Notes on Additional Fauna of Edson Quarry of the Middle Pliocene of Kansas

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ABSTRACT: Notes on new fossil mammals from the Edson Quarry, Middle Pliocene of Kansas. The following are described as new: *Perognathus dunklei* sp. nov.; *Prodipodomys* gen. nov., Genotype *Dipodomys kansensis* Hibbard and *?Oryzomys pliocaenicus* sp. nov.

The specimens which form the basis of this report were collected by Mr. David Dunkle from the Edson Quarry in Sherman county, Kansas, in the spring of 1935. They are now a part of the collection of the Museum of Comparative Zoölogy at Harvard. For permission to study and describe these specimens I am indebted to Dr. Alfred S. Romer.

ORDER INSECTIVORA

Family TALPIDAE

(Fig. 1)

A right humerus (M. C. Z. No. 6200) represents a mole slightly larger than *Scalopus a. machrinoides*. The humerus, though not complete, is different in many respects from that of *Scalopus* and *Scapanus*. More complete material is needed for generic identification, though it seems to represent an extinct genus.

The humerus is not as compact as in *Scalopus a. machrinoides*. The articular surface for the radius is larger, though the condylus internus is not as strongly developed or curved as in *Scalopus* or *Scapanus*. The articular surface for the ulna is intermediate in size. The articular surfaces for the scapula and clavicle are missing.

Another right humerus (K. U. M. V. P. No. 4928) represents a mole the size of *Scalopus a. texanus*. The humerus corresponds in shape to the preceding humerus but differs in size. Both are from adult specimens. It possesses the articular surface for the clavicle, though the spurlike processes are broken off from all of the condyles.

ORDER RODENTIA

Family HETEROMYIDAE

Perognathus dunklei sp. nov.

(Figs. 2 and 3)

Holotype. No. 6203 Museum of Comparative Zoölogy, Harvard; right lower jaw, bearing $P_4 - M_2$ and alveolus of M_3; incisor, angle, condyle and coronoid process missing. Referred material, anterior portion of right lower jaw (No. 6203a M. C. Z.) with incisor and P_4. Collected by David Dunkle, spring of 1935.

Horizon and Type Locality. Middle Pliocene, Ogallala formation, Edson Quarry, Sherman county, Kansas; sec. 25, T. 10 S., R. 38 W.

Diagnosis. Smallest of the known fossil forms of the genus *Perognathus*. External cusps of protoloph and metaloph of M_1 strongly developed; M_1 and M_2 medium crowned.

Description of Type. Perognathus dunklei represents a form the size of *Perognathus f. flavus*.

P_4 is high crowned and the cusps have completely worn down. The median valley of M_1 is still present. The tooth is more rounded than in *Perognathus f. flavus*. The lophs and cusps have remained distinct through a longer period of wear than in recent forms of corresponding age. M_1 has well-developed roots and is larger than M_2. M_2 is well rooted and larger than P_4. It is more rectangular in shape than M_1. M_3 was well developed though smaller than M_2 and possessed two well-developed roots; the anterior being the larger. Alveolar length of P_4-M_3 series, 3 mm.; anteroposterior diameter of P_4-M_2, inclusive, 2.1 mm.; transverse diameter of P_4, 0.6 mm.; transverse diameter of M_1, 0.9 mm.; transverse diameter of M_2, 0.83 mm. The fragmentary jaw is so set in plaster that it is impossible to see the mental foramen or the masseteric ridge.

The fossil species differs from the recent forms in that the cusps are more strongly developed, giving a deeper median valley between the lophs of M_1 and M_2.

Prodipodomys gen. nov.

Genotype. Dipodomys kansensis Hibbard. Amer. Midland Naturalist, Vol. 18, No. 3, pp. 462-464, Fig. 3, May, 1937.

Horizon and Type Locality. Middle Pliocene, near the base of the Ogallala formation, Sherman county, Kansas; sec. 25, T. 10 S., R. 38 W.; Edson Quarry.

