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New records of Beremendia fissidens (PETENYI, 1864) and Sorex minutus Linnaeus, 1766 (Insectivora: Soricidae) from the British Lower and Middle Pleistocene.

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SUMMARY

Beremendia fissidens is a rare shrew in the British Pleistocene deposits, known only from one Cromerian locality (Sugworth) at present. This note describes an additional specimen from the foreshore Crag at East Runton of Villanyian age ca 1.7 m.y.b.p. and a molar, recorded for the first time, from the type Cromerian Freshwater Bed at West Runton, ca 700,000 y.b.p. *Sorex minutus* is also recorded from the Freshwater Bed at West Runton, where it has not previously been noted.

SAMENVATTING

Beremendia fissidens is zeldzaam in pleistocene afzettingen van Groot-Britannië. De soort is tot op heden slechts bekend van één vindplaats (Sugworth) met een Cromerien ouderdom. In deze bijdrage wordt een bovenkaaks snijtand van *Beremendia fissidens* beschreven, afkomstig uit de 'Crag' voor de kust bij East Runton met een Villanyien ouderdom (ca. 1,7 miljoen jaar oud) en een onderkaakskies uit de type-afzettingen van het Cromerien, de 'Freshwater Beds' bij West-Runton met een ouderdom van ca. 700.000 jaar. In de 'Freshwater Bed' afzettingen van West Runton is ook voor het eerst de dwergspitsmuis *Sorex minutus* aangetroffen. Een incomplete kaak van deze soort is ook in dit artikel beschreven en afgebeeld.

Beremendia fissidens

The species was described from Beremend 1 (PETENYI, 1864). It is known from numerous sites in Continental Europe (REUMER, 1984). It first appears in sites of Lower and Middle-Pliocene age such as Podlesice, Weze and Gundersheim (KURTEN, 1968; RZEBIK-KOWALSKA, 1976). It attains its zenith in the Lower Pleistocene when its remains are abundant in Continental sites of Villanyian and Biharian age, persisting until Cromerian times in the Middle Pleistocene at least in Poland, (RZEBIK-KOWALSKA, 1976). In the British Isles, remains of this species are very rare and fragmentary and confined until now to three isolated molars (STUART, 1980, 1982), from the Cromerian at Sugworth, Oxford (STUART, 1980, 1982). In spite of extensive screen washing for small mammal remains in recent years, it has remained unknown from the type Cromerian horizon, the Freshwater Bed at West Runton, (STUART, 1992). It is of interest to describe below an isolated upper incisor from the foreshore Crag at East Runton of Villanyian age and a lower molar from the Cromerian Freshwater Bed at West Runton.

Description

HZM.17.23334 Part right I1 sup. East Runton, near Cromer, Norfolk. Collected by J.D. Clayden from the foreshore crag. (Fig. 1)

HZM.16.22451 m_2 sin. West Runton, near Cromer, Norfolk. Collected by J.D. Clayden from the Cromerian Freshwater Bed (Bed G). (Fig. 2)

Although the talon of the upper incisor (HZM.17.23334) is missing, the large size, (estimated length 4.22 mm taken by the method of REUMER, 1984), strongly fissident condition with slightly divergent cusps and pigmented tip agree well with this species and are not comparable with any other known fossil shrew in Britain, (Fig. 1).

