

NONFLYING MAMMALS OF CHEYENNE COUNTY, KANSAS

A Thesis

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by

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INTRODUCTION

Cheyenne County, Kansas, is rather remote from colleges and universities, and consequently little mammal research has been done on the nonflying mammals in the county. Representatives from some colleges and universities have collected in the county, but their data have been gathered from isolated areas and are not indicative of the county as a whole. This survey was undertaken to compile an annotated account of the nonflying mammals present in Cheyenne County.

Cheyenne County is in an agricultural transition which has resulted in an increase in irrigated land from 17,500 acres in 1965 to 45,000 acres in 1974, a total of 27,500 acres increase with the possibility of as much as 100,000 acres of irrigated land in the future (Cheyenne County Conservation District, 1965). Due to this environmental change, it was felt that a survey of the nonflying mammals of the county was needed at this time. As this transition progresses, it may have either a positive or a negative impact on various mammal populations within the county and on those attempting to extend their range into the county.

DESCRIPTION OF CHEYENNE COUNTY

Location and Utilization. Cheyenne County, Kansas, (Fig. 1) is located in the northwest corner of the state. The county comprises $27 \frac{2}{3}$ legal townships lying between one South and five South of the 40th parallel inclusive and within ranges 37 West and 41 West inclusive, and the east four miles of Range 42 West of the sixth principal meridian. It is bordered on the west by the state of Colorado and on the north by Nebraska.

The county contains 657,280 acres of which 400,160 acres are in cropland and 243,235 acres are in native pasture (Cheyenne County Conservation District, 1975). Cropland acreages consist of 351,858 dryland and 45,000 irrigation. The remaining acres are roadways and highways, river bottom, incorporated cities of St. Francis and Bird City and the unincorporated city of Wheeler, and other community and farm sites.

Climate. The climate of Cheyenne County is typical of the great plains with its extremes and sudden changes (Cockrum, 1952). Weather of the plains consists of long periods of a given type broken sharply by a completely different pattern. An example of this pattern was the record breaking drouth which began during the summer of 1964 and continued through the early spring of 1965 during which time a total of 10.81 inches of precipitation was received. This interval was followed by a record breaking period of precipitation in the summer of 1965

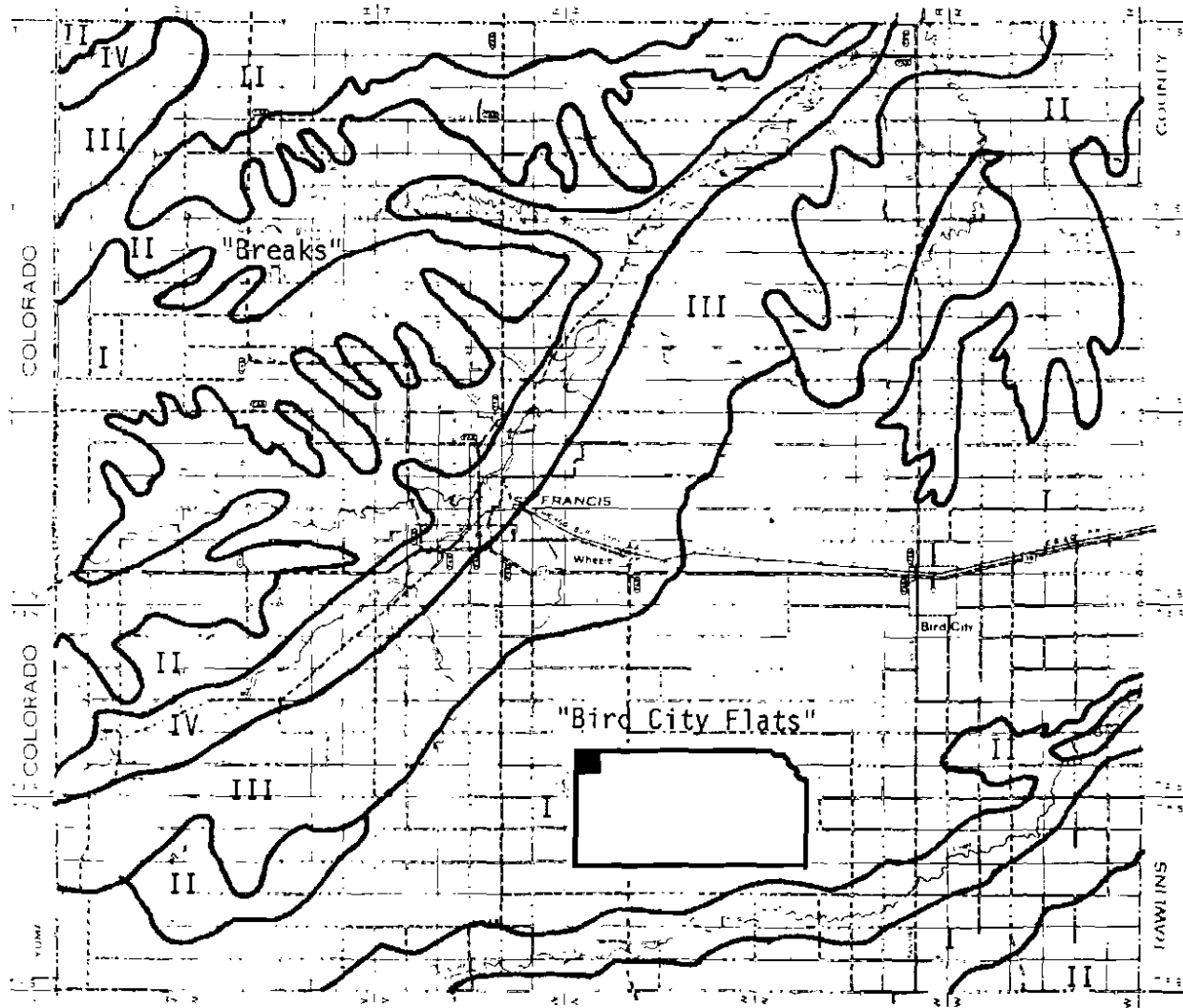


Fig. 1. Map showing the soil associations of Cheyenne County; I. Keith-Ulysses, II. Colby-Ulysses-Canyon, III. Anselmo-Ulysses, IV. Las Animas, Humbarger, Bridgeport; and the locations of the "breaks" and "Bird City Flats" (C.C.C.D., 1975).

which produced a total of 20.87 inches (U.S. Dept. of Commerce National Oceanic and Atmospheric Administration Environmental Data Service, 1973A). Such sudden changes have been recorded since weather records have been kept. In general, the longest periods have been dry ones interspersed by shorter intervals of high precipitation; therefore, the humidity is generally quite low (Flora, 1948). According to the C.C.C.D., (1975), the maximum yearly precipitation was 33.20 inches in 1923 and the minimum was 9.99 inches in 1954, a difference of more than 23 inches. Average annual precipitation for the period 1931-55 was 19.5 inches (U.S. Dept. of Commerce Weather Bureau, 1959).

The county is also known for temperature extremes (Flora, 1948). There can be a variance from 35 to 40 degrees above and below the mean daily temperature during the more stable summer months to as much as 50 to 60 degrees above and below the mean daily temperature in the winter months (C.C.C.D., 1975). Average date of the first 32° F temperature in the fall is 8 October and ranges from 30 September to 3 November, and average date of the last 32° F temperature in the spring is 5 May and ranges from 10 April to 29 May (U.S.D.C.W.B., 1959).

Wind may be considered the most important climatic factor in the county (C.C.C.D., 1975). Effects of moisture or drouth depend largely upon the wind activity. Records indicate prevailing wind direction is from the south with easterly and westerly components except for two months of the year (U.S.D.C.W.B., 1959). February and March have a prevailing wind direction of

north to northwest. Average wind speed varies from a low of 11.6 mph in December to a high of 14.4 mph in April. The mean number of days during the year in which the wind reaches or exceeds 20 mph is 229.

Topography. Cheyenne County is at a mean elevation of 3,340 feet above sea level (U.S.D.C.W.B., 1964). The terrain rises gradually from east to west at a rate of 13.66 feet per mile (U.S.D.C.N.O.A.A.E.D.S., 1973B).

The county is divided into two topographical areas (C.C.C.D., 1975). They are: 1. The nearly level area south and east of the "breaks" along the South Fork Republican River, and 2. the sloping to steep area that comprise the remainder of the north and northwest corner (Fig. 1).

The main portion of the nearly level area, typified by the "Bird City Flats" (Fig. 2), has a general slope to the northeast at approximately 10 feet per mile and drains into the South Fork Republican River, the primary drainage for the county. Shallow upland depressions called "lagoons" dot this area and serve as catchments for runoff water from surrounding fields. A small portion drains southeasterly into the intermittent North Beaver Creek (Fig. 1).

To the north and west of the South Fork Republican River canyons of the "breaks" extend for miles and act as tributaries (Fig. 3). These tributaries are crevasse-like drains (Fig. 4) that dissect the uplands and comprise one-half of the surface of the "breaks".



Fig. 2. The near-level topography of the "Bird City Flats".



Fig. 3. A canyon of the "breaks".



Fig. 4. The crevasse-like drains which extend for miles through the "breaks".

The Arikaree River is intermittent and located in the far northwest corner of the County (Fig. 1). It joins the North Fork Republican River in Dundy County, Nebraska, and drains approximately 60 sections.

Edaphology. Kellogg (1938) placed the uplands of Cheyenne County within the Keith series of the chestnut soils. The county has been further divided into four Soil Associations: the Keith-Ulysses, the Colby-Ulysses-Canyon, the Anselmo-Ulysses, and the Las Animas, Humbarger, Bridgeport (Fig. 1) (C.C.C.D., 1975).

I. Keith-Ulysses Soils

Soils of this association are developing in thick loess deposits that mantle the nearly level uplands throughout the county, particularly in the southeastern one-third (Fig. 2). They occupy about 40

percent of the county. Most agricultural crop production takes place in this soil. Due to its level topography, irrigation potential is high.

II. Colby-Ulysses-Canyon Soils

Soils of this association are deep to shallow, grayish-brown silt loams generally calcareous within six inches of the surface. The surfaces are sloping to steep, and include the "breaks" along the north side of the South Fork Republican River and along the Kansas-Nebraska border. The smoother slopes are suitable for cultivation, but must be aided by extensive conservation practices. They comprise 40 percent of the county.

III. Anselmo-Ulysses Soils

Soils in this association are developing in mixed soil materials. Sandy materials from the South Fork Republican River valley have been blown by prevailing winds over the uplands south of the river. The sandy materials have mixed with loess to form a sandy loam soil. These soils make up about 15 percent of the county. The topography ranges from nearly level to steep slopes along the river. Slopes of less than six percent are suitable for cultivation.

IV. Las Animas, Humbarger, Bridgeport Soils

This soil association comprises alluvial soils developing in deposits of mixed soil materials along the South Fork Republican River, Arikaree River, and

North Beaver Creek. Due to its location, it is subject to flooding, but will support a variety of crops depending upon the texture of the solum and the water table. Soil depth is from shallow to deep with the water table to within five feet of the surface on occasions. Soils of the South Fork Republican River valley have underlying sand and gravel deposits and a high water table. The smaller creeks tend toward loam and silt loam profiles, with water tables quite deep or lacking.

Vegetation. Cheyenne County is within the short grass prairie of the Great Plains (Weaver, 1968). The county has approximately 60 percent of its total tillable acreage under cultivation. The following crops are listed in their order of importance: wheat, corn, grain sorghums, forage sorghums, alfalfa, sugar beets and pinto beans. The remainder of the county is in soil bank grasses and native grasses. (C.C.C.D, 1975).

Because climatic conditions are relatively uniform throughout the county, differences in vegetation are primarily due to difference in topography and soil types (Oosting, 1956). Dominant vegetation of the natural grassland has been organized to coincide with the four soil associations in the county (Fig. 1).

In areas of natural prairie of the Keith-Ulysses Association, blue gramma (Bouteloa gracilis (HBK) Lag.), buffalo grass (Buchloe dactyloides (Nutt.) Englm.), little bluestem (Andropogon scoparius Michx.), and western wheat grass (Agropyron smithii Rydb.) are found.

Plants of the Colby-Ulysses-Canyon Association are aromatic sumac (Rhus aromatica Ait.), big bluestem (Andropogon gerardi Vitman), blue grama (Bouteloa gracilis (HBK) Lag.), choke cherry (Prunus virginiana L.), golden currant (Ribes odoratum Wendland F.), hairy grama (Bouteloa hirsuta Lag.), little bluestem (Andropogon scoparius Michx.), poison ivy (Rhus radicans L.), rabbitbush (Chrysothamnus pulchellus (Gray) Greene.), sand hill sage (Artemisia filifolia Torr.), sideoats grama (Boutelous curtispindula (Michx.) Torr.), switch grass (Panicum virgatum L.), wild plum (Prunus americana Marsh.), and yucca (Yucca glauca Nutt.).

The Anselmo-Ulysses Association contains alkali grass (Puccinella airoides (Nutt.) Wats and Coult), big bluestem (Andropogon gerardi Vitman), sand bluestem (Andropogon hallii Hack.), sandhill sage (Artemisia filifolia Torr.), sideoats grama (Bouteloa curtispindula (Michx.) Torr.), switch grass (Panicum virgatum L.), and western wheat grass (Agropyron smithii Rydb.).

Plants of the Las Animas, Humbarger, Bridgeport Association are alkali grass (Puccinella airoides (Nutt.) Wats and Coult), big bluestem (Andropogon gerardi Vitman), cottonwood (Populus deltoides Marsh), Hackberry (Celtis occidentalis L.), sandbar willow (Salix interior Rowlee.), sand bluestem (Andropogon hallii Hack.), sandhill sage (Artemisia filifolia Torr.), sideoats grama (Bouteloa curtispindula (Michx.) Torr.), tamarisk (Tamarix gallica L.), Virginia creeper (Parthenocissus quinquefolia (L.) Planch.), and western wheat grass (Agropyron smithii Rydb.).

MATERIALS AND METHODS

Throughout the 5.5 year period between January 1970 and June 1975, random sampling of the various communities within the ecosystem was carried out. Generally, one part of the county was selected and attempts were made to sample as many of the different habitats as possible within the communities. There were instances which required the return to particular habitats to collect because of inactivity of the mammals during the initial sampling.

Data for the survey were collected by trapping, sightings, examination of roadkills and credible reports.

Trapping was limited to the smaller mammals. Traps were set either in runs or at the openings of burrows. The following types of traps were used: museum special, rat, spring, conibear, gopher, and mole.

Larger mammals were not readily collected because of processing problems and limited museum storage space. Thus data recorded on these animals were either from sightings by the author, roadkills, or credible reports from the public. All reports from the public were carefully screened before being considered usable or rejected.

Mammals of the county were surveyed with the intent of identifying subspecies of nonflying mammals present. In addition to recording subspecies present, other data were compiled for each subspecies. The data were relative abundance,

habitat preferences and limiting factors, general range within the county, and morphological data.

Clarke, et al, (1958) classified variations in relative abundance into the following categories:

- Abundant - Individuals can be expected to be found in large numbers on almost any visit to the habitat.
- Common - Individuals can be expected to be found regularly and in small numbers on visits to the habitat.
- Occasional - Individuals can be expected to be found irregularly; on visits to the habitat specimens will not be observed.
- Scarce - Only a few individuals have been recorded. It is assumed, however, that Cheyenne County is within the natural range of the subspecies.

These categories were used in indicating relative abundance of mammals in Cheyenne County.

The mammals have been phylogenetically arranged according to the format of Hall and Kelson, (1959).

RESULTS AND DISCUSSION

A total of 40 subspecies, 40 species, 31 genera and six orders were either collected, sighted, examined as roadkills or listed as credible reports. Accounts of subspecies follow and are arranged in a generalized sequence:

1. Each subspecies account contains a discussion of some or all of the following: habitat preference, relevant history from the literature, sympatric relations, if any, and relative abundance.
2. Locality records and number of each subspecies examined, sighted and reported are listed.
3. Morphological measurements and pelage descriptions are presented.
4. Cheyenne County maps on which locality data for specimens examined, sighted, and reported are provided for each subspecies.

Locality records are given for each subspecies by using three primary points of reference: St. Francis, Wheeler, and Bird City. Distances from St. Francis are given using the junction of First and River Streets as point of reference; distance from Wheeler are from the junction of highways U. S. 36 and K. 27; distances from Bird City are from the junction of highways U. S. 36 and K. 161.

