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## A Study of the Geographical and Ecological Distribution of the Buffy Plains Pocket Mouse (*Perognathus flavescens flavescens*), with Description of a New Subspecies from Nebraska

Myron H. Swenk  
*University of Nebraska*

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A STUDY OF THE GEOGRAPHICAL AND ECOLOGICAL  
DISTRIBUTION OF THE BUFFY PLAINS POCKET-  
MOUSE (*PEROGNATHUS FLAVESCENS FLA-  
VESCENS*), WITH DESCRIPTION OF A  
NEW SUBSPECIES FROM NEBRASKA

By MYRON H. SWENK

The Nebraska Sandhill Region is a great expanse of dune and Valentine sand located in the central part of the state. Its general topography is a monotonous succession of sand dunes and ridges, varied with blow-outs and separated by narrow pockets or broad and flat, dry or wet valleys, which usually run in a general, though irregular, northwest and southeast direction. The Valentine sand areas are less strongly rolling, more stable, and have a slightly darker surface soil, with a denser grassy cover, than is true of the dunes of uniformly loose, fine to medium, light grayish brown, chiefly quartz sand, which contain only a very small amount of silt, clay and humus. Because of its loose and porous nature this soil absorbs rain very rapidly, but it is not held at the surface. The total precipitation ranges from 16 to 25 inches annually, on the average, and quickly percolates to deeper levels, there to form part of the extensive subsurface drainage. Also, the wind velocity is high and on the open hills and blow-outs evaporation is very rapid. The dune sand vegetation, therefore, is of those types of plants that are adapted to survival under arid conditions (xerophytes). Blue-stem bunch-grasses (*Andropogon hallii* and *A. scoparius*) dominate the sandhill plant association. Other important sandhill and blow-out grasses are Sand-grass (*Calamovilfa longifolia*), Needle-grass (*Stipa comata*), June-grass (*Koeleria cristata*), and the blow-out grasses *Redfieldia flexuosa*, *Muhlenbergia pungens*, *Eragrostis trichodes* and *Eriocoma cuspidata*. The sedges *Cyperus schweinitzii* and *Carex eleocharis* are important associated species. Other typical and conspicuous sandhill plants include Spanish Bayonet (*Yucca glauca*), Prickly Pear Cactus (*Opuntia polyacantha*, *O. fragilis* and *O. humifusa*), Prairie Wild Rose (*Rosa pratincola*), Western Sand Cherry (*Prunus besseyi*), Smaller Red-root (*Ceanothus ovatus*), Lance-leaved Psoralea (*Psoralea lanceolata*) Prairie Shoe-strings (*Amorpha canescens*), Painted-pod (*Phaca longifolia*), Bush Morning-glory (*Ipomoea leptophylla*) and Blow-out Beard-tongue (*Pentstemon haydeni*).

The Buffy Plains Pocket-mouse (*Perognathus flavescens flavescens*) is a typical mammal of the Sandhill Region of Nebraska. Its home, like that of other species of pocket-mice, is a series of burrows in the ground, consisting of several entrance holes leading to the main burrow, in which is located the nest and the food storage chambers. In the Nebraska sandhills its burrows and nests are commonly placed beneath clumps of Spanish Bayonet or Prickly Pear Cactus, and the entrance holes usually are

so distributed as to open from under the plant in all directions. The soil removed in the excavations is placed in a little heap at the side of the entrance burrow, and if several entrance holes occur close together a small mound of soil may be formed. Like the pocket-gophers, the pocket-mice keep the entrance burrows plugged with soil from within, and if the dirt plug is opened it promptly will be closed again. A very loose and sandy soil seems to be a prerequisite living condition for this little mammal. Its type locality (Kennedy, Cherry County) is in the heart of the Sandhill Region of Nebraska. It is very typically an inhabitant of the dune sand and the sandy soils of the Valentine series which almost wholly constitute the terrain of this area.

