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A NEW GENUS OF CRICETID RODENT FROM THE HEMINGFORDIAN (MIOCENE) OF NEBRASKA[1]

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ABSTRACT

Yatkolamys edwardsi, a new genus and species of cricetid, is described from northwestern Nebraska. The fossil, a partial right lower jaw, comes from beds of Hemingfordian age (middle Miocene). It is referred to the Eucricetodontinae and is thought to be a Eurasian immigrant rather than being derived from a North American Arikareean cricetid.

INTRODUCTION

Fossil remains of cricetid rodents are extremely rare in the North American Hemingfordian. The literature records only a few isolated teeth from the Thomas Farm local fauna in Florida (Black, 1963) and the Black Bear fauna in South Dakota (Martin, 1976).

The Thomas Farm record consists of two teeth, which are probably from widely different taxa. One tooth (Florida Geological Survey V.-6019), a right M^1, is somewhat similar to those of *Zetamys* (Martin, 1974) and to some unassigned teeth from the Texas Miocene presently under study by Bob Slaughter. It probably is not from a cricetid. The other tooth referred by Black to the Cricetidae is University of Florida No. 3940, which he identified as a right M_1. This tooth is not similar to those of any Eurasian or North American cricetid with which we are familiar and may also be misassigned.

The equivocal nature of the Thomas Farm specimens referred to the Cricetidae, along with the absence of cricetids in the rich microfaunas recovered from the Hemingfordian Martin Canyon A, Marsland, and Split Rock local faunas, seemed to make the existence of Hemingfordian cricetids in North America questionable (Lindsay, 1972). This possibility was reinforced by the discovery that the North American Barstovian cricetids are

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derived from the Eurasian cricetid radiation rather than from North American forms (Lindsay, 1972; Martin, 1972). However, J.E. Martin (1976) has recently demonstrated the presence of cricetids in the Black Bear local fauna of the Hemingfordian Batesland Formation in South Dakota.

We now put on record a lower jaw with incisor from the Hemingfordian Cottonwood Creek local fauna in Nebraska. This is the first cricetid specimen from the Hemingfordian that is sufficiently complete to permit serious discussion of its relationships. Of particular interest is the morphology of the incisor enamel. L.D. Martin (1972; 1980) has recognized characteristic enamel ridging on the incisors of North American Oligocene and early Miocene cricetids that permits easy identification to genus.

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SYSTEMATIC PALEONTOLOGY

Order RODENTIA Bowdich, 1821
Superfamily MUROIDEA Miller and Bidley, 1918
Family CRICETIDAE Rochebrune, 1883
Superfamily EUCRICETODONTINAE Mein and Freedenthal, 1971

YATKOLAMYS new genus

Type species.—*Yatkolamys edwardsi*, new species.

Distribution.—Middle Miocene (early Hemingfordian), North America.

Diagnosis.—Distinguished from all other cricetids except *Eoeumys* by the large number of small parallel ridges on its lower incisors; differing from *Eoeumys* by lack of pinnate ridging.

Etymology.—*Yatkola*, for our esteemed former colleague, the late Daniel A. Yatkola; *mys* Greek, meaning mouse.

YATKOLAMYS EDWARDSI, new species

Figure 1

Holotype.—UNSM 45390, partial right ramus with incisor and M_{1-3}.

Type locality and stratigraphic position.—Collected from brown, crossbedded, semiconsolidated sands of the Marsland Formation, Cottonwood Creek locality (UNSM collecting locality Dawes County-118), road cut, east side of U.S. Highway 385, 100 yards east of west line, NW¼ NW¼ SE¼, sec. 16, T. 29 N., R. 48 W., Dawes Co., Neb. (Box Butte NW, 7½ minute quadrangle). Associated fauna compares well with that of the type area of the Marsland Formation (Schultz, 1938) and includes a cypriniform fish, several anurans, two chelonians, at least two iguanid lizards, several snakes, at least two avians, *Parvericius* sp., *Scalopoides* sp., *Oreolagus* sp., a mylagaulid rodent, two sciurid rodents, several heteromyid rodents, *Plesiosminthus* sp., an unidentified carnivore, *Merychyus* sp., *?Oxydactylus* sp., *Aletomeryx* sp., and a small unidentified cervid.

Diagnosis.—As for genus.

Etymology.—For the late Paul W. Edwards, in recognition of his accomplishments in paleontology.

