

Quartz-rich cave sediments in the Burren, Co. Clare, Ireland

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Abstract:

An erosionally isolated fragment of cave passage at Poulsallagh, on the west coast of the Burren, contains a sediment sequence dominated by coarse clastics exceptionally rich in exotic (non-Carboniferous) lithologies, particularly quartz. Analysis suggests that these clasts were derived from granitic and metamorphic outcrops on the north side of Galway Bay and in Connemara, indicating transport distances of more than 50 km for some. It is deduced that these exotic sediments were reworked from till deposited by ice moving across the Burren from the north-west. Subsequent ice movement from the north-east has erased virtually all surface traces of this earlier glaciation other than a scattering of reworked erratics. The former extent of this north-westerly derived till cover is indicated by the presence of similar assemblages of exotic clasts in several other caves, including the Fergus River Cave 20 km further to the east-south-east. The age of the sediments, and the till from which they were derived, remains uncertain but they are considered to be post-Gortian (Stage 11 or 9) and pre-Holocene (Stage 1). The most parsimonious chronology would have the earlier till emplaced on the surface during Stage 4, with clasts fluvially reworked into the cave during the interstadial of Stage 3, followed by till emplacement from the north-east during Stage 2.