The composite species "*Perognathus flavus*" of Baird (6, 1857; not 5, 1855) included an alcoholic specimen (No. 2614, U.S.N.M., original No. 352) that undoubtedly was this mammal, collected along the "Ree Fork, Neb." (= Arickaree River) on September 24, 1856, by W. S. Wood of the Lieutenant F. W. Bryan party. This party on that day entered Nebraska in extreme southwestern Dundy County, where the flood plain soils are fine sands, including Sarpy loamy sand, fine sandy loam and silt loam, Bridgeport loamy fine sand and fine sandy loam and Anselmo loamy sand, and even the upland soils are largely Bridgeport and Colby fine sandy loams; mostly suitable habitat soils for *Perognathus f. flavescens*. The body measurements of this specimen as given by Baird (6, p. 425), translated into millimeters, are: Length, 117; tail, 55; hind foot, 16.5; all of which agree well with those of subadult (September) specimens of *P. f. flavescens*, but are too large for *P. f. flavus*. Hayden (14, 15) next recorded *P. f. flavescens* under the then prevailing name for this species, *Perognathus flavus*, as occurring on the "Upper Missouri", and mentioned it as collected on the "Loup Fork of the Platte" during the summer of 1857. The itinerary of Lieutenant G. K. Warren's party, on which Dr. Hayden was naturalist, shows that it traversed the North Loup River in Nebraska between July 4 and August 7, 1857, during which period the species undoubtedly was collected somewhere in the present Sandhill Region.

Coues (11) listed two specimens in the U.S.N.M., under the composite species name "*Perognathus flavus*", from "Loup Fork"; a dry skin (No. 3254) and an alcoholic specimen (No. 7340). He gives for the first-mentioned specimen a hind foot of 0.63 inch (= 16 mm.). For the last-mentioned specimen (a ♀) he gives the following measurements, translated into millimeters: Length, 114; tail, 58; hind foot, 16.5; which makes it too large for *P. flavus* and indicates that it is certainly *P. f. flavescens*. This dry skin is very probably the same one that is recorded by Osgood (20, p. 21) as from "Loup Fork", in his monograph of *Perognathus*. Another probable Missouri Valley specimen recorded by Coues (11) is a dry skin from "Pole Creek" (No. 3050, U.S.N.M.), which is likely the same specimen that is recorded by Osgood (20) as from "Pole Creek 40 (?=400) miles from Fort Riley." A possible fourth Missouri Valley record by Coues (11) is a specimen from the "Black Hills" (No. 3097), which presents, translated into millimeters, the following rather small measurements for *P. f. flavescens*: Length, 117; tail, 56; hind foot, 15.

Aughey (2) wrote: "A rodent for which I know no popular name is rather common over western and central Nebraska. It is known among naturalists as *Perognathus fasciatus*. It is, without tail, four inches long and mouse like. The Yellow Pocket Mouse (*Cricetodipus flavus*), smaller than the house mouse, is also common over central and western Nebraska." Even if the large size mentioned by Aughey did not place the matter beyond question, we would probably be justified in assuming that the species he mentioned first is the one now known as *Perognathus hispidus* subsp., for Baird (6), whom Aughey followed, wrongly identified this species as *P. fasciatus* Wied, and in this was followed by Coues (11) and subsequent authors, until Merriam (19) set the matter straight.

Aughey's second-mentioned species is almost certainly *P. flavescens*, inasmuch as authors "lumped" the three present-recognized species *flavus* Baird, *flavescens* Merriam, and *fasciatus* Wied under the one name, *flavus*, from the appearance of Baird's monograph in 1857 until Merriam's revision in 1889.

