy* habitat was along a secondary road running NE. This line was about 15 m from the water. The most common plants in this area were rough-leaf dogwood, Japanese honeysuckle, and black locust.

The *forested* habitat was at the bottom of a spoil bank left by mining. The end of this line is close to a puddle, and this habitat may flood after heavy rain. Fortunately there was no such rain in the period of collection. The most common plants in this area were rough-leaf dogwood, burningbush (*Euonymus atropurpureus* var. *atropurpureus*), buckbrush, and elm.

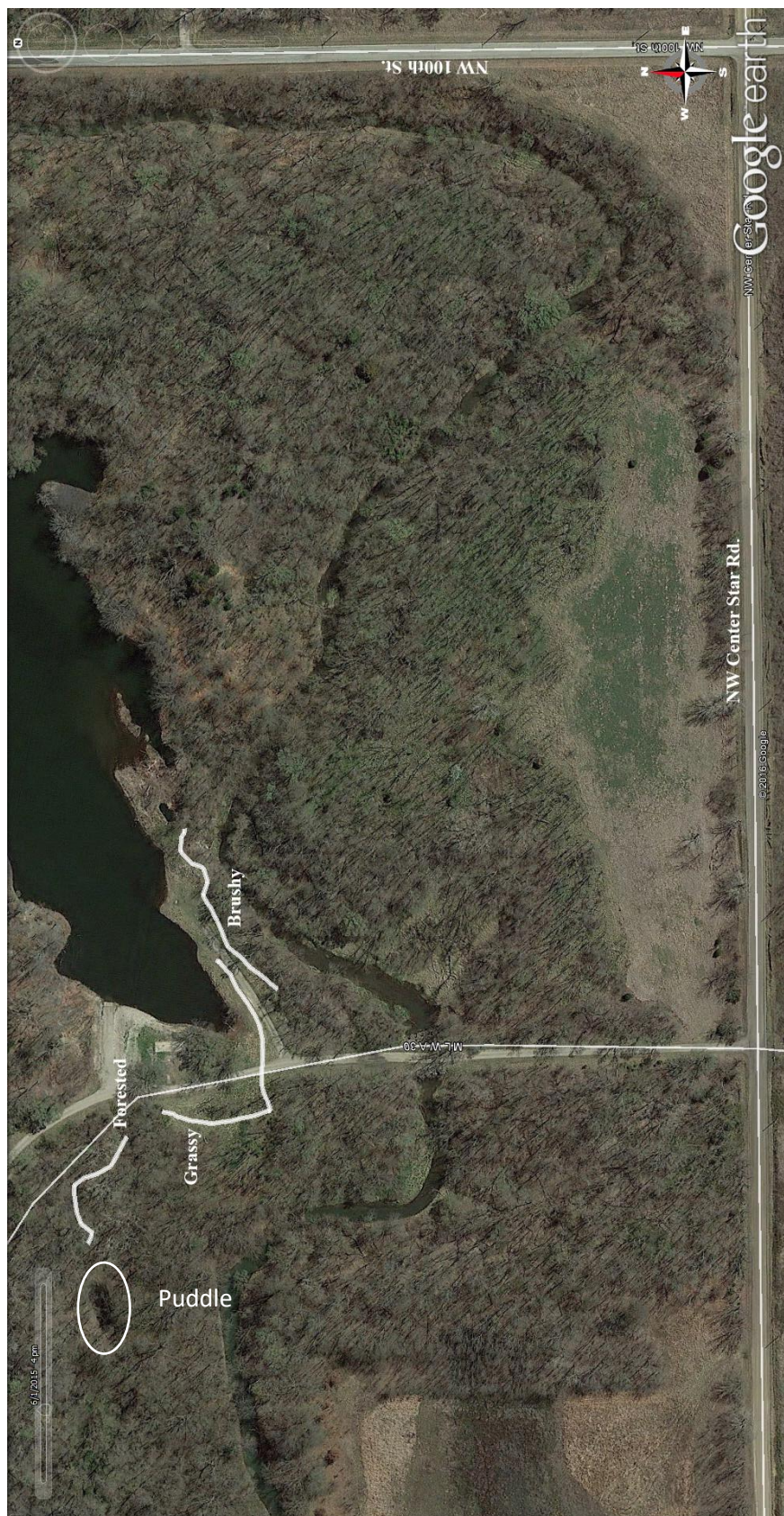


Figure 16. Trapping site #14 (MLWA #30) with the trap lines for each habitat.

Site 15

This site corresponds to MLWA #25, and it is located west of Northwest 120th Street, 900 m north of the intersection with Northwest Bethlehem Road in Cherokee County, Kansas (Fig. 17).

The *grassy* habitat trap line was set along a road that provides access to one of the strip pits on the site. The most common plants in this area were sericea lespedeza, switchgrass, Indiangrass, and purpletop tridens.

The trap line for *brushy* habitat started along a four wheeler trail and followed into the *brushy* vegetation. The most common plants in this area were rough-leaf dogwood, sericea lespedeza, and smooth sumac.

The trap line for the *forested* habitat followed an animal trail starting along the road and going south into the forest. The most common plants in this area were rough-leaf dogwood, Eastern red cedar, sericea lespedeza, switchgrass, pin oak, and purpletop tridens.

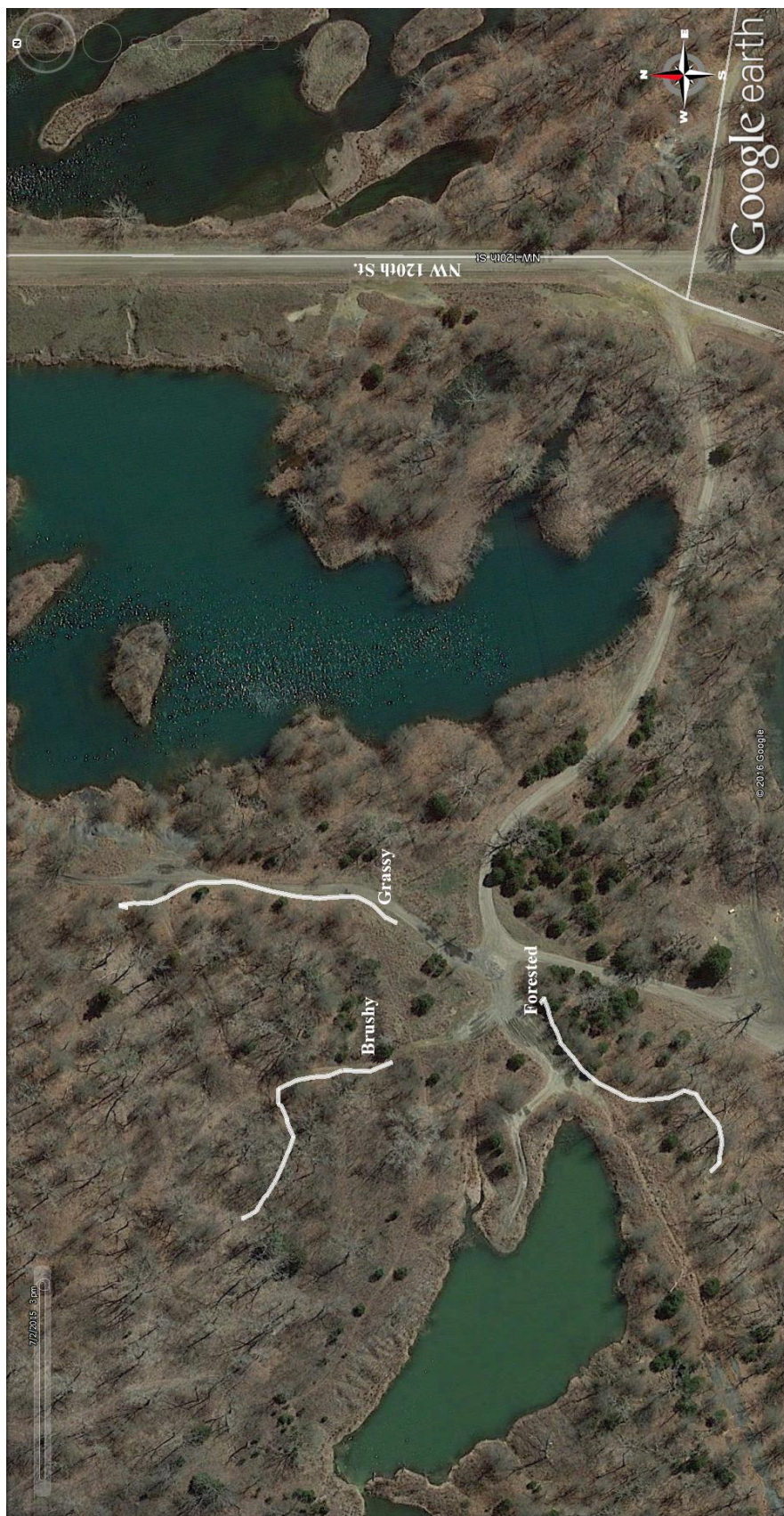


Figure 17. Trapping site #15 (MLWA #25) with the trap lines for each habitat.

Site 16

This site corresponds to MLWA #40, and it is located northeast of the intersection of Northwest Star Valley Road and Northwest 80th Street in Cherokee County, Kansas (Fig. 18).

The *grassy* habitat trap line in this site was set in a grass field in the southeast part of the site. The most common plants in this area were sericea lespedeza, switchgrass, and little bluestem. In this area, the amount of sericea lespedeza coverage qualitatively increased in each trapping season, and by the end of this project it was the dominant species in this habitat.

The trap line for the *brushy* habitat was set in the southwest part of the property along the *brushy* vegetation present under a wind-break line of trees. On each side, this *brushy* habitat abuts grass vegetation. The dominant *brushy* plant was aromatic sumac, and the grasses present were switchgrass and Harger's goldenrod. The wind-break consisted of Eastern red cedar.

The *forested* habitat trap line was set in the northwest part of the property. The most common plants were sugar-berry, rough-leaf dogwood, Osage orange, white mulberry and buckbrush.



Figure 18. Trapping site #16 (MLWA #40) with the trap lines for each habitat.

Site 17

This site corresponds to MLWA #22, and it is located in the intersection of Northwest 80th Street and Northwest Belleview Road, Cherokee County, Kansas (Fig. 19).

The *grassy* habitat trap line in this site was set in two parts, half on the east and half on the west side of the entrance road, around 50 m from NW Belleview Road. This habitat is dominated by one species of plant, composite dropseed (*Sporobolus compositus*).

The trap line in the *brushy* habitat was also set in two parts, half on the east and half on the west side of the entrance road, around 200 m from NW Belleview Road. The half line on the east side of the road was set on top of a spoil bank, and the west side was set at the bottom of a spoil bank about 20 m from water. The most common species in this area were rough-leaf dogwood, sumac, and sericea lespedeza was present in the half line set on the east side of the road.

The trap line for the *forested* habitat was set in the forest area on the east side of the entrance road, about 100 m from NW Belleview Road. This area was dominated by black locust.

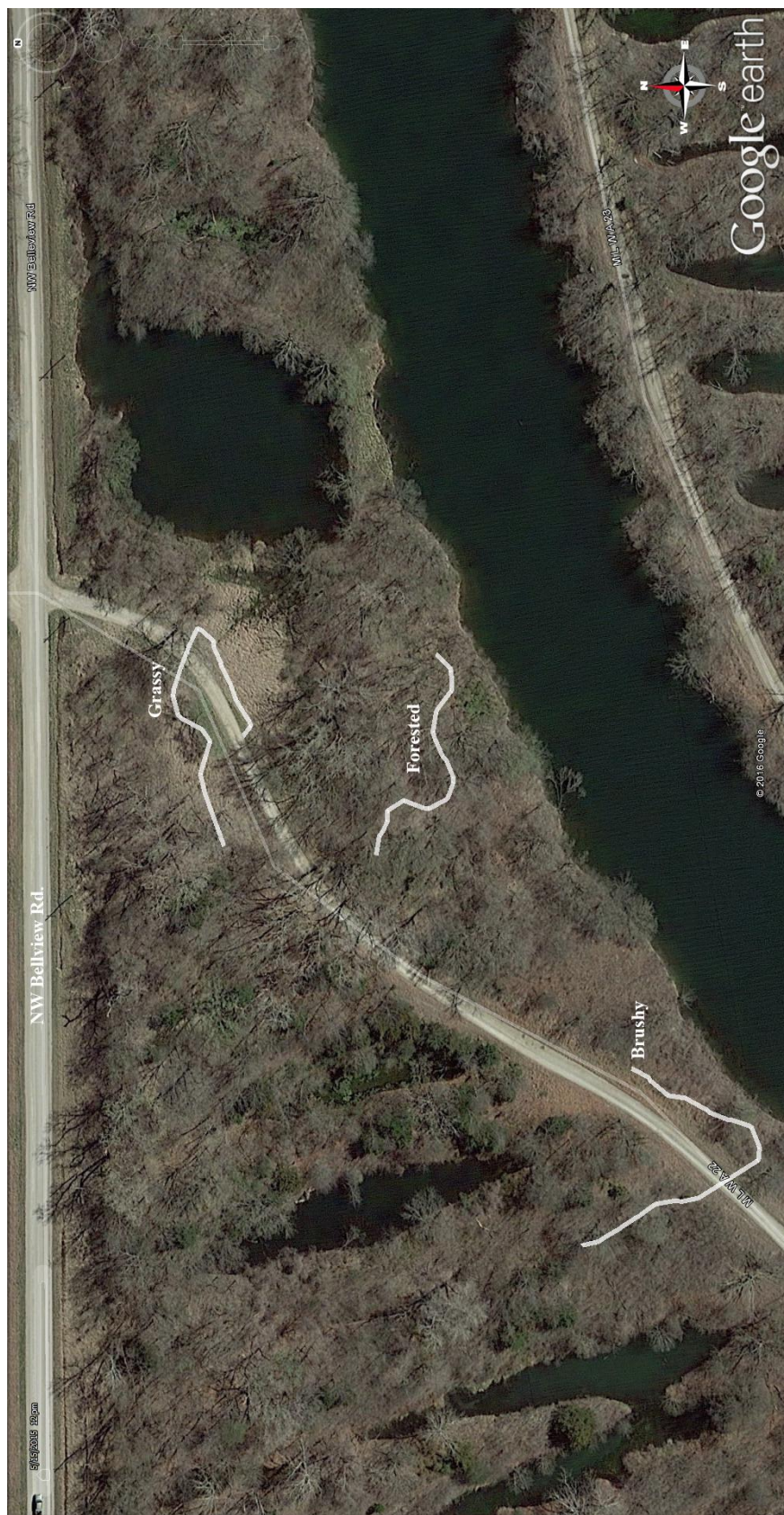


Figure 19. Trapping site #17 (MLWA #22) with the trap lines for each habitat.

Site 18

This site corresponds to MLWA #21 located northwest of the intersection of Northwest 70th Street and Northwest Belleview Road, Cherokee County, Kansas (Fig. 20). This site serves as a field office location for the MLWA managers. Before the last season trapping, the managers of the MLWA were planning on mowing this property, so this site had to be trapped a few days before scheduled.

The trap line for the *grassy* habitat was set in a grass field on the east side of the entrance road. The most common plants in this area were big bluestem, yellow foxtail, green foxtail (*Setaria viridis* var. *viridis*), and Indiangrass.

The trap line for the *brushy* area was set along NW Belleview road. The most common plants in this area were big bluestem, prairie bundle-flower, Canadian horseweed, sumac, rough Canada goldenrod (*Solidago altissima* var. *altissima*), and Indiangrass. After the last trapping this habitat was completely destroyed by mowing conducted by the KDWPT staff.

The forest habitat trap line was set between two spoil banks on the west side of the entrance road leading north. The most common plants in this area were rough-leaf dogwood, white mulberry, and cottonwood.



Figure 20. Trapping site #18 (MLWA #21) with the trap lines for each habitat.

Site 19

This site corresponds to MLWA #32 located at Northwest Center Star Road, 1.6 km west of Northwest 70th Street, Cherokee county, Kansas (Fig. 21).

The *grassy* habitat trap line was set along NW Center Star Road. The most common plants in this area were big bluestem, Russian olive, switchgrass, puffsheath dropseed (*Sporobolus neglectus*), and willowleaf American aster.

The trap line in the *brushy* habitat was set on the top of a spoil bank between the main and secondary strip pits in the site. The most common plants in this area were rough-leaf dogwood, Eastern red cedar, sericea lespedeza, bush honeysuckle, and buckbrush.

The *forest* habitat trap line was set along a trail on the west side of the boat ramp. The most common plants in this area were hickory, deciduous holly (*Ilex decidua*), walnut (*Juglans nigra*), Osage orange, and buckbrush.

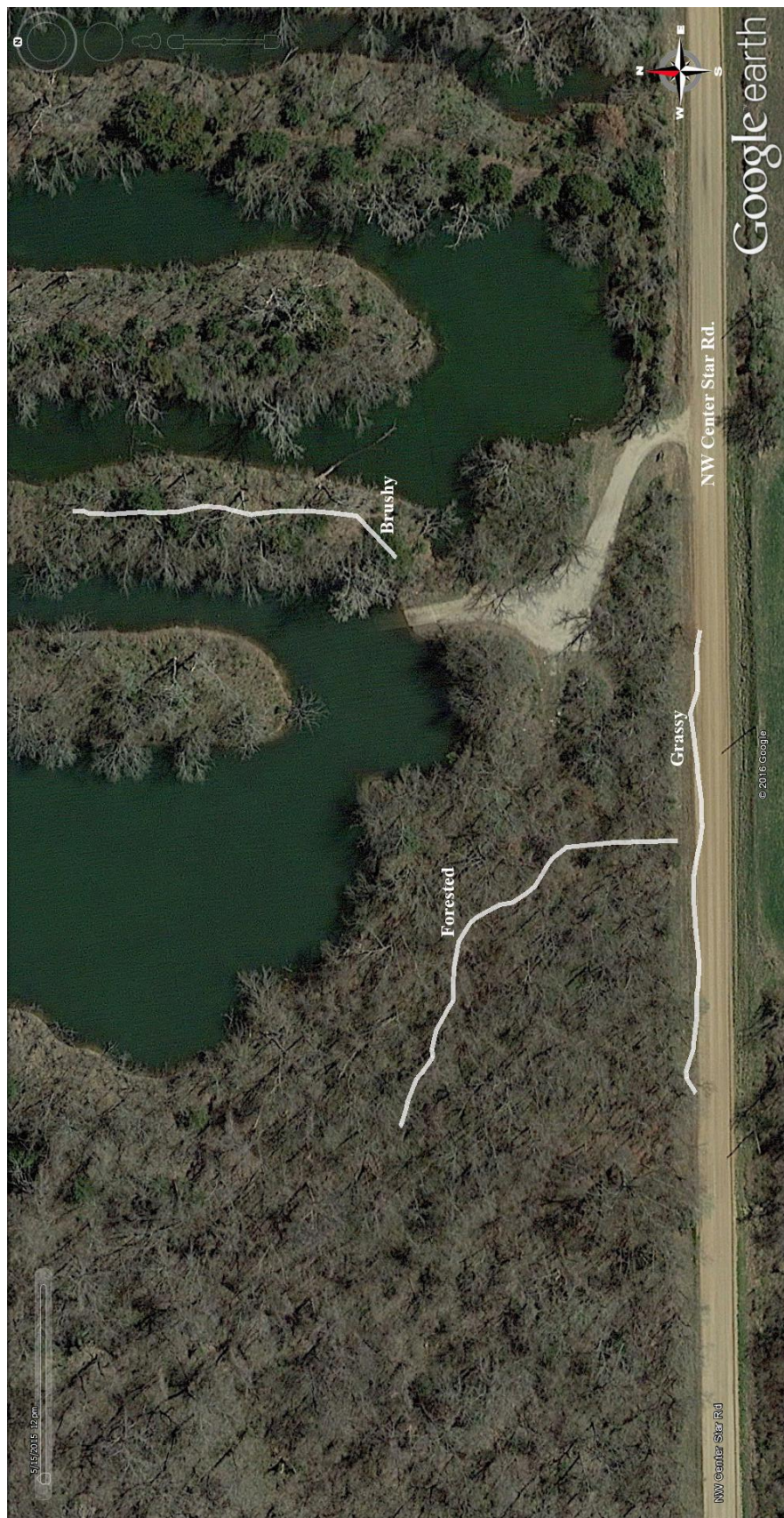


Figure 21. Trapping site #19 (MLWA #32) with the trap lines for each habitat.

Site 20

This site corresponds to MLWA #27, which is located southeast of the intersection of Northwest Center Star Road and Northwest 120th Street, Cherokee County, Kansas (Fig. 22).

The *grassy* habitat trap line was set in a grass field along NW 120th Street. The most common plants in this area were big bluestem, silver beard grass, sericea lespedeza, Indiangrass, and purpletop tridens. This grassland was burned by managers between the second and third trapping seasons.

The *brushy* habitat trap line was set northeast of the entrance road. The southern part of the trap line abutted a grass field. The most common plants in this area were rough-leaf dogwood, Russian olive, and in the part of the line where the two habitats abut sericea lespedeza was present.

The *forested* habitat trap line was set along a four wheeler trail northeast of the *brushy* habitat trap line. The most common plants in this area were sweet gum, cottonwood, pin oak, rough-leaf dogwood, buckbrush, and where the canopy was more open allowing sunlight to penetrate, sericea lespedeza was present.



Figure 22. Trapping site #20 (MLWA #27) with the trap lines for each habitat.