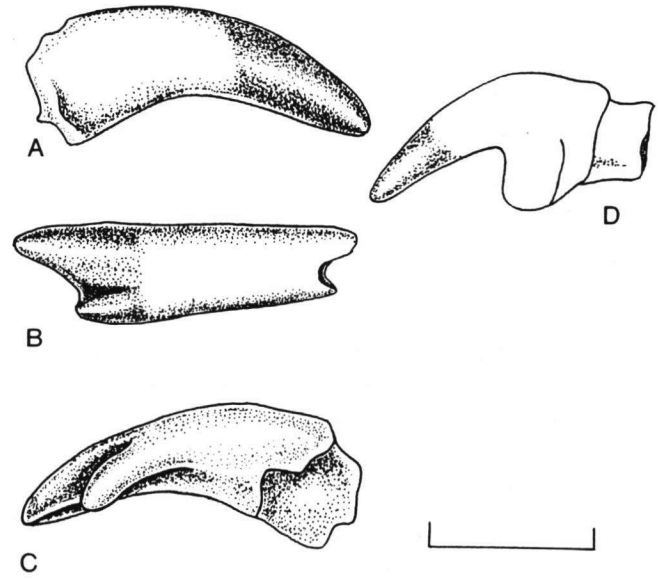

Fig. 1: Incomplete right upper incisor of *Beremendia fissidens*; lingual (A), dorsal (B) and buccal (C) views. HZM.17.23334, East Runton, Norfolk, foreshore crag (Lower Pleistocene). Scale = 2 mm. D: Outline of entire tooth below, after REUMER (1984). Not to scale.

Fig. 1: Incomplete bovenkaaks snijtand van *Beremendia fissidens*; linguaal, dorsaal en buccaal aanzicht. HZM.17.23334, East Runton, Norfolk, foreshore crag (Lower Pleistocene). Schaal = 2mm. D: Zijaanzicht van een complete bovenkaaks snijtand naar REUMER (1984), niet op schaal.

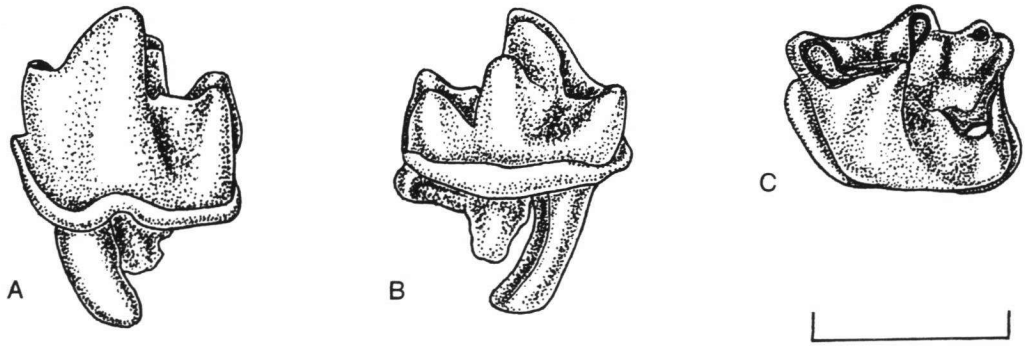

Fig. 2: *Beremendia fissidens* m2 sin; buccal (A), lingual (B) and occlusal (C) views. HZM.16.22451, West Runton, Norfolk, Cromerian Freshwater Bed. Scale = 2 mm.

Fig. 2: *Beremendia fissidens* m2 sin; buccaal, linguaal en occlusaal aanzicht. HZM.16.22451, West Runton, Norfolk, Cromerian Freshwater Bed. Schaal = 2 mm.

Remains of shrews are unfortunately rare in the marine littoral crags of Norfolk and are often indeterminate. The Weybourne Crag of East Runton contains a characteristic Lower Pleistocene microtine fauna generally considered to be of Pre-Pastonian (Villanyian) age, ca 1.7 m.y.b.p. (MAYHEW & STUART, 1986; HARRISON, BATES & CLAYDEN, 1988) correlating in age with Tegelen in the Netherlands. It was predictable that *Beremendia* would occur in the Soricid fauna at this time and this is now confirmed.

The mandibular molar from West Runton (HZM.16.22451) is characterised by its massive size in comparision with other known shrews from this deposit, which are *Sorex runtonensis*, *Sorex savini* and *Neomys newtoni* (STUART, 1992). This specimen is relatively short and broad with the crown almost rectangular in outline, clearly indicating that it is an m_2. The m_1 crown is decidedly longer in relation to its width. The dimensions are crown length 2.37 mm; trigonid width 1.60 mm; talonid width 1.54 mm. These measurements fall well within the range of 31 examples from Villany 3 given by REUMER (1984, Table 47). It is slightly larger than the three lower molars from Sugworth recorded by STUART (1980). The trigonid exhibits the slight posterior shift of the metaconid in relation to the protoconid which is characteristic of *Beremendia*, so that the trigonid basin is deep and wide (REUMER, 1984). The entoconid crest is short and only moderately high. The principal cusps are prominent, with early wear facets. In the trigonid the paraconid is lowest, the protoconid highest.

