

THE TYPE SECTION OF THE JUNCTION OF THE OTTER SANDSTONE FORMATION AND THE MERCIA MUDSTONE GROUP (MID TRIASSIC) AT PENNINGTON POINT, SIDMOUTH



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Gallois, R.W. 2004. The type section of the junction of the Otter Sandstone Formation and the Mercia Mudstone Group (mid Triassic) at Pennington Point, Sidmouth. *Geoscience in south-west England*, **11**, 51-58.

An almost complete section through the Otter Sandstone Formation and the Mercia Mudstone Group is exposed in the cliffs between Budleigh Salterton and Axmouth on the south Devon coast. This is the most complete succession at this stratigraphical level in Britain and has been proposed as the type section for the formation and the group. The conformable junction of the Otter Sandstone Formation and the overlying Mercia Mudstone Group (Sidmouth Mudstone Formation) is wholly exposed in the cliffs at Pennington Point, Sidmouth over a distance of 250 m. The shingle beach that fronts this section of cliff is subject to seasonal variations in thickness of up to 5 m. The cliff and foreshore sections are continually refreshed by wave action at times of low beach level. They expose about 15 m of interbedded sandstone and mudstone, for which the new name Pennington Point Member of the Otter Sandstone Formation is proposed, overlain by the uniform mudstones of the Mercia Mudstone Group. The member marks the transition from the predominantly fluvial environments of the Otter Sandstone Formation to the arid environments of the Mercia Mudstone Group. Concentrations of fossil material in winnowed deposits in the Pennington Point Member at Pennington Point have yielded a more diverse assemblage of vertebrate fossils than at any other Triassic locality in Devon. This includes genera previously known only from Russia and central Europe, and the type material for two new species. The section is nationally important for correlation at this stratigraphical level and internationally important for magnetostratigraphical comparison with sections in southern Europe.

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INTRODUCTION

An almost complete succession through the Mercia Mudstone Group is exposed in the cliffs between Sidmouth and Axmouth on the east Devon coast (Gallois, 2001). The sections are the most complete at this stratigraphical level in Britain, and among the best in Europe. They form an integral part of the East Devon-Dorset Coast World Heritage Site, which exposes strata that represent an almost continuous record of 185 million years of Earth history. The completeness of the south Devon coastal sections has enabled them to be used as the U.K. standard for the magnetostratigraphy of the Triassic Period. Detailed sampling at Pennington Point has shown that a magnetic reversal within ± 1 m of the junction of the Otter Sandstone Formation and the Mercia Mudstone Group can be

correlated with a similar event close to the base of the Ladinian Stage in southern Europe (Hounslow and Jenkins, *pers. comm.*, 2002).

The outcrop of the base of the Mercia Mudstone Group and its junction with the underlying Otter Sandstone Formation is repeated by faulting in the Sidmouth area (Figure 1). It is well exposed, but inaccessible, in cliffs at Ladram Bay [NGR SY 098 853] and beneath High Peak [NGR SY 104 858], and at sea level below Peak Hill [NGR SY 109 865]. At this last locality the sections are backed by high, unstable mudstone cliffs and are wholly or partially covered by debris much of the time. In recent years, the most complete accessible sections have been those at Pennington Point, where the junction is wholly exposed in the cliffs and foreshore [NGR SY 1294 8731 to 1319 8734] over a distance of 250 m eastwards from the outfall of the

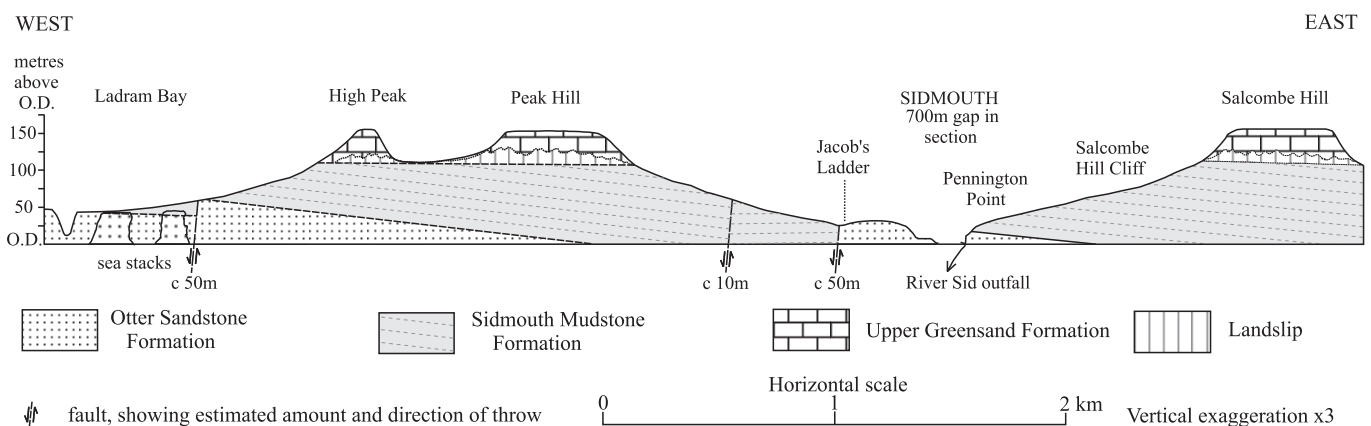


Figure 1. Geological sketch section of the coast between Ladram Bay and Salcombe Hill, Sidmouth.