CHAPTER III

RESULTS AND DISCUSSION

A total of 136,800 trap nights (TN) yielded 1,352 individuals of 12 species. From greatest to least abundant these species were: deer mouse (494 individual, 36.54%), hispid cotton rat (487, 36.00%), white-footed mouse (241, 17.83%), Eastern woodrat (*Neotoma floridana*) (25, 1.85%), least shrew (*Cryptotis parva*) (23, 1.70%), prairie vole (*Microtus ochrogaster*) (22, 1.63%), pine vole (*Microtus pinetorum*) (18, 1.33%), Elliot's short-tailed shrew (*Blarina hylophaga*) (12, 0.89%), fulvous harvest mouse (*Reithrodontomys fulvescens*) (9, 0.67%) and the least abundant species were house mice (*Mus musculus*), plains harvest mice (*Reithrodontomys montanus*) and meadow jumping mice (*Zapus hudsonius*) with 7 individuals each, (0.52%).

The *grassy* habitat was the only habitat in which all 12 species were collected (Table 1). A total of 650 individuals were collected in this type of habitat. The most abundant species in this habitat were hispid cotton rats (328 individuals) and deer mice (217 individuals). These two species correspond to 84% of all specimens collected in *Grassy* habitat. Least shrew, prairie vole and pine vole, were the 3rd, 4th and 5th most abundant species respectively, which corresponded to 8.5% of collected specimens. It was expected the *grassy* habitat to have greater species richness and relative abundance,

since most of the species of small mammals in these *grassy* sites are described in the literature as grass dwellers.

Table 1. Species and number of specimens collected in *grassy* habitat in four trapping seasons.

Species in <i>grassy</i> habitat	Number of specimens	Percentage
Hispid cotton rat	328	50.5%
Deer mouse	217	33.4%
Least shrew	23	3.5%
White-footed mouse	22	3.4%
Prairie vole	18	2.8%
Pine vole	15	2.3%
Elliot's short-tailed shrew	7	1.1%
Plains harvest mouse	7	1.1%
House mouse	6	0.9%
Fulvous harvest mouse	3	0.4%
Eastern woodrat	2	0.3%
Meadow jumping mouse	2	0.3%
Total	650	100%

The *brushy* habitat yielded 483 individuals of 10 species (Table 2). Again the most abundant species were the deer mice and hispid cotton rats, but here, deer mice were the most abundant with 192 individuals, while 147 hispid cotton rats were trapped. In this habitat the white-footed mice were also captured in great numbers (112 individuals). These three species were 93% of the mammals collected. The other 7 species corresponds to just 7% of the total capture. The *brushy* habitat was second in richness and RA probably due to the fact that in most sites *brushy* habitats abut with *grassy* habitats, and the fact that the food availability in the *brushy* area must attract the small mammals.

Table 2. Species and number of specimens collected in *brushy* habitat in four trapping seasons.

Species in <i>brushy</i> habitat	Number of specimens	Percentage
Deer mouse	192	39.7%
Hispid cotton rat	147	30.4%
White-footed mouse	112	23.1%
Eastern woodrat	14	2.9%
Fulvous harvest mouse	5	1.0%
Meadow jumping mouse	5	1.0%
Elliot's short-tailed shrew	3	0.6%
Prairie vole	2	0.4%
Pine vole	2	0.4%
House mouse	1	0.2%
Total	483	100%

The *forested* habitat had the smallest richness and RA, where 8 species were represented (Table 3). In this habitat, 219 individuals were captured during the four trapping seasons. The most abundant species in this habitat was the white-footed mice with 107 individuals, which corresponded to 48.8% of all specimens collected in this habitat. Deer mouse, the second most abundant species was represented by 85 individuals. Wecker (1963) suggests that early life experience and some habitat imprinting may determine habitat selection by deer mice, but this species has a normal affinity for grassland habitat, thus the greatest number of deer mice collected in this study was in the grassy habitat. Understory vegetation in the *forested* habitat is usually sparse, and according to Bowne *et. al.* (1999) the hispid cotton rat exhibits a preference for habitats with high herbaceous cover and tends to shun areas where tree canopy shades the ground cover, which explains the great difference in relative abundance of this species in the three different habitats.

Table 3. Species and number of specimens collected in *forested* habitat in four trapping seasons.

Species in <i>forested</i> habitat	Number of specimens	Percentage
White-footed mouse	107	48.8%
Deer mouse	85	38.8%
Hispid cotton rat	12	5.5%
Eastern woodrat	9	4.1%
Elliot's short-tailed shrew	2	0.9%
Prairie vole	2	0.9%
Pine vole	1	0.5%
Fulvous harvest mouse	1	0.5%
Total	219	100%

Brown (1959) trapping effort was 1600 TN and 152 individuals of six species were collected and Bingman (1963) in his 12 year-long census, collected 851 individuals of nine species with a trapping effort of 18600 TN. At that time it was believed that the shrew present in this area was the Northern short-tailed shrew, but after DNA analysis it was discovered that those individuals were actually the Elliot's short-tailed shrew. In this project 1,352 individuals of 12 species were collected. All species, collected by Brown and Bingman were also collected in this project. Six species were present in this project, but absent in Brown's: least shrew, prairie vole, Eastern woodrat, fulvous harvest mouse, plains harvest mouse, and meadow jumping mouse. Three species were present in this project and absent in Bingman's; Eastern woodrat, plains harvest mouse and meadow jumping mouse. These differences are probably due to several factors such as number of sites trapped, trap effort, annual population fluctuation and such as number of sites trapped, trap effort, annual population fluctuation and climate factors.

According to a Tukey test conducted to assess the significance of the difference in species richness in the three different habitats ($F=7.71$, $P= 0.0011$), there are significant differences between *grassy* and *forested* habitats. *Brushy* and *forested* habitats are similar and *brushy* and *grassy* habitats are similar (Table 4).

Table 4. Species richness differences according to Tukey test.

Level	Least Sq Mean
<i>Grassy</i>	3.95
<i>Brushy</i>	2.90
<i>Forested</i>	2.00

The species' relative abundance for all sites and habitats shows three distinct peaks for deer mouse, hispid cotton rat and white-footed mouse since these three species were by far the most abundant in all habitats (Fig. 23) while all other species had low relative abundance.

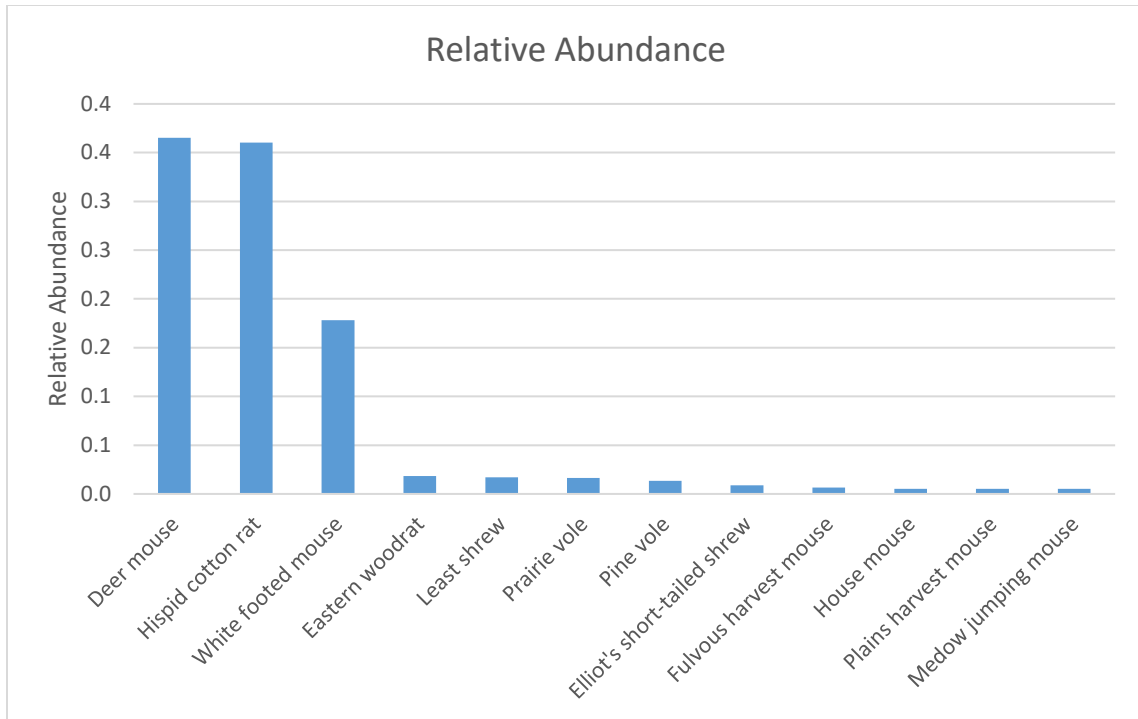


Fig 23. Relative abundance of small mammals for all sites and habitats.

Seasonal Analysis

Nine species (450 individuals) were trapped in winter (January and February): Elliot's short tail shrew, prairie vole, pine vole, Eastern woodrat, white-footed mouse, deer mouse, fulvous harvest mouse, plains harvest mouse, hispid cotton rat. Eight species (253 individuals) were collected in spring (April – July): least shrew, prairie vole, pine vole, house mouse, Eastern woodrat, white-footed mouse, deer mouse, hispid cotton rat. Ten species (273 individuals) were collected in summer (September and October): Elliot's short tail shrew, least shrew, prairie vole, pine vole, Eastern woodrat, white-footed mouse, deer mouse, fulvous harvest mouse, hispid cotton rat, meadow jumping mouse. Twelve species (376 individuals) were collected in fall (November and December), which was the only season where all 12 species were collected: Elliot's short tail shrew, least shrew, prairie vole, pine vole, house mouse, Eastern woodrat, white-footed mouse, deer mouse, fulvous harvest mouse, plains harvest mouse, hispid cotton mouse, deer mouse, fulvous harvest mouse, plains harvest mouse, hispid cotton rat, meadow jumping mouse.

According to Hansen and Fleharty (1974), the reduced capture during spring and summer might not show the true population numbers since the abundance of seeds, berries and insects available may reduce the chance of capture since the animals do not have to roam far to get food thus finding food before finding a trap. The opposite may occur in the autumn and winter since the small mammals would have to roam more to find food and that would increase the chance of capture. Brown (1959) captured 60 individuals between April and May,

47 individuals between June and August and 45 individuals between September and October. Bingman (1963) sampled during spring and fall season for 10 years, he captured 439 individuals during fall and 320 in spring. Although in 5 years he collected more individual during spring than fall.

The results obtained by Brown (1959) and Bingman (1963) differ from the results obtained in this project, which indicates that capture success is a combination of different factors such as temperature, precipitation, population numbers and food availability.

Seasonal relative abundance shows the same pattern as overall relative abundance; far more deer mouse and hispid cotton rat were caught in all seasons than any other species (Fig. 24).

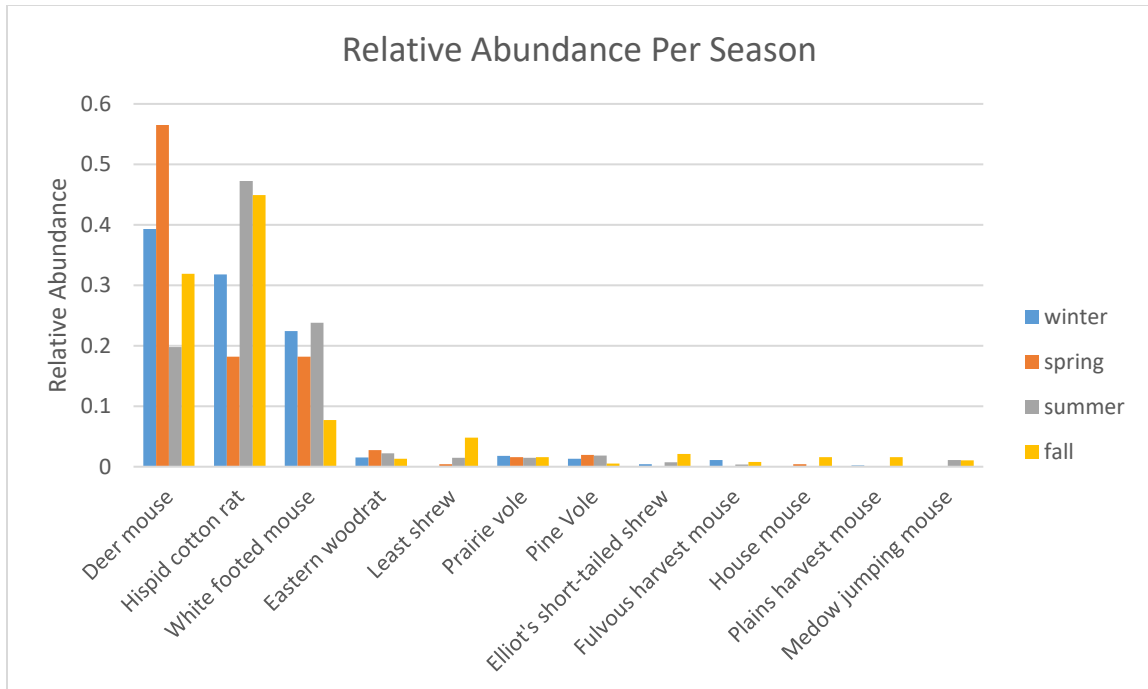


Fig 24. Seasonal relative abundance of small mammals for all sites and habitats.

Weather Analysis

When comparing the seasonal capture rate with weather data (temperature and precipitation), there is an inverse relationship between temperature and the number of individuals collected (Fig. 25). During this project, the highest number of individuals collected was in winter, when 450 individuals were collected; the average temperature for this season was -3.18°C and the average precipitation was 1.34 cm. As the average temperature and precipitation increased, the number of individuals collected decreased; in the spring season, as the average temperature rose to 18.33°C and precipitation to 2.54 cm, the capture number decreased to 253 individuals. During the summer season, the average temperature slightly increased from 18.33°C to 18.61°C , but precipitation slightly decreased from 2.54 cm to 2.36 cm while the capture number increased to 273 individuals. In the fall season, the average temperature dropped to 4.71°C , precipitation dropped to 0.5cm, and the capture number increased to 376 individuals. The average precipitation and temperature were obtained at the National Oceanic & Atmospheric Administration. This weather analysis follows the same pattern found by Brown (1959) where he captured 41% of the total number of captured animals during the lower temperature and precipitation months – but differs from Bingman’s study since he could not find any correlation between precipitation and capture. Bingman also points out that if the lower temperatures of winter are too extreme a reduction in survival rates will occur. Kaufman *et al.* (1995) and Ernest *et. al.* (2000) states that precipitation has more affect temperature.

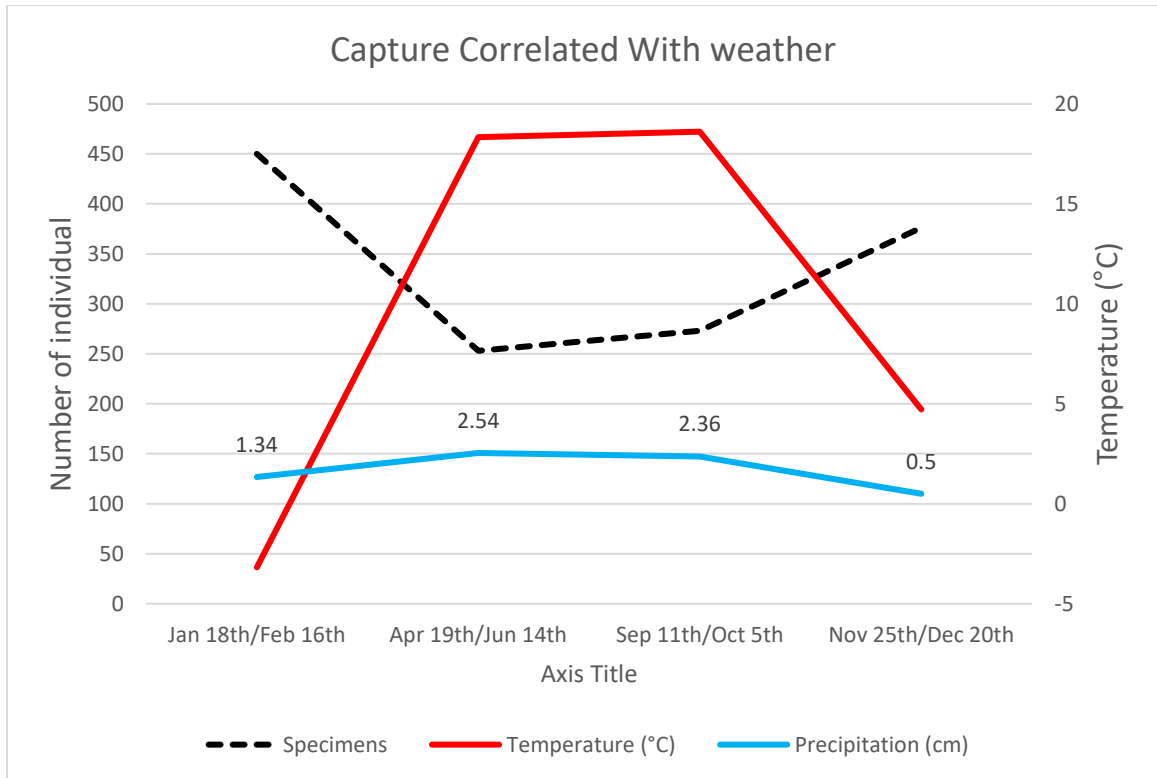


Figure 25. Comparison of weather data (average temperature and precipitation obtained at NOAA) with capture numbers .

Sites with Unusual Data

Some specific sites are worth mentioning due to different results when compared to other sites. The average capture per site is 67.6 individuals. Site number 12 was the site with the most capture in all seasons, totaling 185 individuals, almost three times the average. The second most abundant site was number 16 with a total of 144 individuals collected, more than double the average. Conversely a few sites had consistently low results: Site #4 (22), site #5 (28), and site #19 (30).

The first assumption for the low abundance in site number 4 was the presence of a power line right of way (the high voltage energy could affect the mammals in some way) but according to Johnson *et. al.* (1979), power lines do not affect small mammal communities in a negative way. It seems reasonable that the absence of species and individuals in the *forested* habitat is due to the fact that this area floods during heavy rain periods that may cause a lack of understory vegetation and thus be unattractive habitat. No apparent reason was found to explain the lack of abundance and species richness in the *grassy* and *brushy* habitats.

The same claim can be made towards the sites number 5 and 19, where there were few species and individuals collected, and sites 12 and 16, where several species and individuals were collected. No apparent difference in vegetation community or any other reason was discovered to explain this extreme difference in numbers.

In comparison with Brown's study (1959), this project was conducted on a much larger scale. Brown conducted his project in one single area, and his total trapping effort was 1600 TN. In this project 19 areas were trapped and the trapping effort was 136,800 TN. Compared to Bingman (1963), who conducted a study of a much larger duration (12

years), where a total of 1,067 individuals were captured in the annual census (unknown TN) and auxiliary census (2400 TN), this project captured 1,352 individuals in one year. No information regarding the total number of areas trapped was available in Bingman (1963). Through the analysis of richness and relative abundance, seasonal and weather data, and the vegetation survey, even a short duration project as this has value to gain an understanding of the complexities of a small mammal community and the importance of the Mined Land Wildlife Areas as areas of flora and fauna preservation. In a region known for its relatively homogeneous agricultural fields, the absence of such preservation areas where animals can live without much exposure to human pressures, Southeast Kansas would be much less diverse in terms of species richness. These areas, of fairly young age, are still in the process of vegetational succession. The once poor soil is being enriched by the organic matter. The prairies that are being maintained can support such diversity not only of small mammals but those that come higher in the food chain.

Edge effect is a well know factor in game animals and song birds, although in small mammals its effect on population's densities and richness is not clear. Anderson *et al.* (2003) found that edge of small patches of forest have greater densities than the interior of the patch, but the same was not true in large patches. Pasitschniak-Arts and Messier (1998) found significant differences between edge and interior in delayed hayfields but no differences in idle pasture and dense nesting cover. Heske (1995) and Lindmann *et al.* (2015) found no significant differences between edge and interior habitats.

CHAPTER IV

CONCLUSION

During this project 1,352 individuals of 12 species were captured in 19 Mined Land Wildlife Areas of Crawford and Cherokee Counties, Kansas. The most abundant species were the deer mouse, the hispid cotton rat and the white-footed mouse respectively. Although the number of individuals collected is high, this study is not a comprehensive representation of the small mammal community, since the population numbers fluctuate from one year to another due to biotic and abiotic factors. The present numbers can be just a reflection of one of those fluctuations. A longer project should be done to address this subject.

The increasing presence of *sericea lespedeza* may be of note. This invasive species is taking over several of the grasslands where this study was conducted, and, when that happens, almost nothing from the native vegetation is left. Areas dominated by *sericea lespedeza* are inferior in terms of food and shelter for vertebrates when compared to native areas (Eddy and Moore, 1998); therefore, new studies should be conducted to evaluate the effects of this plant species over the small mammal population.

This project showed the importance of the Mined Land Wildlife Areas as preservation areas that serve to maintain the richness and abundance of small mammals.

More studies should be conducted in the future concerning the richness and abundance of large mammals, the differences between small mammal populations in mined lands and non-mined land areas, the deer population in mined lands, and the effects of climate change in small mammal communities.