Morphological measurements in millimeters for each subspecies by sex are given for the range and mean (\bar{x}) of the

total length (from the tip of the nose to the end of the tail vertebrae), tail length (from the base of the tail to the end of the tail vertebrae), hind foot (from the back of the heel to the tip of the longest claws), and ear, if measurable, (from the notch to the tip). Remarks concerning pelage are provided for most.

County maps on which specimens of the subspecies have been recorded are included. Open circles on maps designate sightings by the author, closed circles indicate specimens which have been collected, open squares show credible reports and closed squares indicate roadkills. Comments concerning unverified subspecies are included.

Order: Marsupialia

Family: Didelphidae

Didelphis marsupialis battyi Thomas

Opossum

The opossum is limited to riparian communities along the South Fork Republican River and its tributaries. These omnivores have been taken on farmsteads directly adjacent to the river and within the city of St. Francis, Kansas, (Fig. 5).

According to Cockrum (1952), there were no records shortly after the turn of the century of opossums as far west as Cheyenne County. Jones (1964) stated that the organisms were moving westwardly up the Republican River valley of which the South Fork Republican River is a tributary. Today opossum are common within this habitat.

Specimens examined (7). From St. Francis: 5 mi S, 6 mi W, 2; 13 mi N, 9 mi E, 1; 1 mi E, 1. Within the city, 3.

Remarks. External measurements of two males and five females were: ♂ Total length (750-965), \bar{x} (mean)=875.5; Tail length (225-498), \bar{x} =361.5; Hind foot (47-68), \bar{x} =57.5; Ear (40-46), \bar{x} =43. ♀ (792-989), \bar{x} =823; (267-491), \bar{x} =387; (45-76), \bar{x} =61; (41-50), \bar{x} =45. Opossum color ranged from nearly black to light gray.

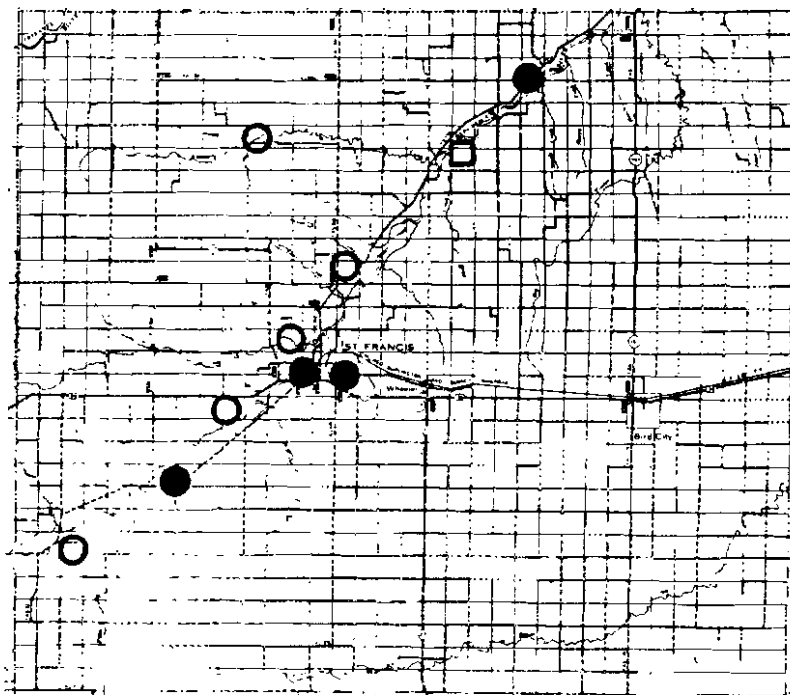


Fig. 5. Locations of *Didelphis marsupialis battyi* in Cheyenne County, Kansas. Symbols are as follows: solid circles, specimens taken; open circles, sighting records; solid squares, roadkills; open squares, credible reports.

Order: Insectivora

Family: Soricidae

Blarina brevicauda carolinensis (Bachman)

Short-tailed Shrew

Short-tailed shrews in Cheyenne County tend to be restricted to riparian communities (Jones, 1964). During the period of this survey only four specimens were taken at the edge of a slough on the South Fork Republican River (Fig. 6), which indicates their scarcity.

Specimens examined (4). From St. Francis: 1 mi W, 4.

Remarks. External measurements of three males and one female were: ♂ (98-112), \bar{x} =101; (20-24), \bar{x} =21.8; (18-20),

$\bar{x}=19.3$. ♀ 96; 19; 18. The color of all four specimens was slate gray.

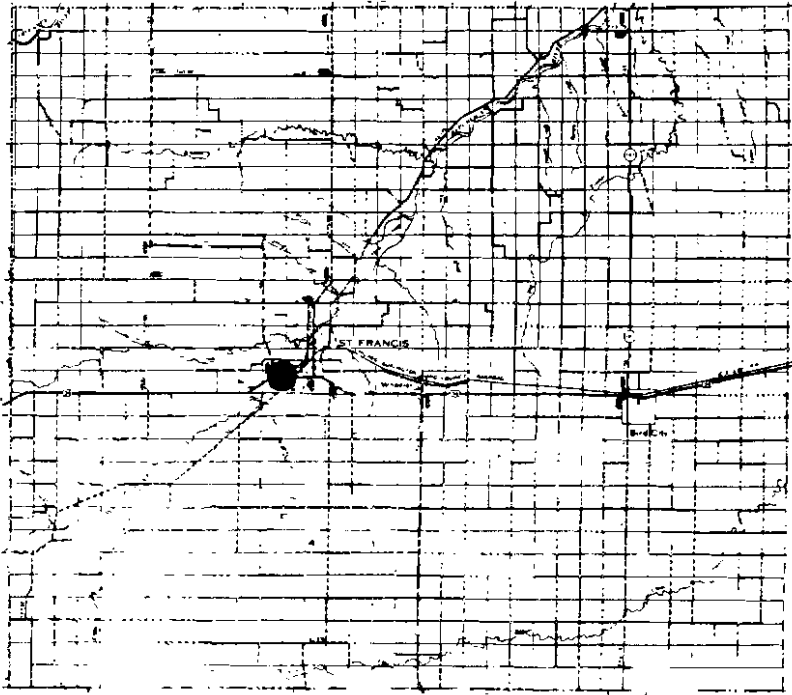


Fig. 6. Location of Blarina brevicauda carolinensis in Cheyenne County, Kansas.

Cryptotis parva parva (Say)

Least Shrew

This small, scarce insectivore has been taken in the northcentral and southwestern parts of the county in a sorghum field and in the upland farming region (Fig. 7). Since the shrew was designated as existing throughout the state except in the southwest corner (Cockrum, 1952), it is assumed that the species is distributed county-wide in isolated habitats.

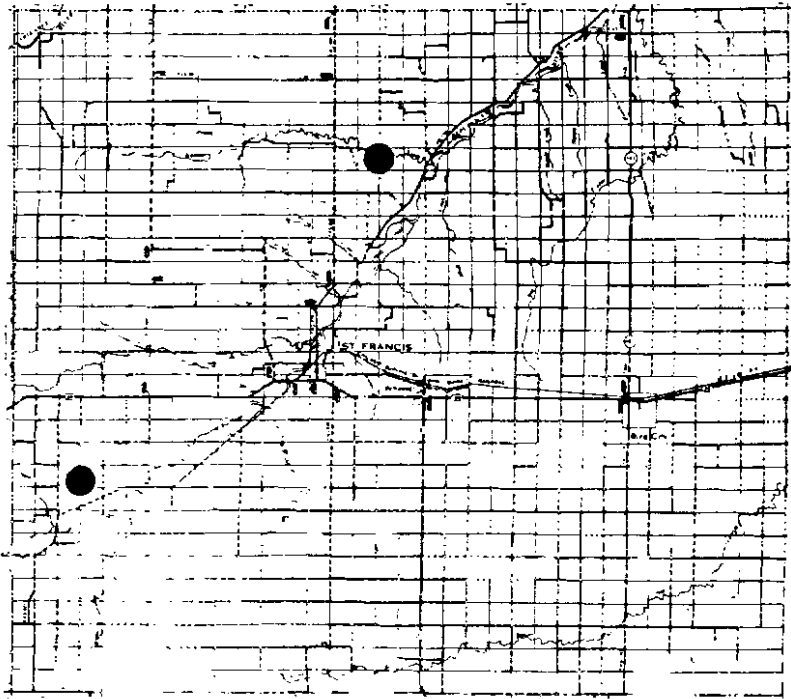


Fig. 7. Locations of Cryptotis parva parva in Cheyenne County, Kansas.

Specimens examined (2). From St. Francis: 5 mi S, 10 mi W, 1; 9 mi N, 3 mi E, 1.

Remarks. External measurements of the two males were: ♂ (67-79), \bar{x} =73; (18-21), \bar{x} =19.5; (8-10), \bar{x} =9. Both were light gray in color.

Family: Talpidae

Scalopus aquaticus caryi Jackson

Common Mole

Cockrum (1952) stated that the common mole has a statewide range. It is found in the moist loamy soils such as 'hose of meadows, pastures, and lawns (Lechleitner, 1969). In Cheyenne County it is common in such suitable habitats.

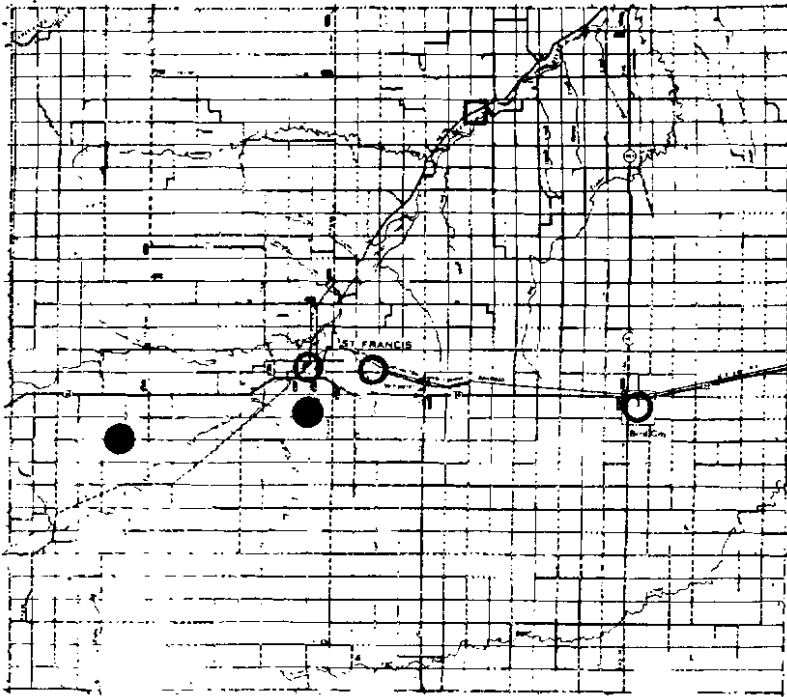


Fig. 8. Locations of Scalopus aquaticus caryi in Cheyenne County, Kansas

Specimens examined (3). From St. Francis: 2 mi S, 1; 3 mi S, 8 mi W, 2.

Remarks. External measurements of the three females were: ♀ (125-152), \bar{x} =136.3; (20-25), \bar{x} =21.6; (20-21), \bar{x} =20.6. All three were light gray in color.

Order: Lagomorpha

Family: Leporidae

Sylvilagus floridanus similis Nelson

Eastern Cottontail

In Cheyenne County the eastern cottontail is sympatric with the desert cottontail, Sylvilagus audubonii baileyi (Merriam). Jones (1964) stated that under such conditions the eastern cottontail will become riparian. This factor has

limited the eastern cottontail to occasional abundance along the South Fork Republican River and around areas which are spring-fed (Fig. 9).

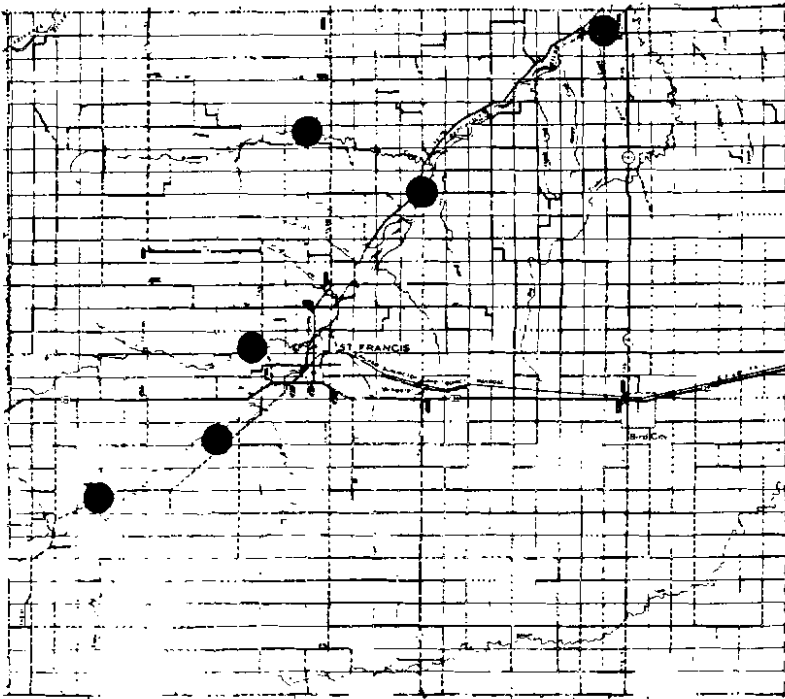


Fig. 9. Locations of Sylvilagus floridanus similis in Cheyenne County, Kansas.

Specimens examined (6). From St. Francis: 5 mi S, 9 mi W, 1; 3 mi S, 4 mi W, 1; 11 mi N, 1; 1 mi N, 3 mi W, 1. From Wheeler: 9 mi N, 1. From Bird City: 16 mi N, 1 mi W, 1.

Remarks. External measurements of the three males and three females were: ♂ (379-390), \bar{x} =389.1; (43-51), \bar{x} =48.1; (95-96), \bar{x} =95.1; (57-63), \bar{x} =60. ♀ (383-420), \bar{x} =401.5; (42-51), \bar{x} =46.5; (96-99), \bar{x} =97.5; (55-61), \bar{x} =57.2. Upper parts were brown, under parts were white.

Sylvilagus audubonii baileyi (Merriam)

Desert Cottontail

The desert cottontail is found in upland areas of the county (Fig. 10). It is common in grasslands, shrubland, and occasionally in riparian areas where there are no eastern cottontails, or where the two populations overlap (Jones, 1964). They are found county-wide.

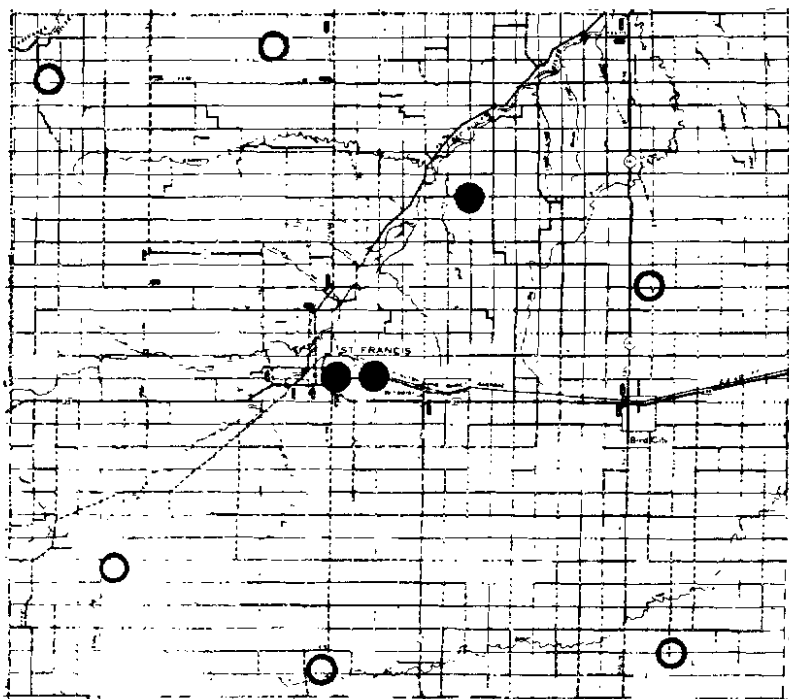


Fig. 10. Locations of Sylvilagus audubonii baileyi in Cheyenne County, Kansas.

Specimens examined (3). From St. Francis: 1 mi E, 1; 3 mi E, 1. From Wheeler: 9 mi N, 2 mi E, 1.