Merriam (19) described the species here being discussed in its typical form under the name *Perognathus fasciatus flavescens*, from specimens collected at Kennedy, Cherry County, Nebraska, the type specimen being an adult ♂ (No. 5027, U.S.N.M.) taken there June 11, 1888, by Vernon Bailey. He pointed out not only color differences, but also some cranial and dental characters, defining *P. f. flavescens* from true *P. fasciatus*; but it remained for Osgood (20, p. 20) to show that *P. flavescens* is a species "entirely distinct" from though "closely related" to *P. fasciatus*, and that "typical examples of both have been taken at the same place, Rosebud Indian Agency, S. Dak." Osgood probably was not then aware, however, of the possibilities in differences in ecological distribution between the two species obtaining in Todd County, South Dakota, where *P. flavescens* might occupy its characteristic dune sand habitat dominant in the more southwestern parts of the county, while *P. fasciatus* might occur chiefly on the adjacent Rosebud fine sandy loam soil of the Crookston Table, which covers most of the eastern and northern parts of the county. In fact, Beed (7) has studied the ecological distribution of the pocket-mice on the short-grass plains of the Crookston Table in Nebraska, in northern Cherry County, north of the Niobrara River, where he found *P. f. flavescens*, *P. f. fasciatus*, *P. f. flavus*, and *P. hispidus paradoxus* all to occur. Unlike the last-mentioned species, the first-mentioned ones did not follow down into the canyons among the western yellow pine growth just above and just below the rock outcroppings on the upper portions of the canyons, or among the outcrops of rock on the edges of the canyons, but were confined to suitable soil areas of the Table itself.

Osgood (20) further predicted that *P. flavescens* and *P. fasciatus* "doubtless occur together at other points", which has been shown by Bailey (4) to be correct as between *P. flavescens perniger* and *P. fasciatus fasciatus* along the Cannonball River in south-central North Dakota, where the first-mentioned form has been taken at Parkin, Morton County (V. Bailey), while *P. f. fasciatus* is known to occur at Wade, Grant County (W. B. Bell), and Cannonball, Sioux County (H. H. Sheldon), respectively, only a few miles up and down the river from Parkin. In these localities occur sandy patches of the Morton and Bainville complex of plains soils, and sandy river flats, that offer a suitable habitat for both species.

Allen (1) next recorded *P. flavescens*, following Merriam in regarding it as a race of *P. fasciatus*, from Rock County, Nebraska, where W. W. Granger collected 10 adults between October 3 and 27, 1895, 8 from Perch, and 2 from Bassett, both localities being, as Granger reported, "in the typical Nebraska sand hills", where the dune sand and sandy Valentine soils dominate. In addition to 16 specimens from Cherry County and 9 from Rock County, Nebraska, Osgood (20) placed on record 1 specimen from Lakeside, Sheridan County; 5 from Thomas County; 2 from Myrtle, Lincoln County, and 1 from "Lincoln County"; 1 from Ewing, Holt County; and 1 from Verdigris (= Verdigre), Knox County. All of these localities are in the dune sand and Valentine sandy soil areas, except that in the immediate vicinity of Myrtle, Lincoln County, the quite similar Richfield fine sandy loam predominates, while in the vicinity of Verdigre, Knox County, the sandy soils of the easternmost extension of the Holt Table give way rather abruptly to undulating or gently rolling prairie, composed of silt loam soils of Peorian calcareous loess origin, classified in the Moody series.

It is interesting, and also highly significant, that in exactly this same locality (Verdigre, Knox County) *P. f. flavescens* begins unmistakably

to show intergradation with its dusky-backed and buffy-bellied subspecies, *P. f. perniger*, which reaches full development at its type locality, Vermilion, South Dakota. Osgood (21, p. 128) has very pertinently written: "Two adults from Verdigris, Nebraska, are distinctly intermediate. One of these, collected April 23, 1903, by Merritt Cary, has decidedly more dusky than is usual in *flavescens*, and has the posterior half of the underparts almost entirely buff. The other, collected by V. Bailey, June 11, 1893, is more like *flavescens* in the color of the upper parts, but has the buffy suffusion on the belly. The specimens from Vermilion, South Dakota, seem to represent an extreme development of these characters. Typical *flavescens* invariably has pure white underparts, and except in very high pelage is quite pale throughout. Its home is in the sand hills of Nebraska, where conditions are decidedly different from those in the more humid region inhabited by *perniger*." Specimens collected on September 21, 1901, by M. Cary at Neligh, Antelope County, near the easternmost end of a tongue of dune sand extending down the Elkhorn River Valley south of the Holt Table, are slightly darker dorsally than typical *P. f. flavescens*, making a slight approach toward *P. f. perniger*. Fichter (13) has summarized the present-known information, which shows that *P. f. perniger* is the exclusive form occurring east of the Missouri River in southeastern North Dakota, southern Minnesota and northern and western Iowa.