LITERATURE CITED

- Anderson, C. S., Cady, A. B. and Meikle, D. B., 2003. Effects of vegetation structure and edge habitat on the density and distribution of white-footed mice *Peromyscus leucopus* in small and large forest patches. *Canadian Journal of Zoology* 81: 897–904.
- Bingman, D. C., 1963. The Kansas small mammal census in the Pittsburg area, years 1950-1962. Unpublished Manuscript, Pittsburg State University, Pittsburg, Kansas.
- Bowne, D. R., Peles, J. D. and Barrett, G. W. 1999. Effects of landscape spatial structure on movement patterns of the hispid cotton rat (*Sigmodon hispidus*). *Landscape Ecology* 14: 53–65.
- Brosius L., 2005. Coal mining in Kansas. [Internet] Kansas Geological Survey. [Updated Jun 20, 2016; Cited 2013 October 10]. Available from: <http://www.kgs.ku.edu/Extension/cherokee/coalmining.html>.
- Brown, B. J., 1959. The distribution and relative abundance of small mammals in the strip-mined area of Pittsburg, Kansas. Unpublished manuscript, Pittsburg State University, Pittsburg, Kansas.
- Cleveland, E. D. and Hays, H. A., 1979. First record of *Zapus hudsonius* from Southeast Kansas. *Transactions of the Kansas Academy of Science* 82: 196
- De Capita, M. E. and Bookhout, T. A., 1975. Small mammal populations, vegetational cover, and hunting use of an Ohio strip-mined area. *The Ohio Journal of Science* 75: 305–313.
- Eddy, T. A., and Moore, C. M., 1998. Effects of sericea lespedeza (*Lespedeza cuneata* (Dumont) G. Don) invasion on oak savannas in Kansas. *Transactions of the Wisconsin Academy of Science Arts and Letters*, 86: 57–62.
- Ernest, S. K. M., Brown, J. H. and Parmenter, R. R. 2000. Rodents, plants, and precipitation: spatial and temporal dynamics of consumers and resources. – *Oikos* 88: 470–482.
- Ford, S. D. 1977. Range, distribution and habitat of the western harvest mouse, *Reithrodontomys megalotis*, in Indiana. *American Midland Naturalist* 98: 422–432.
- Fotouhi, H., 1978. The mammals of the Pittsburg State University Natural History Research Reserve. Unpublished manuscript, Pittsburg State University, Pittsburg, Kansas.

- Goodin, D. G., Mitchel, J. E., Knapp, M. C. and Bivens, R. E. 1995. Climate and Weather Atlas of Kansas an Introduction educational series 12. Kansas Geological Survey, Lawrence, Kansas.
- Hall, E. R., 1955. Handbook of Mammals of Kansas. University of Kansas Museum of Natural History, No 7, Lawrence, Kansas.
- Hansen, C. M., and Fleharty, E. D. 1974. Structural ecological parameters of a population of *Peromyscus maniculatus* in west-central Kansas. The Southern Naturalist. 19: 293–303.
- Hansen, L. P., and Warnock, J. E. 1978. Response of two Species of *Peromyscus* to vegetational succession on land strip-mined for coal. The American Midland Naturalist. 100: 416–423.
- Heacock, K. L., 1965. Some aspects of the ecology of small mammals in a strip-mined area. Unpublished manuscript, Pittsburg State University, Pittsburg, Kansas.
- Heske, E. J., 1995. Mammalian abundances on forest-farm edges versus forest interiors in southern Illinois: is there an edge effect?. Journal of Mammalogy. 76: 562–568.
- Ireland, P. and Hays, H. A., 1966. *Reithrodontomys fulvescens* from Crawford County, Kansas. Transactions of the Kansas Academy of Science. 69: 362.
- Irvin, J. H., 1977. The effects of bilateral blinding on the circadian rhythms of *Sigmodon hispidus*. Unpublished manuscript, Pittsburg State University, Pittsburg, Kansas.
- Johnson, W. C., Schreiber, R. K., Burgess, L. R., 1979. Diversity of small mammals in a powerline right-of-way and adjacent forest in East Tennessee. American Midland Naturalist. 101: 231–235.
- Kansas Native Plant Society. 2016. Ecoregions of Kansas. [Internet]. KNPS. [Updated December 14, 2015; Cited 2016 January 15] Available from: <http://www.kansasnativeplantsociety.org/ecoregions.php>
- Kaufman, D. W., Kaufman, G. A., and Finck, E. J. 1995. Temporal variation in abundance of *Peromyscus leucopus* in wooded habitats of eastern Kansas. American Midland Naturalist, 133: 7–17.
- Lindemann, E. S., Harris, J. P. and Keller, G. S. Effects of vegetation, landscape composition, and edge habitat on small-mammal communities in northern Massachusetts. Northeastern Naturalist, 22: 287–298.
- May, W. L., 1970. A comparative study of the home ranges of small mammals in a grassland habitat. Unpublished manuscript, Pittsburg State University, Pittsburg, Kansas.

Pasitschniak-Arts, M., Messier, F. Effects of edges and habitats on small mammals in a prairie ecosystem. *Canadian Journal of Zoology* 76: 2020–2025.

Perry, R. W., Tappe, P. A., Peitz, D. G., Thill, R. E., Melchoirs, M. A. and Wigley, T. B., 1996. A comparison of snap traps for evaluating small mammal populations. *Proceedings of the annual conference of Southeastern Association of Fish and Wildlife Agencies*. 50: 280–286.

Reid, F., 2006. A field guide to mammals of North America (The Peterson Field Guide Series) 4th ed. Houghton Mifflin, New York, New York.

Sly, G. R. 1976. Small mammal succession on strip-mined land in Vigo County, Indiana. *The American Midland Naturalist*. 95: 257–267.

Timm, R. M., Slade, N. A., and Pisani, G. R., 2005. Technical Key to Species of Mammals in Kansas. [Internet]University of Kansas. [Cited 2015 June 24]. Available from: http://kufs.ku.edu/media/kufs/libres/mammals_of_kansas/list.html.

Wecker, S. C., 1963. The role of early experience in habitat selection by the prairie deer mouse, *Peromyscus maniculatus bairdi*. *Ecological Monographs*, 33: 307–325.

Yeager L. E., 1942. Coal-stripped land as a mammal habitat, with special reference to fur animals. *American Midland Naturalist* 27: 613–635

APPENDIX

APPENDIX A

Standard measurements and locations of small mammals trapped from January 2014 to December 2014 in the Mined Land Wildlife Areas, Southeast Kansas.

<i>Species</i>	Mass /g	Total length/mm	Tail length/mm	hind foot	Ear	Sex	Area	MWA	Date
<i>B. hylophaga</i>	13	104	21	13	10	*	1	1	18-Dec
<i>B. hylophaga</i>	12	110	20	12	8	*	2	13	28-Sep
<i>B. hylophaga</i>	11	101	19	12	7	*	2	13	28-Sep
<i>B. hylophaga</i>	13	111	24	14	10	*	6	6	16-Dec
<i>B. hylophaga</i>	14	107	23	13	9	*	6	6	18-Dec
<i>B. hylophaga</i>	14	106	21	13	7	*	7	12	23-Jan
<i>B. hylophaga</i>	11	108	22	13	8	*	7	12	15-Dec
<i>B. hylophaga</i>	11	102	20	13	11	*	8	8	17-Dec
<i>B. hylophaga</i>	11	101	22	13	10	*	8	8	17-Dec
<i>B. hylophaga</i>	11	110	22	13	8	*	9	34	4-Dec
<i>B. hylophaga</i>	10	101	22	12	4	f	14	30	7-Dec
<i>B. hylophaga</i>	14	104	22	13	7	f	17	22	1-Feb
<i>C. parva</i>	5	76	18	10	7	*	1	1	18-Dec
<i>C. parva</i>	4	83	16	10	7	*	1	1	19-Dec
<i>C. parva</i>	4	75	15	9	4	*	2	13	28-Sep
<i>C. parva</i>	9	71	15	9	6	f	6	6	30-Sep
<i>C. parva</i>	5	85	19	9	8	*	6	6	18-Dec
<i>C. parva</i>	6	85	18	10	8	*	6	6	18-Dec
<i>C. parva</i>	6	83	18	10	7	*	6	6	18-Dec
<i>C. parva</i>	5	83	17	10	8	*	6	6	18-Dec
<i>C. parva</i>	5	82	19	11	7	*	6	6	18-Dec
<i>C. parva</i>	6	86	19	11	8	*	6	6	18-Dec
<i>C. parva</i>	6	84	19	11	7	*	6	6	18-Dec
<i>C. parva</i>	5	84	19	10	8	*	7	12	15-Dec
<i>C. parva</i>	9	90	17	11	9	m	9	34	22-Apr
<i>C. parva</i>	5	84	18	10	8	*	10	18	12-Dec
<i>C. parva</i>	6	82	19	10	8	*	10	18	12-Dec
<i>C. parva</i>	5	80	19	11	7	*	10	18	12-Dec
<i>C. parva</i>	5	83	17	10	8	*	12	38	12-Dec
<i>C. parva</i>	5	86	18	10	8	*	12	38	12-Dec
<i>C. parva</i>	6	84	18	10	8	*	12	38	13-Dec
<i>C. parva</i>	5	86	17	10	7	*	12	38	13-Dec
<i>C. parva</i>	4	77	11	9	3	*	14	30	6-Dec
<i>C. parva</i>	6	87	17	11	6	*	15	25	11-Sep
<i>C. parva</i>	6	82	14	11	7	*	15	25	12-Sep

<i>M. ochrogaster</i>	26	125	26	18	10	m	1	1	21-Jan
<i>M. ochrogaster</i>	51	150	33	18	12	m	1	1	21-Jan
<i>M. ochrogaster</i>	47	160	31	19	15	m	1	1	30-Sep
<i>M. ochrogaster</i>	25	131	28	18	13	f	2	13	7-Jun
<i>M. ochrogaster</i>	29	136	31	19	13	m	2	13	7-Jun
<i>M. ochrogaster</i>	30	136	26	17	11	f	2	13	26-Sep
<i>M. ochrogaster</i>	49	134	13	18	15	f	3	17	24-Jan
<i>M. ochrogaster</i>	55	165	38	21	14	m	3	17	24-Jan
<i>M. ochrogaster</i>	48	155	34	20	14	m	3	17	25-Jan
<i>M. ochrogaster</i>	48	157	37	20	14	m	3	17	25-Jan
<i>M. ochrogaster</i>	52	160	37	19	14	f	6	6	29-Sep
<i>M. ochrogaster</i>	38	146	31	19	13	m	6	6	16-Dec
<i>M. ochrogaster</i>	54	164	39	19	11	m	6	6	16-Dec
<i>M. ochrogaster</i>	30	133	25	17	13	f	7	12	13-Dec
<i>M. ochrogaster</i>	37	150	34	17	13	f	8	8	15-Dec
<i>M. ochrogaster</i>	49	165	38	20	13	f	8	8	16-Dec
<i>M. ochrogaster</i>	53	156	37	19	15	f	9	34	3-Feb
<i>M. ochrogaster</i>	22	126	28	16	11	f	9	34	24-Apr
<i>M. ochrogaster</i>	40	53	32	18	13	m	9	34	4-Dec
<i>M. ochrogaster</i>	33	145	32	18	14	f	12	38	27-Jan
<i>M. ochrogaster</i>	40	146	26	18	14	f	12	38	24-Sep
<i>M. ochrogaster</i>	40	158	36	18	13	m	16	40	3-May
<i>M. pinetorum</i>	33	131	27	20	14	m	3	17	25-Jan
<i>M. pinetorum</i>	26	112	22	16	8	m	4	4	14-Jun
<i>M. pinetorum</i>	39	140	29	17	12	m	6	6	10-Jun
<i>M. pinetorum</i>	42	132	22	20	12	m	7	12	25-Jan
<i>M. pinetorum</i>	39	137	20	21	13	m	7	12	14-Dec
<i>M. pinetorum</i>	28	134	27	16	12	m	9	34	6-Dec
<i>M. pinetorum</i>	21	115	18	16	11	m	10	18	25-Sep
<i>M. pinetorum</i>	25	127	25	18	14	f	12	38	4-May
<i>M. pinetorum</i>	29	135	28	18	14	m	12	38	4-May
<i>M. pinetorum</i>	29	129	22	16	12	f	13	33	13-Sep
<i>M. pinetorum</i>	25	124	21	16	10	f	14	30	17-Sep
<i>M. pinetorum</i>	26	131	23	17	13	f	15	25	13-Sep
<i>M. pinetorum</i>	31	127	26	15	11	f	20	27	14-Feb
<i>M. pinetorum</i>	32	130	22	16	13	m	20	27	14-Feb
<i>M. pinetorum</i>	37	138	23	17	12	m	20	27	14-Feb
<i>M. pinetorum</i>	36	131	23	18	11	m	20	27	16-Feb
<i>M. pinetorum</i>	28	131	24	16	11	f	20	27	20-Apr
<i>M. pinetorum</i>	28	124	22	17	13	m	20	27	12-Sep
<i>M. musculus</i>	23	183	85	18	14	f	1	1	17-Dec

<i>M. musculus</i>	25	178	83	19	16	f	1	1	17-Dec
<i>M. musculus</i>	14	150	87	18	16	f	1	1	19-Dec
<i>M. musculus</i>	16	135	61	21	18	f	4	4	13-Jun
<i>M. musculus</i>	17	164	78	18	16	m	10	18	13-Dec
<i>M. musculus</i>	18	161	71	18	16	f	10	18	13-Dec
<i>M. musculus</i>	13	139	60	19	17	f	10	18	14-Dec
<i>N. floridana</i>	291	345	145	36	27	f	1	1	30-Sep
<i>N. floridana</i>	228	335	141	37	27	m	5	34	4-Feb
<i>N. floridana</i>	507	418	168	40	27	m	5	24	4-Feb
<i>N. floridana</i>	300	381	155	36	27	m	8	8	22-Jan
<i>N. floridana</i>	66	215	88	32	27	f	8	8	9-Jun
<i>N. floridana</i>	234	346	151	36	28	f	8	8	27-Sep
<i>N. floridana</i>	226	358	153	35	25	f	8	8	16-Dec
<i>N. floridana</i>	168	305	124	35	25	f	9	34	22-Apr
<i>N. floridana</i>	263	364	155	37	28	f	9	34	22-Apr
<i>N. floridana</i>	271	350	151	35	26	f	9	34	6-Dec
<i>N. floridana</i>	257	365	162	35	28	f	10	18	23-Sep
<i>N. floridana</i>	326	385	160	36	28	f	11	42	26-Jan
<i>N. floridana</i>	326	382	165	36	26	f	11	42	27-Jan
<i>N. floridana</i>	209	343	152	38	26	f	11	42	27-Jan
<i>N. floridana</i>	134	282	117	34	27	m	11	42	1-Jun
<i>N. floridana</i>	379	394	166	38	28	f	11	42	21-Sep
<i>N. floridana</i>	110	261	105	33	22	f	12	38	5-May
<i>N. floridana</i>	225	342	142	37	30	m	12	38	11-Dec
<i>N. floridana</i>	281	349	148	36	21	f	14	30	3-Feb
<i>N. floridana</i>	288	356	145	36	26	f	14	30	26-Apr
<i>N. floridana</i>	328	285	59	38	26	f	15	25	1-Dec
<i>N. floridana</i>	360	381	156	38	29	m	16	40	11-Dec
<i>N. floridana</i>	284	378	165	36	27	f	17	22	19-Sep
<i>N. floridana</i>	284	360	141	36	26	f	19	32	17-Sep
<i>N. floridana</i>	319	387	161	36	29	m	20	27	20-Apr
<i>P. leucopus</i>	21	157	64	21	16	f	1	1	19-Jan
<i>P. leucopus</i>	30	177	77	21	15	f	1	1	19-Jan
<i>P. leucopus</i>	19	151	58	21	15	f	1	1	19-Jan
<i>P. leucopus</i>	20	156	64	21	16	f	1	1	20-Jan
<i>P. leucopus</i>	24	167	75	20	15	m	1	1	11-Jun
<i>P. leucopus</i>	29	180	79	21	20	f	2	13	22-Jan
<i>P. leucopus</i>	28	186	80	21	17	m	2	13	7-Jun
<i>P. leucopus</i>	22	173	77	21	18	m	2	13	7-Jun
<i>P. leucopus</i>	30	190	88	21	17	m	2	13	26-Sep
<i>P. leucopus</i>	32	174	75	21	18	m	2	13	26-Sep

<i>P. leucopus</i>	23	160	64	21	17	m	3	17	24-Jan
<i>P. leucopus</i>	19	146	60	21	16	f	3	17	25-Jan
<i>P. leucopus</i>	22	159	70	21	17	f	3	17	25-Jan
<i>P. leucopus</i>	14	142	63	21	17	m	3	17	26-Jan
<i>P. leucopus</i>	25	156	63	21	14	m	4	4	18-Jan
<i>P. leucopus</i>	21	152	60	21	16	m	4	4	19-Jan
<i>P. leucopus</i>	20	154	64	21	16	m	4	4	19-Jan
<i>P. leucopus</i>	38	184	81	21	17	f	4	4	19-Jan
<i>P. leucopus</i>	15	142	63	21	16	m	4	4	3-Oct
<i>P. leucopus</i>	24	175	76	21	16	f	4	4	3-Oct
<i>P. leucopus</i>	20	158	66	21	16	m	4	4	4-Oct
<i>P. leucopus</i>	21	155	65	21	16	f	4	4	4-Oct
<i>P. leucopus</i>	14	147	64	21	17	f	4	4	19-Dec
<i>P. leucopus</i>	36	195	82	21	16	f	4	4	20-Dec
<i>P. leucopus</i>	20	157	67	21	16	f	5	24	2-Feb
<i>P. leucopus</i>	23	155	65	21	16	m	5	24	2-Feb
<i>P. leucopus</i>	31	179	79	21	16	m	5	24	2-Feb
<i>P. leucopus</i>	36	177	74	21	17	f	5	24	2-Feb
<i>P. leucopus</i>	18	149	61	21	17	f	5	24	2-Feb
<i>P. leucopus</i>	23	164	68	21	17	m	5	24	2-Feb
<i>P. leucopus</i>	28	187	84	22	17	m	5	24	2-Feb
<i>P. leucopus</i>	22	168	71	21	16	f	5	24	27-Apr
<i>P. leucopus</i>	24	165	66	21	17	m	5	24	8-Dec
<i>P. leucopus</i>	23	164	67	21	17	m	6	6	20-Jan
<i>P. leucopus</i>	21	150	58	21	15	f	6	6	21-Jan
<i>P. leucopus</i>	29	179	75	21	13	m	6	6	21-Jan
<i>P. leucopus</i>	20	156	67	21	15	m	6	6	11-Jun
<i>P. leucopus</i>	22	164	66	21	16	f	6	6	11-Jun
<i>P. leucopus</i>	21	166	70	21	16	m	6	6	12-Jun
<i>P. leucopus</i>	31	179	77	22	17	m	6	6	29-Sep
<i>P. leucopus</i>	25	178	80	21	15	m	6	6	1-Oct
<i>P. leucopus</i>	37	188	86	21	18	m	6	6	16-Dec
<i>P. leucopus</i>	29	186	85	21	17	m	7	12	23-Jan
<i>P. leucopus</i>	24	172	73	21	15	m	7	12	24-Jan
<i>P. leucopus</i>	17	154	66	21	16	m	7	12	24-Jan
<i>P. leucopus</i>	20	160	72	21	16	f	7	12	25-Jan
<i>P. leucopus</i>	29	189	83	21	19	f	7	12	25-Jan
<i>P. leucopus</i>	29	180	76	21	16	m	7	12	25-Sep
<i>P. leucopus</i>	27	174	76	21	15	f	8	8	21-Jan
<i>P. leucopus</i>	30	180	76	21	16	m	8	8	21-Jan
<i>P. leucopus</i>	19	162	71	21	17	f	8	8	21-Jan

<i>P. leucopus</i>	23	167	74	21	18	m	8	8	21-Jan
<i>P. leucopus</i>	24	177	79	21	17	f	8	8	21-Jan
<i>P. leucopus</i>	30	180	81	21	17	f	8	8	21-Jan
<i>P. leucopus</i>	20	153	63	21	18	f	8	8	22-Jan
<i>P. leucopus</i>	27	176	75	21	17	f	8	8	22-Jan
<i>P. leucopus</i>	24	179	80	21	17	f	8	8	22-Jan
<i>P. leucopus</i>	21	158	65	21	16	f	8	8	22-Jan
<i>P. leucopus</i>	30	181	76	21	19	f	8	8	22-Jan
<i>P. leucopus</i>	26	166	66	21	16	m	8	8	23-Jan
<i>P. leucopus</i>	18	157	67	21	14	f	8	8	23-Jan
<i>P. leucopus</i>	25	156	63	21	14	m	8	8	23-Jan
<i>P. leucopus</i>	38	179	77	21	17	f	8	8	23-Jan
<i>P. leucopus</i>	23	170	77	21	16	f	8	8	8-Jun
<i>P. leucopus</i>	26	167	71	21	17	m	8	8	8-Jun
<i>P. leucopus</i>	19	180	85	21	18	m	8	8	8-Jun
<i>P. leucopus</i>	24	174	75	21	15	f	8	8	27-Sep
<i>P. leucopus</i>	28	168	71	21	17	m	8	8	15-Dec
<i>P. leucopus</i>	37	197	75	21	17	f	8	8	15-Dec
<i>P. leucopus</i>	22	163	71	22	17	m	9	34	1-Feb
<i>P. leucopus</i>	21	155	67	22	17	m	9	34	1-Feb
<i>P. leucopus</i>	17	151	67	21	16	m	9	34	22-Apr
<i>P. leucopus</i>	29	176	75	21	15	m	9	34	24-Apr
<i>P. leucopus</i>	22	168	74	22	16	f	9	34	14-Sep
<i>P. leucopus</i>	30	178	72	22	16	m	9	34	14-Sep
<i>P. leucopus</i>	27	179	77	22	16	m	9	34	14-Sep
<i>P. leucopus</i>	33	194	82	22	18	m	9	34	14-Sep
<i>P. leucopus</i>	32	186	83	21	16	m	9	34	15-Sep
<i>P. leucopus</i>	23	189	83	21	16	f	9	34	15-Sep
<i>P. leucopus</i>	32	185	79	21	16	m	9	34	4-Dec
<i>P. leucopus</i>	26	167	71	21	14	m	9	34	6-Dec
<i>P. leucopus</i>	27	173	76	21	16	m	9	34	6-Dec
<i>P. leucopus</i>	29	174	73	21	16	f	10	18	25-Jan
<i>P. leucopus</i>	20	163	67	21	17	m	10	18	25-Jan
<i>P. leucopus</i>	33	185	80	21	18	f	10	18	1-Jun
<i>P. leucopus</i>	29	187	83	21	10	f	10	18	4-Jun
<i>P. leucopus</i>	25	171	73	21	14	f	10	18	4-Jun
<i>P. leucopus</i>	31	184	78	22	16	m	10	18	23-Sep
<i>P. leucopus</i>	30	179	80	22	15	m	10	18	23-Sep
<i>P. leucopus</i>	24	166	69	21	18	f	10	18	24-Sep
<i>P. leucopus</i>	32	195	87	22	17	f	10	18	14-Dec
<i>P. leucopus</i>	20	156	68	21	16	f	11	42	26-Jan