Generic Diagnosis. P_4 high crowned, with two roots and X pattern, smaller than M_1 and as large as M_2 or larger; M_1 and M_2 subequal; M_3 greatly reduced, considerably smaller than P_4 and M_2; M_1 with two well-developed roots; M_2 strong tendency toward single root, a shallow groove on labial side of root of tooth showing incomplete reduction; M_3 single rooted; masseteric ridge well developed, ending in a strong process and situated as in *Dipodomys*. Tendency toward a slight pit between M_3 and coronoid process; a large foramen is present slightly posterior and labial to M_3, its form and position is the same as in *Dipodomys*.

Remarks. The presence of the rooted condition of P_4 and M_1 and the incomplete fusing of the root in M_2 seems to necessitate the founding of a new genus of kangaroo rats. *Prodipodomys* is distinguished from *Cupidinimus* by the presence of a well-developed foramen between M_3 and the base of the coronoid, which corresponds exactly with that found in *Dipodomys*. *Prodipodomys* is distinguished from *Dipodomys* by the presence of rooted P_4 and M_1.

In the M. C. Z. collection is a specimen No. 6204 (fig. 4) collected by David Dunkle, spring 1935, from Edson Quarry, which is questionably referred to *Prodipodomys kansensis*. The specimen consists of left maxilla bearing M^1 and M^2. In size they correspond with the type. P^4 is rooted. The alveolus is so broken that the development of the roots is not clearly shown, but there is evidence that the tooth possessed three roots. The anterior and labial roots

seem smaller than the lingual root. M^1 is high crowned with two well-developed roots. M^2 roots nearly fused. M^3 has a single root. M^1 larger than M^2. Alveoli length of P^4-M^3 series, 4.6 mm. Transverse width of M^1, 1.4 mm. Transverse width of M^2, 1.2 mm.

Family CRICETIDAE

Peromyscus martinii Hibbard

(Fig. 5)

In the collection is a nearly perfect right lower jaw (No. 6201 M. C. Z.) bearing incisor, M_1 and M_2. It is referable to the above form. The size and dentition pattern of the teeth agree in all respects with those of the type. Molar teeth simple and without accessory cusps. Length of tooth series (M_1-M_3) from the posterior edge of the alveolus of M_3 to the anterior edge of the alveolus of M_1 is 4 mm.; depth of mandible below posterior root of M_1 is 3 mm.; length of diastema from anterior border of M_1 to posterior border of the incisor alveolus, 3.5 mm. M_1 does not possess an anterior re-entrant angle. The masseteric ridge and mental foramen is normally developed and corresponds to those of *Peromyscus leucopus aridulus*. In comparison of the fossil specimen with the lower jaws of an adult female of *Peromyscus leucopus aridulus* it is found that the capsular process for the reception of the base of the incisor corresponds in development and position to the recent form. The distance from the alveolar border of M_3 to the condyle is 1.5 mm. greater in *P. l. aridulus* than in the fossil form.

?Oryzomys pliocaenicus sp. nov.

(Fig. 6)

Holotype. No. 6202, Museum of Comparative Zoölogy, Harvard; left lower jaw, bearing incisor, M_1, M_2 and M_3; angle, condyle and coronoid process missing. Collected by David Dunkle, spring of 1935.

Horizon and Type Locality. Middle Pliocene, Ogallala formation, Edson Quarry, Sherman county, Kansas; sec. 25, T. 10 S., R. 38 W.

Diagnosis. A small cricetine rodent with masseteric ridge developed and situated as in the genus *Oryzomys*. Mental foramen situated on dorsal surface of diastemal region. Anteroposterior diameter of M_1-M_3 series is 3.6 mm.

Description of Type. The mandible is that of an old specimen with teeth greatly worn, only the outlines of the cusps remaining. No accessory cusps present. The masseteric ridge corresponds in development to that found in the genus *Oryzomys*. The mental foramen is situated slightly more dorsally on the diastemal region than in *Oryzomys palustus texensis*. The depth of the mandible below M_1 is 3.6 mm.