Swenk (24) summarized the then known Nebraska distributional records of *P. flavescens*, and also recorded as *P. fasciatus* a pair trapped under a rye shock at Glen, Sioux County, on the southern slope of the Pine Ridge, August 13, 1905, by H. S. Smith. Subsequent re-examination of the ♀ specimen shows definitely that it is not *P. fasciatus*, but is better referable to *P. flavescens*, being somewhat intermediate between typical specimens of the last-mentioned species and a variant of it occurring north of the Pine Ridge, that is described and named on a subsequent page of this paper. In addition to the localities already cited, W. E. Beed (*litt.*, March 30, 1939) reports the collecting, during the summer of 1934 (June 12 to September 9), of specimens of typical *P. f. flavescens* at Dunlap, along the Niobrara River in extreme southeastern Dawes County; at Merriman and Kilgore, in the sandhills of north-central Cherry County; at Hyannis, Grant County, in the heart of the Nebraska Sandhill Region; and in the more sandy soils of the Crookston Table in the vicinity of Valentine, Cherry County. In the fall of 1901, M. Cary collected typical specimens of *P. f. flavescens* in Cherry County, along the Niobrara River 10 miles south of Cody (on October 4) and 18 miles northwest of Kennedy (on October 22). An adult ♀ that the late J. M. Bates picked up freshly dead in a ranch barnyard 4 miles south of Kennedy, August 6, 1927, and sent to the writer preserved in alcohol, had the pockets full of seeds of *Cyperus schweinitzii*. South of the Platte River, *P. f. flavescens* occurs in the patches of more sandy soils of the Keith and Holdrege series, east to western Adams County, where Harold Turner trapped a ♀ on June 22, 1934, and a ♂ on March 16, 1936, in Logan Township, in the extreme southwestern part of that county. East of this locality, the fine and very fine sandy soils of the Holdrege series are replaced by the claypan Hastings and Crete series soils, which latter apparently are unsuitable for the maintenance of pocket-mice, and which seem to have barred the spread of *P. f. flavescens* farther to the eastward.

Osgood (20) also recorded two specimens of *P. flavescens* from the "Rosebud Indian Agency", South Dakota, into which area there is an extension of the typical sandhill region, but the two specimens then recorded by him from Vermilion, South Dakota, are quite evidently the young-adult ♀ type (No. 5725, U.S.N.M.) and the immature paratype of his later (21) differentiated *P. f. perniger*.

Areas of dune sand occur in many places in eastern Colorado. For Colorado, Osgood (20) recorded 5 specimens of *P. flavescens* from Sterling,

Logan County, 3 from Greeley, Weld County, 1 from Boulder County, and 4 from Pueblo, Pueblo County. Warren (25) regarded this species as probably "confined to the plains region east of the mountains" and mentioned records from Logan, Weld, Boulder, Adams, El Paso (Colorado Springs, December 7), and Pueblo Counties. Cary (10) also regarded its distribution as confined to the plains region of eastern Colorado, west at least to the eastern base of the foothills, and "north of the Arkansas Valley", it being most abundant in the northeastern Colorado counties and appearing "to occur only in sandy strips of country". Cary (10) also gave the following substantiating data for the previously cited locality records, as well as for a new one. A. K. Fisher found it common in sunflower patches on sandy soil at Sterling, Logan County. J. Alden Loring found it common on sandy strips of country, living in burrows beneath *Opuntia* spp. and *Yucca glauca*, at Greeley, Weld County. A specimen was found by Denis Gale in the nest of a Long-eared Owl at 5,500 feet in Boulder County, May 12, 1890. E. R. Warren collected specimens at Colorado Springs, El Paso County, where the species was regarded by him as uncommon. Clark P. Streater secured specimens along the Arkansas River at Pueblo, Pueblo County, in December. Cary himself trapped one beneath a *Yucca* in a sand blowout on the north side of the valley of the South Fork of the Republican River at Tuttle, Kit Carson County, which is twelve miles west of the Nebraska-Colorado line.