<i>P. leucopus</i>	31	193	86	21	18	m	11	42	26-Jan
<i>P. leucopus</i>	19	158	67	21	15	f	11	42	26-Jan
<i>P. leucopus</i>	28	180	79	21	14	m	11	42	31-May
<i>P. leucopus</i>	26	185	89	21	17	m	11	42	22-Sep
<i>P. leucopus</i>	31	183	76	21	18	f	11	42	10-Dec
<i>P. leucopus</i>	24	163	70	21	16	m	11	42	10-Dec
<i>P. leucopus</i>	16	145	60	21	14	m	11	42	10-Dec
<i>P. leucopus</i>	19	150	61	21	17	f	11	42	11-Dec
<i>P. leucopus</i>	17	156	69	21	18	m	12	38	27-Jan
<i>P. leucopus</i>	21	159	68	21	17	m	12	38	27-Jan
<i>P. leucopus</i>	29	199	91	21	16	m	12	38	27-Jan
<i>P. leucopus</i>	21	159	68	21	16	m	12	38	27-Jan
<i>P. leucopus</i>	19	163	68	21	16	f	12	38	27-Jan
<i>P. leucopus</i>	26	164	68	21	16	m	12	38	27-Jan
<i>P. leucopus</i>	28	180	77	21	17	f	12	38	27-Jan
<i>P. leucopus</i>	29	190	78	21	19	f	12	38	4-May
<i>P. leucopus</i>	33	188	80	21	18	m	12	38	5-May
<i>P. leucopus</i>	22	165	76	21	16	m	12	38	5-May
<i>P. leucopus</i>	31	195	85	21	20	m	12	38	5-May
<i>P. leucopus</i>	32	187	83	21	16	m	12	38	22-Sep
<i>P. leucopus</i>	29	192	83	21	18	f	12	38	22-Sep
<i>P. leucopus</i>	24	181	78	21	17	f	12	38	22-Sep
<i>P. leucopus</i>	31	183	78	21	14	m	12	38	22-Sep
<i>P. leucopus</i>	25	180	85	22	16	m	12	38	22-Sep
<i>P. leucopus</i>	29	184	77	21	17	m	12	38	11-Dec
<i>P. leucopus</i>	20	151	61	21	17	m	12	38	11-Dec
<i>P. leucopus</i>	23	159	61	21	16	f	13	33	4-Feb
<i>P. leucopus</i>	23	157	68	21	15	m	13	33	4-Feb
<i>P. leucopus</i>	25	162	66	21	16	f	13	33	4-Feb
<i>P. leucopus</i>	33	181	74	21	16	f	13	33	4-Feb
<i>P. leucopus</i>	27	185	78	21	17	m	13	33	22-Apr
<i>P. leucopus</i>	33	182	79	22	16	m	13	33	22-Apr
<i>P. leucopus</i>	27	183	76	22	16	m	13	33	14-Sep
<i>P. leucopus</i>	28	175	71	22	16	m	13	33	14-Sep
<i>P. leucopus</i>	27	172	71	22	16	m	13	33	14-Sep
<i>P. leucopus</i>	27	165	66	21	15	m	13	33	15-Sep
<i>P. leucopus</i>	21	169	74	21	17	f	13	33	15-Sep
<i>P. leucopus</i>	16	138	60	21	15	f	13	33	4-Dec
<i>P. leucopus</i>	15	139	58	21	15	f	13	33	4-Dec
<i>P. leucopus</i>	16	138	55	21	15	m	13	33	4-Dec
<i>P. leucopus</i>	29	170	72	21	19	m	13	33	6-Dec

<i>P. leucopus</i>	25	181	82	21	17	m	13	33	6-Dec
<i>P. leucopus</i>	32	178	72	21	15	m	13	33	6-Dec
<i>P. leucopus</i>	32	195	83	21	15	f	14	30	4-Feb
<i>P. leucopus</i>	33	178	70	21	16	m	14	30	4-Feb
<i>P. leucopus</i>	24	164	69	21	15	m	14	30	25-Apr
<i>P. leucopus</i>	18	161	72	21	17	f	14	30	25-Apr
<i>P. leucopus</i>	31	173	73	21	16	f	14	30	26-Apr
<i>P. leucopus</i>	27	173	75	21	17	m	14	30	27-Apr
<i>P. leucopus</i>	18	165	68	21	15	f	14	30	27-Apr
<i>P. leucopus</i>	18	164	68	21	15	m	14	30	27-Apr
<i>P. leucopus</i>	36	186	78	21	17	f	14	30	27-Apr
<i>P. leucopus</i>	23	179	76	21	16	f	14	30	15-Sep
<i>P. leucopus</i>	28	174	76	21	16	m	14	30	15-Sep
<i>P. leucopus</i>	27	190	85	21	16	f	14	30	17-Sep
<i>P. leucopus</i>	33	172	81	21	17	m	14	30	3-Dec
<i>P. leucopus</i>	18	154	71	21	15	m	14	30	3-Dec
<i>P. leucopus</i>	27	176	74	21	17	m	14	30	6-Dec
<i>P. leucopus</i>	27	170	72	21	16	m	15	25	14-Feb
<i>P. leucopus</i>	22	160	68	21	17	f	15	25	14-Feb
<i>P. leucopus</i>	26	165	75	21	15	m	15	25	14-Feb
<i>P. leucopus</i>	20	145	63	21	17	m	15	25	14-Feb
<i>P. leucopus</i>	27	160	72	21	16	m	15	25	14-Feb
<i>P. leucopus</i>	24	163	79	21	18	f	15	25	14-Feb
<i>P. leucopus</i>	18	142	64	21	17	m	15	25	14-Feb
<i>P. leucopus</i>	22	163	68	21	15	m	15	25	20-Apr
<i>P. leucopus</i>	29	179	69	21	20	f	15	25	21-Apr
<i>P. leucopus</i>	37	171	69	21	16	f	15	25	21-Apr
<i>P. leucopus</i>	27	170	69	21	13	m	15	25	11-Sep
<i>P. leucopus</i>	27	171	73	21	17	m	15	25	11-Sep
<i>P. leucopus</i>	26	183	83	21	15	f	15	25	11-Sep
<i>P. leucopus</i>	24	168	74	21	19	f	15	25	11-Sep
<i>P. leucopus</i>	20	155	68	21	18	f	15	25	11-Sep
<i>P. leucopus</i>	25	159	66	21	16	m	15	25	11-Sep
<i>P. leucopus</i>	22	172	75	21	15	m	15	25	11-Sep
<i>P. leucopus</i>	27	173	77	22	17	m	15	25	11-Sep
<i>P. leucopus</i>	25	169	72	22	16	m	15	25	11-Sep
<i>P. leucopus</i>	32	183	76	21	16	m	15	25	12-Sep
<i>P. leucopus</i>	21	157	66	21	16	f	15	25	12-Sep
<i>P. leucopus</i>	28	184	84	21	17	m	15	25	12-Sep
<i>P. leucopus</i>	31	175	74	22	18	m	15	25	13-Sep
<i>P. leucopus</i>	30	182	76	21	14	f	15	25	1-Dec

<i>P. leucopus</i>	33	177	67	21	16	m	15	25	3-Dec
<i>P. leucopus</i>	33	192	81	21	16	m	15	25	3-Dec
<i>P. leucopus</i>	16	140	63	21	15	f	16	40	28-Jan
<i>P. leucopus</i>	21	154	64	21	18	f	16	40	28-Jan
<i>P. leucopus</i>	12	123	54	21	15	f	16	40	30-Jan
<i>P. leucopus</i>	29	184	80	21	16	f	16	40	30-Jan
<i>P. leucopus</i>	25	160	63	21	16	m	16	40	30-Jan
<i>P. leucopus</i>	20	155	68	21	15	m	16	40	30-Jan
<i>P. leucopus</i>	24	160	68	21	16	m	16	40	3-May
<i>P. leucopus</i>	24	161	70	21	20	f	16	40	3-May
<i>P. leucopus</i>	25	168	75	21	17	m	16	40	4-May
<i>P. leucopus</i>	29	180	79	21	16	f	16	40	5-May
<i>P. leucopus</i>	15	137	61	21	16	m	16	40	5-May
<i>P. leucopus</i>	21	161	66	21	15	f	16	40	5-May
<i>P. leucopus</i>	26	170	74	21	14	m	16	40	20-Sep
<i>P. leucopus</i>	24	166	71	21	16	f	16	40	20-Sep
<i>P. leucopus</i>	26	166	71	21	15	m	16	40	20-Sep
<i>P. leucopus</i>	24	175	79	21	15	f	16	40	20-Sep
<i>P. leucopus</i>	26	179	81	21	16	m	16	40	20-Sep
<i>P. leucopus</i>	31	179	82	21	16	m	16	40	20-Sep
<i>P. leucopus</i>	27	184	68	21	18	f	16	40	20-Sep
<i>P. leucopus</i>	32	192	86	22	18	m	16	40	20-Sep
<i>P. leucopus</i>	32	184	77	21	14	f	16	40	21-Sep
<i>P. leucopus</i>	24	172	73	21	17	m	16	40	21-Sep
<i>P. leucopus</i>	26	176	75	21	16	f	16	40	22-Sep
<i>P. leucopus</i>	25	180	76	21	17	f	16	40	22-Sep
<i>P. leucopus</i>	27	180	80	21	17	m	16	40	11-Dec
<i>P. leucopus</i>	25	163	68	21	16	m	17	22	30-Jan
<i>P. leucopus</i>	31	171	76	21	17	f	17	22	30-Jan
<i>P. leucopus</i>	24	164	73	21	17	m	17	22	30-Jan
<i>P. leucopus</i>	40	193	85	22	20	m	17	22	31-Jan
<i>P. leucopus</i>	32	186	83	21	17	m	17	22	1-Feb
<i>P. leucopus</i>	28	181	77	21	17	f	17	22	1-Feb
<i>P. leucopus</i>	20	152	61	21	16	f	17	22	1-Feb
<i>P. leucopus</i>	32	190	83	22	18	m	17	22	1-Feb
<i>P. leucopus</i>	26	166	72	21	17	f	17	22	30-Apr
<i>P. leucopus</i>	27	169	68	21	15	m	17	22	30-Apr
<i>P. leucopus</i>	31	179	77	21	17	m	17	22	18-Sep
<i>P. leucopus</i>	28	187	84	21	14	m	17	22	18-Sep
<i>P. leucopus</i>	26	170	71	21	15	m	17	22	19-Sep
<i>P. leucopus</i>	27	181	80	21	17	f	18	21	30-Jan

<i>P. leucopus</i>	32	182	81	21	18	m	18	21	30-Jan
<i>P. leucopus</i>	20	163	72	21	16	m	18	21	30-Jan
<i>P. leucopus</i>	23	169	74	21	17	f	18	21	1-May
<i>P. leucopus</i>	29	182	78	21	17	m	18	21	1-May
<i>P. leucopus</i>	18	155	68	21	16	f	18	21	2-May
<i>P. leucopus</i>	26	174	77	21	16	m	18	21	19-Sep
<i>P. leucopus</i>	19	146	62	20	17	m	19	32	31-Jan
<i>P. leucopus</i>	30	180	81	21	18	m	19	32	31-Jan
<i>P. leucopus</i>	25	159	68	21	16	m	19	32	31-Jan
<i>P. leucopus</i>	31	179	80	21	16	m	19	32	31-Jan
<i>P. leucopus</i>	32	192	88	21	18	m	19	32	1-Feb
<i>P. leucopus</i>	30	184	81	21	17	f	19	32	1-Feb
<i>P. leucopus</i>	22	157	66	21	17	m	19	32	2-Feb
<i>P. leucopus</i>	29	191	85	21	16	m	19	32	2-Feb
<i>P. leucopus</i>	21	150	61	21	16	m	19	32	2-Feb
<i>P. leucopus</i>	23	153	67	21	16	m	19	32	2-Feb
<i>P. leucopus</i>	22	160	69	21	16	m	19	32	28-Apr
<i>P. leucopus</i>	26	183	80	21	15	f	19	32	17-Sep
<i>P. leucopus</i>	26	178	81	21	16	m	19	32	17-Sep
<i>p. leucopus</i>	27	180	82	22	15	m	19	32	19-Sep
<i>P. leucopus</i>	27	173	75	21	15	m	20	27	14-Feb
<i>P. leucopus</i>	18	156	73	21	16	f	20	27	14-Feb
<i>P. leucopus</i>	21	160	69	21	18	m	20	27	14-Feb
<i>P. leucopus</i>	32	179	75	21	13	f	20	27	16-Feb
<i>P. leucopus</i>	31	179	75	21	17	m	20	27	20-Apr
<i>P. leucopus</i>	26	176	73	21	17	f	20	27	21-Apr
<i>P. maniculatus</i>	14	115	35	16	12	f	1	1	19-Jan
<i>P. maniculatus</i>	16	117	35	17	12	m	1	1	19-Jan
<i>P. maniculatus</i>	17	122	39	18	14	m	1	1	19-Jan
<i>P. maniculatus</i>	18	149	61	20	15	f	1	1	19-Jan
<i>P. maniculatus</i>	16	122	40	17	14	m	1	1	21-Jan
<i>P. maniculatus</i>	24	146	52	18	14	f	1	1	21-Jan
<i>P. maniculatus</i>	24	160	67	19	13	m	1	1	21-Jan
<i>P. maniculatus</i>	15	140	60	20	14	m	1	1	21-Jan
<i>P. maniculatus</i>	23	162	68	20	13	f	1	1	21-Jan
<i>P. maniculatus</i>	22	152	64	20	15	m	1	1	21-Jan
<i>P. maniculatus</i>	18	141	56	20	14	f	1	1	21-Jan
<i>P. maniculatus</i>	13	137	60	15	12	f	1	1	1-Oct
<i>P. maniculatus</i>	23	160	66	20	16	f	1	1	17-Dec
<i>P. maniculatus</i>	29	178	79	20	18	f	1	1	17-Dec
<i>P. maniculatus</i>	18	151	63	20	17	m	1	1	18-Dec

<i>P. maniculatus</i>	13	140	62	19	17	m	1	1	19-Dec
<i>P. maniculatus</i>	28	175	74	20	17	m	2	13	22-Jan
<i>P. maniculatus</i>	26	173	72	20	16	f	2	13	22-Jan
<i>P. maniculatus</i>	19	133	45	16	12	m	2	13	23-Jan
<i>P. maniculatus</i>	18	148	63	20	14	f	2	13	23-Jan
<i>P. maniculatus</i>	17	145	62	20	14	f	2	13	23-Jan
<i>P. maniculatus</i>	26	157	67	20	15	m	2	13	23-Jan
<i>P. maniculatus</i>	26	161	65	20	14	f	2	13	23-Jan
<i>P. maniculatus</i>	16	132	50	17	14	m	2	13	7-Jun
<i>P. maniculatus</i>	13	126	53	18	14	f	2	13	7-Jun
<i>P. maniculatus</i>	24	169	73	19	17	f	2	13	7-Jun
<i>P. maniculatus</i>	19	139	55	19	14	f	2	13	7-Jun
<i>P. maniculatus</i>	20	163	69	20	17	f	2	13	7-Jun
<i>P. maniculatus</i>	20	155	68	20	15	m	2	13	7-Jun
<i>P. maniculatus</i>	25	149	45	20	16	f	2	13	8-Jun
<i>P. maniculatus</i>	20	145	56	19	15	m	2	13	26-Sep
<i>P. maniculatus</i>	20	153	61	20	16	f	3	17	24-Jan
<i>P. maniculatus</i>	20	157	67	20	15	m	3	17	25-Jan
<i>P. maniculatus</i>	28	174	74	20	17	m	3	17	26-Jan
<i>P. maniculatus</i>	10	117	46	18	13	f	4	4	19-Jan
<i>P. maniculatus</i>	15	147	66	20	17	m	4	4	3-Oct
<i>P. maniculatus</i>	22	157	64	20	15	m	4	4	3-Oct
<i>P. maniculatus</i>	27	165	69	20	17	m	4	4	3-Oct
<i>P. maniculatus</i>	21	152	58	20	16	m	4	4	4-Oct
<i>P. maniculatus</i>	27	188	85	20	17	f	4	4	4-Oct
<i>P. maniculatus</i>	24	176	74	20	16	f	4	4	18-Dec
<i>P. maniculatus</i>	27	172	72	20	17	m	4	4	18-Dec
<i>P. maniculatus</i>	20	155	64	19	17	f	5	24	2-Feb
<i>P. maniculatus</i>	20	158	68	20	16	m	5	24	2-Feb
<i>P. maniculatus</i>	28	171	73	20	16	m	5	24	2-Feb
<i>P. maniculatus</i>	31	180	77	20	17	m	5	24	4-Feb
<i>P. maniculatus</i>	25	166	66	20	16	m	5	24	4-Feb
<i>P. maniculatus</i>	18	144	57	20	14	f	5	24	27-Apr
<i>P. maniculatus</i>	15	138	54	20	14	m	5	24	27-Apr
<i>P. maniculatus</i>	22	161	67	20	16	f	5	24	27-Apr
<i>P. maniculatus</i>	22	156	65	20	14	f	5	24	28-Apr
<i>P. maniculatus</i>	29	177	74	20	16	m	5	24	29-Apr
<i>P. maniculatus</i>	24	179	77	20	17	m	5	24	17-Sep
<i>P. maniculatus</i>	29	188	82	20	17	m	5	24	17-Sep
<i>P. maniculatus</i>	26	173	74	20	16	f	5	24	17-Sep
<i>P. maniculatus</i>	24	169	73	20	15	f	5	24	7-Dec

<i>P. maniculatus</i>	13	148	62	20	20	f	5	24	7-Dec
<i>P. maniculatus</i>	13	139	58	20	16	m	5	24	7-Dec
<i>P. maniculatus</i>	12	135	60	20	16	m	5	24	8-Dec
<i>P. maniculatus</i>	19	136	52	18	16	m	6	6	20-Jan
<i>P. maniculatus</i>	21	134	49	18	16	f	6	6	20-Jan
<i>P. maniculatus</i>	19	143	54	18	15	m	6	6	20-Jan
<i>P. maniculatus</i>	22	146	53	18	16	f	6	6	20-Jan
<i>P. maniculatus</i>	17	136	56	20	17	m	6	6	20-Jan
<i>P. maniculatus</i>	18	146	59	20	15	m	6	6	20-Jan
<i>P. maniculatus</i>	18	142	56	20	15	m	6	6	20-Jan
<i>P. maniculatus</i>	23	168	68	20	16	f	6	6	20-Jan
<i>P. maniculatus</i>	28	170	68	20	17	f	6	6	20-Jan
<i>P. maniculatus</i>	20	143	53	18	16	m	6	6	21-Jan
<i>P. maniculatus</i>	18	136	51	18	17	m	6	6	21-Jan
<i>P. maniculatus</i>	17	134	54	19	15	m	6	6	21-Jan
<i>P. maniculatus</i>	16	129	47	17	15	m	6	6	10-Jun
<i>P. maniculatus</i>	28	174	80	20	17	m	6	6	29-Sep
<i>P. maniculatus</i>	28	181	81	20	15	m	6	6	30-Sep
<i>P. maniculatus</i>	28	171	68	20	15	f	6	6	1-Oct
<i>P. maniculatus</i>	16	149	63	20	15	f	6	6	1-Oct
<i>P. maniculatus</i>	23	154	58	18	19	m	6	6	16-Dec
<i>P. maniculatus</i>	20	149	59	18	16	f	6	6	16-Dec
<i>P. maniculatus</i>	15	126	50	18	15	m	6	6	16-Dec
<i>P. maniculatus</i>	16	147	58	20	16	m	6	6	16-Dec
<i>P. maniculatus</i>	21	157	62	20	18	f	6	6	16-Dec
<i>P. maniculatus</i>	17	141	54	20	15	f	6	6	16-Dec
<i>P. maniculatus</i>	20	156	67	20	17	f	6	6	18-Dec
<i>P. maniculatus</i>	19	143	55	20	16	m	6	6	18-Dec
<i>P. maniculatus</i>	17	143	58	20	16	m	7	12	23-Jan
<i>P. maniculatus</i>	16	142	58	20	15	m	7	12	23-Jan
<i>P. maniculatus</i>	18	152	64	20	17	f	7	12	23-Jan
<i>P. maniculatus</i>	24	171	75	20	15	m	7	12	23-Jan
<i>P. maniculatus</i>	23	161	71	20	16	m	7	12	23-Jan
<i>P. maniculatus</i>	19	160	71	20	17	m	7	12	23-Jan
<i>P. maniculatus</i>	19	161	69	20	17	f	7	12	25-Jan
<i>P. maniculatus</i>	19	155	66	20	15	f	7	12	25-Jan
<i>P. maniculatus</i>	19	142	53	17	no ears	f	7	12	5-Jun
<i>P. maniculatus</i>	11	123	47	17	15	f	7	12	5-Jun
<i>P. maniculatus</i>	13	126	50	18	15	m	7	12	5-Jun
<i>P. maniculatus</i>	22	161	69	19	15	f	7	12	5-Jun
<i>P. maniculatus</i>	22	158	67	19	16	m	7	12	5-Jun

