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# St James's Pit, Norwich, Norfolk

[TG 242 094]

## Highlights

St James's Pit, Norwich is Britain's best mosasaur locality. Mosasaurs were giant marine lizards, which are well known from North America, the Low Countries and parts of Africa. The remains from St James's Pit are rather fragmentary, but the best in Britain.

## Introduction

The Chalk pits of Norwich have long been known as a source of remains of mosasaurs. St James's Pit is the best available site for future finds in Britain. The geology of the site has been described by Jukes-Browne and Hill (1904) and Peake and Hancock (1978). The mosasaur fossils have seemingly never been described.

## Description

Several quarries were formerly worked in a strip of Upper Chalk around the north-east side of Norwich. These include Lollard's Pit, Gas Hill [TG 241 098], St James's Pit [TG 242 094], Kett's Cave [TG 237 093] and Catton Grove Pit [TG 228 108]. The Chalk belongs to the zone of *Belemnitella mucronata* (Late Campanian; Rawson *et al.*, 1978, p. 52). The thick sequence of the 'Norwich Chalk' has yielded abundant fossils, and the chalk contains occasional flints and iron-stained bands (Jukes-Browne and Hill, 1904, p. 259; Peake and Hancock, 1978). There is no information on the exact horizon of the bones.

St James's Pit, currently used as a recreation area, has a sloping north face approximately 50 m high. This is largely covered by sand and gravel from above, but the Chalk may be exposed with only a little digging. The Chalk appears to be well bedded with some pyrite nodules, but no flints.

## Fauna

Several teeth, vertebrae and other bones of mosasaurs have been found at Norwich. Specimens are preserved in the BGS(GSM), BMNH, CAMSM and NORCM.

### Lepidosauria: Squamata: Sauria:

Mosasauridae

*Leiodon anceps* Owen, 1841 CAMSM B20608–9, B20611–2 (teeth); NORCM 13–65 (pelvis)

*Leiodon* sp. BMNH R2767 (vertebra); BMNH R6376, unnumb. (teeth)

?*Mosasaurus oweni*' (Hector, 1874) CAMSM B20627

*Mosasaurus* sp. BMNH 37000a. 48940d (teeth, vertebrae: Lollard's Pit); BGS(GSM) 5560, 99085; NORCH 36–64 (vertebrae)

'mosasaur' BMNH 37000 (vertebrae); BGS(GSM) 114 240–3 (various: St James's Pit)

## Interpretation

Mosasaurus were large marine reptiles of the Late Cretaceous. Remains are known from various parts of the United States (Gulf Coast, New Jersey, Kansas), Belgium, the Netherlands, France and Sweden (Russell, 1967). Although related to varanid lizards, the mosasaurs achieved large size (up to 17 m long) and were clearly formidable predators. They lived generally in subtropical epicontinental seas of less than 180 m depth, and many species had a wide geographic range. The fragmentary remains from Britain probably belong to species that occur elsewhere in Europe and North America. The specimen ascribed to *Mosasaurus oweni* is probably wrongly assigned; this form was originally described from New Zealand.

### **Comparison with other localities**

Mosasaurus are known from several sites in the English Upper Chalk. In the pits around Norwich, remains are known from Lollard's Pit, Gas Hill ([TG 241 089]; Bayfield, 1864); Catton Grove Chalk Pit ([TG 228 108]; P. Lawrence, pers. com., 1982); and Whitlingham [TG 272 078]. Mosasaurus are known from several other English localities, such as Dorking (Surrey) and Hailing (Kent), as noted in the Chalk locality lists (q.v.).

### **Conclusions**

Mosasaurus are present at several British Chalk localities, but rarely represented by more than an odd tooth or vertebra. The old chalk quarries at Norwich preserve only mosasaurs, and St James's Pit has the greatest potential for future finds, which gives its conservation value.

### **[References](#)**