Osgood (20) stated that he had examined four specimens of *P. flavescens* from Cairo, Pratt County, Kansas. Lantz (17, 18) assigned the species a general distribution in the north-central part of Kansas, and stated that it was common there. Hibbard (16) recorded it as common throughout Kansas west of the 99th meridian. Black (8) indicated the more detailed basis of these general statements in the following words: "Probably all of the western part of the state. Eastern records are from Pratt and Reno counties; it has also been taken in Morton, Logan, Trego and Rush counties, and has been found common in most localities where it is known."

Rhoads (22) described *Perognathus copei* from a single type specimen taken from the stomach of a rattlesnake by Professor Cope at Mobeetie, Wheeler County, in the Texas Panhandle. Osgood (20) found the type specimen "very imperfect and its status accordingly doubtful". He placed it as a synonym of *P. flavescens*, however, though recognizing that "possibly it represents a slight southern race of *flavescens*". Bailey (3), with three topotypes (an adult ♀ and 2 juveniles) taken by James H. Gant in July, 1904, found them "to possess characters which enable this form to be recognized as a bright-colored subspecies of *flavescens*", and cites two specimens "with slightly accentuated characters" collected by Merritt Cary in the sandhills of Winkler County, Texas, 20 miles north of Monahans, Ward County, as making the known southern limit of the range of *P. f. copei*. Osgood's (20) doubtful record of *P. flavescens* from Santa Fe, New Mexico, based on "four distorted and dessicated" specimens, obviously does not refer to this species, which is not known from New Mexico, but with little doubt to *P. apache melanotis*, which is known to occur in the Santa Fe vicinity.

Quite parallel to the previously mentioned change in coloration that takes place within this species where, proceeding eastward, the sandy soils of the Holt Table become replaced by the silt loam prairie soils of the Moody series, and the dusky-backed *P. f. perniger* appears, in north-eastern Nebraska and southeastern South Dakota, is the appearance of an unnamed race of *P. flavescens*, likewise with a stronger admixture of blackish hairs above, where the Dawes Table soils are replaced by very fine sandy loam soils in the basin north of the Pine Ridge escarpment in northwestern Nebraska. On October 26, 1915, Leroy M. Gates captured an adult ♂ pocket-mouse by hand on the farm that he then

was operating along Little Bordeaux Creek, 3 miles east of Chadron, Dawes County, on Section 14, T. 33 N., R. 48 W., composed largely of Laurel and Tripp very fine sandy loam soil. When Mr. Gates sent the skin and accompanying perfect skull of this specimen to the writer a few weeks later, it was recognized to represent an undescribed form of *P. flavescens*, and Mr. Gates was urged if possible to secure some additional specimens. However, no more were caught by him in that locality. Later, after he had moved to another farm located somewhat less than 1 mile southwest of Chadron, on Section 19, T. 32 N., R. 48 W., composed wholly of Dawes very fine sandy loam soil, he secured there a larger, fully adult ♂ specimen on August 3, 1918, that was practically identical in pelage coloration with the one previously caught by him. The writer had hoped to secure still more specimens, but, not having been able to do so, now proposes that the new subspecies be named

*Perognathus flavescens olivaceogriseus* subsp. nov.

#### OLIVE-GRAY PLAINS POCKET-MOUSE.

*Type*.—Chadron, Dawes County, Nebraska, October 26, 1915. Adult ♂, skin and skull. L. M. Gates, collector. One adult paratopotype ♂, skin and skull, August 3, 1918 (L. M. Gates). Collection of M. H. Swenk.