Description.—Cricetid about size of *Onychomys;* ramus with masseteric lines strongly developed, meeting in "V" and continuing as ridge under posterior half of M_1; mental foramen not preserved but probably anterior of M_1; ascending ramus just posterior to front of M_1. Incisor with rounded ventral surface, enamel not extending far onto labial side, surface covered with large number of small parallel ridges; lower molars brachydont and cuspidate, but not terraced, lingual

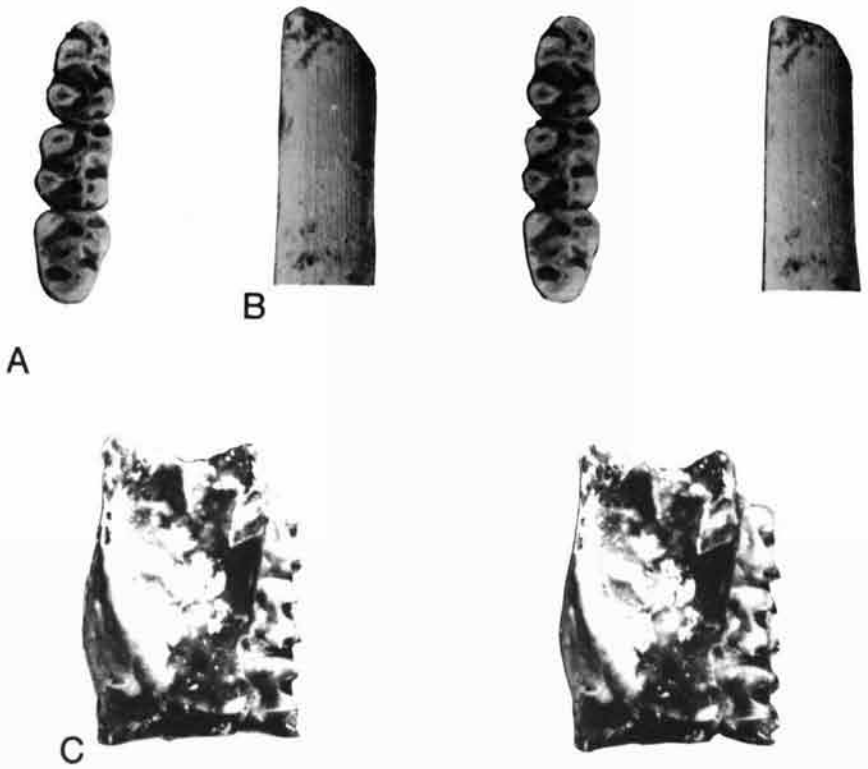

Fig. 1. Stereophotographs of *Yatkolamys edwardsi*, UNSM 45390 (holotype). A. Crown view of M_{1-3}, X10. B. Ventral view of incisor, X15. C. Labial view of ramus, X7.

and labial cingula rudimentary or absent, all molars about same size with nonalternating cusps and reentrants broad and straight. M_1 with small anteroconid attached by anterior mure directly to protoconid; anterior cingulum well developed labially and attaching anteroconid to protoconid; mesolophid short, small spur off posterior mure into labial reentrant; posterior cingulum well developed. M_2 with protoconid and metaconid attaching separately to anterior cingulum; anterior cingulum attaching labially to protoconid, forming deep pocket (such pockets also occurring in M_1 and M_3); mesolophid very short; posterior cingulum prominent. M_3 almost as large as M_2 but narrower posteriorly, similar to other molars.

Measurements of holotype in mm.—Length: M_1, 2.04; M_2, 1.15; M_3, 1.91; M_{1-3}, 5.78. Width: M_1, 1.23; M_2, 1.43; M_3, 1.52.

Discussion.—The low-crowned cuspidate molars of Yatkolamys are easily distinguished from the high-crowned lophate teeth of *Paciculus* and the terraced molars of *Leidymys* and *Copemys*. Yatkolamys is also distinguished by the large number of parallel ridges on its lower incisors. The two most common Arikareean genera that might be expected to persist into the Hemingfordian are *Paciculus* and *Leidymys*. Both have a system of 4 to 5 parallel ridges on the enamel of the lower incisors (Fig. 2), whereas *Yatkolamys* has 16. The only known North American cricetid to have anything close to this number of ridges on the lower incisor enamel is *Eoeumys vetus;* however, neither *Eoeymys vetus* nor the closely related *Eoeumys exiguus* have lower incisors associated with their holotypes. The characterization of their lower incisor enamel is based on referred specimens that are pinnately ridged. One such referred specimen, (University of Kansas Museum of Natural History, Division of Vertebrate Paleontology, KUVP 10753) from the type

area of *Eoeumys vetus*, is compared to a primitive species of *Leidymys (L. blacki)* in Figure 2. Various Eurasian cricetids also have ridged lower incisor enamel, and Alker (1968) assigned *Eoeumys exiguus* from the North American middle Oligocene to the European early Oligocene genus *Paracricetodon*. This assignment was convincingly refuted by Dawson and Black (1970); however, several of the characters listed by Alker do successfully separate *Eoeumys exiguus* from *Eumys*, *Leidymys*, and *Scottimus*. The most important of these characters is the pinnately ridged lower incisors.