The distinct, conical entoconid is smaller than the hypoconid and has a well developed post-entoconid edge. The cristid obliqua passing from the hypoconid to the posterior wall of the trigonid has a distinct notch just before its point of attachment just external to the metaconid. The lingual cingulum is unusually high and well developed, while the buccal cingulum has a well marked undulation below the tip of the protoconid. The anterior root is well preserved and deeply grooved on its posterior surface, the posterior root is missing, its point of attachment concealed by adherent matrix. As is frequently the case in fossil shrew teeth from West Runton all trace of pigmentation has been lost and the preservation colour is jet black.

Discussion

The fragmentary incisor from the foreshore crag at East Runton of presumed Villanyian age shows no significant difference from material from continental sites. The Cromerian specimen of m_2 described above has minor but perhaps significant features in comparison with Polish Villanyian and Biharian material in the Harrison Zoological Museum. These are a well developed lingual cingulum, undulant buccal cingulum and notched cristid obliqua. These features could be merely individual variations and are not evident in the Cromerian molar figured by STUART (1980, fig. 1 C). More material is clearly required to assess the Cromerian form more accurately. Its great rarity at West Runton probably indicates that it was already dwindling to extinction. Significantly, it was not found in the later Cromerian fauna of Westbury-sub-Mendip (BISHOP, 1982) which ANDREWS (1990) considers a later interglacial (Westbury Interglacial) correlating with Ostend, Norfolk. In both of these later Cromerian faunas the dominant West Runton vole *Mimomys savini*, which was also present at Sugworth (STUART, 1980), has evolved into its descendant *Arvicola cantiana*. It seems likely that by this time *Beremendia* had become extinct in Britain.

Sorex minutus

This species was not included by STUART (1992) in his list of mammals known from the Freshwater Bed. It is evidently a rare species in the deposit, previously unrecorded there. It was however found at Sugworth (STUART, 1980, 1982). In the HZM collection, it is represented by four fragmentary rami listed below, all from the Freshwater Bed.

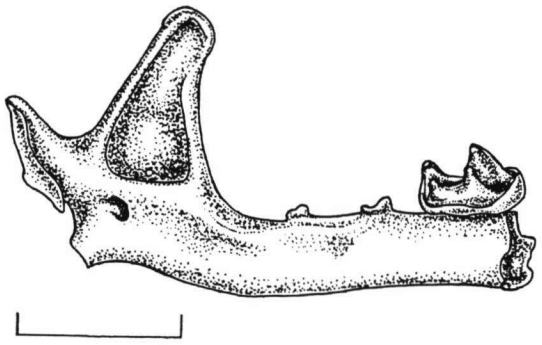

Fig. 3: *Sorex minutus* posterior left mandibular ramus with m1; lingual view. HZM.78.15549, West Runton, Norfolk, Cromerian Freshwater Bed. Scale = 2mm.

Fig. 3: *Sorex minutus* posterieure deel van een linker onderkaak met m1; linguaal aanzicht. HZM78.15549, West Runton, Norfolk, Cromerian Freshwater Bed. Schaal = 2mm.

Description

HZM. 78.15549 Left posterior mandible with m_1, coronoid and condyle.Collected by D.L. Harrrison and P.J.J. Bates (Fig. 3).

HZM.113.22850 Right ramus with p_4-m_3. Collected by J.D. Clayden.

HZM.114.22852 Left ramus with m_1. Collected by J.D. Clayden.

HZM.115.23298 Posterior left ramus. Collected by J.D. Clayden.

Measurements (mm)	HZM.78.15449	113.22850	114.22852	115.23298
Coronoid height	3.14	-	-	3.07
Depth of ramus, below m2	0.90	0.96	0.90	-
p4-m3	-	3.84	-	-
m1-m3		3.20	-	-
p4L	-	0.83	-	-
p4W	-	0.51	-	-
m1L	1.25	1.34	1.28	-
m1W	0.77	0.64	0.70	-
m2L	-	1.06	-	-
m2W	-	0.64	-	-
m3L	-	0.96	-	-
m3W	-	0.54	-	-

These specimens do not differ either in size or morphology from recent material of this successful and adaptable tiny shrew, which first appeared in Europe during the early Pliocene (KURTEN, 1968).

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