Remarks. External measurements of three females were: ♀ (353-400), \bar{x} =377.6; (40-51), \bar{x} =46.6; (93-95), \bar{x} =93.6; (60-67), \bar{x} =62.6. Upper parts were brown, under parts were white.

Lepus californicus melanotis Mearns

Black-tailed Jack Rabbit

Black-tailed and white-tailed jack rabbits, Lepus townsendii campanius Hollister, were sympatric in the county at one time, but cultivation has caused an exodus of the latter (Brown, 1947).

Black-tailed jack rabbit populations tend to fluctuate over the years. This is caused by such things as disease (Tiemeier, et al, 1965), a lower mortality rate of the young during drouth periods (Wooster, 1935), and the predation rate and population density of their natural enemy, the coyote.

Even though their population density is low at present, they are found throughout the county (Fig. 11) and, in the past few years their numbers appear to be increasing again. Their abundance is occasional.

Specimens examined (1). From St. Francis: 5 mi S, 3 mi W, 1.

Remarks. External measurements of one male were: ♂ 547; 86; 123; 119. Upper parts including the tail were blackish. Under parts were brownish except for the white ventral side of the tail and the feet.

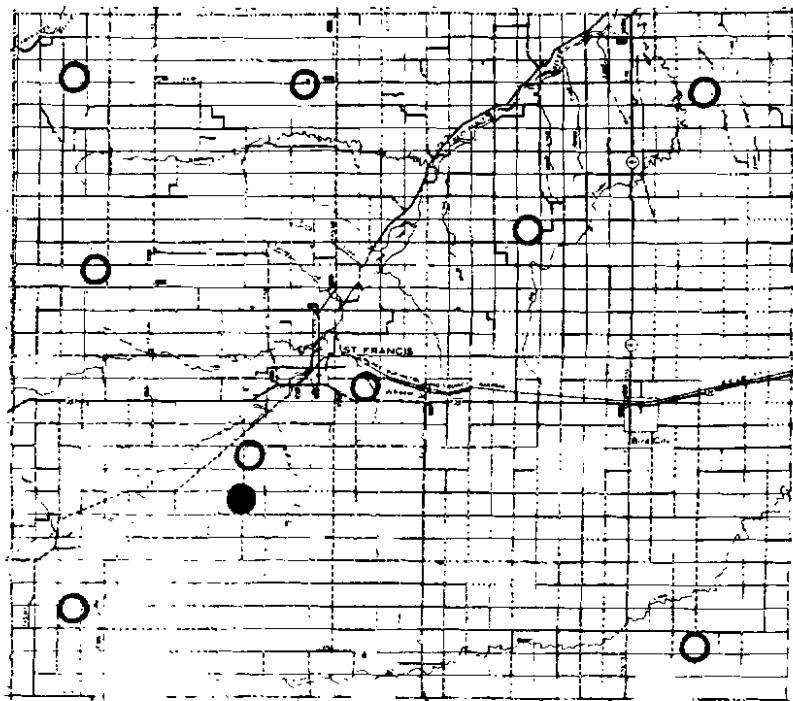


Fig. 11. Locations of Lepus californicus melanotis in Cheyenne County, Kansas.

Order: Rodentia

Family: Sciuridae

Spermophilus tridecemlineatus arenicola (A. H. Howell)

Thirteen-Lined Ground Squirrel

This is the most abundant squirrel in the county. Jones (1964) stated that the mammal prefers areas of short grass such as heavily grazed pastures, golf courses, and the mowed borders of highways. This squirrel is found throughout the county (Fig. 12).

Specimens examined (16). From St. Francis: 1 mi S, 2; 1 mi S, 7 mi W, 1; 8 mi S, 4 mi W, 1; 11 mi S, 10 mi W, 1; 4 mi N, 1; 6 mi N, 9 mi W, 1; 10 mi W, 7 mi S, 1. From Wheeler: 6 mi N, 1; 10 mi S, 1. From Bird City: 1 mi W, 1; 11 mi S, 1; 12 mi N, 2; 11 mi N, 5 mi W, 1; 4 mi E, 1.

Remarks. External measurements of 11 males and five females are: ♂ (183-265), \bar{x} =226.6; (60-92), \bar{x} =77.8; (25-34), \bar{x} =30.2; (5-10), \bar{x} =6.8. ♀ (210-272), \bar{x} =242; (68-104), \bar{x} =84.8; (30-32), \bar{x} =31; (5-9), \bar{x} =6.2. Upper parts had five dark longitudinal stripes and a series of buffy-white spots extending from anterior to posterior between the stripes. Narrow buffy stripes alternated with the dark stripes. Underparts were light tan.

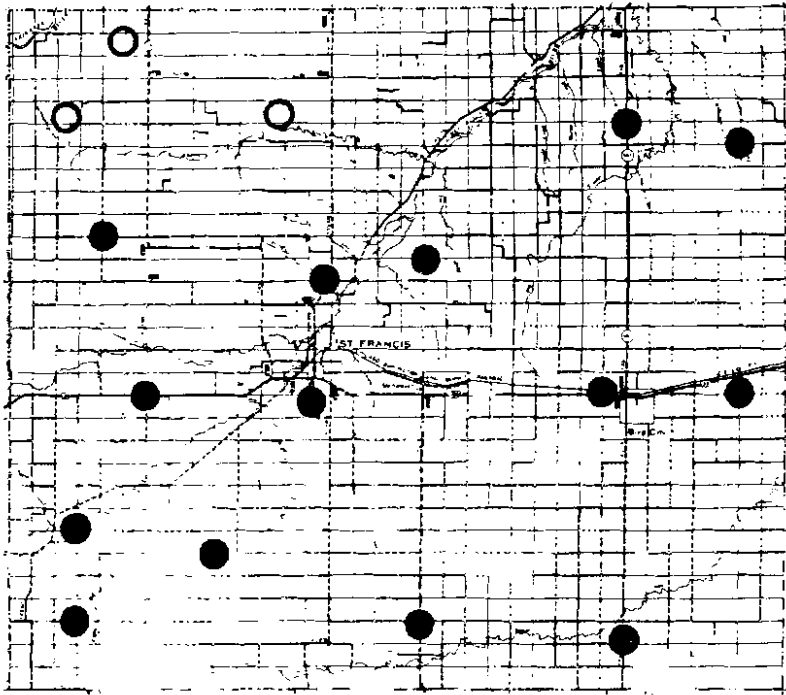


Fig. 12. Locations of Spermophilus tridecemlineatus arenicola in Cheyenne County, Kansas.

Spermophilus spilosoma obsoletus Kennicott

Spotted Ground Squirrel

The spotted ground squirrel and the thirteen-lined ground squirrel are sympatric. The spotted ground squirrel prefers sandy soils (Cockrum, 1952), thus it is found in the Anselmo-

Ulysses and Las Animas, Humbarger, Bridgeport Soils adjacent to the South Fork Republican River (Fig. 13). In both soil associations their abundance is occasional.

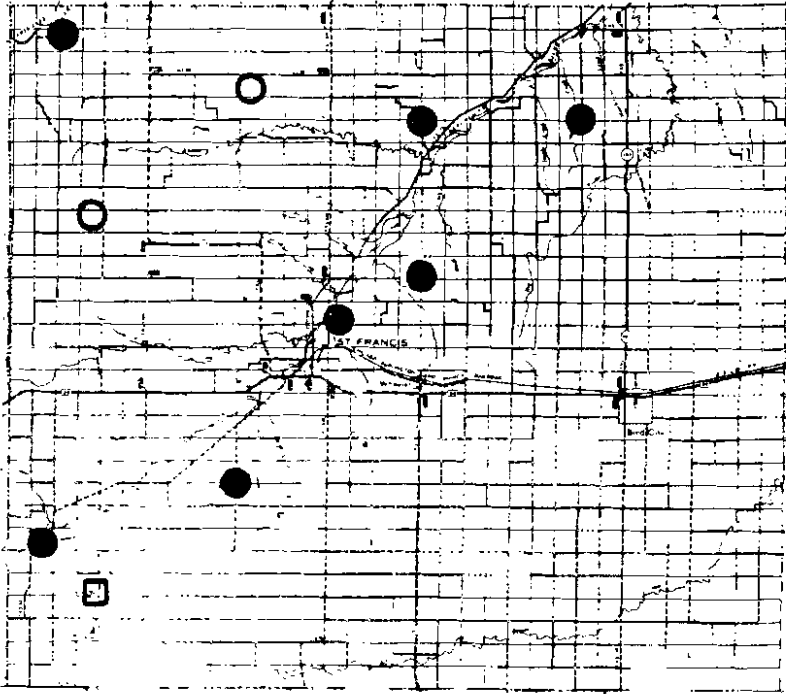


Fig. 13. Locations of Spermophilus spilosoma obsoletus in Cheyenne County, Kansas.

Specimens examined (7). From St. Francis: 5 mi S, 3 mi W, 1; 8 mi S, 11 mi W, 1; 15 mi N, 11 mi W, 1; 2 mi N, 1 mi E, 1. From Wheeler: 5 mi N, 1; 12 mi N, 1. From Bird City: 12 mi N, 2 mi W, 1.

Remarks. External measurements of three males and four females were: ♂ (210-230), \bar{x} =221.3; (60-73), \bar{x} =66; (30-34), \bar{x} =32.6; (5-7), \bar{x} =6. ♀ (212-226), \bar{x} =219; (66-70), \bar{x} =68.25; (30-34), \bar{x} =32; (5-7), \bar{x} =6.25. The upper part was cinnamon with white spots; sides and under parts were white. The tail was slightly bicolored.

Cynomys ludovicianus ludovicianus (Ord)

Black-tailed Prairie Dog

This mammal prefers to inhabit the short-grass plains (Hall, 1955) (Fig. 14). Since it feeds on short grasses and forbs which tend to increase with grazing pressure, it can become a nuisance to ranchers and farmers who allow over-grazing (Smith, 1958). Its population density is not as great as in the "town" which Meade (1885) described along the Chisolm cattle trail.

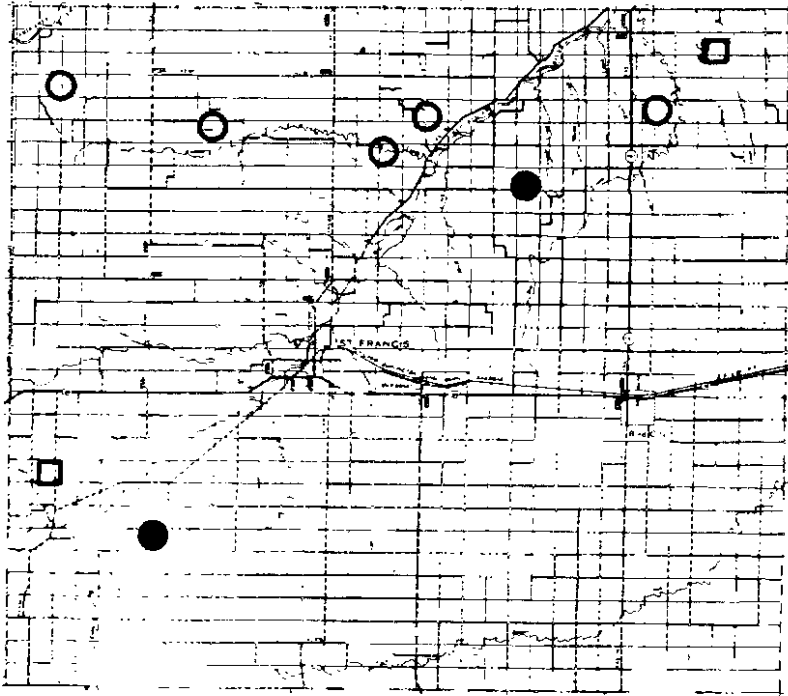


Fig. 14. Locations of Cynomys ludovicianus ludovicianus in Cheyenne County, Kansas.

The abundance of the black-tailed prairie dog was common county-wide, but its numbers are decreasing due to cultivation, poisoning techniques, and better grassland management.

Specimens examined (2). From St. Francis: 7 mi S, 7 mi W, 1. From Wheeler: 9 mi N, 4 mi E, 1.

Remarks. External measurements of two females were: ♀ (245-339), \bar{x} =292; (55-77), \bar{x} =66; (47-58), \bar{x} =52.5. The upper parts were cinnamon and the under parts were white. The tip of the tail was black.

Sciurus niger rufiventer E. Geoffroy St.-Hilaire

Fox Squirrel

The fox squirrel of Cheyenne County inhabits trees of the riparian community along the South Fork Republican River and the spring-fed tributaries (Fig. 15). Its ability to survive on a wide variety of foods obtained either in the trees or on the ground results in its common abundance (Bugbee and Riegel, 1945).

It is not hunted to an appreciable degree in the county so predation by man is not a major factor. The majority of fatalities are roadkills.

Specimens examined (5). From St. Francis: 1 mi N, 1; 1 mi S, 1 mi W, 1. Within the city, 3.

Remarks. External measurements of three males and two females were: ♂ (551-570), \bar{x} =568; (262-290), \bar{x} =269; (58-66), \bar{x} =61; (26-30), \bar{x} =28.5. ♀ (490-520), \bar{x} =505; (203-230), \bar{x} =216.5; (66-69), \bar{x} =67.5; (27-29), \bar{x} =28. Upper parts were reddish, tips of hair on tail and behind ears reddish-yellow.

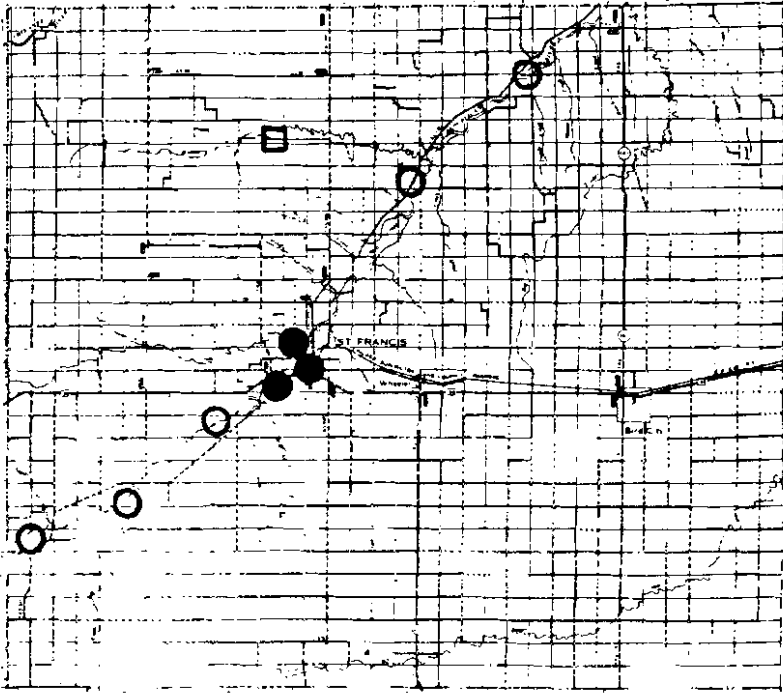


Fig. 15. Locations of Sciurus niger rufiventer in Cheyenne County, Kansas.

Family: Geomyidae

Geomys bursarius lutescens Merriam

Plains Pocket Gopher

The plains pocket gopher is abundant throughout the county (Fig. 16). It prefers a light, mesic, sandy soil and is especially common along stream margins, in irrigated alfalfa fields, and overgrazed pasture land (Miller, 1964, and Buechner, 1942).

Specimens examined (67). From St. Francis: 1 mi S, 2 mi W, 10; 7 mi S, 11 mi W, 3; 12 mi S, 10 mi W, 6; 5 mi N, 10 mi W, 5; 14 mi N, 1 mi E, 6. From Wheeler: 11 mi S, 6; 9 mi N, 9; 15 mi N, 2 mi E, 2. From Bird City: 10 mi S, 2 mi E, 7; 16 mi N, 6 mi E, 5; 15 mi N, 3 mi W, 8.

