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**GEOLOGY AND PALAEOBIOLOGY OF THE
NORTHERN SPERRGEBIET, NAMIBIA**

by

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Proboscidea from the Early Miocene of the northern Sperrgebiet, Namibia

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Very limited and fragmentary remains of proboscideans have been recovered from the Miocene fluvio-paludal deposits of the northern Sperrgebiet. An upper molar from Elisabethfeld is identified as *Eozygodon morotoensis*, and there is a fragment of gomphothere enamel proving the presence of a second lineage of proboscideans in the region. In addition there is a proboscidean atlas vertebra and a series of footprints at Elisabethfeld that were most likely made by a proboscidean.

Introduction

Proboscidean remains are rare in the northern parts of the Sperrgebiet. Pickford and Senut (2000) recorded a series of elephantoid footprints at Elisabethfeld, and Pickford (2003) reported the presence of *Eozygodon morotoensis* at the same site. In addition there are two fragmentary teeth lacking enamel which are indeterminate, a fragment of thick enamel belonging most likely to a gomphothere, and an atlas vertebra.

Systematic descriptions

Order Proboscidea Illiger, 1811

Mammutidae Cabrera, 1929

Genus *Eozygodon* Tassy and Pickford, 1983

Species *Eozygodon morotoensis* (Pickford and Tassy, 1980)

Holotype : MOR I 61 E, partial dental series comprising left and right P4/, M1/, M2/, left m/3 and two fragments of molars, from Moroto I, Uganda.

Material from the northern Sperrgebiet : EF 26'93, worn and abraded left M1/ (Pl. 1, A-E).

Material doubtfully attributed to the species : EF 1'96, first loph of an upper molar (M2/?); EF 25'93, right p/4 lacking enamel (Pl. 1, F).

Description : The upper molar from Elisabethfeld is deeply worn and somewhat abraded by wind-blown sand. The enamel is thin within a proboscidean context, as in *Eozygodon morotoensis*. There is a prominent anterior cingulum, followed by three deeply worn lophs. The pretrite side is worn down to cervix level distally, but the lingual enamel of the two anterior cusps is present. The posttrite side retains parts of the enamel of the two anterior lophs, but the third one has been damaged by the wind-blown sand. The two buccal roots are far apart, lying beneath the first and third posttrites, with no root below the second posttrite. Lingually there is a single antero-posteriorly

elongated root that lies beneath the second and third pretrites, bifurcating towards its apex. The root beneath the first pretrite is confluent with that beneath the first posttrite. The crown is 67 x 46 mm, which is similar to a specimen from Auchas, Namibia (Pickford, 2003).

EF 1'96 is the first loph of an upper molar, as revealed by the confluent form of the root below the pretrite and posttrite cusps. The specimen is severely sand blasted and has no enamel, but it could belong to *Eozygodon*. As preserved it is 51 mm wide at cervix, which is compatible with M2/ and M3/ of *Eozygodon morotoensis*. Clearly however, such poorly preserved material is essentially unidentifiable.

EF 25'93 is a lower right premolar, probably p/4. The enamel is missing and the specimen is sand blasted, but the form of the dentine-enamel junction can be ascertained reasonably well. The anterior loph is comprised of two cusps with the buccal one having anterior and posterior crests that lead from its tip obliquely towards the midline of the tooth. The posterior loph also consists of two cusps separated from the anterior pair by a valley. There are two roots. As preserved the tooth measures 37.6 x 25.7 mm at cervix.

Family Gomphotheriidae Hay, 1922

Genus and species *incertae sedis*

Material : EF 6'94, enamel fragment; SAM PQN 124, atlas vertebra.

Description : A fragment of enamel, probably from a molar is considerably thicker than that which occurs in the cheek teeth of *Eozygodon morotoensis*, and it most likely represents a gomphothere such as *Progomphotherium* or *Afromastodon*. Unfortunately, the specimen is unidentifiable even at the family level, but it does reveal that the fluvio-paludal deposits of the region contain at least two taxa of proboscideans.

