
Hordle Cliff, Hampshire

[SZ 254 925]–[SZ 270 921]

Introduction

Hordle Cliff (also termed Milford or Hordwell) has produced one of the richest Late Eocene bird and mammal faunas in the world. Other taxa, for example turtles, crocodylians, lizards and snakes, are also well represented (Benton and Spencer, 1995). This site is continuing to produce new material as the cliffs continue to be eroded. A brief review of the history of exploration at Hordle Cliff may be found in Chapter 3.

Fossil birds from Hordle Cliff were described by Lydekker (1891) and Harrison (1971, 1976) and reviewed by Harrison and Walker (1976c).

Description

The geology of Hordle Cliff is described in Chapter 3.

Despite the large collection of bird fossils described from Hordle Cliff, little is known about their precise stratigraphical position. Most of the material was collected during the middle part of the 19th century, when stratigraphical details were not always rigorously documented. Further information on the provenance of the vertebrate fossils is given in Chapter 3.

Fauna

The extensive faunas from various horizons at Hordle Cliff include molluscs, fishes, some 40 taxa of reptiles (Benton and Spencer, 1995), mammals (see Chapter 3) and birds.

AVES

Anseriformes

Presbyornithidae

Headonornis hantoniensis (Lydekker, 1891)

Anatidae

Palaeopapia eous (Harrison and Walker, 1976c)

Gaviiformes

Gaviidae

Colymboides anglicus Lydekker, 1891

Pelecaniformes

Phalacrocoracidae

Piscator tenuirostris Harrison and Walker, 1976c

Ciconiiformes

Threskiornithidae

Actiornis anglicus (Lydekker, 1891)

'*Elornis* sp.'

Falconiformes

Cathartidae

Cathartidae gen. et sp. indet.

Accipitridae

?*Aquifavus* sp.

Pandionidae

Palaeocircus cuvieri Milne-Edwards, 1871

Gruiformes

Gruidae

Palaeogrus hordwelliensis (Lydekker, 1891)

Geranopsis hastingsiae Lydekker, 1891

Rallidae

Ibidopsis hordwelliensis Lydekker, 1891

Charadriiformes

Recurvirostridae

Kashinia magnum (Harrison and Walker, 1976c)

Burhinidae

Petropluvialis simplex Harrison and Walker, 1976c

The birds from Hordle Cliff were reviewed by Harrison and Walker (1976c), who identified 11 named species, 10 of them erected by Lydekker (1891) or by Harrison and Walker (1976c) (not including subsequent synonymies) on the basis of type specimens from Hordle Cliff. As with other British fossil bird localities, most of the taxa recorded from Hordle Cliff are known from only one or two bones.

The record of a presbyornithid anseriform *Headonornis hantoniensis* Lydekker, 1891, from Hordle Cliff is based on the holotype, a right coracoid ((Figure 4.14)a), as well as a right humerus and a partial femur. The duck *Palaeopapia eous* (Harrison and Walker, 1976c) was based on a partial sternum and a referred right coracoid from Hordle Cliff. The gaviiform (diver) *Colymboides anglicus* Lydekker, 1891, is known from a left coracoid, a left humerus ((Figure 4.14)b,c) and the frontal portion of a skull (Harrison, 1976; Harrison and Walker, 1976c). The pelecaniform *Piscator tenuirostris* Harrison and Walker, 1976c, is founded on the upper part of a mandible ((Figure 4.14)d).

The ciconiiform *Actiornis anglicus* (Lydekker, 1891) is based on a partial ulna (Figure 4.14)e, as well as three other referred specimens, two partial humeri (one of them originally named as a species of *Elornis*) and a tarsometatarsus. A

tibiotarsus and another tarsometatarsus from Hordle Cliff were described as belonging to a flamingo by Harrison (1971) and referred to '*Elornis* sp.' by Harrison and Walker (1976c).

Three falconiforms were described by Harrison and Walker (1976c): an unidentified cathartid was based on an ungual phalanx; the acciptrid *?Aquilifavus* was identified from a partial ungual phalanx ((Figure 4.14)0); and the French pandionid *Palaeocircus cuvieri* Milne-Edwards, 1871, was recognized from a further ungual phalanx.

Three gruiforms, the cranes *Palaeogrus hordwelliensis* Lydekker, 1891, and *Geranopsis bastingsiae* Lydekker, 1891, and the rail *Ibidopsis hordwelliensis* Lydekker, 1891, were named on the basis of a partial tibiotarsus, a partial coracoid and a partial tibiotarsus respectively ((Figure 4.14)g–i), as well as additional referred material of the third species.