Remarks. External measurements of 24 males and 43 females were: ♂ (179-298), \bar{x} =249; (42-101), \bar{x} =69.8; (21-36), \bar{x} =29.3. ♀ (215-275), \bar{x} =231.5; (54-74), \bar{x} =62.4; (21-30), \bar{x} =27.6. The upper parts of most were brown though a few were dark gray and all had a dark longitudinal, dorsal stripe. The under parts were grayish to white

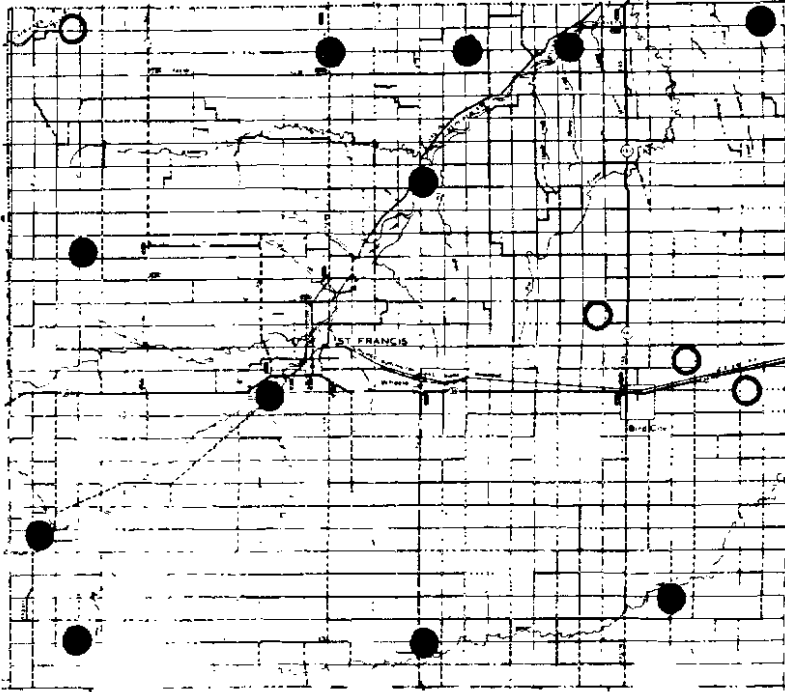


Fig. 16. Locations of Geomys bursarius lutescens in Cheyenne County, Kansas.

Family: Heteromyidae

Perognathus flavescens flavescens Merriam

Plains Pocket Mouse

Only two specimens of this subspecies have been taken in the county (Fig. 17). Both specimens were taken in sandy soils which Jones (1964) found these mammals to prefer. They inhabit the sandy soils near the margins of the South Fork Republican River valley, and are categorized as scarce.

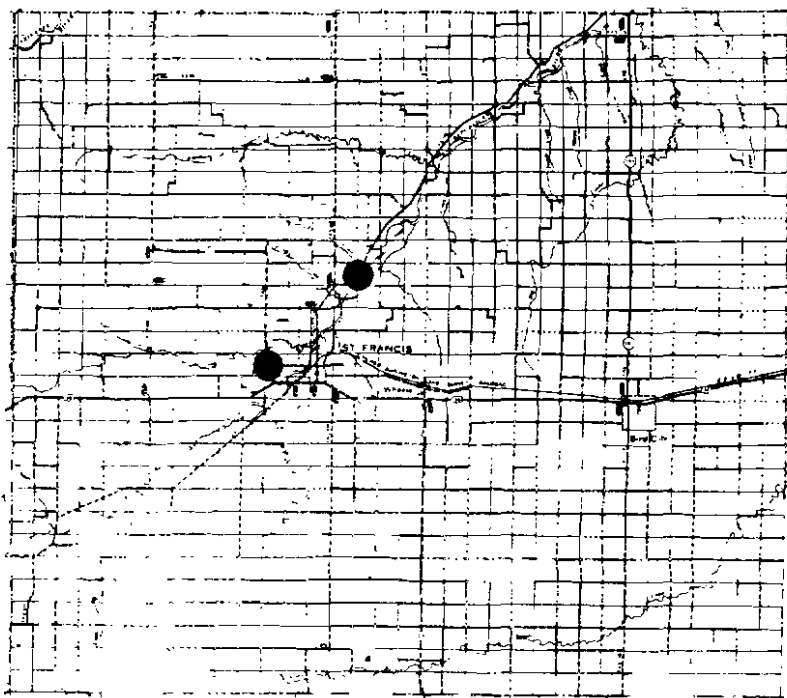


Fig. 17. Locations of Perognathus flavescens flavescens in Cheyenne County, Kansas.

Specimens examined (2). From St. Francis: 2 mi W, 1; 4 mi N, 2 mi E, 1.

Remarks. External measurements of the two females were: ♀ (95-108), \bar{x} =101.5; (42-47), \bar{x} =44.5; (15-16), \bar{x} =15.5; (5.5-6), \bar{x} =5.75. The upper parts were ochraceous buff with sparse black hairs. Subauricular patches were approximately the length of the pinnae and a white color.

Perognathus flavus bunkerii Cockrum

Silky Pocket Mouse

One specimen has been collected in the county (Fig. 18) by representatives of Fort Hays Kansas State College. It is in the Museum of the High Plains, number 10121. This specimen was taken north of St. Francis in the "breaks".

Bailey (1932) stated that it prefers mellow soils of river bottoms. Occasionally it is found on the sidehills and even among the stones of rocky ground, but always where there is mellow soil in which to burrow. It is in this second environment that the one specimen of this scarce species was taken.

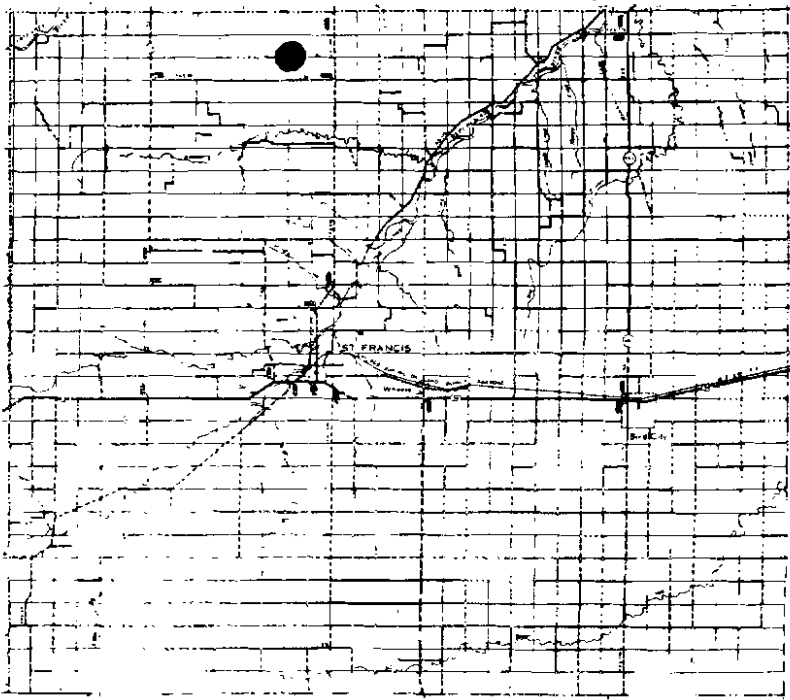


Fig. 18. Location of Perognathus flavus bunkerii in Cheyenne County, Kansas.

Specimens examined (1). From St. Francis: 14 mi N, 1 mi W, 1.

Remarks. External measurements of the female were: ♀ 105; 52; 15; 6. The upper parts were ochraceous buff with sparse black hairs. Postauricular patches were twice the length of the pinnae. Under parts were white and the postauricular patches were buffy.

Perognathus hispidus paradoxus Merriam

Hispid Pocket Mouse

This large pocket mouse is found occasionally in isolated areas (Fig. 19). It prefers a soil with a sandy texture in the open plains (Lechleitner, 1969, and Cockrum, 1952).

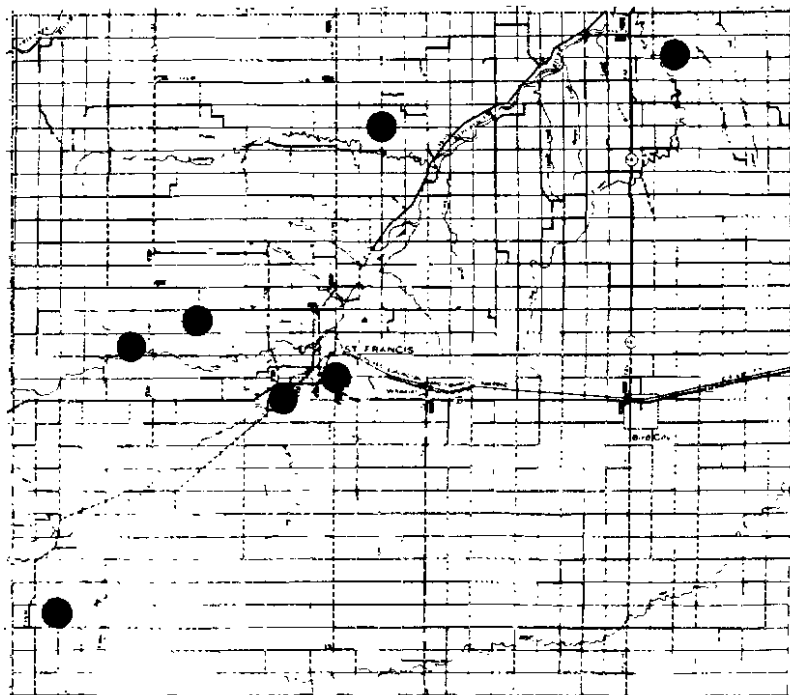


Fig. 19. Locations of Perognathus hispidus paradoxus in Cheyenne County, Kansas.

There has not been a specimen collected from the southeastern one-third of the county, but since its range extends nearly all the way across Kansas eastward (Cockrum, 1952), they are probably present in isolated habitats throughout Cheyenne County.

Specimens examined (7). From St. Francis: 1 mi S, 1 mi W, 1; 10 mi S, 11 mi W, 1; 1 mi E, 1; 1 mi N, 8 mi W, 1; 2 mi N, 5 mi W, 1; 11 mi N, 3 mi E, 1. From Bird City: 15 mi N, 2 mi E, 1.

Remarks. External measurements of the five males and two females were: ♂ (205-218), \bar{x} =210; (93-104), \bar{x} =99.6; (23-27), \bar{x} =24.6; (12-15), \bar{x} =12.6. ♀ (191-212), \bar{x} =201.5; (99-104), \bar{x} =101.5; (20-26), \bar{x} =23; (10-15), \bar{x} =12.5. The upper parts were buffy, including the guard hairs, under parts were white. The bicolored tail was buff on the dorsum and white on the venter.

Dipodomys ordii richardsoni (J. A. Allen)

Ord's Kangaroo Rat

Ord's kangaroo rat is abundant county-wide (Fig. 20). It prefers sandy soil and generally makes its burrow opening at the base of plants such as grasses, shrubs (Lechleitner, 1969), and yucca. The population is most dense in the northern two-thirds of the county.

Specimens examined (12). From St. Francis: 1 mi S, 1; 1 mi S, 6 mi W, 1; 11 mi S, 10 mi W, 1; 13 mi S, 1; 3 mi W, 1; 12 mi W, 1; 4 mi N, 2 mi W, 1; 12 mi N, 10 mi W, 1. From Wheeler: 13 mi N, 3 mi E, 1. From Bird City: 9 mi S, 1; 5 mi N, 4 mi W, 1; 12 mi N, 1.

Remarks. External measurements of nine males and three females were: ♂ (200-290), \bar{x} =229; (110-175), \bar{x} =131; (35-43), \bar{x} =35.5; (10-13), \bar{x} =11.6. ♀ (280-305), \bar{x} =291.7; (151-170), \bar{x} =163.7; (39-40), \bar{x} =39.7; (10-12), \bar{x} =10.7. The upper parts were buffy, and the under parts white. The tail had a buffy dorsum and venter and white lateral stripes; it terminated in a black tip. White stripes were present on the hips.

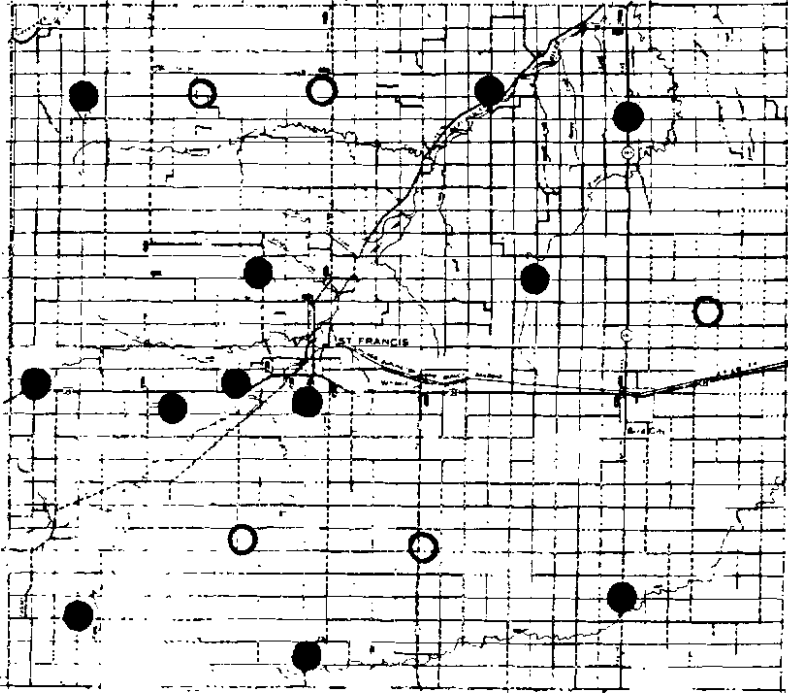


Fig. 20. Locations of Dipodomys ordii richardsoni in Cheyenne County, Kansas.

Family: Castoridae

Castor canadensis missouriensis V. Bailey

Beaver

The beaver is common along the South Fork Republican River (Fig. 21). Rutherford (1964) indicated that beaver live in bank dens until they get their colony started and, after a dam is constructed, build lodges. Since the South Fork Republican River flow fluctuates so much, they seldom build dams except in isolated areas, and never build lodges.

They are trapped in the winter, but the number harvested is not sufficient to be detrimental to the population density.

Specimen examined (1). From St. Francis: 5 mi S, 7 mi W, 1.

Remarks. External measurements of the male were: ♂ 905; 350; 168; 30. The body was covered with brown fur.

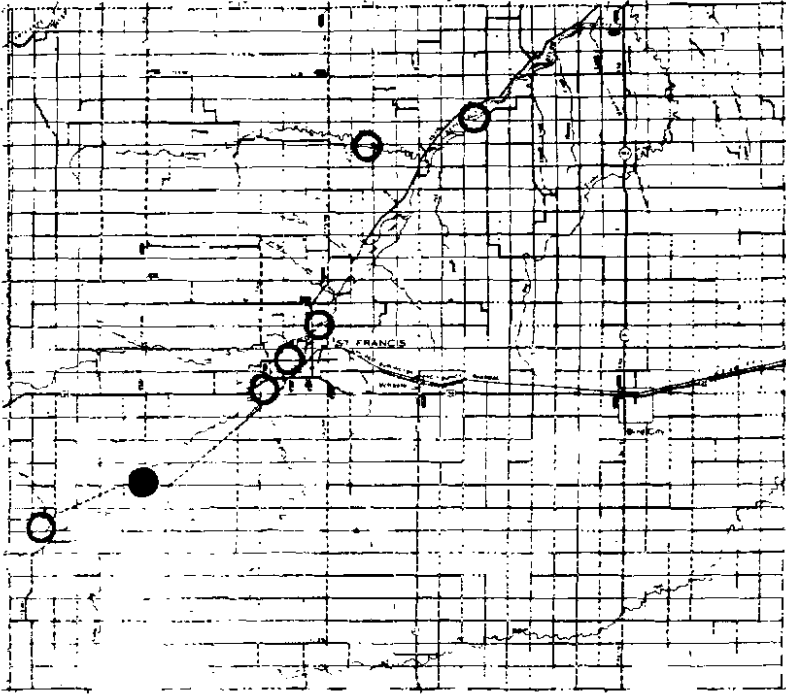


Fig. 21. Locations of Castor canadensis missouriensis in Cheyenne County, Kansas.

Family: Cricetidae

Onychomys leucogaster breviauritus Merriam

Northern Grasshopper Mouse

Bailey (1929) mentioned that this mouse inhabits the short grass areas of western Kansas. It also is found in habitats of shrubs and sandy soils and prefers undisturbed areas (Lechleitner, 1969, and Jones, 1964).

It is common throughout the county (Fig. 22) and has been collected with success in the natural shortgrass prairie habitat.