<i>P. maniculatus</i>	11	128	52	19	13	f	7	12	5-Jun
<i>P. maniculatus</i>	25	181	76	20	16	f	7	12	5-Jun
<i>P. maniculatus</i>	19	162	76	20	14	f	7	12	5-Jun
<i>P. maniculatus</i>	22	144	57	18	15	m	7	12	25-Sep
<i>P. maniculatus</i>	19	147	59	18	16	m	7	12	25-Sep
<i>P. maniculatus</i>	25	173	76	20	17	f	7	12	25-Sep
<i>P. maniculatus</i>	15	134	50	18	16	f	7	12	26-Sep
<i>P. maniculatus</i>	24	177	76	20	17	f	7	12	26-Sep
<i>P. maniculatus</i>	19	146	55	18	15	f	7	12	14-Dec
<i>P. maniculatus</i>	13	115	40	16	13	m	8	8	21-Jan
<i>P. maniculatus</i>	12	117	43	17	14	f	8	8	21-Jan
<i>P. maniculatus</i>	16	141	53	17	15	f	8	8	21-Jan
<i>P. maniculatus</i>	18	128	45	17	13	m	8	8	21-Jan
<i>P. maniculatus</i>	13	115	47	17	13	f	8	8	21-Jan
<i>P. maniculatus</i>	15	142	56	18	14	f	8	8	21-Jan
<i>P. maniculatus</i>	16	145	58	18	13	m	8	8	21-Jan
<i>P. maniculatus</i>	17	142	62	20	15	f	8	8	21-Jan
<i>P. maniculatus</i>	20	150	62	20	17	f	8	8	21-Jan
<i>P. maniculatus</i>	21	149	61	20	16	m	8	8	21-Jan
<i>P. maniculatus</i>	18	149	62	20	14	m	8	8	21-Jan
<i>P. maniculatus</i>	20	146	59	20	14	m	8	8	21-Jan
<i>P. maniculatus</i>	24	160	67	20	17	m	8	8	21-Jan
<i>P. maniculatus</i>	18	146	64	20	16	m	8	8	21-Jan
<i>P. maniculatus</i>	20	153	62	20	14	f	8	8	21-Jan
<i>P. maniculatus</i>	28	181	79	20	15	f	8	8	21-Jan
<i>P. maniculatus</i>	26	164	64	20	16	m	8	8	22-Jan
<i>P. maniculatus</i>	22	161	68	20	17	m	8	8	22-Jan
<i>P. maniculatus</i>	20	135	49	17	13	m	8	8	23-Jan
<i>P. maniculatus</i>	27	173	73	20	14	m	8	8	23-Jan
<i>P. maniculatus</i>	22	156	67	20	15	f	8	8	23-Jan
<i>P. maniculatus</i>	22	161	62	20	15	m	8	8	23-Jan
<i>P. maniculatus</i>	28	185	79	20	16	f	8	8	23-Jan
<i>P. maniculatus</i>	25	167	64	20	17	m	8	8	23-Jan
<i>P. maniculatus</i>	31	173	72	20	17	m	8	8	23-Jan
<i>P. maniculatus</i>	20	149	59	18	12	f	8	8	8-Jun
<i>P. maniculatus</i>	18	136	54	19	17	m	8	8	8-Jun
<i>P. maniculatus</i>	26	167	79	20	17	f	8	8	8-Jun
<i>P. maniculatus</i>	19	151	60	20	14	f	8	8	8-Jun
<i>P. maniculatus</i>	20	169	75	20	17	f	8	8	8-Jun
<i>P. maniculatus</i>	22	171	73	20	17	m	8	8	8-Jun
<i>P. maniculatus</i>	20	140	64	19	no ears	m	8	8	10-Jun

<i>P. maniculatus</i>	14	125	46	19	13	m	8	8	28-Sep
<i>P. maniculatus</i>	20	158	59	20	15	f	8	8	29-Sep
<i>P. maniculatus</i>	17	138	55	18	15	m	8	8	15-Dec
<i>P. maniculatus</i>	19	148	57	18	13	f	8	8	15-Dec
<i>P. maniculatus</i>	17	147	62	20	17	m	8	8	15-Dec
<i>P. maniculatus</i>	17	144	60	20	16	m	8	8	15-Dec
<i>P. maniculatus</i>	29	174	73	20	16	m	8	8	15-Dec
<i>P. maniculatus</i>	22	160	64	20	17	f	8	8	15-Dec
<i>P. maniculatus</i>	31	180	79	20	18	m	8	8	15-Dec
<i>P. maniculatus</i>	18	143	58	20	17	m	8	8	15-Dec
<i>P. maniculatus</i>	14	142	58	17	16	m	8	8	16-Dec
<i>P. maniculatus</i>	22	159	62	17	15	f	8	8	16-Dec
<i>P. maniculatus</i>	14	131	49	17	16	f	8	8	16-Dec
<i>P. maniculatus</i>	14	127	51	18	15	m	8	8	16-Dec
<i>P. maniculatus</i>	9	114	44	18	15	m	8	8	16-Dec
<i>P. maniculatus</i>	8	116	49	18	13	f	8	8	16-Dec
<i>P. maniculatus</i>	26	172	69	19	16	f	8	8	16-Dec
<i>P. maniculatus</i>	18	156	62	20	17	f	8	8	16-Dec
<i>P. maniculatus</i>	18	160	69	20	18	f	8	8	16-Dec
<i>P. maniculatus</i>	12	124	49	20	15	f	8	8	16-Dec
<i>P. maniculatus</i>	15	131	51	18	15	f	9	34	2-Feb
<i>P. maniculatus</i>	21	141	54	19	15	m	9	34	2-Feb
<i>P. maniculatus</i>	17	135	55	19	14	m	9	34	2-Feb
<i>P. maniculatus</i>	29	175	76	20	16	m	9	34	2-Feb
<i>P. maniculatus</i>	20	159	65	20	14	m	9	34	22-Apr
<i>P. maniculatus</i>	21	165	70	20	16	m	9	34	22-Apr
<i>P. maniculatus</i>	21	148	55	18	14	m	9	34	24-Apr
<i>P. maniculatus</i>	13	127	47	18	16	m	9	34	24-Apr
<i>P. maniculatus</i>	14	137	56	18	17	f	9	34	14-Sep
<i>P. maniculatus</i>	19	150	65	18	15	m	9	34	14-Sep
<i>P. maniculatus</i>	21	162	73	20	16	f	9	34	14-Sep
<i>P. maniculatus</i>	14	131	50	17	13	f	9	34	16-Sep
<i>P. maniculatus</i>	25	180	81	19	15	m	9	34	16-Sep
<i>P. maniculatus</i>	19	145	59	17	14	f	9	34	4-Dec
<i>P. maniculatus</i>	21	135	47	17	14	f	9	34	4-Dec
<i>P. maniculatus</i>	21	150	56	17	14	f	9	34	4-Dec
<i>P. maniculatus</i>	16	139	51	17	14	f	9	34	4-Dec
<i>P. maniculatus</i>	16	130	51	18	14	f	9	34	4-Dec
<i>P. maniculatus</i>	19	152	61	18	14	m	9	34	4-Dec
<i>P. maniculatus</i>	17	142	53	18	15	m	9	34	4-Dec
<i>P. maniculatus</i>	22	146	57	18	13	m	9	34	4-Dec

<i>P. maniculatus</i>	17	140	52	18	14	m	9	34	4-Dec
<i>P. maniculatus</i>	17	135	52	19	14	m	9	34	4-Dec
<i>P. maniculatus</i>	14	122	48	17	15	f	9	34	6-Dec
<i>P. maniculatus</i>	19	131	46	17	14	m	9	34	6-Dec
<i>P. maniculatus</i>	18	140	54	18	13	m	9	34	6-Dec
<i>P. maniculatus</i>	26	174	74	19	15	f	9	34	6-Dec
<i>P. maniculatus</i>	14	124	46	16	13	f	10	18	25-Jan
<i>P. maniculatus</i>	20	150	57	19	16	m	10	18	25-Jan
<i>P. maniculatus</i>	23	148	56	19	16	m	10	18	25-Jan
<i>P. maniculatus</i>	21	154	64	20	15	m	10	18	25-Jan
<i>P. maniculatus</i>	23	171	71	20	16	f	10	18	25-Jan
<i>P. maniculatus</i>	28	164	65	20	14	m	10	18	26-Jan
<i>P. maniculatus</i>	10	118	45	17	16	f	10	18	27-Jan
<i>P. maniculatus</i>	16	133	53	17	15	m	10	18	27-Jan
<i>P. maniculatus</i>	14	125	49	17	16	m	10	18	27-Jan
<i>P. maniculatus</i>	14	129	52	17	15	m	10	18	27-Jan
<i>P. maniculatus</i>	12	135	58	20	17	m	10	18	27-Jan
<i>P. maniculatus</i>	18	141	58	20	16	m	10	18	27-Jan
<i>P. maniculatus</i>	22	165	67	20	17	f	10	18	27-Jan
<i>P. maniculatus</i>	31	175	73	20	15	m	10	18	27-Jan
<i>P. maniculatus</i>	16	141	63	19	16	f	10	18	1-Jun
<i>P. maniculatus</i>	25	167	67	20	16	m	10	18	1-Jun
<i>P. maniculatus</i>	23	168	71	20	17	f	10	18	1-Jun
<i>P. maniculatus</i>	21	166	73	20	18	m	10	18	1-Jun
<i>P. maniculatus</i>	14	139	63	20	16	m	10	18	1-Jun
<i>P. maniculatus</i>	18	147	66	20	17	m	10	18	1-Jun
<i>P. maniculatus</i>	14	119	55	19	14	f	10	18	2-Jun
<i>P. maniculatus</i>	29	183	80	20	17	f	10	18	4-Jun
<i>P. maniculatus</i>	16	141	65	20	16	f	10	18	4-Jun
<i>P. maniculatus</i>	24	165	66	20	17	m	10	18	4-Jun
<i>P. maniculatus</i>	29	150	56	19	18	f	10	18	24-Sep
<i>P. maniculatus</i>	27	170	75	20	15	m	10	18	25-Sep
<i>P. maniculatus</i>	18	146	56	18	14	m	10	18	12-Dec
<i>P. maniculatus</i>	23	157	62	18	14	f	10	18	12-Dec
<i>P. maniculatus</i>	18	143	56	18	15	m	10	18	12-Dec
<i>P. maniculatus</i>	14	133	51	18	14	f	10	18	12-Dec
<i>P. maniculatus</i>	16	140	53	18	15	m	10	18	12-Dec
<i>P. maniculatus</i>	16	136	50	18	14	f	10	18	12-Dec
<i>P. maniculatus</i>	14	130	51	18	14	f	10	18	12-Dec
<i>P. maniculatus</i>	13	126	48	18	16	m	10	18	12-Dec
<i>P. maniculatus</i>	21	155	59	19	16	f	10	18	12-Dec
<i>P. maniculatus</i>	11	124	50	19	15	f	10	18	12-Dec

<i>P. maniculatus</i>	11	124	48	17	15	f	10	18	13-Dec
<i>P. maniculatus</i>	10	122	46	17	16	f	10	18	13-Dec
<i>P. maniculatus</i>	12	127	47	17	15	m	10	18	13-Dec
<i>P. maniculatus</i>	15	134	50	18	15	f	10	18	13-Dec
<i>P. maniculatus</i>	13	125	48	18	16	m	10	18	13-Dec
<i>P. maniculatus</i>	25	166	68	20	16	f	10	18	14-Dec
<i>P. maniculatus</i>	11	127	52	18	14	f	11	42	26-Jan
<i>P. maniculatus</i>	14	133	51	18	16	m	11	42	26-Jan
<i>P. maniculatus</i>	14	130	50	18	14	f	11	42	26-Jan
<i>P. maniculatus</i>	13	129	47	18	15	m	11	42	26-Jan
<i>P. maniculatus</i>	20	151	53	18	16	f	11	42	26-Jan
<i>P. maniculatus</i>	19	150	57	18	16	f	11	42	26-Jan
<i>P. maniculatus</i>	13	130	54	18	14	m	11	42	26-Jan
<i>P. maniculatus</i>	14	136	57	19	15	m	11	42	26-Jan
<i>P. maniculatus</i>	20	143	56	19	15	f	11	42	26-Jan
<i>P. maniculatus</i>	18	142	55	19	15	f	11	42	26-Jan
<i>P. maniculatus</i>	22	157	65	19	16	m	11	42	26-Jan
<i>P. maniculatus</i>	21	157	62	19	16	f	11	42	26-Jan
<i>P. maniculatus</i>	22	160	65	19	15	f	11	42	26-Jan
<i>P. maniculatus</i>	16	141	58	20	15	f	11	42	26-Jan
<i>P. maniculatus</i>	18	159	67	20	17	f	11	42	26-Jan
<i>P. maniculatus</i>	18	159	70	20	15	f	11	42	26-Jan
<i>P. maniculatus</i>	25	190	85	20	16	f	11	42	26-Jan
<i>P. maniculatus</i>	18	174	78	20	18	m	11	42	26-Jan
<i>P. maniculatus</i>	14	120	44	16	13	f	11	42	27-Jan
<i>P. maniculatus</i>	13	122	46	17	13	f	11	42	27-Jan
<i>P. maniculatus</i>	18	140	56	17	15	m	11	42	27-Jan
<i>P. maniculatus</i>	18	143	57	18	16	m	11	42	27-Jan
<i>P. maniculatus</i>	14	124	48	18	13	f	11	42	27-Jan
<i>P. maniculatus</i>	17	142	51	18	15	f	11	42	27-Jan
<i>P. maniculatus</i>	15	131	51	18	15	f	11	42	27-Jan
<i>P. maniculatus</i>	14	131	51	19	14	m	11	42	27-Jan
<i>P. maniculatus</i>	16	142	58	20	16	m	11	42	27-Jan
<i>P. maniculatus</i>	19	148	62	20	16	m	11	42	27-Jan
<i>P. maniculatus</i>	21	155	63	19	16	m	11	42	28-Jan
<i>P. maniculatus</i>	15	138	52	17	12	m	11	42	31-May
<i>P. maniculatus</i>	11	127	48	17	17	m	11	42	31-May
<i>P. maniculatus</i>	12	131	50	18	13	m	11	42	31-May
<i>P. maniculatus</i>	19	145	53	19	15	m	11	42	31-May
<i>P. maniculatus</i>	16	120	47	19	13	m	11	42	31-May
<i>P. maniculatus</i>	13	140	56	19	14	f	11	42	31-May

<i>P. maniculatus</i>	17	155	68	20	14	f	11	42	31-May
<i>P. maniculatus</i>	20	157	64	20	14	m	11	42	31-May
<i>P. maniculatus</i>	21	169	71	20	*	f	11	42	31-May
<i>P. maniculatus</i>	16	150	66	20	16	m	11	42	1-Jun
<i>P. maniculatus</i>	19	153	68	20	17	f	11	42	1-Jun
<i>P. maniculatus</i>	13	126	44	17	13	f	11	42	10-Dec
<i>P. maniculatus</i>	13	118	39	17	13	m	11	42	10-Dec
<i>P. maniculatus</i>	13	115	38	17	12	m	11	42	10-Dec
<i>P. maniculatus</i>	18	148	57	17	14	m	11	42	10-Dec
<i>P. maniculatus</i>	27	169	72	20	15	m	11	42	10-Dec
<i>P. maniculatus</i>	17	146	58	20	13	m	11	42	10-Dec
<i>P. maniculatus</i>	22	145	52	18	16	m	11	42	11-Dec
<i>P. maniculatus</i>	14	131	61	19	15	f	11	42	11-Dec
<i>P. maniculatus</i>	11	131	56	20	15	m	11	42	11-Dec
<i>P. maniculatus</i>	15	135	58	20	15	f	11	42	11-Dec
<i>P. maniculatus</i>	21	153	63	20	17	m	11	42	11-Dec
<i>P. maniculatus</i>	15	148	54	18	15	m	11	42	12-Dec
<i>P. maniculatus</i>	13	123	42	18	14	m	11	42	12-Dec
<i>P. maniculatus</i>	15	130	50	17	13	m	12	38	27-Jan
<i>P. maniculatus</i>	20	135	48	17	14	m	12	38	27-Jan
<i>P. maniculatus</i>	18	125	50	17	15	f	12	38	27-Jan
<i>P. maniculatus</i>	21	146	57	18	15	f	12	38	27-Jan
<i>P. maniculatus</i>	15	125	48	18	14	f	12	38	27-Jan
<i>P. maniculatus</i>	15	132	50	18	14	m	12	38	27-Jan
<i>P. maniculatus</i>	18	133	54	18	14	f	12	38	27-Jan
<i>P. maniculatus</i>	20	141	52	18	16	f	12	38	27-Jan
<i>P. maniculatus</i>	19	144	55	18	15	f	12	38	27-Jan
<i>P. maniculatus</i>	24	156	62	19	14	m	12	38	27-Jan
<i>P. maniculatus</i>	23	146	55	19	16	m	12	38	27-Jan
<i>P. maniculatus</i>	27	160	63	19	17	m	12	38	27-Jan
<i>P. maniculatus</i>	23	156	63	19	13	f	12	38	27-Jan
<i>P. maniculatus</i>	18	149	60	19	17	f	12	38	27-Jan
<i>P. maniculatus</i>	29	180	76	20	16	f	12	38	27-Jan
<i>P. maniculatus</i>	18	151	60	20	18	f	12	38	27-Jan
<i>P. maniculatus</i>	15	125	50	18	13	m	12	38	28-Jan
<i>P. maniculatus</i>	14	130	50	17	13	f	12	38	4-May
<i>P. maniculatus</i>	21	160	65	20	16	m	12	38	4-May
<i>P. maniculatus</i>	24	165	72	20	15	m	12	38	4-May
<i>P. maniculatus</i>	23	171	71	20	17	f	12	38	4-May
<i>P. maniculatus</i>	25	170	72	20	17	m	12	38	4-May
<i>P. maniculatus</i>	20	152	62	20	17	f	12	38	4-May

<i>P. maniculatus</i>	22	167	67	20	18	f	12	38	4-May
<i>P. maniculatus</i>	27	171	74	20	14	f	12	38	4-May
<i>P. maniculatus</i>	30	170	75	20	17	f	12	38	4-May
<i>P. maniculatus</i>	20	145	57	20	14	m	12	38	4-May
<i>P. maniculatus</i>	14	126	49	18	16	m	12	38	5-May
<i>P. maniculatus</i>	21	161	73	20	18	f	12	38	5-May
<i>P. maniculatus</i>	14	136	52	16	13	f	12	38	6-May
<i>P. maniculatus</i>	25	170	68	20	17	m	12	38	6-May
<i>P. maniculatus</i>	33	175	77	20	15	f	12	38	22-Sep
<i>P. maniculatus</i>	31	199	91	20	15	m	12	38	22-Sep
<i>P. maniculatus</i>	25	180	80	20	17	f	12	38	22-Sep
<i>P. maniculatus</i>	25	174	74	20	17	f	12	38	22-Sep
<i>P. maniculatus</i>	27	184	79	20	17	m	12	38	22-Sep
<i>P. maniculatus</i>	21	176	77	20	16	f	12	38	22-Sep
<i>P. maniculatus</i>	26	163	64	20	16	m	12	38	23-Sep
<i>P. maniculatus</i>	9	106	40	17	15	m	12	38	11-Dec
<i>P. maniculatus</i>	8	105	41	17	14	m	12	38	11-Dec
<i>P. maniculatus</i>	12	125	48	17	13	m	12	38	11-Dec
<i>P. maniculatus</i>	14	129	50	17	15	f	12	38	11-Dec
<i>P. maniculatus</i>	12	134	60	18	15	f	12	38	11-Dec
<i>P. maniculatus</i>	19	136	51	19	15	m	12	38	11-Dec
<i>P. maniculatus</i>	22	144	56	19	14	m	12	38	11-Dec
<i>P. maniculatus</i>	22	149	59	19	14	f	12	38	11-Dec
<i>P. maniculatus</i>	26	172	72	20	17	f	12	38	11-Dec
<i>P. maniculatus</i>	32	177	72	20	17	f	12	38	11-Dec
<i>P. maniculatus</i>	29	179	73	20	16	m	12	38	11-Dec
<i>P. maniculatus</i>	18	145	61	20	14	m	12	38	11-Dec
<i>P. maniculatus</i>	14	138	57	20	16	m	12	38	11-Dec
<i>P. maniculatus</i>	8	112	45	17	15	m	12	38	13-Dec
<i>P. maniculatus</i>	24	162	65	18	14	f	12	38	13-Dec
<i>P. maniculatus</i>	18	157	67	20	16	m	12	38	13-Dec
<i>P. maniculatus</i>	16	143	65	19	16	f	13	33	5-Feb
<i>P. maniculatus</i>	15	135	55	19	17	m	13	33	22-Apr
<i>P. maniculatus</i>	15	145	62	20	no ears	f	13	33	22-Apr
<i>P. maniculatus</i>	22	164	64	20	17	m	13	33	22-Apr
<i>P. maniculatus</i>	27	165	65	20	18	f	13	33	22-Apr
<i>P. maniculatus</i>	25	165	63	20	15	m	13	33	22-Apr
<i>P. maniculatus</i>	16	144	62	20	17	m	13	33	22-Apr
<i>P. maniculatus</i>	14	131	56	19	16	f	13	33	4-Dec
<i>P. maniculatus</i>	16	141	61	19	16	m	13	33	4-Dec
<i>P. maniculatus</i>	15	139	59	20	14	m	13	33	4-Dec