Two charadriiforms, *Kashinia magnum* (Harrison and Walker, 1976c) and *Petropluvialis simplex* Harrison and Walker, 1976c, were established on the basis of an incomplete coracoid and two partial coracoids respectively (Figure 4.14)j).

Interpretation

For an interpretation of the environment of deposition, see Chapter 3.

The presbyornithid *Headonornis hantoniensis* Lydekker, 1891, is recognized at Hordle Cliff on the basis of the original material described by Lydekker (1891), as well as on the basis of a partial femur originally named as the new genus and species *Gigantibis incognita* Harrison and Walker, 1976c, interpreted first as representing a large ibis, but later (Harrison, 1976) re-assigned to *Headonornis hantoniensis*. This was a large wading bird, with a body as large as a swan, but much longer legs. Dyke (2001b) retained the type coracoid in *H. hantoniensis*, but noted that the humeri are most likely assignable to *Presbyornis isoni*, a ground-dwelling duck, and he suggested that *Headonornis* might in the end turn out to be a synonym of *Presbyornis*. *Palaeopapia* was determined as *Ayes incertae sedis* by Dyke (2001b) since the type specimen lacks characters diagnostic of Anseriformes.

The gaviiform *Colymboides anglicus* is the earliest known specimen of a diver — a small loon — an interpretation that Olson (1985, p. 213) accepted. The pelecaniform *Piscator tenuirostris* Harrison and Walker, 1976c, is based on a jaw fragment that Lydekker (1891) originally ascribed to the ibis *Ibidopsis hordwelliensis*, but the element is much more like part of the beak of a shag *Phalacrocorax aristotelis*, but with a narrower bill (Harrison and Walker, 1976c). On the other hand, *Actiornis anglicus* originally was described (Lydekker, 1891) as a cormorant but it is more likely a ciconiiform, and specifically an ibis (Harrison and Walker, 1976c; Harrison, 1986).

The three falconiforms, the unidentified cathartid, the acciptrid *?Aquilifavus*, and the French pandionid *Palaeocircus cuvieri* are based only on claw bones, but, if correctly identified, these indicate a diverse array of predators: a New World vulture, a hawk and an osprey. Note, however, that Olson (1985, p. 114) was unhappy about the assignment of *Palaeocircus* to the Family Pandionidae (ospreys) and preferred to leave both the French and the English material as *incertae sedis*.

Wading birds include the three gruiforms from Hordle Cliff, the cranes *Palaeogrus hordwelliensis* and *Geranopsis hastingsiae*, and the rail *Ibidopsis hordwelliensis*. Note that Olson (1985, p. 163) was unhappy about the attribution of *Palaeogrus* to the cranes but believed that *Geranopsis* may indeed be a gruiform. The charadriiforms *Kashinia magnum* and *Petropluvialis simplex* represent an early avocet and a thick-knee, further typical shorebirds today.

