
Chapter 2 British Carboniferous fossil reptile sites

Within the past decade two possible Carboniferous reptiles have come to light in Britain, one from the Lower Carboniferous of West Lothian, Scotland and the other from the Upper Carboniferous of Newsham, Northumberland. The Scottish material, collected by Mr Stanley Wood and the National Museums of Scotland, came from the Lower Carboniferous (Brigantian) East Kirkton Limestone near Bathgate, West Lothian, and forms part of an important terrestrial assemblage that includes some of the earliest recorded temnospondyl amphibians, eurypterids, myriapods, scorpions and the earliest known opiloid (harvestman). Two 'reptile' specimens have been collected from different horizons; the type from bed 82, the black shale member (Smithson, 1989), and the second from bed 76 (Smithson *et al.*, 1994). There are two further specimens (A.R. Milner, pers. comm., 1994).

The type specimen (NMS G.1990.72.1), named *Westlothiana lizziae* (Smithson and Rolfe, 1991), consists of an almost complete articulated skeleton preserved in part and counterpart. The total length of the skeleton is 180–200 mm with a pre-sacral length of about 120 mm. Assignment to the Reptilia (Division Amniota) was based on two main criteria. Firstly, a well-developed astragalus and calcaneum are present in the pes, a character shared by all extant amniotes. Secondly, the cranial remains show clear reduction of the temporal series (intertemporal, supratemporal and tabular) permitting contact between the parietal, postorbital and the squamosal. The latter character is found in all other Carboniferous tetrapods which are regarded as true amniotes.

However, recent further study of the type specimen following preparation of the palate and braincase, and detailed examination of the second specimen (Smithson *et al.*, 1994) have revealed that *Westlothiana* has a mixture of primitive tetrapod and derived amniote characters. It shares with early amniotes the pattern of bones in the temporal series, a large vertical quadrate, gastrocentric vertebrae, gracile humerus with distinct supinator process, and hind feet with a pedal formula 23454. But, unlike other early amniotes, it lacks a tooth-bearing pterygoid flange and, contrary to the original description, it has three proximal tarsals, tibiale, intermedium and fibulare, and not an astragalus and calcaneum.

The earliest amniote fossil identified prior to the discovery of the Scottish reptile was *Hylonomus*, a protorothyridid from the lower Westphalian B (Upper Carboniferous) of Joggins, Nova Scotia (c. 308 Ma) (Carroll, 1964); thus the Scottish 'reptile', if that is what it is (Brigantian, 335 Ma, Lower Carboniferous) pre-dates *Hylonomus* by 27 Ma.

The only other reptilian material reported from the British Carboniferous are the supposed remains of a reptile collected during the late 19th century from the lower Westphalian B (Upper Carboniferous) of Newsham, Northumberland [NZ 306 791]. The specimen (NEWHM G24.84), which consists of an incomplete skull table, was referred to the 'Romeriidae', and subsequently to the Protorothyrididae by Boyd (1984, 1985). A recent examination of the specimen, however, has demonstrated that it belongs to the skull of an acanthodian fish of a variety common at the find locality (Coates and Smithson, pers. comm. to Milner, 1987, p. 500).

Footprints of amphibians and reptiles have been recovered (Sarjeant, 1974) from Butts Quarry, Aveley, Shropshire [SO 76 84] in the Keele Beds, dated as Westphalian D (Smith *et al.*, 1974, p. 9) or Stephanian (Haubold and Sarjeant, 1973, p. 897).

No reptile sites are scheduled as SSSIs from the British Carboniferous because East Kirkton has so far produced very few specimens. Should more come to light there, it would be a strong candidate for scheduling as a GCR reptile site.

[References](#)