<i>P. maniculatus</i>	14	134	29	19	17	f	13	33	6-Dec
<i>P. maniculatus</i>	28	180	79	19	18	m	13	33	6-Dec
<i>P. maniculatus</i>	30	178	75	20	19	f	13	33	6-Dec
<i>P. maniculatus</i>	25	171	78	20	17	f	14	30	3-Feb
<i>P. maniculatus</i>	16	149	61	19	15	m	14	30	26-Apr
<i>P. maniculatus</i>	19	154	62	19	15	f	14	30	26-Apr
<i>P. maniculatus</i>	15	143	58	19	15	f	14	30	26-Apr
<i>P. maniculatus</i>	20	152	62	20	14	m	14	30	26-Apr
<i>P. maniculatus</i>	17	151	64	20	17	m	14	30	26-Apr
<i>P. maniculatus</i>	18	146	57	20	16	f	14	30	27-Apr
<i>P. maniculatus</i>	17	144	60	20	17	f	14	30	27-Apr
<i>P. maniculatus</i>	21	159	65	20	14	m	14	30	27-Apr
<i>P. maniculatus</i>	16	131	51	19	15	m	14	30	3-Dec
<i>P. maniculatus</i>	28	172	71	20	17	m	14	30	6-Dec
<i>P. maniculatus</i>	28	180	74	20	16	f	14	30	6-Dec
<i>P. maniculatus</i>	9	113	52	18	15	m	15	25	14-Feb
<i>P. maniculatus</i>	10	125	53	19	14	m	15	25	14-Feb
<i>P. maniculatus</i>	13	128	57	19	15	f	15	25	14-Feb
<i>P. maniculatus</i>	32	173	74	20	16	f	15	25	14-Feb
<i>P. maniculatus</i>	10	113	54	20	15	m	15	25	14-Feb
<i>P. maniculatus</i>	25	168	69	17	16	f	15	25	19-Apr
<i>P. maniculatus</i>	11	131	59	19	15	m	15	25	19-Apr
<i>P. maniculatus</i>	15	141	60	20	15	f	15	25	19-Apr
<i>P. maniculatus</i>	26	162	64	20	14	m	15	25	19-Apr
<i>P. maniculatus</i>	27	167	67	20	14	m	15	25	19-Apr
<i>P. maniculatus</i>	18	155	62	20	15	f	15	25	19-Apr
<i>P. maniculatus</i>	29	176	71	20	15	m	15	25	19-Apr
<i>P. maniculatus</i>	20	154	63	19	17	f	15	25	20-Apr
<i>P. maniculatus</i>	26	156	60	19	15	f	15	25	20-Apr
<i>P. maniculatus</i>	18	139	53	20	15	f	15	25	20-Apr
<i>P. maniculatus</i>	15	143	58	20	16	m	15	25	20-Apr
<i>P. maniculatus</i>	23	160	65	20	16	m	15	25	20-Apr
<i>P. maniculatus</i>	23	162	70	19	17	m	15	25	21-Apr
<i>P. maniculatus</i>	25	171	71	20	17	f	15	25	21-Apr
<i>P. maniculatus</i>	26	177	78	20	17	m	15	25	11-Sep
<i>P. maniculatus</i>	22	160	72	20	19	m	15	25	11-Sep
<i>P. maniculatus</i>	18	157	66	20	14	f	15	25	11-Sep
<i>P. maniculatus</i>	25	174	76	20	20	m	15	25	11-Sep
<i>P. maniculatus</i>	9	118	47	18	13	m	15	25	1-Dec
<i>P. maniculatus</i>	31	185	75	20	15	f	15	25	2-Dec
<i>P. maniculatus</i>	21	153	63	19	15	m	15	25	3-Dec

<i>P. maniculatus</i>	12	126	52	20	14	f	15	25	3-Dec
<i>P. maniculatus</i>	27	152	57	19	15	f	16	40	28-Jan
<i>P. maniculatus</i>	23	142	52	19	16	m	16	40	28-Jan
<i>P. maniculatus</i>	19	152	64	20	16	f	16	40	28-Jan
<i>P. maniculatus</i>	33	231	76	20	17	m	16	40	28-Jan
<i>P. maniculatus</i>	31	184	80	20	15	m	16	40	28-Jan
<i>P. maniculatus</i>	26	181	79	20	15	f	16	40	28-Jan
<i>P. maniculatus</i>	22	130	48	18	14	f	16	40	30-Jan
<i>P. maniculatus</i>	10	126	53	19	15	m	16	40	30-Jan
<i>P. maniculatus</i>	15	134	59	20	19	m	16	40	30-Jan
<i>P. maniculatus</i>	11	130	54	20	16	f	16	40	30-Jan
<i>P. maniculatus</i>	22	145	58	20	16	m	16	40	30-Jan
<i>P. maniculatus</i>	12	118	45	17	15	m	16	40	3-May
<i>P. maniculatus</i>	17	139	57	19	14	f	16	40	3-May
<i>P. maniculatus</i>	20	150	65	20	14	m	16	40	3-May
<i>P. maniculatus</i>	20	155	65	20	17	m	16	40	3-May
<i>P. maniculatus</i>	20	157	69	20	16	m	16	40	3-May
<i>P. maniculatus</i>	29	182	82	20	16	m	16	40	3-May
<i>P. maniculatus</i>	11	116	48	16	14	m	16	40	4-May
<i>P. maniculatus</i>	14	130	50	17	15	f	16	40	4-May
<i>P. maniculatus</i>	10	122	60	17	14	f	16	40	4-May
<i>P. maniculatus</i>	13	136	57	19	17	m	16	40	4-May
<i>P. maniculatus</i>	22	157	69	19	15	m	16	40	4-May
<i>P. maniculatus</i>	21	153	58	19	13	m	16	40	4-May
<i>P. maniculatus</i>	18	141	65	19	15	m	16	40	5-May
<i>P. maniculatus</i>	16	145	63	20	15	f	16	40	5-May
<i>P. maniculatus</i>	19	155	65	20	16	f	16	40	5-May
<i>P. maniculatus</i>	26	156	62	18	15	m	16	40	20-Sep
<i>P. maniculatus</i>	18	133	52	18	13	f	16	40	9-Dec
<i>P. maniculatus</i>	22	149	55	19	14	m	16	40	9-Dec
<i>P. maniculatus</i>	26	170	75	20	15	m	16	40	9-Dec
<i>P. maniculatus</i>	26	167	77	20	14	f	16	40	9-Dec
<i>P. maniculatus</i>	19	140	62	20	16	m	17	22	30-Jan
<i>P. maniculatus</i>	19	151	67	20	17	f	17	22	30-Jan
<i>P. maniculatus</i>	19	145	63	20	16	m	17	22	30-Jan
<i>P. maniculatus</i>	32	180	78	19	16	m	17	22	31-Jan
<i>P. maniculatus</i>	21	158	69	19	16	m	17	22	31-Jan
<i>P. maniculatus</i>	22	162	71	20	16	m	17	22	31-Jan
<i>P. maniculatus</i>	19	149	63	20	18	f	17	22	31-Jan
<i>P. maniculatus</i>	19	149	60	20	15	m	17	22	31-Jan
<i>P. maniculatus</i>	20	158	66	19	16	f	17	22	1-Feb

<i>P. maniculatus</i>	22	164	67	20	15	m	17	32	29-Apr
<i>P. maniculatus</i>	21	173	75	20	17	m	17	32	29-Apr
<i>P. maniculatus</i>	29	162	67	19	15	f	17	22	30-Apr
<i>P. maniculatus</i>	23	163	70	20	15	f	17	22	30-Apr
<i>P. maniculatus</i>	25	167	70	19	19	m	17	22	18-Sep
<i>P. maniculatus</i>	25	166	72	19	16	m	17	22	18-Sep
<i>P. maniculatus</i>	28	180	78	20	14	m	17	22	18-Sep
<i>P. maniculatus</i>	24	183	79	20	16	f	17	22	18-Sep
<i>P. maniculatus</i>	23	171	71	20	14	f	17	22	18-Sep
<i>P. maniculatus</i>	21	164	69	19	16	f	17	22	20-Sep
<i>P. maniculatus</i>	25	168	73	20	15	f	17	22	20-Sep
<i>P. maniculatus</i>	18	136	51	18	16	m	18	21	30-Jan
<i>P. maniculatus</i>	17	132	49	18	16	m	18	21	30-Jan
<i>P. maniculatus</i>	18	149	65	19	17	f	18	21	30-Jan
<i>P. maniculatus</i>	18	150	68	20	17	f	18	21	30-Jan
<i>P. maniculatus</i>	18	150	67	20	17	f	18	21	30-Jan
<i>P. maniculatus</i>	27	191	86	20	17	m	18	21	30-Jan
<i>P. maniculatus</i>	24	154	64	19	15	m	18	21	1-May
<i>P. maniculatus</i>	24	171	65	19	15	m	18	21	1-May
<i>P. maniculatus</i>	21	152	66	20	17	m	18	21	1-May
<i>P. maniculatus</i>	23	160	67	20	16	m	18	21	1-May
<i>P. maniculatus</i>	14	130	54	18	15	f	18	21	2-May
<i>P. maniculatus</i>	13	123	47	17	13	f	18	21	3-May
<i>P. maniculatus</i>	15	136	51	19	13	m	18	21	3-May
<i>P. maniculatus</i>	9	108	38	17	13	f	18	21	19-Sep
<i>P. maniculatus</i>	28	169	72	19	15	m	18	21	19-Sep
<i>P. maniculatus</i>	20	140	56	19	15	m	18	21	19-Sep
<i>P. maniculatus</i>	25	177	75	20	14	f	18	21	19-Sep
<i>P. maniculatus</i>	14	134	56	19	14	f	18	21	25-Nov
<i>P. maniculatus</i>	26	177	75	20	16	m	18	21	25-Nov
<i>P. maniculatus</i>	25	176	76	20	15	m	18	21	25-Nov
<i>P. maniculatus</i>	15	132	57	19	17	m	19	32	31-Jan
<i>P. maniculatus</i>	19	148	63	19	17	f	19	32	31-Jan
<i>P. maniculatus</i>	20	155	61	20	15	f	19	32	31-Jan
<i>P. maniculatus</i>	18	150	65	20	17	f	19	32	31-Jan
<i>P. maniculatus</i>	17	148	60	20	15	m	19	32	1-Feb
<i>P. maniculatus</i>	19	156	67	20	17	m	19	32	1-Feb
<i>P. maniculatus</i>	29	181	80	20	17	f	19	32	1-Feb
<i>P. maniculatus</i>	17	149	62	20	14	m	19	32	30-Apr
<i>P. maniculatus</i>	20	160	64	20	13	f	19	32	17-Sep
<i>P. maniculatus</i>	25	184	85	20	17	m	19	32	18-Sep

<i>P. maniculatus</i>	30	169	74	20	16	f	19	32	19-Sep
<i>P. maniculatus</i>	15	135	53	19	14	f	19	32	8-Dec
<i>P. maniculatus</i>	15	130	53	20	17	f	19	32	8-Dec
<i>P. maniculatus</i>	27	186	83	20	18	f	19	32	8-Dec
<i>P. maniculatus</i>	28	71	71	20	17	m	19	32	9-Dec
<i>P. maniculatus</i>	16	131	54	20	14	f	20	27	14-Feb
<i>P. maniculatus</i>	18	142	61	19	18	f	20	27	20-Apr
<i>P. maniculatus</i>	19	157	66	19	16	m	20	27	20-Apr
<i>P. maniculatus</i>	14	143	60	19	13	m	20	27	20-Apr
<i>P. maniculatus</i>	11	139	62	19	15	m	20	27	20-Apr
<i>P. maniculatus</i>	30	177	80	20	16	m	20	27	20-Apr
<i>P. maniculatus</i>	19	146	66	20	16	m	20	27	20-Apr
<i>P. maniculatus</i>	14	143	61	20	15	f	20	27	20-Apr
<i>P. maniculatus</i>	16	140	62	20	15	f	20	27	20-Apr
<i>P. maniculatus</i>	28	176	75	20	16	f	20	27	20-Apr
<i>P. maniculatus</i>	26	158	58	20	14	f	20	27	20-Apr
<i>P. maniculatus</i>	22	161	66	20	15	f	20	27	20-Apr
<i>P. maniculatus</i>	25	176	74	20	17	m	20	27	20-Apr
<i>P. maniculatus</i>	17	140	53	20	17	f	20	27	20-Apr
<i>P. maniculatus</i>	28	180	72	20	16	f	20	27	21-Apr
<i>P. maniculatus</i>	21	158	63	20	16	m	20	27	21-Apr
<i>P. maniculatus</i>	17	150	59	20	17	f	20	27	21-Apr
<i>P. maniculatus</i>	17	147	62	20	17	f	20	27	21-Apr
<i>P. maniculatus</i>	26	173	71	20	16	m	20	27	21-Apr
<i>P. maniculatus</i>	29	164	61	20	18	f	20	27	21-Apr
<i>P. maniculatus</i>	24	161	63	20	18	m	20	27	21-Apr
<i>P. maniculatus</i>	30	177	69	20	18	m	20	27	21-Apr
<i>R. fulvescens</i>	12	170	95	20	14	m	1	1	1-Oct
<i>R. fulvescens</i>	16	178	100	20	15	m	1	1	18-Dec
<i>R. fulvescens</i>	13	164	86	20	17	f	2	13	22-Jan
<i>R. fulvescens</i>	12	165	87	20	16	f	2	13	22-Jan
<i>R. fulvescens</i>	12	155	84	19	13	f	2	13	23-Jan
<i>R. fulvescens</i>	12	156	84	19	13	m	4	4	20-Jan
<i>R. fulvescens</i>	12	163	92	20	17	m	8	8	15-Dec
<i>R. fulvescens</i>	14	165	85	19	17	m	8	8	17-Dec
<i>R. fulvescens</i>	11	156	86	20	17	m	18	21	30-Jan
<i>R. montanus</i>	8	115	51	16	13	m	2	13	23-Jan
<i>R. montanus</i>	7	115	43	13	12	f	8	8	16-Dec
<i>R. montanus</i>	6	116	45	14	11	f	8	8	16-Dec
<i>R. montanus</i>	7	112	50	15	12	m	8	8	16-Dec
<i>R. montanus</i>	10	129	56	15	13	f	8	8	16-Dec

<i>R. montanus</i>	6	106	48	14	12	f	8	8	17-Dec
<i>R. montanus</i>	10	114	44	16	13	f	10	18	12-Dec
<i>S. hispidus</i>	55	198	80	27	17	f	1	1	19-Jan
<i>S. hispidus</i>	57	202	78	27	16	f	1	1	19-Jan
<i>S. hispidus</i>	62	212	85	28	17	m	1	1	19-Jan
<i>S. hispidus</i>	62	201	78	28	17	m	1	1	19-Jan
<i>S. hispidus</i>	73	218	85	28	18	m	1	1	19-Jan
<i>S. hispidus</i>	77	220	85	30	18	f	1	1	19-Jan
<i>S. hispidus</i>	97	234	87	31	19	m	1	1	21-Jan
<i>S. hispidus</i>	154	284	113	32	22	f	1	1	21-Jan
<i>S. hispidus</i>	126	257	100	30	19	m	1	1	30-Sep
<i>S. hispidus</i>	71	235	98	30	15	m	1	1	1-Oct
<i>S. hispidus</i>	117	273	111	30	18	m	1	1	1-Oct
<i>S. hispidus</i>	97	243	97	29	16	m	1	1	3-Oct
<i>S. hispidus</i>	40	184	77	25	17	m	1	1	17-Dec
<i>S. hispidus</i>	43	184	83	26	17	m	1	1	18-Dec
<i>S. hispidus</i>	107	236	92	29	19	f	1	1	18-Dec
<i>S. hispidus</i>	74	222	93	31	20	f	1	1	18-Dec
<i>S. hispidus</i>	42	192	83	26	16	m	1	1	19-Dec
<i>S. hispidus</i>	60	201	78	28	17	f	1	1	19-Dec
<i>S. hispidus</i>	86	245	97	30	17	m	2	13	23-Jan
<i>S. hispidus</i>	32	171	67	25	13	m	2	13	7-Jun
<i>S. hispidus</i>	217	294	101	31	20	f	2	13	7-Jun
<i>S. hispidus</i>	33	176	71	25	16	f	2	13	9-Jun
<i>S. hispidus</i>	34	175	79	25	18	f	2	13	9-Jun
<i>S. hispidus</i>	146	270	100	28	20	f	2	13	9-Jun
<i>S. hispidus</i>	65	214	85	28	18	m	4	4	18-Dec
<i>S. hispidus</i>	62	194	69	26	17	f	6	6	20-Jan
<i>S. hispidus</i>	68	205	75	28	16	f	6	6	20-Jan
<i>S. hispidus</i>	82	221	82	29	20	m	6	6	20-Jan
<i>S. hispidus</i>	103	256	108	32	18	m	6	6	20-Jan
<i>S. hispidus</i>	50	182	67	26	15	f	6	6	21-Jan
<i>S. hispidus</i>	53	182	68	27	15	f	6	6	21-Jan
<i>S. hispidus</i>	46	190	70	27	17	f	6	6	21-Jan
<i>S. hispidus</i>	48	180	61	27	16	m	6	6	21-Jan
<i>S. hispidus</i>	43	179	68	27	18	m	6	6	21-Jan
<i>S. hispidus</i>	55	200	77	27	18	f	6	6	21-Jan
<i>S. hispidus</i>	68	207	83	28	16	f	6	6	21-Jan
<i>S. hispidus</i>	68	210	81	28	18	f	6	6	21-Jan
<i>S. hispidus</i>	63	197	76	28	19	m	6	6	21-Jan
<i>S. hispidus</i>	88	225	84	29	18	f	6	6	21-Jan

<i>S. hispidus</i>	66	206	80	29	16	f	6	6	21-Jan
<i>S. hispidus</i>	73	216	90	29	19	f	6	6	21-Jan
<i>S. hispidus</i>	62	206	78	29	18	m	6	6	21-Jan
<i>S. hispidus</i>	71	214	84	30	20	f	6	6	21-Jan
<i>S. hispidus</i>	54	191	70	27	17	f	6	6	22-Jan
<i>S. hispidus</i>	39	182	75	25	17	f	6	6	10-Jun
<i>S. hispidus</i>	35	180	74	25	15	f	6	6	10-Jun
<i>S. hispidus</i>	56	204	89	26	15	f	6	6	10-Jun
<i>S. hispidus</i>	67	221	93	27	17	m	6	6	10-Jun
<i>S. hispidus</i>	67	211	87	28	15	m	6	6	10-Jun
<i>S. hispidus</i>	80	225	96	28	15	f	6	6	10-Jun
<i>S. hispidus</i>	214	292	105	32	19	m	6	6	10-Jun
<i>S. hispidus</i>	58	206	87	26	16	m	6	6	11-Jun
<i>S. hispidus</i>	50	196	93	27	17	f	6	6	11-Jun
<i>S. hispidus</i>	79	218	87	29	18	m	6	6	11-Jun
<i>S. hispidus</i>	25	160	68	23	15	f	6	6	29-Sep
<i>S. hispidus</i>	25	161	70	24	15	f	6	6	29-Sep
<i>S. hispidus</i>	23	152	65	24	15	f	6	6	29-Sep
<i>S. hispidus</i>	61	222	94	28	16	f	6	6	29-Sep
<i>S. hispidus</i>	67	232	97	28	16	m	6	6	29-Sep
<i>S. hispidus</i>	46	204	85	28	17	m	6	6	29-Sep
<i>S. hispidus</i>	58	217	95	28	17	m	6	6	29-Sep
<i>S. hispidus</i>	64	228	97	28	18	m	6	6	29-Sep
<i>S. hispidus</i>	85	252	106	28	18	f	6	6	29-Sep
<i>S. hispidus</i>	144	295	118	29	18	f	6	6	29-Sep
<i>S. hispidus</i>	69	234	102	30	18	m	6	6	29-Sep
<i>S. hispidus</i>	66	231	94	30	18	f	6	6	29-Sep
<i>S. hispidus</i>	115	224	68	31	21	f	6	6	29-Sep
<i>S. hispidus</i>	112	270	117	31	20	f	6	6	29-Sep
<i>S. hispidus</i>	74	242	105	31	18	m	6	6	29-Sep
<i>S. hispidus</i>	174	299	124	31	19	f	6	6	29-Sep
<i>S. hispidus</i>	13	127	50	19	13	*	6	6	30-Sep
<i>S. hispidus</i>	29	175	74	24	14	*	6	6	30-Sep
<i>S. hispidus</i>	42	200	85	26	16	f	6	6	30-Sep
<i>S. hispidus</i>	49	207	81	27	15	m	6	6	30-Sep
<i>S. hispidus</i>	49	204	89	28	17	f	6	6	30-Sep
<i>S. hispidus</i>	58	209	79	28	18	m	6	6	30-Sep
<i>S. hispidus</i>	68	229	92	28	17	f	6	6	30-Sep
<i>S. hispidus</i>	92	247	104	29	18	f	6	6	30-Sep
<i>S. hispidus</i>	60	224	94	30	17	m	6	6	30-Sep
<i>S. hispidus</i>	13	125	51	19	13	m	6	6	1-Oct

