
Lacey's Farm Quarry, Totland, Isle of Wight

[SZ 323 862]

Introduction

Lacey's Farm Quarry (also known as the 'Greens Quarry') is an abandoned quarry (Figure 3.16) that exposes a sequence of sediments from the Lacey's Farm Limestone Member of the upper part of the Headon Hill Formation, in a small outlier from the main Headon Hill locality (see GCR site report). It has produced an abundant and moderately diverse mammalian fauna of 22 species that represent nine orders. The unit was sampled intensively in the 1960s and 1970s, and the rodents have been described (Bosma and Insole, 1972, 1976; Bosma, 1974; Bosma and de Bruijn, 1979, 1982).

Description

The Lacey's Farm Quarry locality lies close to the stratotype section of the Lacey's Farm Limestone Member of the Headon Hill Formation at Headon Hill, and a sedimentary log of the succession in the quarry is given here from Insole and Daley (1985, p. 84; (Table 3.4)).

The vertebrate materials have been recovered from thin clay and sand seams in the Lacey's Farm Limestone Member in the upper part of the Headon Hill Formation (Bosma and Insole, 1972), as well as from the limestone itself (University of Bristol localities 6911 and 7105; Bosma and Insole, 1972). The fossiliferous section is at [SZ 3224 8618]. The main collections were made by sieving the clays and sands, and additional finds in the limestone were made by prospecting. The fossils are almost entirely isolated teeth.

Fauna

The list of mammalian taxa is based on Insole (1972) and Hooker (1992, table 25.1).

MAMMALIA

Marsupialia

Herpetotheriidae

Amphiperatherium spp.

Rodentia

Pseudosciuridae

Suevosciurus ehingensis Dehm, 1937

Treposciurus mutabilis Schmidt-Kittler 1970

Tanomys quercyi (Schlosser, 1884)

Theridomyidae

Isoptychus pseudosiderolithicus de Bonis 1964

Thalerimys fordii (Bosma and Insole, 1972;

Gliridae

Gliravus daamsi Bosma and de Bruijn 1982

Glamys priscus (Stehlin and Schaub, 1951;

Bransatoglis bahloi Bosma and de Bruijn 1982

Chiroptera

indet.

Archonta undiff.

Nyctitheriidae

Paradoxonycteris aff. *tobieni* (Sigé, 1976)

Primates

Adapidae

Leptadapis stintoni (Gingerich, 1977)

Omomyidae

Microchoerus erinaceus Wood, 1844

Microchoerus edwardsi? (Filhol, 1880)

Apatotheria

Apatemyidae

Heterohyus nanus Teilhard, 1922

Carnivora

Amphicyonidae

Cynodictis lacustris Gervais, 1852

Artiodactyla

Cebochoeridae

Acotherulum saturninum Gervais, 1850

Choeropotamidae

Rhagatherium sp.

Xiphodontidae

Haplomeryx sp.

Amphimerycidae

Pseudamphimeryx hantonensis Cooper, 1928

Perissodactyla

Palaeotheriidae

Plagiolophus annectens (Owen, 1848b)

Palaeotherium magnum Cuvier, 1804

The fauna of 22 mammals from the Lacey's Farm Limestone Member has its closest relationships with the older Headonian fauna from the underlying Hatherwood Limestone Member of Headon Hill (see GCR site report), but the diversity and number of specimens is less. The fauna is, however, much richer and better preserved than in the Lacey's Farm Limestone Member at Headon Hill. The majority of the taxa are common to the other earlier Priabonian/ Headonian mammal faunas of southern England and of the Paris Basin.

(Figure 3.16) Lacey's Farm Quarry, showing exposure of the Lacey's Farm Limestone Member.

	Thickness (m)
Headon Hill Formation	
Fishbourne Member	
Mud, brown-grey, with basal conglomerate	seen to 1.0
Lacey's Farm Limestone Member	
Limestone, white, rubbly with green marl lenses; <i>Lymnaea</i> , <i>Australorbis</i>	2.5
Marl, yellow-green; abundant calcareous concretions; vertebrate bones and teeth	0.3
Limestone, white, rubbly; base transitional into underlying mud	0.9
Mud, green; abundant calcareous concretions	seen to 0.3

Lacey's Farm Quarry is the type locality for one species, the rodent *Thalerimys fordi* (Bosma and Insole, 1972), based on a number of isolated teeth (Figure 3.17), which differs from its relative, *Isoptychus pseudosiderolithicus*, in being larger and having more complex infoldings on the crowns of its molars. The fauna is marked by the first appearance of the pseudosciurid rodent *Suevosciurus ehingensis*, which may have evolved in Britain from the earlier *S. bosmae* in a northern European speciation event (Hooker, 1991a).