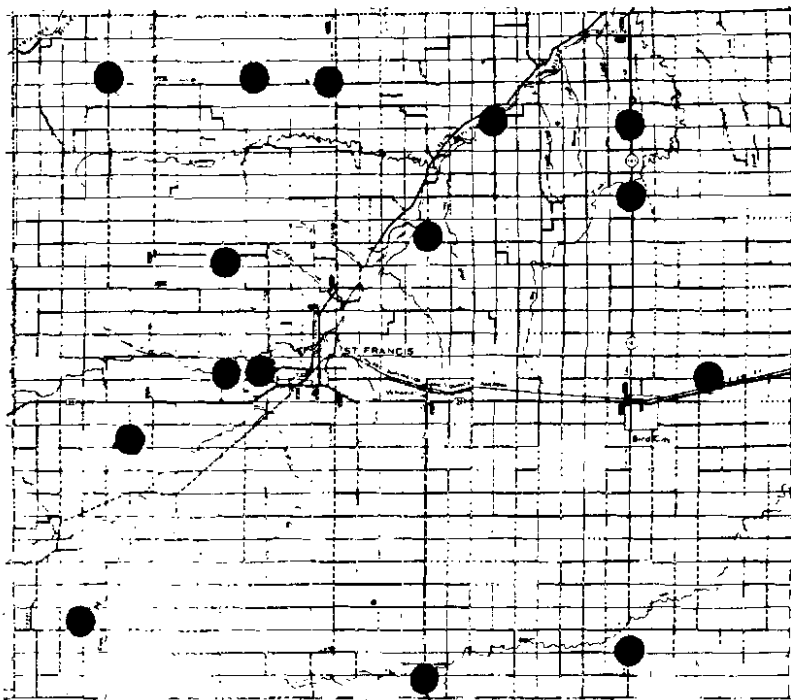


Fig. 22. Locations of Onychomys leucogaster breviauritus in Cheyenne County, Kansas.

Specimens examined (15). From St. Francis: 3 mi S, 8 mi W, 1; 10 mi S, 10 mi W, 1; 5 mi N, 4 mi W, 1; 13 mi N, 1; 13 mi N, 3 mi W, 1; 13 mi N, 9 mi W, 1; 2 mi W, 1; 4 mi W, 1. From Wheeler: 12 mi S, 1; 7 mi N, 1; 12 mi N, 3 mi E, 1. From Bird City: 11 mi S, 1; 3 mi E, 1 mi N, 1; 9 mi N, 1; 12 mi N, 1.

Remarks. External measurements of nine males and seven females were: ♂ (138-160), \bar{x} =146; (35-47), \bar{x} =40; (19-23), \bar{x} =20.3; (15-17), \bar{x} =15.7. ♀ (130-147), \bar{x} =140.5; (31-42), \bar{x} =36.6; (20-23), \bar{x} =18.3; (13-17), \bar{x} =15.6. Color on upper parts was gray in immatures to golden in adults. Under parts were white. The tip of the tail was white on all specimens.

Reithrodontomys montanus albescens Cary

Plains Harvest Mouse

The scarce plains harvest mouse is limited to the sandy, short grass prairie and prickly pear associations (Benson, 1935, and Hill and Hibbard, 1943). Only one specimen was collected during the survey (Fig. 23).

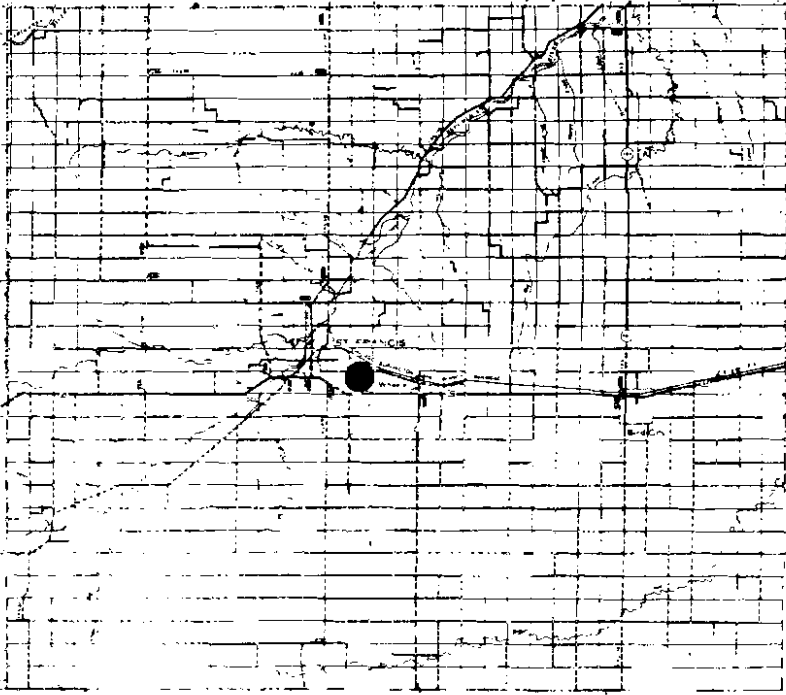


Fig. 23. Location of Reithrodontomys montanus albescens in Cheyenne County, Kansas.

Specimen examined (1). From St. Francis: 2 mi E, 1.

♂ 114; 48; 15; 14. Upper parts were gray with a well defined mid-dorsal stripe. The under parts were grayish-white. The tail was bicolored with a gray dorsum and a white venter.

Reithrodontomys megalotis dychei J. A. Allen

Western Harvest Mouse

The western harvest mouse is found in sunflower-tall grass associations (Hill & Hibbard, 1943). This subspecies is sympatric with the plains harvest mouse. Its abundance is common within the county (Fig. 24).

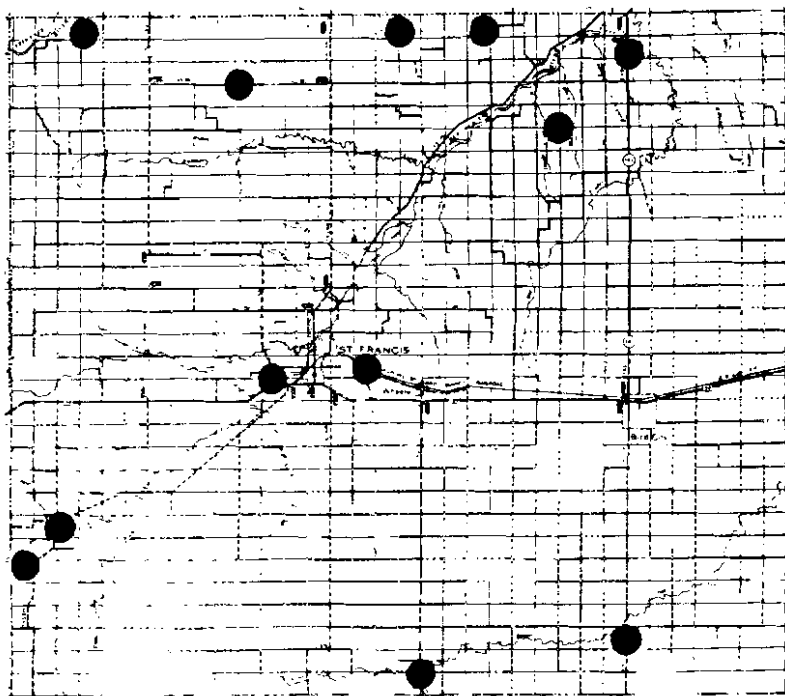


Fig. 24. Locations of Reithrodontomys megalotis dychei in Cheyenne County, Kansas.

Specimens examined (14). From St. Francis: 6 mi S, 11 mi W, 2; 8 mi S, 12 mi W, 1; 2 mi E, 1; 2 mi W, 1; 13 mi N, 3 mi W, 1; 15 mi N, 4 mi E, 1; 15 mi N, 8 mi E, 1; 15 mi N, 10 mi W, 1. From Wheeler: 12 mi S, 2. From Bird City: 10 mi S, 1; 12 mi N, 3 mi W, 1; 15 mi N, 1.

Remarks. External measurements of nine males and five females were: ♂ (124-143), \bar{x} =130; (58-70), \bar{x} =64.2; (15-19), \bar{x} =16.7; (10-13), \bar{x} =12.1. ♀ (130-140), \bar{x} =134.2; (54-71), \bar{x} =61.5;

(14-18), $\bar{x}=15.8$; (11-13), $\bar{x}=12.1$. Upper parts were gray with no mid-dorsal stripe. Under parts were white-gray, much lighter than the dorsal. The tails were bicolored with a gray dorsum and a white venter.

Peromyscus maniculatus nebrascensis (Coues)

Deer Mouse

The deer mouse inhabits grasslands in Kansas such as pastures and meadows. It also inhabits fence rows, cultivated areas, and in fact, almost every habitat except woodlands (Cockrum, 1952). The organism is found throughout the county in abundance (Fig. 25), and is the most numerous of all mammals in Cheyenne County.

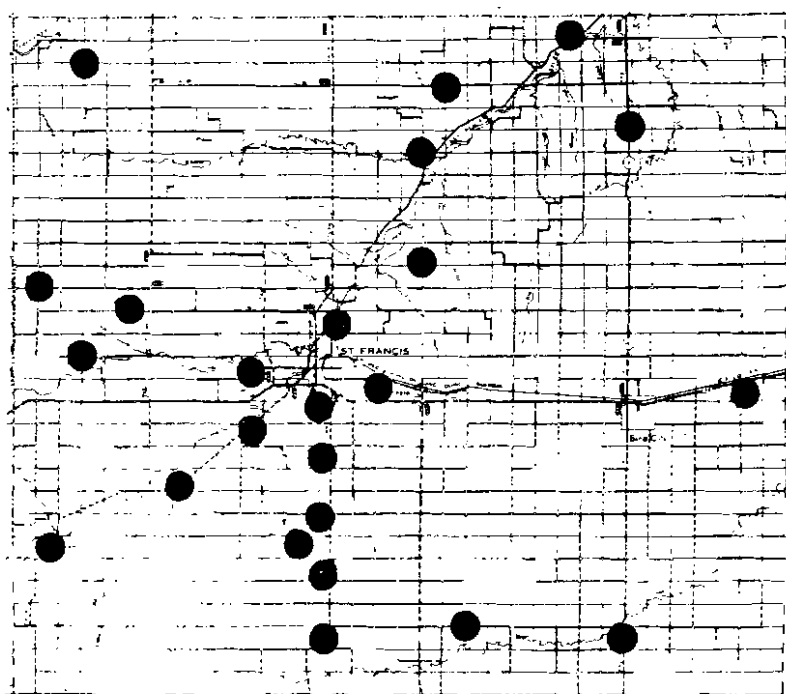


Fig. 25. Locations of Peromyscus maniculatus nebrascensis in Cheyenne County, Kansas.

Specimens examined (25). From St. Francis: 1 mi S, 1; 2 mi S, 3 mi W, 1; 3 mi S, 1; 5 mi S, 6 mi W, 1; 6 mi S, 1; 7 mi S, 1; 7 mi S, 11 mi W, 1; 9 mi S, 1; 11 mi S, 1; 2 mi W, 1; 10 mi W, 1 mi N, 1; 8 mi W, 3 mi N, 1; 10 mi W, 14 mi N, 1; 12 mi W, 4 mi N, 1; 3 mi E, 2; 2 mi N, 1 mi E, 1. From Wheeler: 10 mi S, 2 mi E, 1; 6 mi N, 1; 11 mi N, 1; 14 mi N, 1 mi E, 1. From Bird City: 10 mi S, 1; 12 mi N, 1; 16 mi N, 2 mi W, 1; 5 mi E, 1.

Remarks. External measurements of 14 males and 11 females were: ♂ (130-155), \bar{x} =141.9; (50-64), \bar{x} =56; (15-20), \bar{x} =18.1; (13-15), \bar{x} =14.1. ♀ (120-150), \bar{x} =141; (53-65), \bar{x} =57.6; (16-20), \bar{x} =18; (12-17), \bar{x} =14.5. Upper parts of immatures were gray, adults were cinnamon, both with dark mid-dorsal lines. The under parts were white. The tails were bicolored having a black dorsum and white venter.

Peromyscus leucopus aridulus Osgood

White-footed Mouse

Jones (1964) mentioned that the suitable habitat for the white-footed mouse is restricted in most parts of western Nebraska to deciduous riparian communities along stream courses. The white-footed mouse and the deer mouse are sympatric and have been taken in the same trap line. They have been collected in isolated areas near the South Fork Republican River, sloughs supplied by springs and underflow, and Beaver Creek (Fig. 26). Their relative abundance is common.

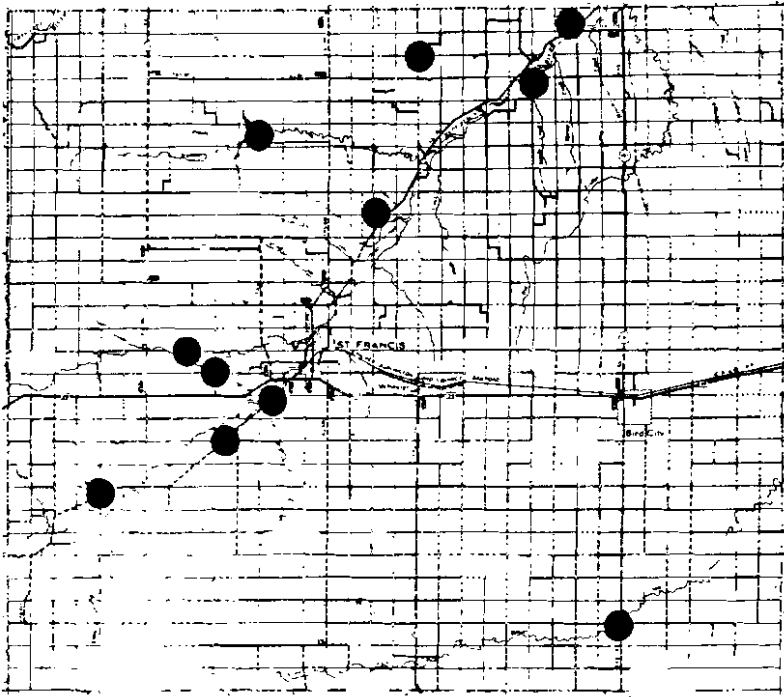


Fig. 26. Locations of *Peromyscus leucopus aridulus* in Cheyenne County, Kansas.

Specimens examined (11). From St. Francis: 1 mi S, 1 mi W, 1; 3 mi S, 3 mi W, 1; 5 mi S, 9 mi W, 1; 4 mi W, 1; 5 mi W, 1 mi N, 1; 10 mi N, 2 mi W, 1. From Wheeler: 8 mi N, 2 mi W, 1; 15 mi N, 1; 14 mi N, 5 mi E, 1. From Bird City: 10 mi S, 1; 16 mi N, 2 mi W, 1.

Remarks. External measurements of five males and six females were: ♂ (146-180), \bar{x} =162.2; (66-76), \bar{x} =70.4; (21-23), \bar{x} =21.4; (14-17), \bar{x} =15.8. ♀ (145-220), \bar{x} =163; (67-80), \bar{x} =71.8; (19-21), \bar{x} =19.6; (13-16), \bar{x} =13.8. Upper parts were cinnamon laterally with a broad, black mid-dorsal stripe. The under parts were white. The tail was bicolored with a black dorsal stripe and a white venter.

Neotoma floridana campestris J. A. Allen

Eastern Wood Rat

Eastern wood rats are common county-wide (Fig. 27). They inhabit outcropping ledges of exposed limestone (Fitch, 1958 and Cockrum, 1952). They build dens around or in yucca and cactuses and abandoned or little-used buildings (Lechleitner, 1969, and Jones, 1964).

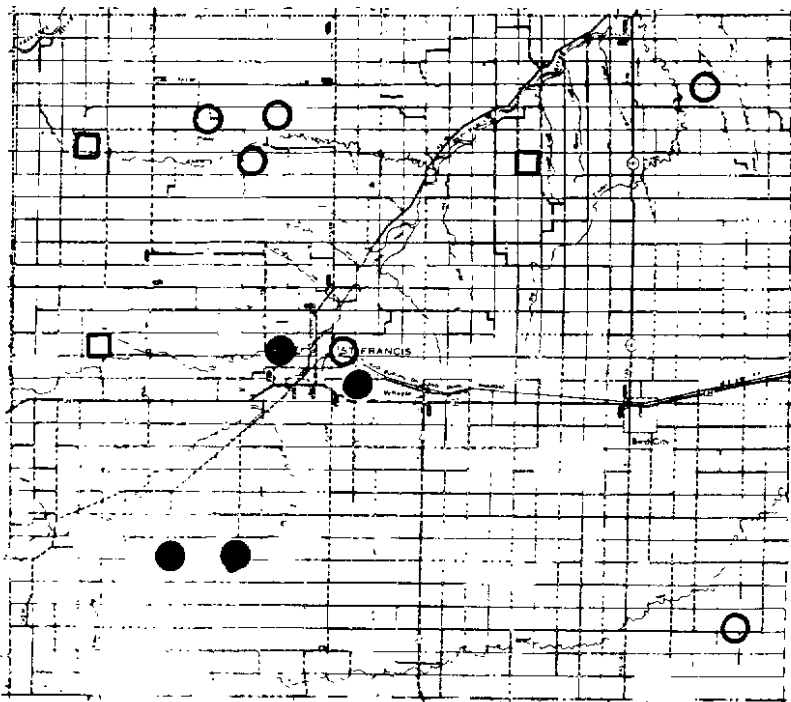


Fig. 27. Locations of Neotoma floridana campestris in Cheyenne County, Kansas.