<i>S. hispidus</i>	19	149	61	22	12	m	6	6	1-Oct
<i>S. hispidus</i>	32	171	67	24	16	f	6	6	1-Oct
<i>S. hispidus</i>	33	171	72	24	14	f	6	6	1-Oct
<i>S. hispidus</i>	46	196	80	26	17	f	6	6	1-Oct
<i>S. hispidus</i>	43	195	77	26	16	m	6	6	1-Oct
<i>S. hispidus</i>	54	213	93	28	18	m	6	6	1-Oct
<i>S. hispidus</i>	55	200	77	28	17	m	6	6	1-Oct
<i>S. hispidus</i>	84	196	51	29	17	m	6	6	1-Oct
<i>S. hispidus</i>	75	235	95	30	17	m	6	6	1-Oct
<i>S. hispidus</i>	119	276	118	31	19	f	6	6	1-Oct
<i>S. hispidus</i>	68	220	100	29	18	m	6	6	16-Dec
<i>S. hispidus</i>	73	221	90	29	19	f	6	6	16-Dec
<i>S. hispidus</i>	115	265	107	31	21	f	6	6	16-Dec
<i>S. hispidus</i>	51	197	79	26	18	f	6	6	17-Dec
<i>S. hispidus</i>	66	206	82	28	17	f	6	6	17-Dec
<i>S. hispidus</i>	75	216	81	28	17	m	6	6	17-Dec
<i>S. hispidus</i>	117	220	60	30	20	f	6	6	17-Dec
<i>S. hispidus</i>	100	261	106	31	18	m	6	6	17-Dec
<i>S. hispidus</i>	111	267	111	31	20	f	6	6	17-Dec
<i>S. hispidus</i>	66	219	90	27	18	f	6	6	18-Dec
<i>S. hispidus</i>	54	195	82	27	18	m	6	6	18-Dec
<i>S. hispidus</i>	109	193	56	31	19	m	6	6	18-Dec
<i>S. hispidus</i>	33	166	67	25	17	f	7	12	23-Jan
<i>S. hispidus</i>	36	163	55	25	17	f	7	12	23-Jan
<i>S. hispidus</i>	56	206	83	27	18	f	7	12	23-Jan
<i>S. hispidus</i>	44	188	73	27	16	m	7	12	23-Jan
<i>S. hispidus</i>	59	204	78	27	19	m	7	12	23-Jan
<i>S. hispidus</i>	58	205	79	27	16	f	7	12	23-Jan
<i>S. hispidus</i>	50	192	70	28	18	m	7	12	23-Jan
<i>S. hispidus</i>	64	215	81	28	17	m	7	12	23-Jan
<i>S. hispidus</i>	67	206	80	29	17	m	7	12	23-Jan
<i>S. hispidus</i>	74	235	95	31	19	f	7	12	24-Jan
<i>S. hispidus</i>	38	186	79	26	17	f	7	12	25-Jan
<i>S. hispidus</i>	19	151	60	22	16	m	7	12	26-Sep
<i>S. hispidus</i>	19	146	58	22	15	m	7	12	26-Sep
<i>S. hispidus</i>	19	149	59	22	16	f	7	12	26-Sep
<i>S. hispidus</i>	142	284	119	31	20	f	7	12	27-Sep
<i>S. hispidus</i>	39	182	73	25	17	m	7	12	13-Dec
<i>S. hispidus</i>	49	189	70	26	18	m	7	12	14-Dec
<i>S. hispidus</i>	62	207	85	27	17	f	7	12	15-Dec
<i>S. hispidus</i>	60	211	84	28	17	f	8	8	21-Jan

<i>S. hispidus</i>	70	225	87	29	17	m	8	8	21-Jan
<i>S. hispidus</i>	65	222	89	28	17	f	8	8	22-Jan
<i>S. hispidus</i>	69	216	80	28	18	f	8	8	23-Jan
<i>S. hispidus</i>	74	236	88	29	18	m	8	8	9-Jun
<i>S. hispidus</i>	54	199	75	22	13	m	8	8	15-Dec
<i>S. hispidus</i>	45	193	79	26	17	m	8	8	15-Dec
<i>S. hispidus</i>	65	210	88	29	18	m	8	8	15-Dec
<i>S. hispidus</i>	131	273	112	30	20	m	8	8	16-Dec
<i>S. hispidus</i>	72	223	87	29	19	m	8	8	17-Dec
<i>S. hispidus</i>	66	213	84	29	18	m	8	8	17-Dec
<i>S. hispidus</i>	75	226	92	29	19	m	9	34	1-Feb
<i>S. hispidus</i>	141	299	132	33	20	f	9	34	1-Feb
<i>S. hispidus</i>	94	225	83	29	19	f	9	34	2-Feb
<i>S. hispidus</i>	79	228	96	30	18	f	9	34	2-Feb
<i>S. hispidus</i>	72	225	91	30	19	m	9	34	2-Feb
<i>S. hispidus</i>	98	236	91	30	19	m	9	34	2-Feb
<i>S. hispidus</i>	79	236	90	30	19	m	9	34	2-Feb
<i>S. hispidus</i>	76	224	91	30	19	f	9	34	2-Feb
<i>S. hispidus</i>	151	276	107	29	20	m	9	34	22-Apr
<i>S. hispidus</i>	106	247	92	29	19	f	9	34	22-Apr
<i>S. hispidus</i>	111	263	96	30	21	m	9	34	22-Apr
<i>S. hispidus</i>	104	242	91	30	19	m	9	34	22-Apr
<i>S. hispidus</i>	104	245	95	30	20	m	9	34	22-Apr
<i>S. hispidus</i>	96	242	89	28	19	m	9	34	23-Apr
<i>S. hispidus</i>	115	129	100	30	21	m	9	34	24-Apr
<i>S. hispidus</i>	144	285	105	32	19	m	9	34	24-Apr
<i>S. hispidus</i>	56	227	94	29	18	f	9	34	14-Sep
<i>S. hispidus</i>	94	258	108	30	20	m	9	34	14-Sep
<i>S. hispidus</i>	65	233	95	30	17	m	9	34	14-Sep
<i>S. hispidus</i>	87	252	107	31	19	f	9	34	14-Sep
<i>S. hispidus</i>	106	272	116	31	19	m	9	34	14-Sep
<i>S. hispidus</i>	86	254	105	32	20	f	9	34	14-Sep
<i>S. hispidus</i>	133	309	126	33	20	f	9	34	14-Sep
<i>S. hispidus</i>	48	218	95	28	16	f	9	34	15-Sep
<i>S. hispidus</i>	112	274	111	29	18	f	9	34	15-Sep
<i>S. hispidus</i>	53	211	90	29	18	f	9	34	15-Sep
<i>S. hispidus</i>	77	233	100	30	19	m	9	34	15-Sep
<i>S. hispidus</i>	104	260	109	31	17	m	9	34	15-Sep
<i>S. hispidus</i>	144	225	62	31	21	m	9	34	15-Sep
<i>S. hispidus</i>	92	263	11	32	19	m	9	34	15-Sep
<i>S. hispidus</i>	19	153	61	22	15	f	9	34	16-Sep

<i>S. hispidus</i>	37	171	67	24	15	m	9	34	4-Dec
<i>S. hispidus</i>	88	220	83	28	17	f	9	34	4-Dec
<i>S. hispidus</i>	112	245	89	28	20	f	9	34	4-Dec
<i>S. hispidus</i>	97	239	98	29	19	f	9	34	4-Dec
<i>S. hispidus</i>	80	221	87	29	17	m	9	34	4-Dec
<i>S. hispidus</i>	92	230	89	29	19	m	9	34	4-Dec
<i>S. hispidus</i>	69	211	84	29	18	m	9	34	4-Dec
<i>S. hispidus</i>	69	207	84	29	18	f	9	34	4-Dec
<i>S. hispidus</i>	92	235	91	30	19	f	9	34	4-Dec
<i>S. hispidus</i>	80	215	81	30	19	m	9	34	4-Dec
<i>S. hispidus</i>	112	254	103	31	19	m	9	34	4-Dec
<i>S. hispidus</i>	107	256	101	31	19	m	9	34	4-Dec
<i>S. hispidus</i>	42	180	70	26	16	m	9	34	6-Dec
<i>S. hispidus</i>	53	192	74	27	19	m	9	34	6-Dec
<i>S. hispidus</i>	72	223	90	28	19	f	9	34	6-Dec
<i>S. hispidus</i>	65	208	79	28	16	f	9	34	6-Dec
<i>S. hispidus</i>	95	223	84	28	18	m	9	34	6-Dec
<i>S. hispidus</i>	88	225	93	28	21	f	9	34	6-Dec
<i>S. hispidus</i>	83	228	86	29	18	m	9	34	6-Dec
<i>S. hispidus</i>	97	229	88	29	20	f	9	34	6-Dec
<i>S. hispidus</i>	85	224	86	29	19	m	9	34	6-Dec
<i>S. hispidus</i>	113	248	97	30	20	f	9	34	6-Dec
<i>S. hispidus</i>	178	287	115	31	20	m	9	34	6-Dec
<i>S. hispidus</i>	151	276	110	31	19	m	9	34	6-Dec
<i>S. hispidus</i>	124	268	106	32	19	m	9	34	6-Dec
<i>S. hispidus</i>	83	218	82	28	18	f	10	18	13-Dec
<i>S. hispidus</i>	59	210	83	26	17	f	11	42	26-Jan
<i>S. hispidus</i>	68	211	80	28	19	m	11	42	26-Jan
<i>S. hispidus</i>	73	215	85	28	17	m	11	42	26-Jan
<i>S. hispidus</i>	70	218	58	29	18	m	11	42	26-Jan
<i>S. hispidus</i>	67	204	70	29	19	f	11	42	26-Jan
<i>S. hispidus</i>	64	224	90	29	18	f	11	42	27-Jan
<i>S. hispidus</i>	81	252	101	32	19	m	11	42	27-Jan
<i>S. hispidus</i>	124	271	107	32	20	f	11	42	27-Jan
<i>S. hispidus</i>	89	241	102	32	20	f	11	42	27-Jan
<i>S. hispidus</i>	112	249	89	33	20	m	11	42	27-Jan
<i>S. hispidus</i>	23	163	67	23	13	f	11	42	31-May
<i>S. hispidus</i>	28	165	66	23	15	m	11	42	31-May
<i>S. hispidus</i>	24	163	65	23	14	f	11	42	31-May
<i>S. hispidus</i>	24	161	68	23	15	m	11	42	31-May
<i>S. hispidus</i>	26	159	64	24	13	m	11	42	31-May
<i>S. hispidus</i>	23	167	68	24	14	f	11	42	31-May

<i>S. hispidus</i>	141	235	64	29	19	m	11	42	31-May
<i>S. hispidus</i>	20	148	59	23	15	m	11	42	1-Jun
<i>S. hispidus</i>	27	171	69	24	17	*	11	42	1-Jun
<i>S. hispidus</i>	25	171	71	25	13	f	11	42	2-Jun
<i>S. hispidus</i>	41	196	80	26	16	f	11	42	21-Sep
<i>S. hispidus</i>	61	215	81	28	18	m	11	42	21-Sep
<i>S. hispidus</i>	113	238	101	29	19	f	11	42	21-Sep
<i>S. hispidus</i>	117	270	111	30	17	f	11	42	21-Sep
<i>S. hispidus</i>	69	220	79	30	17	f	11	42	21-Sep
<i>S. hispidus</i>	117	282	112	32	19	m	11	42	21-Sep
<i>S. hispidus</i>	106	259	103	33	20	m	11	42	21-Sep
<i>S. hispidus</i>	73	234	95	29	18	m	11	42	22-Sep
<i>S. hispidus</i>	74	248	109	31	18	m	11	42	22-Sep
<i>S. hispidus</i>	112	279	110	32	20	m	11	42	22-Sep
<i>S. hispidus</i>	146	275	109	32	19	f	11	42	23-Sep
<i>S. hispidus</i>	145	293	120	32	19	f	11	42	23-Sep
<i>S. hispidus</i>	47	178	68	25	17	f	11	42	10-Dec
<i>S. hispidus</i>	77	217	76	28	17	m	11	42	10-Dec
<i>S. hispidus</i>	144	297	122	30	19	f	11	42	10-Dec
<i>S. hispidus</i>	150	296	121	32	19	f	11	42	10-Dec
<i>S. hispidus</i>	80	221	79	28	20	m	11	42	11-Dec
<i>S. hispidus</i>	100	240	93	29	17	m	11	42	11-Dec
<i>S. hispidus</i>	54	195	76	27	17	f	11	42	12-Dec
<i>S. hispidus</i>	60	197	75	26	16	f	12	38	27-Jan
<i>S. hispidus</i>	47	183	65	26	15	f	12	38	27-Jan
<i>S. hispidus</i>	62	197	74	27	17	f	12	38	27-Jan
<i>S. hispidus</i>	55	207	80	27	18	f	12	38	27-Jan
<i>S. hispidus</i>	61	202	81	27	17	f	12	38	27-Jan
<i>S. hispidus</i>	57	194	73	27	17	m	12	38	27-Jan
<i>S. hispidus</i>	59	199	77	27	17	m	12	38	27-Jan
<i>S. hispidus</i>	60	218	84	27	16	m	12	38	27-Jan
<i>S. hispidus</i>	60	205	79	28	17	f	12	38	27-Jan
<i>S. hispidus</i>	58	205	83	28	17	m	12	38	27-Jan
<i>S. hispidus</i>	63	209	85	28	17	f	12	38	27-Jan
<i>S. hispidus</i>	58	199	74	28	17	f	12	38	27-Jan
<i>S. hispidus</i>	66	204	76	29	17	m	12	38	27-Jan
<i>S. hispidus</i>	80	220	84	29	18	f	12	38	27-Jan
<i>S. hispidus</i>	83	229	87	29	18	m	12	38	27-Jan
<i>S. hispidus</i>	65	205	81	29	17	m	12	38	27-Jan
<i>S. hispidus</i>	79	217	80	29	17	m	12	38	27-Jan
<i>S. hispidus</i>	65	208	78	29	18	f	12	38	27-Jan
<i>S. hispidus</i>	70	217	83	29	18	m	12	38	27-Jan

<i>S. hispidus</i>	66	185	51	29	18	f	12	38	27-Jan
<i>S. hispidus</i>	114	235	97	30	18	f	12	38	27-Jan
<i>S. hispidus</i>	132	256	108	30	19	f	12	38	27-Jan
<i>S. hispidus</i>	84	220	80	30	18	m	12	38	27-Jan
<i>S. hispidus</i>	89	234	89	30	19	m	12	38	27-Jan
<i>S. hispidus</i>	81	234	93	31	19	m	12	38	27-Jan
<i>S. hispidus</i>	107	251	102	31	19	m	12	38	27-Jan
<i>S. hispidus</i>	88	249	101	31	20	f	12	38	27-Jan
<i>S. hispidus</i>	83	243	99	32	19	m	12	38	27-Jan
<i>S. hispidus</i>	52	203	80	27	no ears	m	12	38	28-Jan
<i>S. hispidus</i>	126	250	84	28	20	f	12	38	28-Jan
<i>S. hispidus</i>	73	196	73	29	20	m	12	38	28-Jan
<i>S. hispidus</i>	100	241	94	29	17	f	12	38	28-Jan
<i>S. hispidus</i>	80	230	88	30	20	f	12	38	28-Jan
<i>S. hispidus</i>	107	231	86	30	18	f	12	38	28-Jan
<i>S. hispidus</i>	77	220	90	30	19	f	12	38	28-Jan
<i>S. hispidus</i>	121	250	91	30	20	m	12	38	28-Jan
<i>S. hispidus</i>	153	275	109	31	20	f	12	38	28-Jan
<i>S. hispidus</i>	114	252	96	29	22	m	12	38	4-May
<i>S. hispidus</i>	119	241	94	29	18	f	12	38	4-May
<i>S. hispidus</i>	99	254	105	30	21	m	12	38	4-May
<i>S. hispidus</i>	136	252	101	31	20	m	12	38	4-May
<i>S. hispidus</i>	130	235	90	27	20	f	12	38	5-May
<i>S. hispidus</i>	103	241	91	28	20	f	12	38	5-May
<i>S. hispidus</i>	111	259	94	29	20	m	12	38	5-May
<i>S. hispidus</i>	96	245	98	30	19	m	12	38	5-May
<i>S. hispidus</i>	139	246	88	29	19	f	12	38	6-May
<i>S. hispidus</i>	39	182	79	25	17	m	12	38	22-Sep
<i>S. hispidus</i>	39	190	77	25	16	m	12	38	22-Sep
<i>S. hispidus</i>	41	199	82	26	17	m	12	38	22-Sep
<i>S. hispidus</i>	83	227	97	28	19	f	12	38	22-Sep
<i>S. hispidus</i>	112	273	107	28	16	m	12	38	22-Sep
<i>S. hispidus</i>	52	220	94	28	18	f	12	38	22-Sep
<i>S. hispidus</i>	84	229	94	28	17	m	12	38	22-Sep
<i>S. hispidus</i>	122	265	103	28	19	f	12	38	22-Sep
<i>S. hispidus</i>	84	227	93	29	17	f	12	38	22-Sep
<i>S. hispidus</i>	77	234	93	29	17	m	12	38	22-Sep
<i>S. hispidus</i>	75	216	94	30	18	m	12	38	22-Sep
<i>S. hispidus</i>	72	230	95	30	17	f	12	38	22-Sep
<i>S. hispidus</i>	129	275	114	33	18	f	12	38	22-Sep
<i>S. hispidus</i>	99	259	110	29	17	m	12	38	23-Sep

<i>S. hispidus</i>	158	285	109	30	20	m	12	38	23-Sep
<i>S. hispidus</i>	40	190	74	25	17	f	12	38	24-Sep
<i>S. hispidus</i>	45	192	77	27	15	m	12	38	24-Sep
<i>S. hispidus</i>	63	230	90	28	19	f	12	38	24-Sep
<i>S. hispidus</i>	86	237	89	30	18	m	12	38	24-Sep
<i>S. hispidus</i>	67	232	94	31	19	m	12	38	24-Sep
<i>S. hispidus</i>	39	176	69	25	17	f	12	38	11-Dec
<i>S. hispidus</i>	38	169	64	25	16	m	12	38	11-Dec
<i>S. hispidus</i>	39	176	69	26	16	f	12	38	11-Dec
<i>S. hispidus</i>	61	197	74	28	17	f	12	38	11-Dec
<i>S. hispidus</i>	75	207	82	28	17	m	12	38	11-Dec
<i>S. hispidus</i>	90	227	88	29	19	m	12	38	11-Dec
<i>S. hispidus</i>	92	232	82	29	19	f	12	38	11-Dec
<i>S. hispidus</i>	77	222	81	29	17	f	12	38	11-Dec
<i>S. hispidus</i>	120	249	94	30	18	m	12	38	11-Dec
<i>S. hispidus</i>	96	225	83	30	19	m	12	38	11-Dec
<i>S. hispidus</i>	99	239	86	30	18	m	12	38	11-Dec
<i>S. hispidus</i>	99	228	86	30	19	m	12	38	11-Dec
<i>S. hispidus</i>	118	242	91	30	18	f	12	38	11-Dec
<i>S. hispidus</i>	119	257	94	30	17	m	12	38	11-Dec
<i>S. hispidus</i>	108	242	93	30	19	f	12	38	11-Dec
<i>S. hispidus</i>	111	237	88	30	18	m	12	38	11-Dec
<i>S. hispidus</i>	153	262	101	32	18	f	12	38	11-Dec
<i>S. hispidus</i>	155	279	103	33	19	m	12	38	11-Dec
<i>S. hispidus</i>	33	173	67	24	16	f	12	38	12-Dec
<i>S. hispidus</i>	37	185	70	25	16	f	12	38	12-Dec
<i>S. hispidus</i>	66	205	74	26	16	f	12	38	12-Dec
<i>S. hispidus</i>	80	229	92	28	17	f	12	38	12-Dec
<i>S. hispidus</i>	83	231	86	28	18	m	12	38	12-Dec
<i>S. hispidus</i>	97	234	99	29	20	m	12	38	12-Dec
<i>S. hispidus</i>	87	226	90	29	17	f	12	38	12-Dec
<i>S. hispidus</i>	103	242	96	29	19	m	12	38	12-Dec
<i>S. hispidus</i>	137	275	112	29	19	f	12	38	12-Dec
<i>S. hispidus</i>	104	241	94	30	19	f	12	38	12-Dec
<i>S. hispidus</i>	100	266	114	31	17	m	12	38	12-Dec
<i>S. hispidus</i>	138	263	102	31	18	f	12	38	12-Dec
<i>S. hispidus</i>	40	180	78	25	16	f	12	38	13-Dec
<i>S. hispidus</i>	108	239	98	28	21	f	12	38	13-Dec
<i>S. hispidus</i>	83	232	98	29	18	f	12	38	13-Dec
<i>S. hispidus</i>	99	239	99	30	19	m	12	38	13-Dec
<i>S. hispidus</i>	106	244	101	30	18	f	12	38	13-Dec

<i>S. hispidus</i>	103	261	108	30	18	f	12	38	13-Dec
<i>S. hispidus</i>	43	215	98	29	19	f	13	33	15-Sep
<i>S. hispidus</i>	130	269	106	32	19	m	13	33	15-Sep
<i>S. hispidus</i>	65	206	78	27	17	f	13	33	4-Dec
<i>S. hispidus</i>	50	199	77	28	16	f	13	33	4-Dec
<i>S. hispidus</i>	63	216	83	30	17	f	13	33	4-Dec
<i>S. hispidus</i>	55	204	84	27	17	m	13	33	6-Dec
<i>S. hispidus</i>	83	232	94	29	20	m	13	33	6-Dec
<i>S. hispidus</i>	115	260	104	29	22	f	13	33	6-Dec
<i>S. hispidus</i>	87	232	89	30	19	m	13	33	6-Dec
<i>S. hispidus</i>	53	203	79	27	17	f	14	30	4-Feb
<i>S. hispidus</i>	58	205	83	28	14	f	14	30	4-Feb
<i>S. hispidus</i>	57	204	81	28	17	f	14	30	4-Feb
<i>S. hispidus</i>	65	202	84	28	17	f	14	30	4-Feb
<i>S. hispidus</i>	99	264	106	32	19	f	14	30	4-Feb
<i>S. hispidus</i>	121	263	96	30	18	m	14	30	27-Apr
<i>S. hispidus</i>	38	196	82	26	16	f	14	30	15-Sep
<i>S. hispidus</i>	164	286	113	30	20	m	14	30	16-Sep
<i>S. hispidus</i>	99	269	109	32	18	m	14	30	16-Sep
<i>S. hispidus</i>	40	174	64	25	17	m	14	30	3-Dec
<i>S. hispidus</i>	64	208	75	27	19	f	14	30	3-Dec
<i>S. hispidus</i>	42	187	72	27	16	f	14	30	3-Dec
<i>S. hispidus</i>	61	205	80	28	17	m	14	30	3-Dec
<i>S. hispidus</i>	111	259	98	29	20	f	14	30	3-Dec
<i>S. hispidus</i>	75	225	83	29	17	m	14	30	3-Dec
<i>S. hispidus</i>	68	205	87	29	19	m	14	30	3-Dec
<i>S. hispidus</i>	56	190	76	25	15	m	14	30	6-Dec
<i>S. hispidus</i>	51	185	73	25	19	m	14	30	6-Dec
<i>S. hispidus</i>	38	180	67	25	16	m	14	30	6-Dec
<i>S. hispidus</i>	54	191	74	26	18	m	14	30	6-Dec
<i>S. hispidus</i>	49	187	74	26	16	f	14	30	6-Dec
<i>S. hispidus</i>	45	188	74	26	17	m	14	30	6-Dec
<i>S. hispidus</i>	114	185	34	30	18	m	14	30	6-Dec
<i>S. hispidus</i>	49	178	59	28	19	f	15	25	14-Feb
<i>S. hispidus</i>	49	196	92	29	18	f	15	25	14-Feb
<i>S. hispidus</i>	37	191	82	26	17	m	15	25	11-Sep
<i>S. hispidus</i>	143	289	118	32	20	m	15	25	11-Sep
<i>S. hispidus</i>	54	221	98	28	17	m	15	25	13-Sep
<i>S. hispidus</i>	79	247	103	31	19	m	15	25	13-Sep
<i>S. hispidus</i>	86	202	85	28	20	f	16	40	28-Jan
<i>S. hispidus</i>	82	225	88	28	18	m	16	40	28-Jan