Remarks. This specimen is placed questionably in the genus *Oryzomys*. Incomplete material, the form and position of the masseteric ridge, also the position of the mental foramen, prohibit the placing of the specimen with the following genera: *Onychomys, Reithrodontomys, Peromyscus* or *Eligmodontia*. The depth of the mandible correlated with the size of the jaw is also characteristic and resembles more closely the condition observed in *Oryzomys*. If the jaw were complete so that one could study the development and situa-

tion of the capsular process for the reception of the base of the incisor, more light would be thrown upon the relationship of the species.

The following fauna has been found associated with the newly described forms from the Edson Quarry = "Edson Beds" = "North Quarry":

AMPHIBIA
- Ambystomidae
  - *Plioambystoma kansensis* Adams
- Pelobatidae
  - *Scaphiopus pliobatrachus* Taylor
- Bufonidae
  - *Bufo arenarius* Taylor
  - *Bufo hibbardi* Taylor

REPTILIA
- Chelydridae
  - *Chelonia* sp.
- Testudinidae
  - *Testudo* sp.

AVES
- Colymbidae
  - *Colymbus nigricollis*
- Gruidae
  - *Grus nannodes* Wetmore and Martin
- Scolopacidae sp.
- Corvidae sp.

MAMMALIA
- Mustelidae
  - *Martinogale alveodens* Hall
  - *Plesiogulo marshalli* (Martin)
- Canidae
  - *Osteoborus cyonoides* (Martin)
  - *Leptocyon shermanensis* Hibbard
- Felidae
  - *Machairodus* cf. *catocopis* Cope
  - *Adelphailurus kansensis* Hibbard
- Mylagaulidae
  - *Mylagaulus monodon* Cope
- ? Family
  - *Kansasimys dubius* Wood
- Heteromyidae
  - *Prodipodomys kansensis* (Hibbard)
- Cricetidae
  - *Peromyscus martinii* Hibbard
- Camelidae
  - *Megatylopus gigas* Matthew and Cook
  - *Pliauchenia* sp.
- Tayassuidae
  - *Prosthennops serus* Cope

Equidae
Hipparion cf. *montezumae* (Leidy)
Pliohippus cf. *pernix* Marsh
Calippus ansae Matthew and Stirton
Rhinocerotidae
Aphelops cf. *mutilus* Matthew

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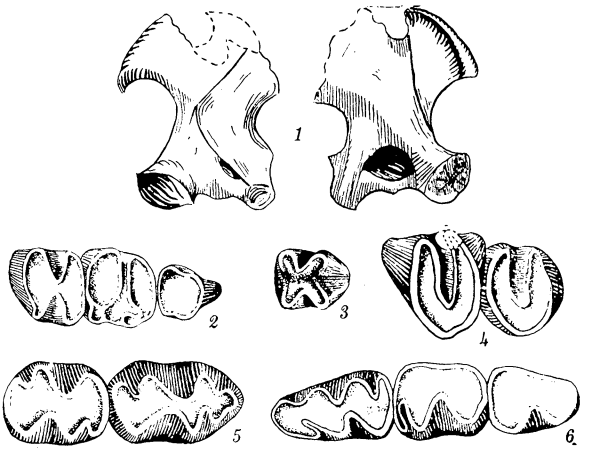

FIG. 1. *Talpidae,* right humerus, K. U. M. V. P. No. 4928, × 2.

FIG. 2. *Perognathus dunklei* Hibbard, type, M. C. Z., No. 6203, right lower P_4, M_1 and M_2, × 10.

FIG. 3. *Perognathus dunklei,* right lower P_4, M. C. Z. No. 6203a, × 10.

FIG. 4. *Prodipodomys kansensis,* M. C. Z. No. 6204, left upper M^1 and M^2, × 10.

FIG. 5. *Peromyscus martinii,* M. C. Z. No. 6201, right lower M_1 and M_2, × 10.

FIG. 6. *?Oryzomys pliocaenicus* Hibbard, type, M. C. Z. No. 6202, left lower M_1, M_2, and M_3, × 10.