Specimens examined (4). From St. Francis: 8 mi S, 3 mi W, 1; 8 mi S, 6 mi W, 1; 2 mi E, 1; 1 mi N, 1 mi W, 1.

Remarks. External measurements of the one male and three females were: ♂ 379; 176; 39; 25. ♀ (272-395), \bar{x} =325; (116-155), \bar{x} =133; (39-45), \bar{x} =41.3; (21-23), \bar{x} =24. The upper parts of the immatures were gray, the adults buffy-ochraceous. Under parts were white. The bicolored tails were white ventrally and

gray dorsally.

Microtus ochrogaster haydeni (Baird)

Prairie Vole

Jameson (1947) found that the prairie vole spends most of its time in an elaborate system of tunnels (some entirely below the ground) and in almost hidden galleries in the dense grass. These semifossorial animals (Jameson, 1947) tend to need a moist soil thus the tall and mixed grasses provide shade which is conducive to providing desired habitat conditions (Martin, 1956).

The prairie vole is common in isolated areas throughout the county (Fig. 28). It was not found in short grass communities.

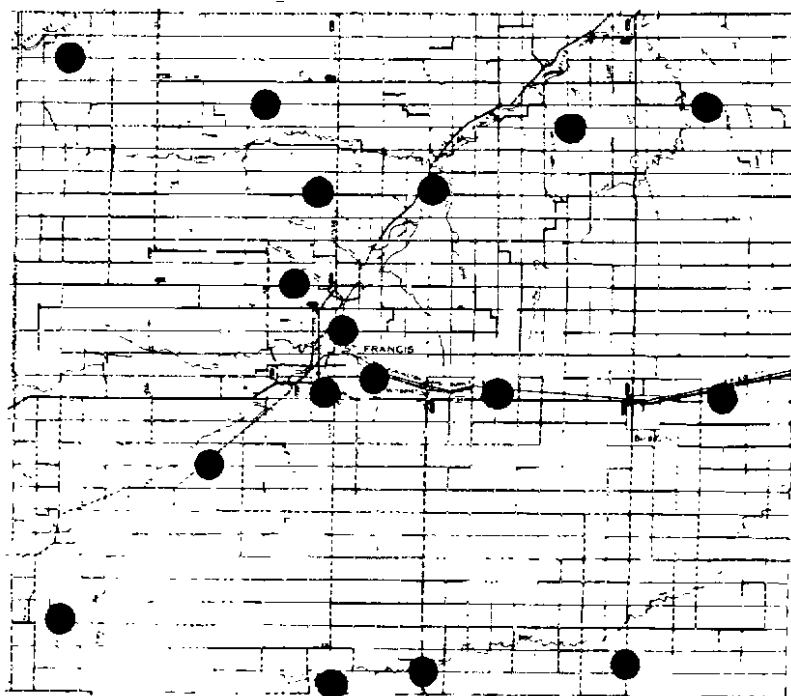


Fig. 28. Locations of Microtus ochrogaster haydeni in Cheyenne County, Kansas.

Specimens examined (17). From St. Francis: 1 mi S, 1; 4 mi S, 5 mi W, 1; 11 mi S, 11 mi W, 1; 14 mi S, 1 mi E, 1; 3 mi E, 1; 2 mi N, 1 mi E, 1; 4 mi N, 1 mi W, 1; 8 mi N, 1; 12 mi N, 2 mi W, 1; 14 mi N, 11 mi W, 1. From Wheeler: 12 mi S, 1; 9 mi N, 1; 3 mi E, 1. From Bird City: 11 mi S, 1; 4 mi E, 1; 12 mi N, 3 mi W, 1; 13 mi N, 3 mi E, 1.

Remarks. External measurements of eight males and nine females were: ♂ (125-160), \bar{x} =148.7; (29-45), \bar{x} =40.1; (19-22), \bar{x} =20; (11-14), \bar{x} =13.25. ♀ (140-175), \bar{x} =156.8; (31-42), \bar{x} =35.5; (16-21), \bar{x} =19.2; (10-15), \bar{x} =12.8. Upper parts were dark gray, the sides were cinnamon. The under parts were cinnamon to light gray. The bicolored tails were gray dorsally and lighter gray ventrally.

Ondatra zibethicus cinnamominus (Hollister)

Muskrat

The muskrat is found along rivers and marshes near the rivers (Jones, 1964). They are common along the South Fork Republican River (Fig. 29). Their dens are in the river banks or adjacent marsh.

There is some harvesting of the animals each year by trappers, but not enough to be detrimental to their population density.

Specimen examined (1). From St. Francis: 6 mi S, 7 mi W, 1.

Remarks. External measurements of one male were: ♂ 496; 230; 76; 18. Body color was dark brown.

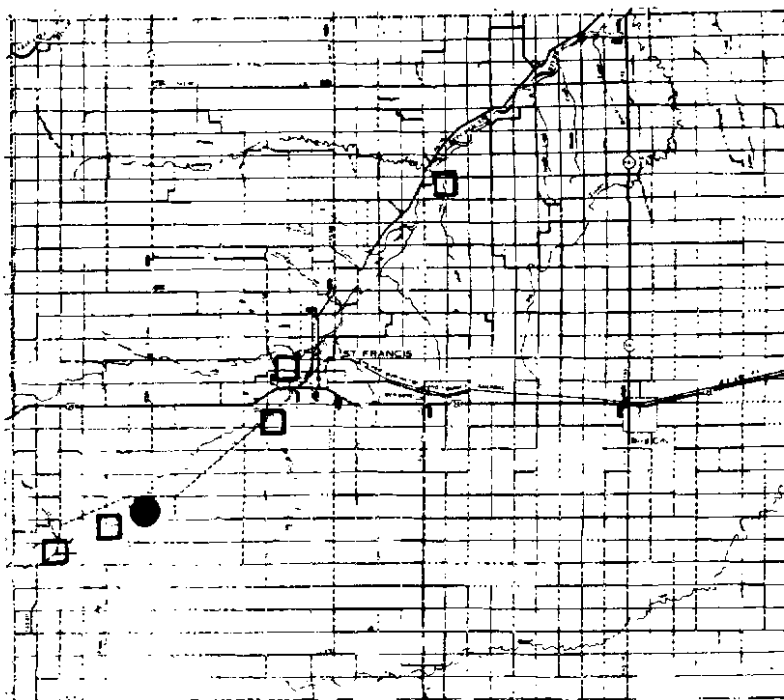


Fig. 29. Locations of Ondatra zibethicus cinnamominus in Cheyenne County, Kansas.

Family: Muridae

Rattus norvegicus norvegicus (Berkenhout)

Norway Rat

The Norway rat was introduced into the eastern United States from the Old World at about the time of the American Revolution (Silver, 1941). It is now found throughout the United States (Hall & Kelson, 1959). The rat is mostly limited to the immediate environments of man (Jones, 1964, and Lechleitner, 1969).

Where the opportunity presents itself, they inhabit old buildings, grain bins, feedstacks and city dumps. Rats are common county-wide (Fig. 30).

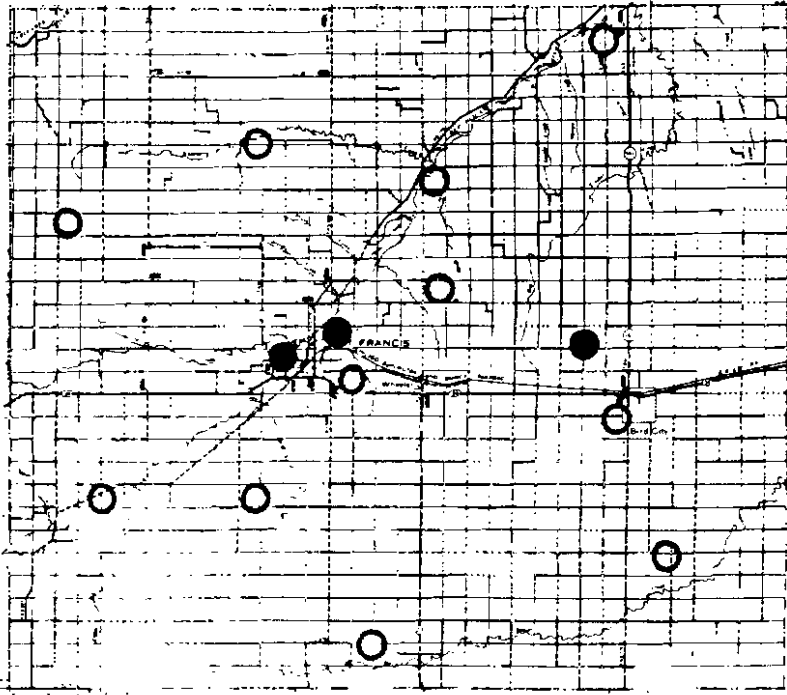


Fig. 30. Locations of Rattus norvegicus norvegicus in Cheyenne County, Kansas.

Specimens examined (4). From St. Francis: 1 mi W, 2; 1 mi N, 1 mi E, 1. From Bird City: 2 mi N, 2 mi W, 1.

Remarks. External measurements of four males were: ♂ (341-400), \bar{x} =385.2; (166-190), \bar{x} =181; (38-43), \bar{x} =40.25; (20-23), \bar{x} =21. Upper parts were brown, under parts and feet grayish, the tail sparsely haired.

Mus musculus domesticus Ruddy

House Mouse

House mice were introduced into the United States from Eurasia and were found along the Missouri River as early as 1885 (Lechleitner, 1969, and Cockrum, 1952).

Hall (1955) mentioned that house mice live in houses of man, fence rows, and fields. In Cheyenne County they are

trapped regularly around yucca plants and in plant litter. They are common throughout the county (Fig. 31).

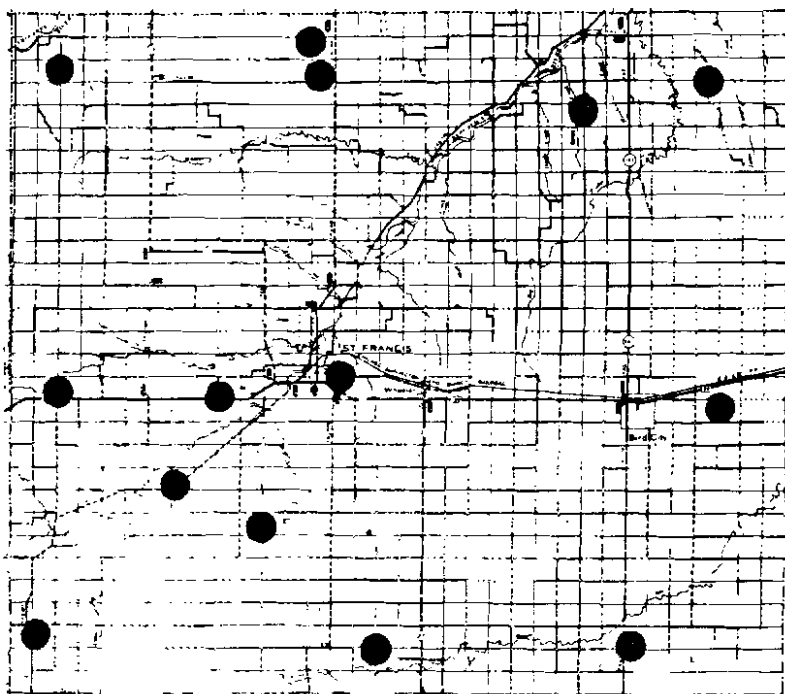


Fig. 31. Locations of Mus musculus domesticus in Cheyenne County, Kansas.

Specimens examined (14). From St. Francis: 1 mi S, 4 mi W, 1; 1 mi S, 11 mi W, 1; 5 mi S, 6 mi W, 1; 7 mi S, 2 mi W, 1; 11 mi S, 12 mi W, 1; 12 mi S, 2 mi E, 1; 1 mi E, 1; 13 mi N, 1; 13 mi N, 11 mi W, 1; 15 mi N, 1. From Bird City: 11 mi S, 1; 4 mi E, 1; 13 mi N, 2 mi W, 1; 14 mi N, 3 mi E, 1.

Remarks. External measurements of seven males and seven females were: ♂ (130-154), \bar{x} =153; (59-79), \bar{x} =72.3; (17-18), \bar{x} =17.3; (12-15), \bar{x} =13.4. ♀ (130-170), \bar{x} =149; (62-80), \bar{x} =72; (15-18), \bar{x} =16.8; (10-13), \bar{x} =11.7. The upper parts were brownish, lower parts either brownish or grayish, and the sparsely-haired tails were brownish in color.

Family: Erethizontidae

Erethizon dorsatum bruneri Swenk

Porcupine

The porcupine was once common along the South Fork Republican River (Hibbard, 1934). Today this species occurs sparingly in the western part of the Republican Valley in cottonwood communities (Jones, 1964, and Hibbard, 1934). Its food consists of bark and buds (Lechleitner, 1969).

There have been three occasions during the survey when people along the South Fork Republican River valley have reported dogs returning home with porcupine quills imbedded in their skin. All three occurrences were some distance from each other. These recordings are the only evidence of porcupine presence in Cheyenne County and indicates that their abundance is scarce (Fig. 32).

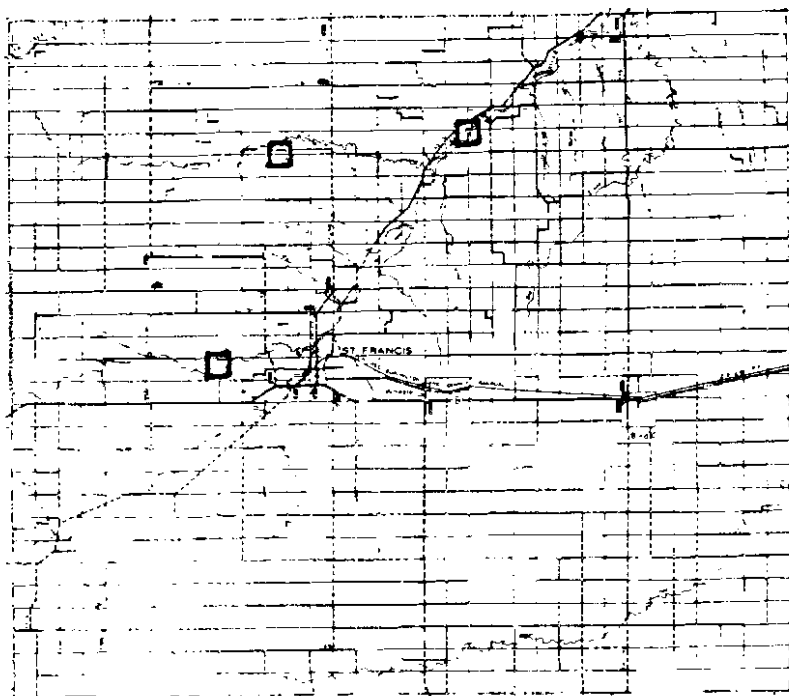


Fig. 32. Locations of Erethizon dorsatum bruneri in Cheyenne County, Kansas.

Specimens of credible reports (3). From St. Francis:
 4 mi W, 1 mi N, 1; 10 mi N, 1 mi W, 1; 11 mi N, 7 mi E, 1.
Remarks. None.

Order: Carnivora

Family: Canidae

Canis latrans latrans Say

Coyote

The coyote is found throughout the county and is abundant (Fig. 33). Their greatest population density is in the north and west parts of the county where the terrain is rough and includes the "breaks". Ranchers in the county complain about losses of cattle and sheep, but Gier (1957) indicated, as others have, that the major items in the coyote diet, listed in order of preference, are rabbit, carrion, rodents, and chickens.

