

## Two Late Pleistocene Fossils from the Washita Local Fauna

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Two fragmented fossils of microvertebrates were recovered in western Oklahoma. They were found in a bed of light gray, silty clay 12 kilometers south of Weatherford, Washita County Oklahoma (T11N, R14W, S18, SW1/4, NE1/4). The clay deposit is representative of the Late Pleistocene, which dates back 10,000 - 100,000 years. It is ~18 meters long and 2.3 meters deep and rests on red Permian sandstone of the Cloud Chief Formation. A gradual color change can be seen at the contact of the Pleistocene and Permian sediments.

The date of the deposit was obtained by radiocarbon dating three previously excavated bone samples (Geochron Laboratories, Krueger Enterprises, Inc. Cambridge, MA) found near the two fossils and was found to be an average of ~17,028 C-14 years before present (C-13 corrected). The samples used to date the site include *Bison cf. occidentalis*, GX-16060-A (18,295 +270); *Equus excelsus*, GX-22604-A (16,440 + 730) (1); and *Bootherium bombifrons*, GX-19196 (16,350 +190) (2).

***Scalopus aquaticus*:** The first fossil recovered by using a screenwashing method in the spring of 1997 was *Scalopus aquaticus*, more commonly known as the eastern mole (Fig. 1). The fossil was a fragmented left mandible with the third molar (M3) still intact. Due to the fragmented nature of the fossil, Dr. Nicholas Czaplewski aided in the identification by comparing it to other *S. aquaticus* fossils at the Natural History Museum at the University of Oklahoma. Measurements were made using a binocular stereoscopic microscope and a digital caliper set in millimeters. The measurements include coronoid process to condyloid process, 5.67 mm; condyloid process to the angle of the mandible, 6.80 mm; angle of the mandible to the anterior fragmented surface of the mandible, 9.76 mm; mandible to the coronoid process, 5.88 mm; anterior to posterior surface of the molar, 1.82 mm; buccal to lingual surface of the molar, 1.38 mm; and mandible to crown of the molar 2.60 mm.

The eastern mole is classified in Animalia, Phylum Chordata, Class Mammalia, Order Insectivora, Family Talpidae, Genus:

*Scalopus*, Species *S. aquaticus*. It inhabits a variety of habitats, including sand dunes, hardwood forests, open fields and pastures. Habitat requirements are well-drained loose soil suitable for tunneling, the presence of moisture, and a supply of food (3). *S. aquaticus* has an extensive geographic range, occurring throughout much of the eastern United States, where soils are favorable. It ranges from the eastern base of the Rocky Mountains of Wyoming eastward to the Atlantic, northward to the Great Lakes, and southward to the northeastern Mexico (4). It is though the southcentral states except in southern Louisiana (5).

The head and body length of males ranges from 188 to 210 mm long, the tail length ranges from 30 to 40 mm long, and weight from 80 to 90

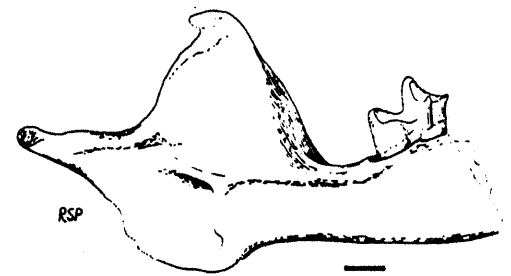


Figure 1. Fragmented left mandible of *Scalopus aquaticus*. Bar = 1 mm.

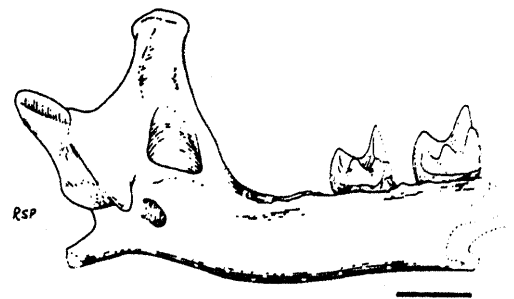


Figure 2. Fragmented left mandible of *Sorex cinereus*. Bar = 1 mm.

grams. Females are slightly smaller (3). The robust body is covered with a thick fur; its color varies from silver to black to copper. The tail is round and almost hairless, as are the burrowing feet, which have webbing between the toes. The eyes are poorly developed and serve only in detecting light. The eastern mole has an elongated snout, like that of a shrew, but lacks the enlarged upper incisors and the teeth are not pigmented. The teeth are relatively high crowned. The dental formula is  $I\ 3/2, C\ 1/0, Pm\ 3/3, M\ 3/3 \times 2 = 36$  teeth (6).

*Sorex cinereus*: The second fossil recovered in the spring of 1998 was the *Sorex cinereus*, more commonly known as the masked shrew (Fig. 2). This fossil was a fragmented left mandible with the first and second molars (M1 and M2) still intact. Due to its fragmented nature, Russell S. Pfau from Oklahoma State University aided us in its identification. The measurements of the fossil include: coronoid process to condyloid process, 2.75 mm; condyloid process to the angle of the mandible, 2.71 mm; angle of the mandible to the anterior fragmented surface of the mandible, 6.19 mm; and mandible to the coronoid process, 3.14 mm.

The masked shrew is classified in Animalia, Phylum Chordata, Class Mammalia, Order Insectivora, Family Soricidae, Genus: *Sorex*, Species: *S. cinereus*. It inhabits moist environments in forests, open country, and brushlands. It survives in areas of extreme winter cold by living at the bases of plants and forming runways and burrows in soft ground (4). *S. cinereus* is one of the most widely distributed of all American mammals. It occurs from Maine to the Dakotas and Nebraska, and southeast to the Smoky Mountains of North Carolina (3).

*S. cinereus* is one of the smallest of shrews; total length ranges from 71 to 111 mm. The length of the tail ranges from 25 to 50 mm (6). The body is typically grayish brown, while the tail is bicolored. The ventral areas are paler than the dorsal. Certain identification is afforded by the upper dentition in which the third upper unicuspid tooth is equal in size to or larger than the fourth. Specimens found as fossil are usually complete or fragmentary lower jaws. In the lower ramus there is usually no postmandibular foramen and the crown length of the lower molar, M1 to M3 measures only about 3.1 to 3.2 mm (4). The dental formula is  $I\ 3/1, C\ 1/1, Pm\ 3/1, M\ 3/3 = 32$  teeth (6).

It is likely that these two specimens lived at a time of extremely cold weather. The deposit in which they were found has produced *Bootherium bombifrons* (musk ox), a cold weather animal, and radiocarbon dating indicates the deposition of the site to have occurred during the latter part of the Wisconsin ice age.

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