Interpretation

The environment of deposition of the Lacey's Farm Limestone Member is that of a freshwater lake, with evidence in the west of subaerial exposure and karst development (Insole, 1972).

The distribution of mammal taxa indicates a bias towards small sizes, as with the Headon Hill mammal faunas, possibly partly the result of bias in preservation and collecting (as for Headon Hill, most of the Lacey's Farm Quarry mammal specimens were found by screenwashing — see above). The Lacey's Farm Limestone Member mammal fauna includes more frugivores and fewer insectivores than the Hordle Cliff Mammal Bed. The Lacey's Farm Limestone Member mammal assemblage is probably a local accumulation, and it may indicate a forest patch where mammals have been concentrated in the fossiliferous unit.

The Lacey's Farm Limestone Member mammal assemblage has overall similarities with other Headon Hill Formation faunas but is sufficiently different from most of them that, with the fauna from the Hatherwood Limestone Member alone, it is assigned to the *pseudosiderolithicus–thaleri* Zone (Hooker, 1987) and Mammal Paleogene Reference Level MP18 (Schmidt-Kittler, 1987). This makes it equivalent in age and composition to a number of mammal faunas from France (Gousnat, Sainte-Neboule, St Martin de Villereal 1, Ste Croix de Beaumont 1, Civrac, La Debruge), Switzerland

(Gösgen-Kanal) and Germany (Pfaffenweiler, Ehrenstein 1A, Ehrenstein 2, 3, 6, Herrlingen 3).