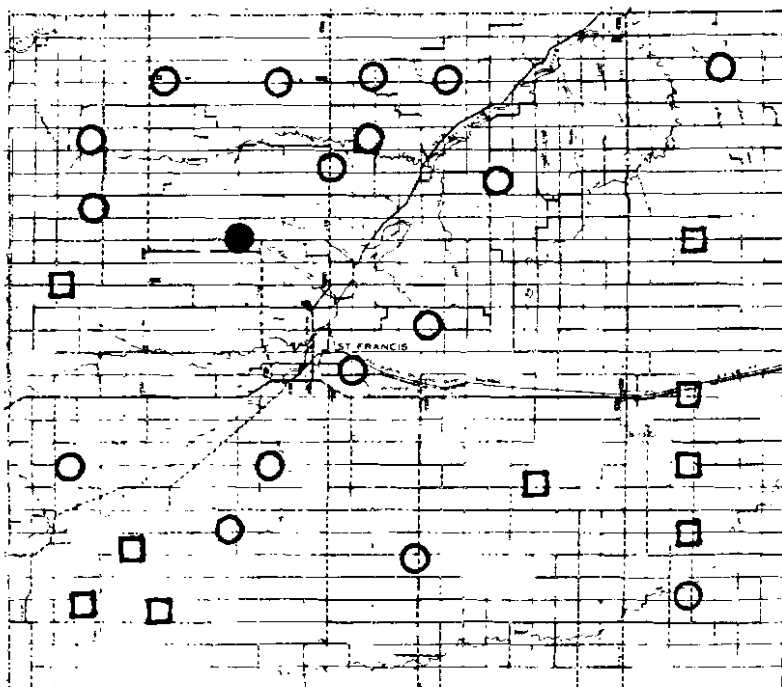


Fig. 33. Locations of Canis latrans latrans in Cheyenne County, Kansas.

Specimen examined (1). From St. Francis: 6 mi N, 3 mi W, 1.

Remarks. External measurements of one female were: ♀ 1048; 290; 173; 109. Upper parts were buffy gray lined with black, the under parts a pale buff.

Vulpes fulva regalis Merriam

Red Fox

There are several records of red fox in Sherman County, Kansas, which is immediately south of Cheyenne County. Some reports locate the fox within a few miles of the Cheyenne County line, however, only one credible sighting was recorded in Cheyenne County (Fig. 34). In June 1975, a red fox was seen crossing a road south of St. Francis, Kansas.

Stanley (1963) found that the red fox prefers areas where patches of timber alternate with pastures and cultivated fields. The above mentioned fox was sighted in an area of cultivation (dryland and irrigation) and pastures. There were no trees except farmstead windbreaks. Its relative abundance at present is scarce.

Specimen of credible report (1). From St. Francis: 6 mi S, 1 mi E, 1.

Remarks. None.

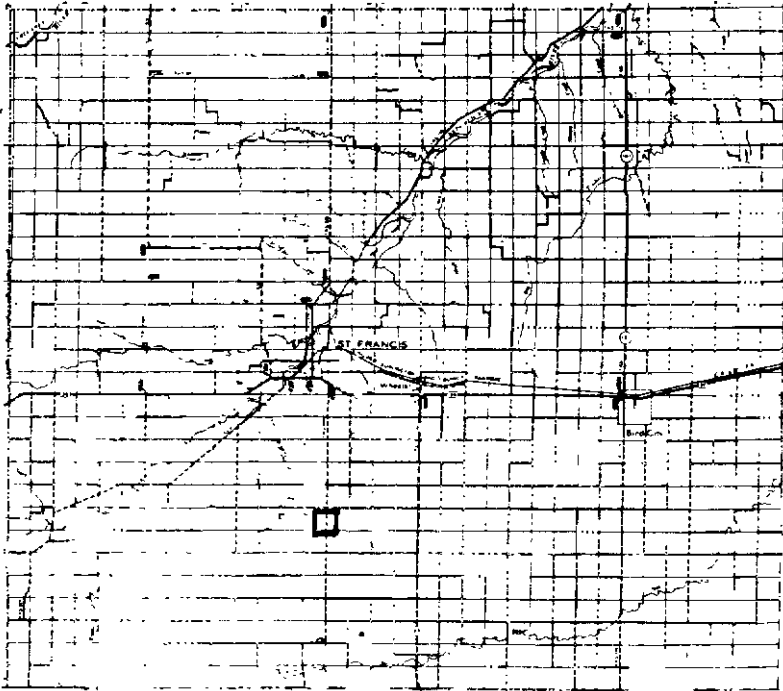


Fig. 34. Location of Vulpes fulva regalis in Cheyenne County, Kansas.

Vulpes velox velox (Say)

Swift Fox

Bunker (1940) reported finding kit foxes on the plains in western Kansas. Cockrum (1952) mentioned that the kit fox was on the verge of extinction throughout its range in Kansas.

In 1971 there was reported a roadkill west of Bird City, Kansas, in a cultivated region. One pair of kit foxes was killed southwest of St. Francis, Kansas, in a cultivated and grassland area in 1973. Their abundance is scarce (Fig. 35).

Specimens of credible reports and roadkills (3). From St. Francis: 5 mi S, 6 mi W, 2. From Bird City: 3 mi W, 1.

Remarks. None.

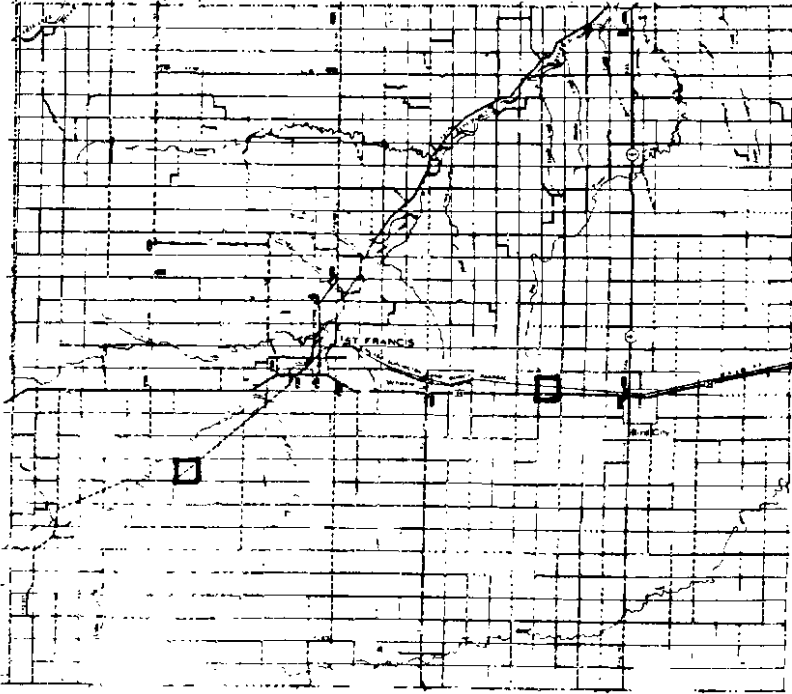


Fig. 35. Locations of Vulpes velox velox in Cheyenne County, Kansas.

Family: Procyonidae

Procyon lotor hirtus Nelson and Goldman

Raccoon

The raccoon is found along the South Fork Republican River valley and its spring-fed tributaries (Stains, 1956). They move from these riparian environments to the adjacent corn fields and have been recorded in the "breaks", several miles from the river, where there is no woody vegetation except fruit producing shrubs. Under these conditions the animals take refuge in burrows in the ground instead of high in hollow trees (Jones, 1964, and Lechleitner, 1969). They are common in the northwestern one-half of the county, but a few are found in the southcentral irrigated regions (Fig. 36).

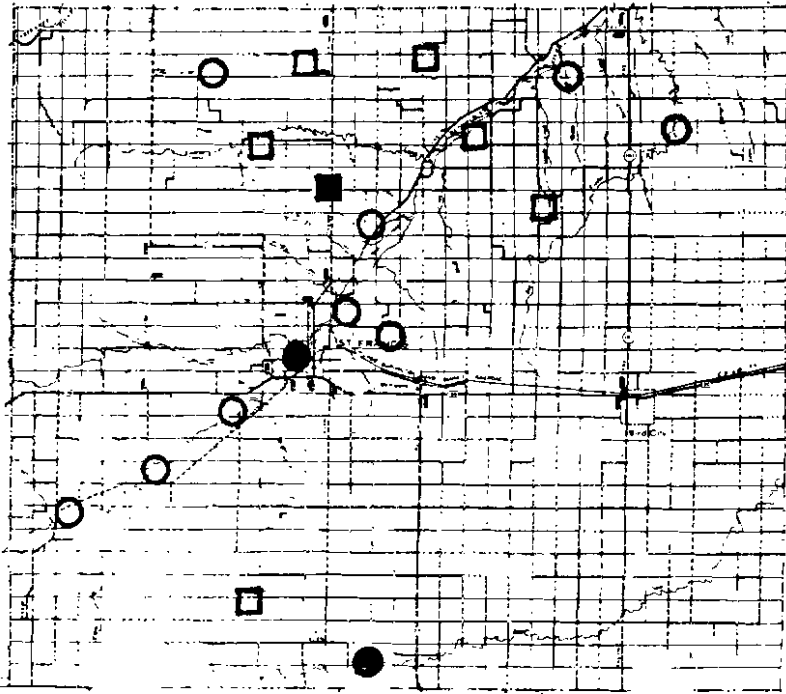


Fig. 36. Locations of Procyon lotor hirtus in Cheyenne County, Kansas.

Specimens examined (2). From St. Francis: 13 mi S, 3 mi E, 1; 1 mi N, 1 mi W, 1.

Remarks. External measurements of the two males were: ♂ (745-838), \bar{x} =791.5; (235-277), \bar{x} =256.5; (109-121), \bar{x} =115; (35-60), \bar{x} =47.5. Upper parts were brownish gray, tipped with black. The under parts were gray. Tail hair consisted of alternating dark and light rings.

Family: Mustelidae

Mustela frenata longicauda Bonaparte

Long-tailed Weasel

Only one specimen of the long-tailed weasel has been collected in Cheyenne County. There have been reported sightings from scattered areas in the county. Cockrum (1952)

indicated that the long-tailed weasel is state-wide in occurrence. Since the animal is nocturnal (Hall, 1955) and secretive, the population is probably greater than it appears to be. Available information indicates that the relative abundance is occasional.

Specimen examined (1). From St. Francis: 3 mi S, 2 mi W, 1.

Remarks. External measurements of male were: δ 427; 149; 47. This specimen was taken during the winter and the upper parts were light brown colored, under parts were white. The tail terminated in a black tip.

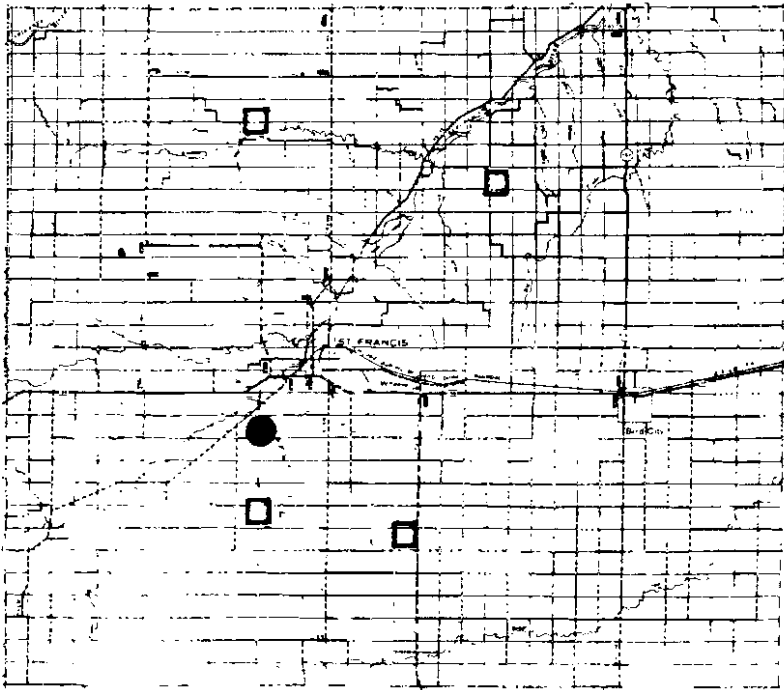


Fig. 37. Locations of Mustela frenata longicauda in Cheyenne County, Kansas.

Mustela vison letifera Hollister

Mink

The mink is limited in occurrence to the South Fork Republican River, adjacent marshes and spring-fed tributaries (Fig. 38). Since it is semiaquatic (Lechleitner, 1969), these habitats are the only ones with a sufficient water supply to support mink.

Mink are trapped during the winter and results show their abundance to be occasional.

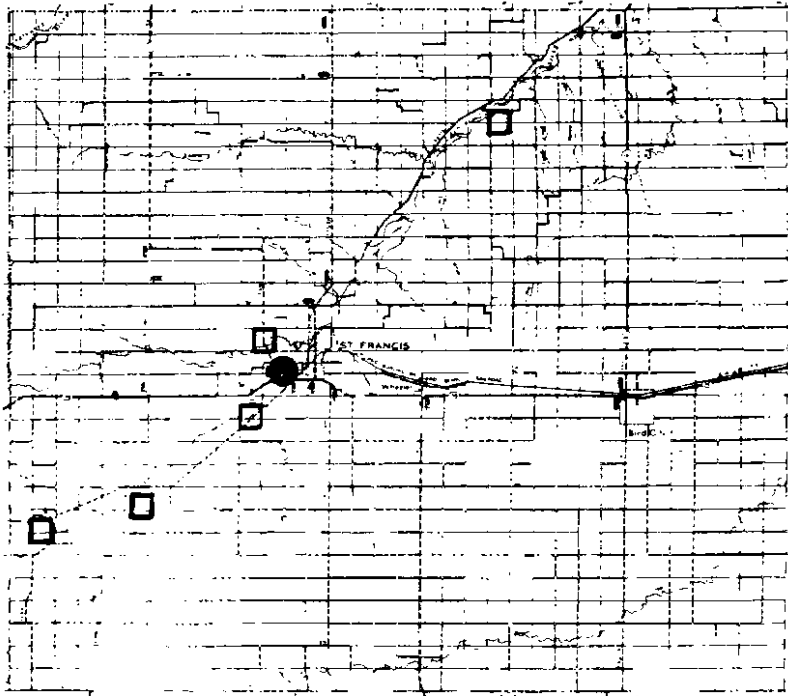


Fig. 38. Locations of Mustela vison letifera in Cheyenne County, Kansas.

Specimen examined (1). From St. Francis: 1 mi W, 1.

Remarks. External measurements of one female were:
 ♀ 526; 160; 70. The pelt was dark brown with a white spot on the chest.

Taxidea taxus taxus (Schreber)

Badger

Jones (1964) stated that the badger is relatively common throughout the Great Plains. The badger population extends over the entire county (Fig. 39). Sightings, diggings, and roadkills result in it being categorized as common.

Specimen examined. (1). From St. Francis: 2 mi N, 2 mi W, 1.

Remarks. External measurements of one male are: ♂ 728; 117; 102; 45. The upper parts were silvery gray, under parts lighter than the upper. The feet, cheeks and ears were black. A white stripe extended dorsally from the nose to between the shoulders.

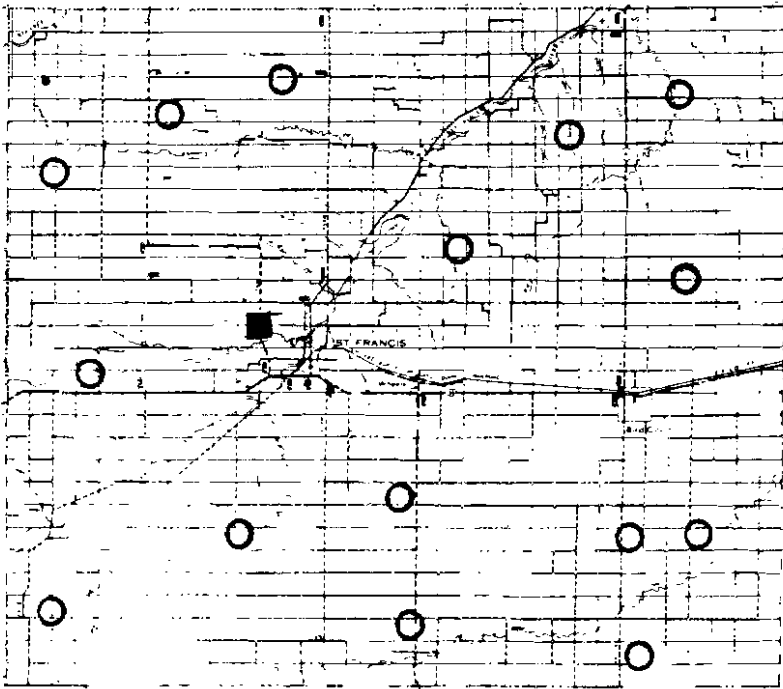


Fig. 39. Locations of Taxidea taxus taxus in Cheyenne County, Kansas.