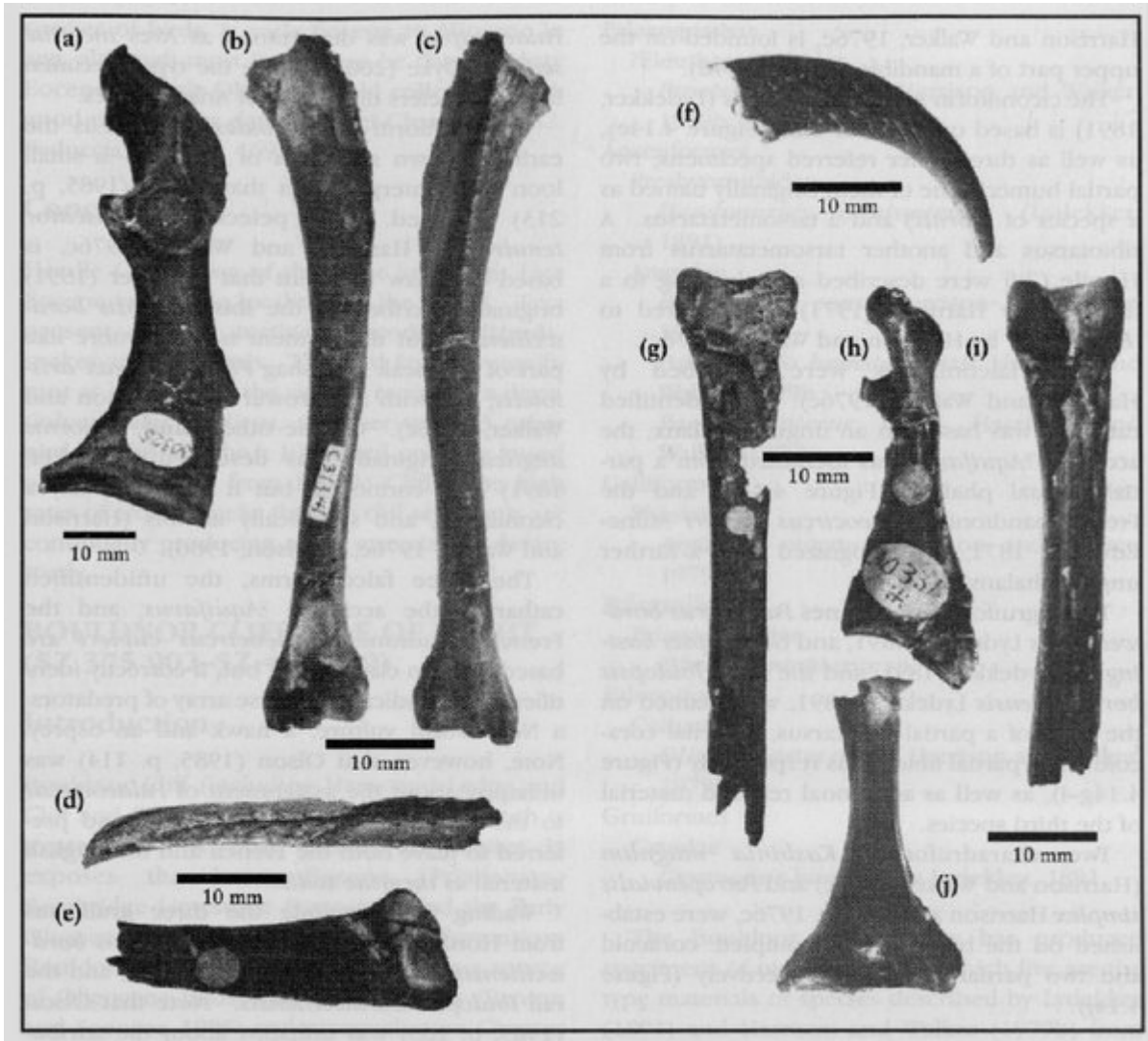
Comparison with other localities

The sediments at this site are directly comparable to the Totland Bay Member at Headon Hill, Isle of Wight, in terms of the mammal faunas preserved. However, birds have not been found in these age-equivalent units (Hooker *et al.*, 1980). In France, a relatively extensive fauna of 13 species of birds is known from the slightly younger Gypse de Montmartre in the Paris Basin (Harrison, 1980a), and the falconiform *Palaeocircus cuvieri* Milne-Edwards, 1871, is shared with Hordle Cliff. The famous Phosphorites du Quercy, source of a rich fauna of some 90 species of birds, is early Eocene to Miocene in age, although most faunas can be dated as Late Eocene or Early Oligocene; old collections lack good provenance data (Mourer-Chauvire, 1982; Feduccia, 1999, p. 169).

Conclusions

Hordle Cliff is one of the most important Late Eocene vertebrate localities in the world. Taxa present include turtles, crocodiles, lizards, snakes and mammals. The bird fauna is significant as it preserves the earliest record of a diver, *Colymboides anglicus*, together with 13 other bird species, of which 10 named ones are based on type material from Hordle Cliff. The high rates of erosion mean that the cliff sediments are continually producing more material for future study.

References



(Figure 4.14) Bird fossils from the Late Eocene Headon Hill Formation of Hordle Cliff, Hampshire. (a) Proximal end of the right coracoid of the presbyornithid *Headonornis hantoniensis* in dorsal view. (b,c) Left humerus of the diver *Colymboides anglicus* in palmar (b) and anconal (c) views. (d) Upper portion of the beak of the pelican *Piscator tenuirostris* in left lateral view. (e) Proximal end of the right ulna of the ciconiiform *Actiornis anglicus* in palmar view. (f) Claw of the falconiform ?*Aquifavus* in lateral view. (g) Distal portion of the right tibiotarsus of the crane *Palaeogrus hordwelliensis* in anterior view. (h) Left coracoid of the crane *Geraniopsis hastingsiae* in ventral view. (i) Distal portion of the right tibiotarsus of the rail *Ibidopsis hordwelliensis* in anterior view. (j) Distal portion of the left coracoid of the thick-knee *Petropluvialis simplex* in ventral view. (After Harrison and Walker, 1976c.)