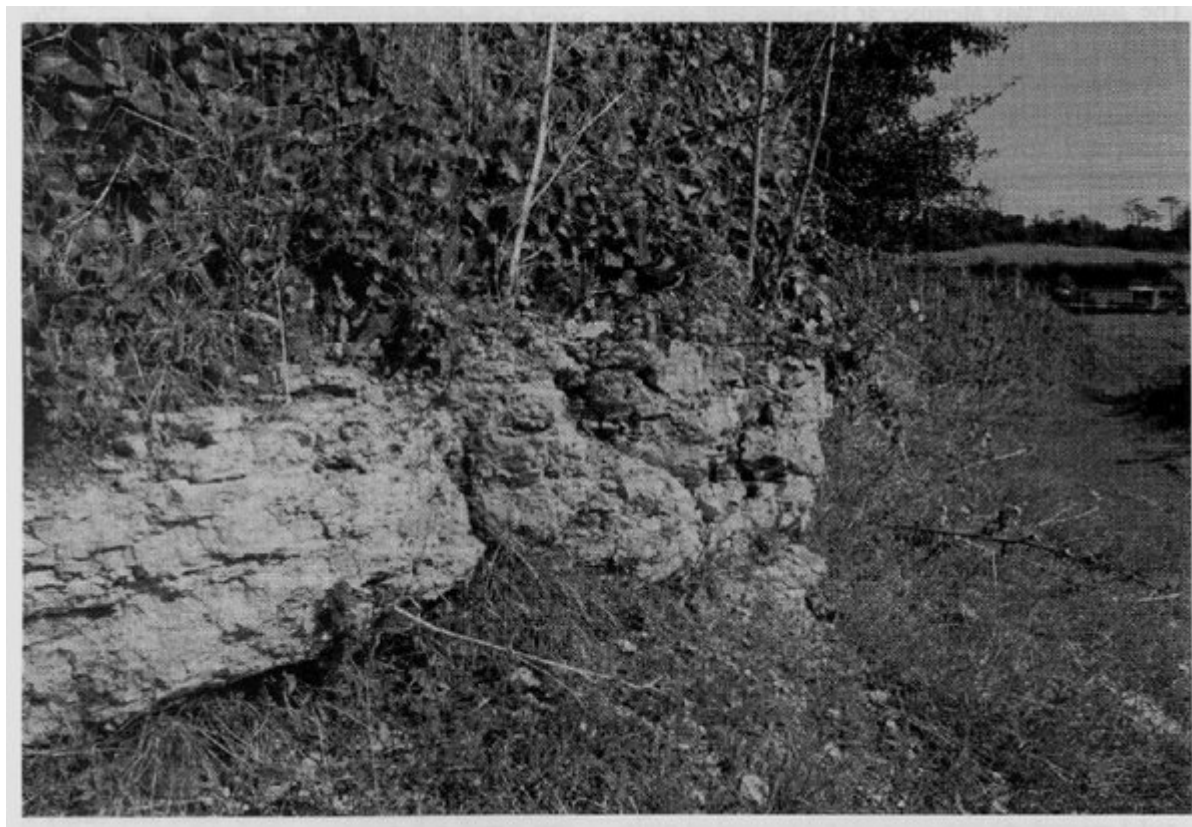
Comparison with other localities

The mammalian assemblage preserved at Lacey's Farm Quarry can demonstrably be intercalated into the sequence at Headon Hill by direct lithostratigraphical mapping of the Lacey's Farm Limestone Member over a distance of only about 1 km. Only very occasional mammal fossils are known from other sites in the Lacey's Farm Limestone Member, namely Headon Hill and Whitecliff Bay (see GCR site reports), from where six and one taxa respectively are recorded, all of which also occur at Lacey's Farm Quarry. The fauna is also comparable with a number of faunas from Spain, France and Switzerland, as detailed above.

Conclusions

Lacey's Farm Quarry is nationally important for preserving the only rich mammalian fauna from the Lacey's Farm Limestone Member of the Headon Hill Formation. It complements the nearby internationally important sequence at Headon Hill by providing a datable fauna at a level poor in mammals at Headon Hill. Although little work has so far been published on this locality, it has great potential for future study, and the fauna could be considerably augmented.

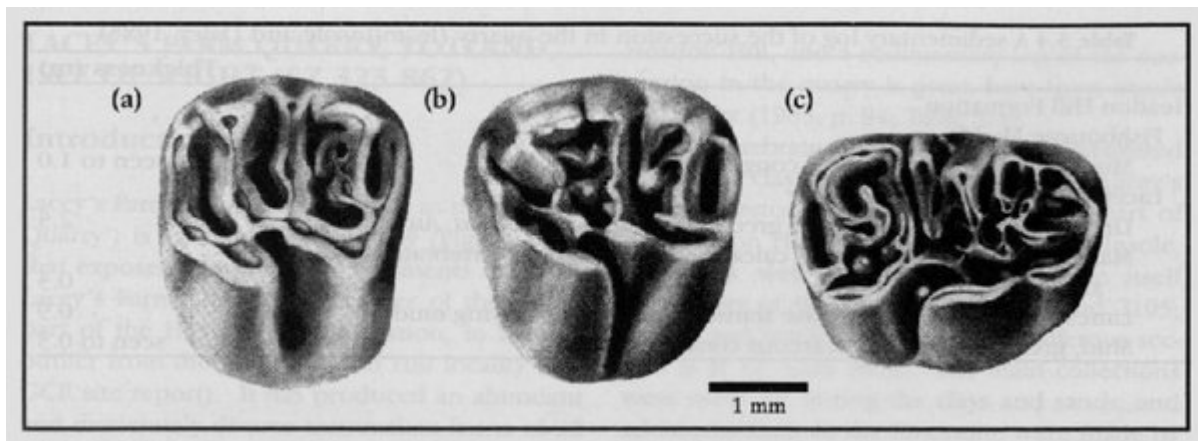
References



(Figure 3.16) Lacey's Farm Quarry, showing exposure of the Lacey's Farm Limestone Member.

	<u>Thickness (m)</u>
Headon Hill Formation	
Fishbourne Member	
Mud, brown-grey, with basal conglomerate	seen to 1.0
Lacey's Farm Limestone Member	
Limestone, white, rubbly with green marl lenses; <i>Lymnaea</i> , <i>Australorbis</i>	2.5
Marl, yellow-green; abundant calcareous concretions; vertebrate bones and teeth	0.3
Limestone, white, rubbly; base transitional into underlying mud	0.9
Mud, green; abundant calcareous concretions	seen to 0.3

(Table 3.4) A sedimentary log of the succession in the quarry (from Insole and Daley, 1985)



(Figure 3.17) Fossil mammal specimens from the Headon Hill Formation of Lacey's Farm Quarry, Isle of Wight. Teeth of the rodent *Thalerimys fordii* in crown view. (a) Upper molar 1 or 2. (b) Upper premolar 4. (c) Upper milk premolar 4. (After Bosma and Insole, 1972.)