SAM PQN 124 from Elisabethfeld, is an atlas vertebra that could belong to either of the two proboscideans known from the site. The occipital articula-

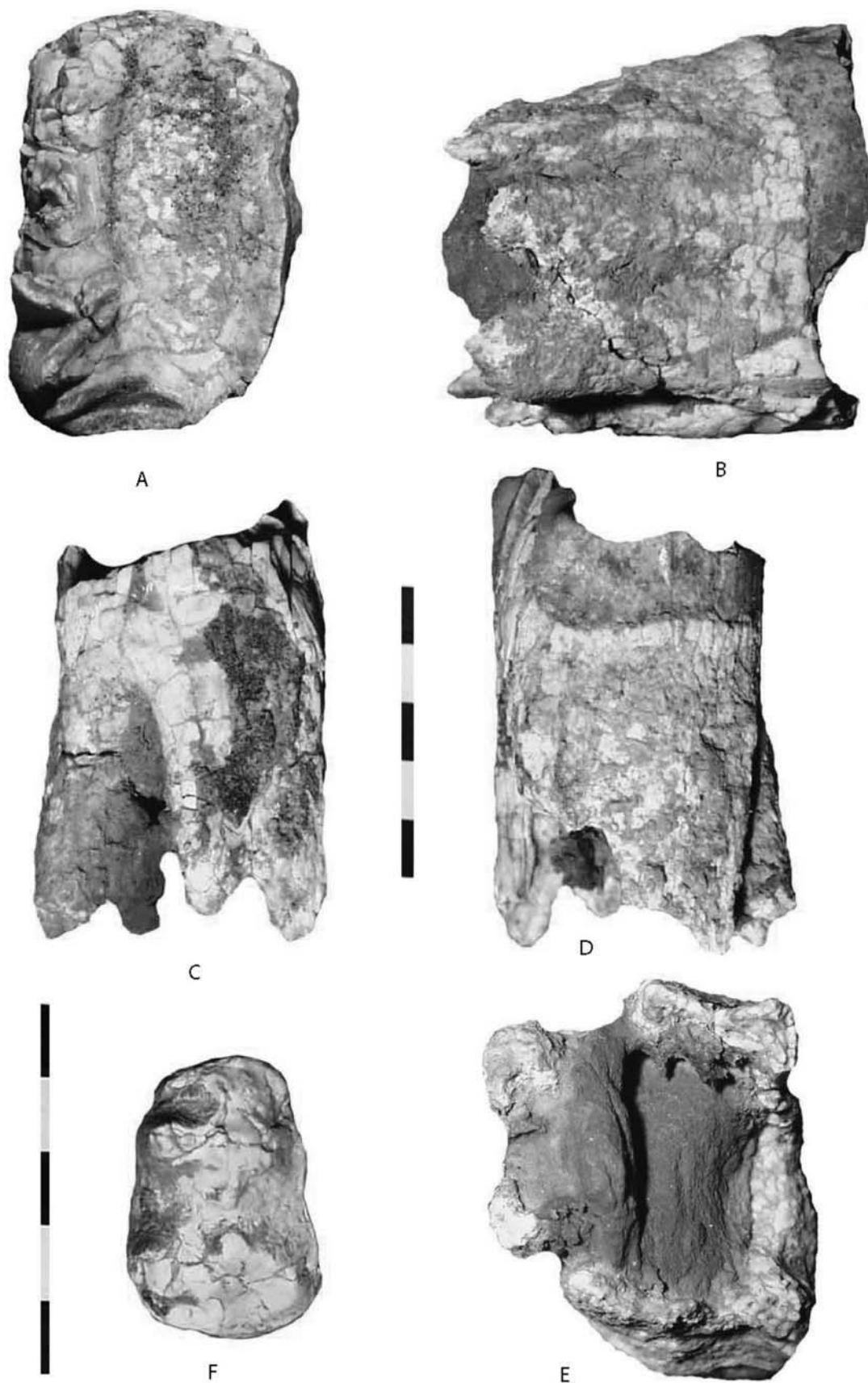


Plate 1. *Eozygodon morotoensis* from Elisabethfeld, Namibia. A-E, EF 26'93, left M1/, occlusal, buccal, mesial, distal and radicular views respectively; F, EF 26'93, right p/4, occlusal view (scale intervals : 1 cm).

tion is 158 mm wide and ca 92 mm high. The antero-posterior length of the bone at its dorsal midline is ca 50 mm. The vertebral canal is 75 mm dorso-ventral by ca 68 mm in breadth.

Footprints

A set of large footprints at Elisabethfeld were described and illustrated by Pickford and Senut (2000). They were most probably made by a proboscidean, but it is impossible to identify the species involved.

Conclusions

The meagre remains of proboscideans from the central and northern Sperrgebiet reveal the presence of at least two taxa, a thick-enamelled gomphothere, and the thinner enamelled mammutid *Eozygodon morotoensis*. There are also footprints of a proboscidean at Elisabethfeld, the site which yielded all the tooth fragments so far found.

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