*Subspecific Characters*.—Similar in size and proportions to *P. f. flavescens* (Merriam) (19), of the Sandhill Region of Nebraska and of similar dune sand and Valentine sand areas, or very sandy tracts, in eastern Colorado and western Kansas, but general color of upperparts decidedly darker and more olivaceous, the base color about Olive-Buff<sup>1</sup> instead of about Cinnamon-Buff, and much more strongly admixed with blackish, especially mid-dorsally and on lower back and rump, giving a decidedly darker general dorsal color tone, the buffy white ear spots and postauricular areas less contrasting and conspicuous, and the tail more strongly dusky above, producing a more bicolor appearance; also similar to *P. f. perniger* Osgood (21), of sandy areas in the temperate to cool, subhumid to moderately humid, tall-grass bearing, chernozem plains and more acid prairie soils (chiefly of the Barnes, Moody, Marshall, Carrington, Tama, and Clarion series) of southeastern North Dakota, eastern South Dakota, northeastern Nebraska, southern Minnesota, and northern and western Iowa, but smaller and shorter-tailed, and with general color of upperparts decidedly duller, the base color Olive-Buff instead of Vinaceous-Cinnamon, much less strongly admixed with blackish, the entire underparts pure white instead of Light Vinaceous-Cinnamon on the sides of the neck and over the entire abdomen, the tail less sharply bicolor; also similar to *P. f. copei* (Rhoads) (22) of the Texas Panhandle and southward in western Texas to about latitude 32°, but larger and distinctly longer-tailed, and with general coloration duller than the "grizzled blackish fawn" of the head and upper back and "rump and thighs strongly washed with cinnamon", of *P. f. copei*.

*Color*.—Adult (August and October): General color of upperparts a blend of olive gray, buffy and blackish, the base color about Olive-Buff, very strongly lined with blackish, especially mid-dorsally and on lower back and rump; face and circumorbital area Pale Olive-Buff tinged with Vinaceous Buff, the postauricular areas clear Pale Olive Buff, the ear spots distinct and buffy white; lateral line purely Pale Pinkish Buff; entire underparts, legs and feet pure white; tail strongly dusky above, white on sides and below.

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<sup>1</sup> Named colors are those of Ridgway (23), *Color Standards and Nomenclature* (1912).

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*Body Measurements.*—Comparative measurements in millimeters of *P. f. flavescens*, including the extremes and averages of 3 series from Nebraska, differing in age and sex, and of the type adult ♂ from Kennedy, Cherry County, Nebraska (Merriam, 19) and 6 adult topotypes (Osgood, 20), together with measurements of the type adult ♂ and paratopotype adult ♂ of this new race, the type adult ♀ of *P. f. perniger* from Vermilion, Clay County, South Dakota (Osgood, 20), and the type ♂ of *P. f. copei* from near Mobeetie, Wheeler County, Texas (Rhoads, 22), are given in the following table.

TABLE 1.—*Extreme and average body measurements in millimeters of the subspecies of Perognathus flavescens*

Specimens	Total Length	Tail Vertebrae	Hind Foot
<i>P. f. flavescens:</i>			
Of 6 young adult specimens . . . . .	110-117 (114.6)	55.0-67.0 (59.0)	15.0-16.5 (15.8)
Of 5 adult ♀ specimens . . . . .	120-125 (121.4)	55.0-62.0 (54.3)	16.0-17.5 (16.8)
Of 9 adult ♂ specimens . . . . .	119-127 (123.1)	54.5-64.0 (59.3)	17.0-18.0 (17.2)
Of 6 adult topotypes . . . . .	129.5	61.5	17.3
Of type adult ♂ specimen . . . . .	136.0	63.0	17.0
<i>P. f. olivaceogriseus:</i>			
Of type adult ♂ specimen . . . . .	124.0	53.0	16.5
Of paratopotype ad. ♂ specimen . . . . .	136.0	61.0	17.0
<i>P. f. perniger:</i>			
Of type young adult ♀ specimen . . . . .	140.0	68.0	17.0
<i>P. f. copei:</i>			
Of type ♂ specimen . . . . .	114.0	49.0	15.0

*Skull Measurements.*—Comparative measurements in millimeters of the skulls of *P. f. flavescens*, including those of the type adult ♂ (Merriam, 19), of 3 adult topotypes (Osgood, 20), of an adult ♀ from Glen, Sioux County, Nebraska, and a young adult ♂ from Valentine, Cherry County, Nebraska, together with cranial measurements of the type adult ♂ of this new race, of the young adult ♀ type of *P. f. perniger* (Elliot, 12) and another specimen of the same form from Randolph, Fremont County, Iowa (Edson Fichter, collector, 13), and of the type ♂ of *P. f. copei* (Rhoads, 22), are given in the following table.