Spilogale putorius interrupta (Rafinesque)

Eastern Spotted Skunk

The spotted skunk is scarce, and when found is generally inhabiting old buildings of farmsteads (Hall, 1955). Jones (1964) indicated that the species was reported in the Republican Valley of eastern Colorado in 1907.

The number of spotted skunk reports in the county is small (Fig. 40). Cockrum (1952) reported the skunk to be state-wide in distribution, but there have been no positive identifications along the eastern one-fourth or southwestern corner of Cheyenne County. Its relative abundance is scarce.

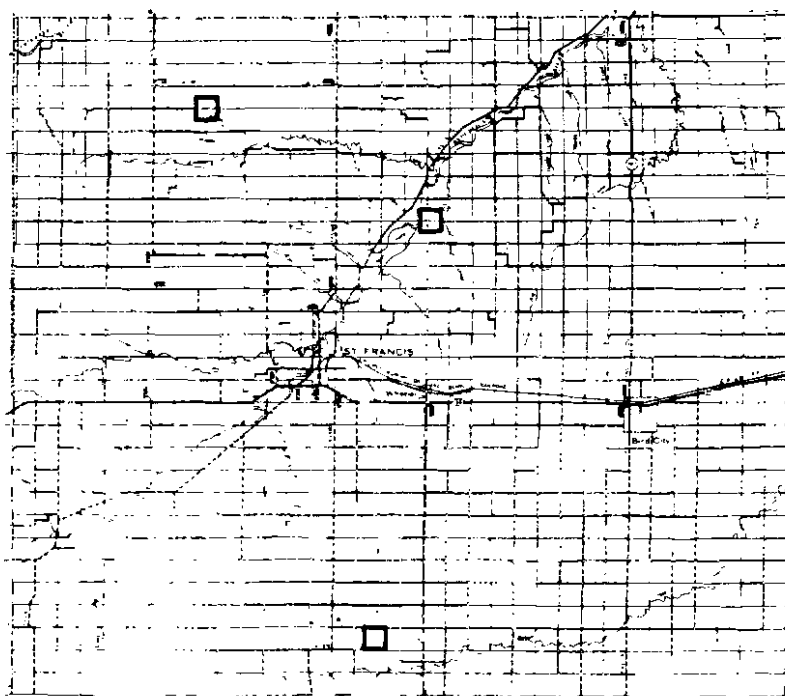


Fig. 40. Locations of Spilogale putorius interrupta in Cheyenne County, Kansas.

Specimens from credible reports (5). From St. Francis: 11 mi S, 3 mi E, 1; 12 mi N, 5 mi W, 3. From Wheeler: 8 mi N, 1.

Remarks. None.

Mephitis mephitis varians Gray

Striped Skunk

Striped skunks are residents of prairies, meadows, parks, and croplands, and they occasionally live near or under human dwellings (Lechleitner, 1969). This skunk is common throughout the county (Fig. 41).

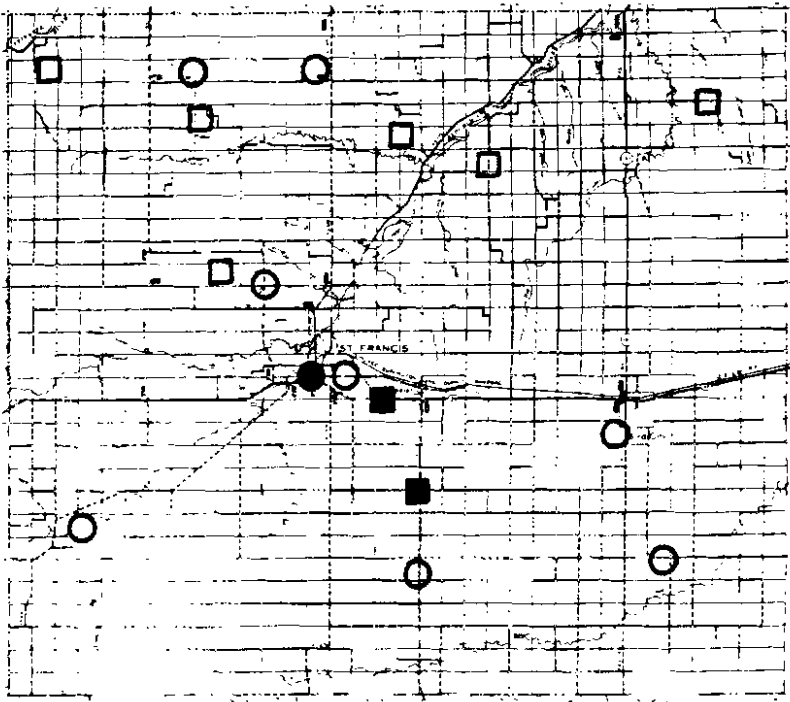


Fig. 41. Locations of Mephitis mephitis varians in Cheyenne County, Kansas.

Specimen examined (1). From St. Francis: Within the city,
1.

Remarks. External measurements of one female were: ♀
580; 211; 80; 27. The body was black with a white stripe that began at the head, divided, and joined again at the base of the tail. The tail had a dorsal white stripe.

Family: Felidae

Lynx rufus baileyi Merriam

Bobcat

Lechleitner (1969) found that Colorado bobcats inhabit brushy habitats in canyons, draws, washes and other rough areas. Velich (1958) suggested that the present distribution of the bobcat is limited to heavily wooded areas. Nearly every year a bobcat is taken from the wooded areas along the South Fork Republican River valley or the rough "breaks" region to the northwest. Though this might give the impression of large population numbers, they are scarce (Fig. 42).

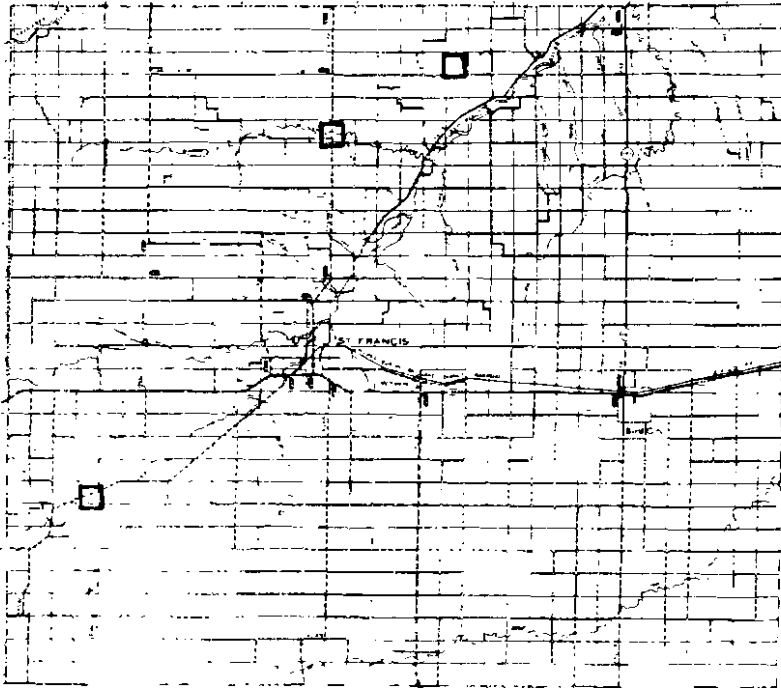


Fig. 42. Locations of Lynx rufus baileyi in Cheyenne County, Kansas.

Specimens taken by hunters (6). From St. Francis: 6 mi S, 9 mi W, 2; 10 mi N, 1 mi E, 2; 13 mi N, 6 mi E, 2.

Remarks. None.

Order: Artiodactyla

Family: Cervidae

Odocoileus hemionus hemionus (Rafinesque)

Black-tailed Deer or Mule Deer

Both Cockrum (1952) and Hall (1955) indicated that there were no black-tailed deer within the state. Since that time there have been introductions into several areas. Cheyenne County was not one. It is probable that Cheyenne County mule deer are the result of eastward and southward dispersal of Colorado and Nebraska populations, respectively.

During the fall of 1972 the author viewed a herd of 28 near St. Francis. In the late summer of 1973 a farmer of the community sighted a herd of 37.

The deer ranges along the South Fork Republican River valley and in the "breaks" (Fig. 43). Their relative abundance is common in suitable habitats.

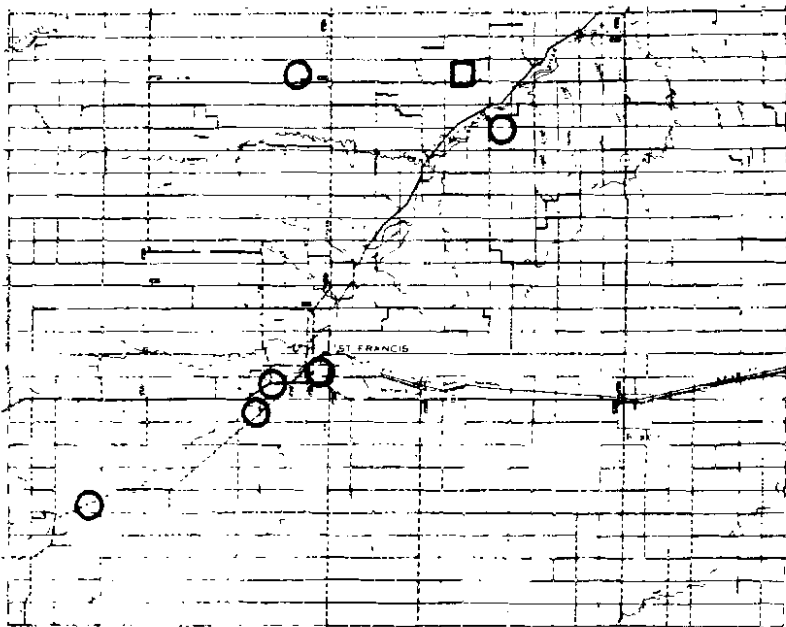


Fig. 43. Locations of Odocoileus hemionus hemionus in Cheyenne County, Kansas.

Specimens sighted (77). From St. Francis: 2 mi S, 2 mi W, 28; 1 mi W, 4; 6 mi S, 10 mi W, 2; 13 mi N, 2; 13 mi N, 7 mi E, 37; 11 mi N, 8 mi E, 3. Within the City: 1.

Remarks. None.

Odocoileus virginiana texana (Mearns)

White-tailed Deer

Anderson (1964) reported that white-tailed deer were plentiful in Kansas during the Lewis and Clark Expedition. Cockrum (1952) and Hall (1955) stated that this species was no longer in the state. It has been established that the white-tailed deer is present today in Cheyenne County, but their number is small (Anderson, 1964).

The white-tailed deer and mule deer, O. hemionus, are sympatric along the South Fork Republican River valley (Fig. 44). White-tailed deer are scarce in the county (Anderson, 1964). During the period of this survey only four deer were sighted. Since white-tailed deer are browsers and the mule deer are grazers (Hall, 1955), it is difficult to explain with the lack of competition for food between the species, why the white-tailed deer population is low.

Specimens sighted (4). From St. Francis: 1 mi E, 2; 2 mi N, 1; 10 mi N, 1 mi W, 1.

Remarks. None.

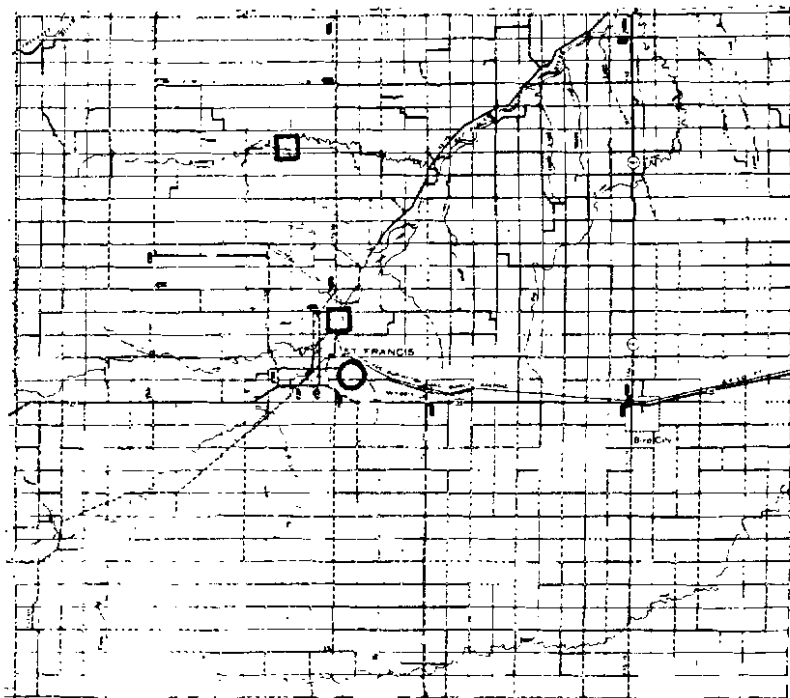


Fig. 44. Locations of Odocoileus virginiana texana in Cheyenne County, Kansas

Unverified Subspecies and Species

Two species of mammals which have strong possibilities of being present in the county were unverified. These were the southern bog lemming, Synaptomys cooperi stonei Rhoads, and the black-footed ferret, Mustela nigripes ssp. (Audubon and Backman).

The southern bog lemming has been taken within five miles of the northern border of Kansas in Dundy County, Nebraska, (Jones, 1964). But at this time, there is no record of their being taken in Cheyenne County, Kansas.

After investigation, it is assumed that the black-footed ferret has been extirpated from Cheyenne County, Kansas. There have been mysterious disappearances of prairie dog "towns" without the aid of poisons, but there has been no real evidence of

the ferret being involved in the abandonment of the "towns".

Conclusions and Recommendations

Tillage of prairie land and conversion of dry land to irrigation could result in pronounced changes in mammal populations in Cheyenne County, Kansas. Species such as ground squirrels, plains harvest mice, prairie voles, and others require undisturbed, natural habitats and, as a result of the farming transition, might undergo population reductions. Other species such as deer, opossums, and raccoons will probably respond by expanding their range in the county and increasing population density.

If this agricultural transition materializes to its fullest, additional investigation of its effects on the species of mammals in Cheyenne County, Kansas, should be undertaken.

SUMMARY

During the period of January 1970 to June 1975 a survey of the nonflying mammals of Cheyenne County, Kansas, was undertaken. To confirm the subspecies present it was necessary to gather data by trapping small mammals, by sightings, by inspecting roadkills and by authenticating credible reports. As the survey continued, information regarding population density, possible habitat preferences and limiting factors, and morphological data were accumulated.

A total of 40 subspecies representing 40 species, 31 genera and six orders were collected, sighted, examined as roadkills or listed as credible reports.

As a result of this survey, the relative abundance of the 40 species was determined as:

Abundant

Spermophilus tridecemlineatus

Geomys bursarius

Dipodomys ordii

Peromyscus maniculatus

Canis latrans

Common

Didelphis marsupialis

Scalopus aquaticus

Sylvilagus audubonii

Cynomys ludovicianus

Sciurus niger

Castor canadensis

Onychomys leucogaster

Reithrodontomys megalotis

Peromyscus leucopus

Neotoma floridana

Microtus ochrogaster

Ondatra zibethicus

Rattus norvegicus

Mus musculus

Procyon lotor

Taxidea taxus

Mephitis mephitis

Odocoileus hemionus

Occasional

Sylvilagus floridanus

Lepus californicus

Spermophilis pilosoma

Perognathus hispidus

Mustela frenata

Mustela vison

Scarce

Blarina brevicauda

Cryptotis parva

Perognathus flavescens

Perognathus flavus

Reithrodontomys montanus

Erethizon dorsatum

Vulpes fulva

Vulpes velox

Spilogale putorius

Lynx rufus

Odocoileus virginiana

Two species, Synaptomys cooperi and Mustela nigripes, were classified as unverified in Cheyenne County, Kansas.

The conversion of dryland acres and natural prairies to tilled, irrigated farmland could bring about changes in the population density of some species of mammals now present in Cheyenne County, Kansas.

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