New specimen of *Monosaulax typicus* (Mammalia, Castoridae) from the Mascall Formation of Twin Buttes in the Crooked River Basin, Oregon

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Abstract

The Mascall formation of Central Oregon is a rock unit that was formed during the middle Miocene (~15 million years ago). The Mascall formation was first described from North Central Oregon, but also outcrops to the south in the Crooked River Basin, where it is much older. While these southern outcrops of the Mascall Formation have been known for some time, recent research shows that they are about a million years older than the outcrops of the same formation in the John Day Basin. This particular formation is known for producing many Barstovian-age mammals. Recent collections by University of Oregon field crews have yielded new material from the Crooked River region. I have diagnosed two new specimens recovered from the Mascall formation from Twin Buttes near Paulina, OR, as *Monosaulax typicus* from the family Castoridae. One specimen is a fragment of a lower right jaw that contains the p4-m2, while the other is a left jaw fragment. These are the most complete remains of *M. typicus* from the Mascall formation; other known specimens are isolated teeth. The teeth have all the diagnostic characteristic of other previously identified specimens of *M. typicus* that were found in Southeast Oregon rocks of similar age. The information of this new specimen will add to the limited knowledge of this species and the environment of the Crooked River Basin (Shotwell, 1968).

Description

- Right fragment of lower jaw
- Fully intact p4-m2
- Missing incisor and m3
- Signs of advanced stages of wear: missing striids, reduced fossetids, reduced crown height
- Ovid shape
- Fossetids oriented perpendicular to jaw
- No secondary fossetids on any teeth
- p4 is the largest tooth
- The mesostriid on the labial side of p4 shows advanced signs of wear
- The para-, meso-, and meta- fossetids on the p4 are parallel, straight, and almost the same length
- m1 contains meso-, meta-, and hypo- fossetids
- Parafossetid on m1 is no longer visible
- The m2 contains para-, meso-, meta-, and hypo-fossetids
- Mesostriid and hypostriid on m1 and m2 have been worn down and are no longer visible

Right Jaw Fragment of *M. typicus*

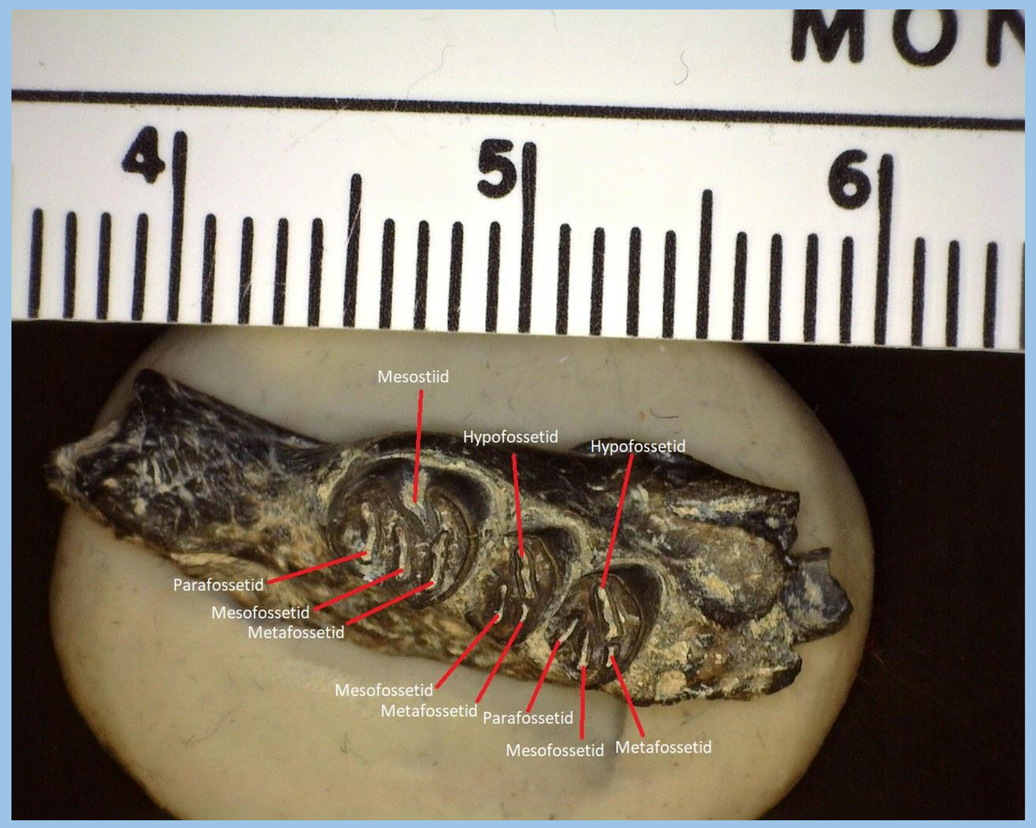

Figure 1 Labeled occlusal view of *M. typicus*

Figure 2 Lingual View of *M. typicus*

Figure 3 Labial view of *M. typicus*

Tooth Measurements (mm)	New Specimen	UO 21677
p4 AP	3.80	3.88
p4 Tr	3.23	3.52
p4 Mesofossetid	.73	-
m1 AP	2.03	2.70
m1 Tr	2.93	3.41
m2 AP	2.37	2.79
m2 Tr	3.10	3.47

Table 1 Measurements in mm to compare holotype specimen to New specimen of *M. typicus*

Paleoecology

Monosaulax was a genus of beaver that lived during the middle Miocene. Their age range spanned ~15-13 million years ago. *Monosaulax typicus* and *Monosaulax progressus* are the two species of beavers to roam Oregon during this time. *M. typicus* was a small bodied, semi-aquatic beaver. They were shown to have some capabilities for digging and burrowing. The lophodont teeth suggest that *M. typicus* was an herbivore. The hypsodont teeth would allow *M. typicus* to feed on grasses, leaves, and seeds (Rybczynski et al 2010).

Ongoing Research from the Twin Buttes Locality

List of other known taxa:

- Hesperotestudo
- Rhinocerotids
- Teleoceros
- Merychippus
- Amphicyonid

Figure 4 Occlusal view of a Rhinocerotid

Figure 5 Occlusal view of an Amphicyonid

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Sources

[1] Rybczynski, N., Ross, E. M., Samuels, J. X., & Korth, W. W. (2010). Re-evaluation of Sinocastor (Rodentia: Castoridae) with implications on the origin of modern beavers. PloS one, 5(11), e13990. https://doi.org/10.1371/journal.pone.0013990

[2] Shotwell, J.A. 1968. Miocene mammals of Southeast Oregon. Bulletin of the Museum of Natural History, 14;pp.67