TABLE 2.—*Cranial measurements in millimeters of typical and other pertinent specimens of the subspecies of Perognathus flavescens*

Skull Measurements	<i>P. f. flavescens</i> Ad. ♂ Type (No. 5027, U. S. N. M.)	<i>P. f. flavescens</i> Average 3 Ad. Topotypes	<i>P. f. flavescens</i> Ad. ♀ from Glen, Neb.	<i>P. f. flavescens</i> Yng. Ad. ♂ from Valentine, Neb.	<i>P. f. olivaceogriseus</i> Ad. ♂ Type	<i>P. f. perniger</i> Yng. Ad. ♀ Type (No. 57725, U.S.N.M.)	<i>P. f. perniger</i> ♀ from Randolph, Iowa	<i>P. f. copei</i> ♂ Type (No. 1612, A.N.S.P. Phil.)
Occipito-nasal length . . . . .	22.3	22.1	22.5	21.3	22.5	20.6	20.0	19.5
Basilar length of Hensel . . . . .	15.4	15.1	15.5	14.0	15.7	13.9	15.0	14.5
Zygomatic breadth . . . . .	12.0	11.6	12.0	12.0	12.0	10.6	9.3	10.0
Greatest mastoid breadth . . . . .	3.2	3.0	3.0	3.4	3.5	3.1	3.1	4.5
Least interorbital breadth . . . . .	5.3	4.8	5.1	5.5	5.0	5.0	5.5	7.0
Greatest length of interparietal . . . . .	8.0	8.0	8.0	9.1	8.3	8.3	8.0	8.0
Greatest breadth of interparietal . . . . .	8.0	8.0	8.0	9.1	8.3	8.3	8.0	8.0
Length of nasals . . . . .	8.0	8.0	8.0	9.1	8.3	8.3	8.0	8.0



Beyond the facts given above, nothing definite is known of the geographical and ecological distribution of *P. f. olivaceogriseus*. W. E. Beed (*litt.*, March 30, 1939) has informed the writer that in 1934 he took specimens of what he regarded as *P. flavescens* near Chadron, but unfortunately none of them was preserved. It is a very fair presumption, however, to believe that eventually *P. f. olivaceogriseus* will be found to occur quite generally in Nebraska in the numerous and frequently quite extensive patches of very fine sandy loam soils of the Bridgeport, Laurel, Tripp and Dawes series, that occur in a narrow belt lying between the conifer-bearing Pine Ridge and the largely treeless, much eroded buttes and ravines of the northern escarpment of the Dawes Table, on the south, and the almost solid areas of Pierre clays, clay loams and loams, quite unsuitable as a habitat for this arenicolous mammal, lying in general north of Antelope and Squaw Creeks in northern Sioux County, the terraces of the Little Cottonwood Creek and White River in central Dawes County and the extreme northwestern corner of Sheridan County, on the north. M. Cary (9) probably referred to this race when he cited "*Perognathus flavescens* (?)" as occurring exclusively in the strictly Upper Sonoran Hat Creek Basin area of Sioux County, being absent on the adjoining Dawes Table. In his more detailed unpublished notes in this connection Cary stated: "The characteristic holes of a small pocket mouse were seen on both Indian Creek and in a wheat field on the Monroe." He did not collect any specimens in either of these locations. It may be noted that there are areas of Laurel fine sandy loam along Indian Creek, and the Tripp very fine sandy loam, occurring along Monroe Creek, forms a fairly suitable soil for the growing of crops, including wheat.

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