<i>S. hispidus</i>	103	244	102	28	20	f	16	40	28-Jan
<i>S. hispidus</i>	78	221	81	29	16	f	16	40	28-Jan
<i>S. hispidus</i>	91	236	90	29	20	m	16	40	28-Jan
<i>S. hispidus</i>	81	227	91	29	19	m	16	40	28-Jan
<i>S. hispidus</i>	91	223	80	29	18	m	16	40	28-Jan
<i>S. hispidus</i>	83	217	78	29	18	f	16	40	28-Jan
<i>S. hispidus</i>	91	206	87	29	20	f	16	40	28-Jan
<i>S. hispidus</i>	93	230	101	29	20	f	16	40	28-Jan
<i>S. hispidus</i>	66	207	82	30	18	f	16	40	28-Jan
<i>S. hispidus</i>	90	243	85	30	20	f	16	40	28-Jan
<i>S. hispidus</i>	115	260	104	31	19	m	16	40	28-Jan
<i>S. hispidus</i>	106	255	104	31	21	m	16	40	28-Jan
<i>S. hispidus</i>	107	240	98	31	19	m	16	40	28-Jan
<i>S. hispidus</i>	101	265	111	32	18	m	16	40	28-Jan
<i>S. hispidus</i>	129	266	105	32	19	f	16	40	28-Jan
<i>S. hispidus</i>	78	215	87	28	16	f	16	40	30-Jan
<i>S. hispidus</i>	65	213	82	28	17	f	16	40	30-Jan
<i>S. hispidus</i>	85	217	89	28	18	f	16	40	30-Jan
<i>S. hispidus</i>	69	207	89	29	20	f	16	40	30-Jan
<i>S. hispidus</i>	68	210	91	29	17	m	16	40	30-Jan
<i>S. hispidus</i>	62	190	69	29	19	m	16	40	30-Jan
<i>S. hispidus</i>	102	198	68	30	16	f	16	40	30-Jan
<i>S. hispidus</i>	81	250	97	30	17	f	16	40	30-Jan
<i>S. hispidus</i>	103	248	106	31	18	f	16	40	30-Jan
<i>S. hispidus</i>	142	248	89	29	19	f	16	40	3-May
<i>S. hispidus</i>	39	190	84	26	17	m	16	40	20-Sep
<i>S. hispidus</i>	62	223	96	28	18	m	16	40	20-Sep
<i>S. hispidus</i>	54	209	88	28	17	f	16	40	20-Sep
<i>S. hispidus</i>	52	206	87	28	17	m	16	40	20-Sep
<i>S. hispidus</i>	69	221	92	29	18	f	16	40	20-Sep
<i>S. hispidus</i>	119	229	74	30	18	f	16	40	20-Sep
<i>S. hispidus</i>	102	259	116	31	20	m	16	40	20-Sep
<i>S. hispidus</i>	108	268	118	31	19	f	16	40	20-Sep
<i>S. hispidus</i>	103	269	114	32	20	m	16	40	20-Sep
<i>S. hispidus</i>	34	186	79	26	16	f	16	40	21-Sep
<i>S. hispidus</i>	62	211	83	28	18	f	16	40	21-Sep
<i>S. hispidus</i>	70	230	91	29	15	f	16	40	21-Sep
<i>S. hispidus</i>	74	248	101	31	19	f	16	40	21-Sep
<i>S. hispidus</i>	86	246	103	31	20	m	16	40	21-Sep
<i>S. hispidus</i>	57	210	85	27	17	m	16	40	22-Sep
<i>S. hispidus</i>	144	275	112	29	20	f	16	40	22-Sep

<i>S. hispidus</i>	96	264	109	31	19	m	16	40	22-Sep
<i>S. hispidus</i>	52	190	70	25	16	f	16	40	9-Dec
<i>S. hispidus</i>	41	181	70	25	16	f	16	40	9-Dec
<i>S. hispidus</i>	40	174	64	25	15	f	16	40	9-Dec
<i>S. hispidus</i>	64	201	71	26	17	f	16	40	9-Dec
<i>S. hispidus</i>	48	195	75	26	17	m	16	40	9-Dec
<i>S. hispidus</i>	49	191	67	26	17	f	16	40	9-Dec
<i>S. hispidus</i>	54	206	81	27	18	m	16	40	9-Dec
<i>S. hispidus</i>	74	219	82	27	19	m	16	40	9-Dec
<i>S. hispidus</i>	106	230	91	28	16	f	16	40	9-Dec
<i>S. hispidus</i>	72	210	76	28	18	f	16	40	9-Dec
<i>S. hispidus</i>	71	205	83	28	16	m	16	40	9-Dec
<i>S. hispidus</i>	80	220	78	28	19	f	16	40	9-Dec
<i>S. hispidus</i>	65	206	75	28	19	m	16	40	9-Dec
<i>S. hispidus</i>	75	221	84	28	18	m	16	40	9-Dec
<i>S. hispidus</i>	57	196	74	29	17	f	16	40	9-Dec
<i>S. hispidus</i>	72	222	84	29	17	m	16	40	9-Dec
<i>S. hispidus</i>	92	241	95	29	18	f	16	40	9-Dec
<i>S. hispidus</i>	104	244	96	30	17	m	16	40	9-Dec
<i>S. hispidus</i>	148	271	104	32	20	m	16	40	9-Dec
<i>S. hispidus</i>	155	289	116	33	19	m	16	40	9-Dec
<i>S. hispidus</i>	122	222	61	31	20	m	16	40	10-Dec
<i>S. hispidus</i>	38	171	65	24	17	f	16	40	11-Dec
<i>S. hispidus</i>	65	210	79	28	19	f	16	40	11-Dec
<i>S. hispidus</i>	64	212	84	28	18	f	16	40	11-Dec
<i>S. hispidus</i>	63	205	76	28	19	f	16	40	11-Dec
<i>S. hispidus</i>	122	250	93	29	21	m	16	40	11-Dec
<i>S. hispidus</i>	90	231	88	29	17	m	16	40	11-Dec
<i>S. hispidus</i>	79	225	89	29	18	f	16	40	11-Dec
<i>S. hispidus</i>	139	273	115	29	22	f	16	40	11-Dec
<i>S. hispidus</i>	119	250	92	30	20	f	16	40	11-Dec
<i>S. hispidus</i>	121	249	93	31	19	m	16	40	11-Dec
<i>S. hispidus</i>	159	289	114	31	19	f	16	40	11-Dec
<i>S. hispidus</i>	151	288	121	31	20	m	16	40	11-Dec
<i>S. hispidus</i>	147	285	111	31	19	m	16	40	11-Dec
<i>S. hispidus</i>	37	170	64	24	15	m	16	40	13-Dec
<i>S. hispidus</i>	55	192	79	26	15	f	16	40	13-Dec
<i>S. hispidus</i>	50	200	73	26	17	f	16	40	13-Dec
<i>S. hispidus</i>	133	251	107	29	19	m	16	40	13-Dec
<i>S. hispidus</i>	68	205	74	29	14	m	16	40	13-Dec
<i>S. hispidus</i>	88	227	84	30	19	m	16	40	13-Dec

<i>S. hispidus</i>	112	253	96	30	18	m	16	40	13-Dec
<i>S. hispidus</i>	119	255	102	31	17	m	16	40	13-Dec
<i>S. hispidus</i>	66	210	92	29	18	f	17	22	30-Jan
<i>S. hispidus</i>	84	235	100	30	21	f	17	22	30-Jan
<i>S. hispidus</i>	90	254	99	29	20	f	17	22	1-Feb
<i>S. hispidus</i>	100	264	108	31	20	f	17	22	1-Feb
<i>S. hispidus</i>	107	251	97	30	19	m	17	22	30-Apr
<i>S. hispidus</i>	110	260	103	30	18	m	17	22	18-Sep
<i>S. hispidus</i>	152	285	113	31	20	m	17	22	18-Sep
<i>S. hispidus</i>	114	267	108	30	19	m	17	22	20-Sep
<i>S. hispidus</i>	18	152	62	21	13	f	18	21	30-Jan
<i>S. hispidus</i>	20	150	57	22	14	m	18	21	30-Jan
<i>S. hispidus</i>	50	201	78	27	14	m	18	21	30-Jan
<i>S. hispidus</i>	138	295	117	32	19	m	18	21	30-Jan
<i>S. hispidus</i>	73	221	88	28	21	f	18	21	31-Jan
<i>S. hispidus</i>	84	233	103	29	20	f	18	21	31-Jan
<i>S. hispidus</i>	96	280	115	30	21	f	18	21	31-Jan
<i>S. hispidus</i>	106	249	87	31	20	f	18	21	19-Sep
<i>S. hispidus</i>	20	155	66	22	16	m	18	21	20-Sep
<i>S. hispidus</i>	57	214	91	27	17	f	18	21	20-Sep
<i>S. hispidus</i>	55	205	79	27	16	f	18	21	20-Sep
<i>S. hispidus</i>	103	270	115	30	20	m	18	21	20-Sep
<i>S. hispidus</i>	68	215	93	28	18	f	18	21	21-Sep
<i>S. hispidus</i>	85	235	91	30	20	f	18	21	21-Sep
<i>S. hispidus</i>	80	230	83	30	19	f	18	21	21-Sep
<i>S. hispidus</i>	95	257	114	32	21	f	18	21	21-Sep
<i>S. hispidus</i>	27	153	59	23	15	f	18	21	25-Nov
<i>S. hispidus</i>	55	209	85	27	17	m	18	21	25-Nov
<i>S. hispidus</i>	61	220	86	28	16	m	18	21	25-Nov
<i>S. hispidus</i>	75	225	85	29	19	f	18	21	25-Nov
<i>S. hispidus</i>	65	197	76	29	18	f	18	21	25-Nov
<i>S. hispidus</i>	86	192	53	29	19	f	18	21	25-Nov
<i>S. hispidus</i>	49	191	76	27	17	m	18	21	26-Nov
<i>S. hispidus</i>	50	198	77	27	17	m	18	21	26-Nov
<i>S. hispidus</i>	79	224	90	29	16	m	18	21	26-Nov
<i>S. hispidus</i>	59	197	69	27	18	f	20	27	14-Feb
<i>Z. hudsonius</i>	9	177	108	27	11	f	8	8	27-Sep
<i>Z. hudsonius</i>	15	174	91	18	16	f	9	34	6-Dec
<i>Z. hudsonius</i>	10	169	98	25	11	m	12	38	23-Sep
<i>Z. hudsonius</i>	14	189	111	27	14	m	18	21	20-Sep
<i>Z. hudsonius</i>	10	145	77	19	14	f	18	21	25-Nov

<i>Z. hudsonius</i>	10	148	80	19	13	m	18	21	26-Nov
<i>Z. hudsonius</i>	8	143	73	19	13	f	18	21	26-Nov

APPENDIX B
Geographic Coordinates for each trapline in all 19 areas.

Area	Line	Coordinates		Column1
		Beginning	End	
1	1	N37°28.19611' W094°42.16868'	N37°28.20749' W094°42.08820'	
	2	N37°28.35536' W094°42.08540'	N37°28.41510' W094°42.06083'	
	3	N37°28.32887' W094°42.13741'	N37°28.37096' W094°42.15326'	
2	1	N37°15.84734' W094°48.83836'	N37°15.80074' W094°48.83839'	
	2	N37°15.80274' W094°48.81746'	N37°15.80450' W094°48.79993'	
	3	N37°15.81065' W094°48.77458'	N37°15.83739' W094°48.77106'	
4	1	N37°26.25665' W094°37.70363'	N37°26.31179' W094°37.75072'	
	2	N37°26.24748' W094°37.71439'	N37°26.19569' W094°37.67420'	
	3	N37°26.24936' W094°37.71518'	N37°26.21642' W094°37.76771'	
5	1	N37°12.71491' W095°00.30703'	N37°12.76004' W095°00.31977'	
	2	N37°12.70991' W095°00.26896'	N37°12.70807' W095°00.21901'	
	3	N37°12.53749' W095°00.27716'	N37°12.56911' W095°00.26172'	
6	1	N37°25.47619' W094°45.34424'	N37°25.50238' W094°45.42556'	
	2	N37°25.20848' W094°45.34574'	N37°25.24231' W094°45.34551'	
	3	N37°25.28758' W094°45.36443'	N37°25.33738' W094°45.35399'	
7	1	N37°15.53557' W094°48.91022'	N37°15.53455' W094°48.85162'	
	2	N37°15.54125' W094°49.00257'	N37°15.54311' W094°49.08749'	
	3	N37°15.13811' W094°49.16143'	N37°15.16655' W094°49.20156'	
8	1	N37°23.35822' W094°46.65319'	N37°23.35934' W094°46.58708'	
	2	N37°23.37133' W094°46.61923'	N37°23.38483' W094°46.56364'	
	3	N37°23.35747' W094°46.50326'	N37°23.35319' W094°46.42424'	
9	1	N37°13.38631' W095°01.25248'	N37°13.39321' W095°01.32308'	
	2	N37°13.40889' W095°01.30150'	N37°13.42489' W095°01.26590'	
	3	N37°13.38541' W095°01.50337'	N37°13.41361' W095°01.52780'	
10	1	N37°16.01896' W094°55.37641'	N37°16.06600' W094°55.37685'	
	2	N37°16.02178' W094°55.31414'	N37°16.01486' W094°55.25921'	
	3	N37°16.02310' W094°55.28898'	N37°16.04627' W094°55.25444'	
11	1	N37°15.14837' W094°56.05524'	N37°15.15151' W094°55.96773'	
	2	N37°15.16970' W094°56.07498'	N37°15.20852' W094°56.07044'	
	3	N37°15.17932' W094°55.84565'	N37°15.22034' W094°55.84544'	
12	1	N37°15.01587' W094°56.01470'	N37°15.02762' W094°55.94263'	
	2	N37°15.08769' W094°55.64613'	N37°15.06320' W094°55.70916'	
	3	N37°14.95748' W094°55.98325'	N37°14.92119' W094°56.00341'	
13	1	N37°13.51676' W095°01.90582'	N37°13.55041' W095°01.90593'	
	2	N37°13.55182' W095°01.92719'	N37°13.51138' W095°01.92227'	
	3	N37°13.58693' W095°01.94102'	N37°13.63136' W095°01.94291'	
14	1	N37°12.63200' W095°01.11379'	N37°12.61977' W095°01.07286'	
	2	N37°12.60626' W095°01.08013'	N37°12.62675' W095°01.03520'	

	3	N37°12.64331' W095°01.12862'	N37°12.63973' W095°01.12038'
15	1	N37°12.16787' W095°03.14705'	N37°12.21522' W095°03.14221'
	2	N37°12.17812' W095°03.17908'	N37°12.17812' W095°03.17908'
	3	N37°12.11336' W095°03.20464'	N37°12.17812' W095°03.17928'
16	1	N37°15.14551' W094°58.06430'	N37°15.14704' W094°58.12348'
	2	N37°15.14829' W094°58.39603'	N37°15.15016' W094°58.50083'
	3	N37°15.86356' W094°58.58275'	N37°15.90161' W094°58.56886'
17	1	N37°14.23345' W094°58.66919'	N37°14.23077' W094°58.65074'
	2	N37°14.17931' W094°58.70749'	N37°14.18622' W094°58.73642'
	3	N37°14.21298' W094°58.67093'	N37°14.20459' W094°58.63742'
18	1	N37°14.26098' W094°57.65373'	N37°14.26166' W094°57.58724'
	2	N37°14.30058' W094°57.66615'	N37°14.27977' W094°57.65108'
	3	N37°14.38958' W094°57.69029'	N37°14.44196' W094°57.67331'
19	1	N37°12.50701' W094°58.66168'	N37°12.50767' W094°58.72475'
	2	N37°12.53987' W094°58.65185'	N37°12.57441' W094°58.64559'
	3	N37°12.50952' W094°58.69035'	N37°12.53981' W094°58.72841'
20	1	N37°12.32186' W095°02.99318'	N37°12.37378' W095°02.99086'
	2	N37°12.35683' W095°02.92347'	N37°12.33308' W095°02.96539'
	3	N37°12.39265' W095°02.93121'	N37°12.41054' W095°02.87417'

APPENDIX C

Scientific and common names of the mammal species noted in this manuscript.

<i>Blarina hylophaga</i>	Elliot's short-tailed shrew
<i>Cryptotis parva</i>	least shrew
<i>Microtus ochrogaster</i>	prairie vole
<i>Microtus pinetorum</i>	pine vole
<i>Mus musculus</i>	house mouse
<i>Neotoma floridana</i>	Eastern woodrat
<i>Peromyscus leucopus</i>	white-footed mouse
<i>Peromyscus maniculatus</i>	deer mouse
<i>Reithrodontomys fulvescens</i>	fulvous harvest mouse
<i>Reithrodontomys montanus</i>	plains harvest mouse
<i>Sigmodon hispidus</i>	hispid cotton rat
<i>Zapus hudsonius</i>	meadow jumping mouse

APPENDIX D

Scientific and common names of Plant species noted in this manuscript.

<i>Acer saccharinum</i>	silver maple
<i>Andropogon gerardii</i>	big bluestem
<i>Andropogon ternarius</i>	split-beard bluestem
<i>Bothriochloa laguroides</i> var. <i>torreyana</i>	silver beard grass
<i>Bouteloua curtipendula</i> var. <i>canadensis</i>	side-oats grama
<i>Campsis radicans</i>	trumpet vine
<i>Carya</i> sp.	hickory
<i>Catalpa speciosa</i> .	catalpa
<i>Celtis laevigata</i> var. <i>laevigata</i>	sugar-berry
<i>Cephalanthus occidentalis</i>	common buttonbush
<i>Chasmanthium latifolium</i>	wood oats
<i>Cornus drummondii</i>	rough-leaf dogwood
<i>Desmanthus illinoensis</i>	prairie bundle-flower
<i>Elaeagnus umbellate</i>	Russian olive
<i>Erigeron canadensis</i>	Canadian horseweed
<i>Euonymus atropurpureus</i> var. <i>atropurpureus</i>	burning bush
<i>Ilex decidua</i>	deciduous holly
<i>Juglans nigra</i>	walnut
<i>Juniperus virginiana</i>	Eastern red cedar
<i>Lespedeza cuneata</i>	sericea lespedeza
<i>Liquidambar styraciflua</i>	sweet gum
<i>Lonicera japonica</i>	Japanese honeysuckle
<i>Lonicera maackii</i>	bush honeysuckle
<i>Maclura pomifera</i>	Osage orange
<i>Morus alba</i>	white mulbery
<i>Panicum dichotomiflorum</i>	fall panicgrass
<i>Panicum virgatum</i>	switchgrass
<i>Paspalum laeve</i> var. <i>laeve</i>	field paspalum
<i>Phytolaca americana</i> var. <i>americana</i>	American pokeweed
<i>Platanus occidentalis</i>	Sycamore
<i>Populus deltoides</i>	cottonwood
<i>Prunus hortulana</i>	wild goose plum
<i>Prunus serotina</i>	black cherry
<i>Quercus alba</i>	white oak
<i>Quercus macrocarpa</i>	bur oak
<i>Quercus palustris</i>	pin oak

<i>Quercus rubra</i>	red oak
<i>Rhus aromatica</i>	aromatic sumac
<i>Rhus copallinum</i>	winged sumac
<i>Rhus glabra</i>	smooth sumac
<i>Robinia pseudoacacia</i>	black locust
<i>Rubus</i> sp.	blackberry
<i>Schizachyrium scoparium</i> var. <i>scoparium</i>	little bluestem
<i>Securigera varia</i>	crown vetch
<i>Setaria glauca</i> ,	yellow foxtail
<i>Setaria parviflora</i>	bristly foxtail
<i>Setaria viridis</i> var. <i>viridis</i>	green foxtail
<i>Solidago altissima</i> var. <i>altissima</i>	rough Canada goldenrod
<i>Solidago canadensis</i> var. <i>hargerii</i>	Harger's goldenrod
<i>Solidago nemoralis</i> ssp. <i>nemoralis</i>	grey goldenrod
<i>Solidago radula</i>	Western rough goldenrod
<i>Solidago</i> sp.	goldenrod
<i>Sorghastrum nutans</i>	Indiangrass
<i>Sporobolus compositus</i>	composite dropseed
<i>Sporobolus neglectus</i>	puffsheath dropseed
<i>Symphoricarpos orbiculatus</i>	buckbrush
<i>Symphyotrichum pilosum</i>	white old-field American aster
<i>Symphyotrichum praealtum</i>	willowleaf American aster
<i>Tridens flavus</i> var. <i>flavus</i>	purpletop tridens
<i>Tridens strictus</i>	longspike tridens
<i>Ulmus rubra</i>	slippery elm
<i>Ulmus</i> sp.	elm