All specimens of *Copemys* that we have examined have smooth incisors, as does *Cricetodon*. In *Eucricetodon collatum* there are several parallel ridges. *"Eumys" asiaticus* from Mongolia has similar ridging on its incisors and might be best regarded as a eucricetodontine. It is certainly not a *Eumys*. Black's (1961) genus *Cotimus* also has ridged lower incisor enamel and might be best considered a synonym of *Leidymys*. It is apparently Arikareean in age (Martin, 1980).

It seems likely that the multiple ridges in *Yatkolamys* is a condition derived from a cricetid with a smaller number of ridges, and we regard it as a eucricetodontine. In North America the best case for an ancestral taxon could be made for *Leidymys* as the nature of the ridging is different in *Eoeumys vetus*.

Because of the specialized nature of *Yatkolamys*, we do not believe that it gave rise to any of the known Barstovian cricetids, and we still regard these as Eurasian immigrants closely related to *Democricetodon* and *Copemys*. The basal stock of the eucricetodontine radiation in North America must have been similar to *Eoeumys vetus;* in Eurasia it was probably *Eucricetodon*. Both of these forms have large infraorbital foramina, large buccal anterocones, and ridged incisors. Apparently they share a common ancestor in the lower Oligocene. After this time there is little evidence for interchange of cricetids between North America and Eurasia until the presence of *Yatkolamys* in the Hemingfordian. All Oligocene and early Miocene cricetids in North America are probably evolu-

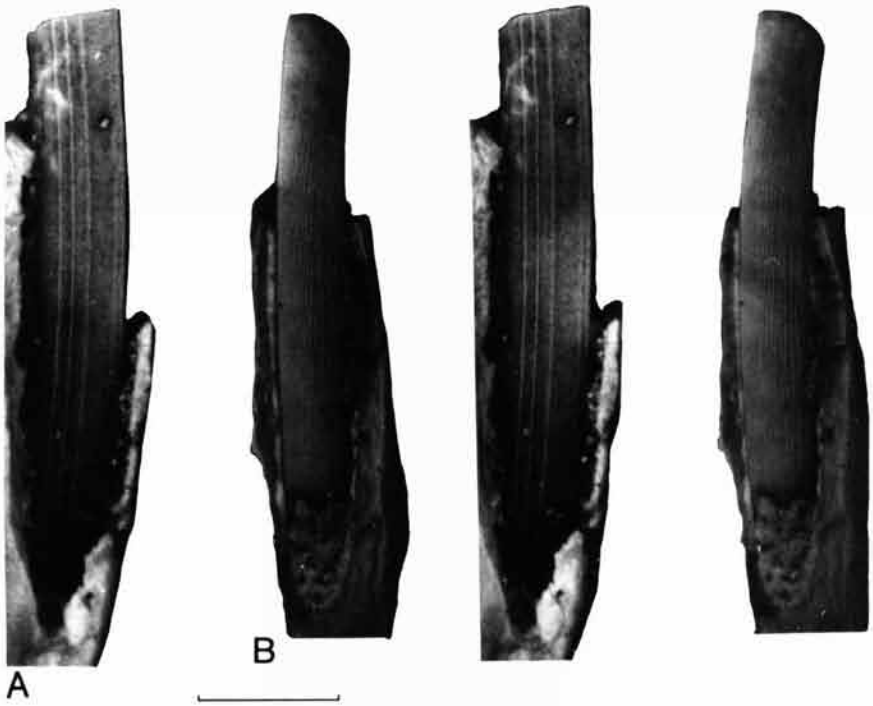

Fig. 2. Ventral stereophotographs of lower incisors. A. *Leidymys blacki*, UNSM 11624. B. *Eoeumys vetus*, KUVP 10753. Scale = 2.5 mm.

tionary dead-ends. *Yatkolamys* is regarded as an immigrant in the Hemingfordian as it is more similar to *Eucricetodon* than to any North American cricetid. The hesperomyine radiation is believed by us to be based in another immigration of Eurasian cricetids that took place during the late Miocene (Barstovian).

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