HOYLE'S MOUTH, TENBY, WALES: STEPHEN ALDHOUSE-GREEN'S EXCAVATIONS 1986–1996

APPENDIX 4: THE EVIDENCE OF THE BIRD REMAINS

by
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Introduction

The extended sequence of excavations over a century and a half at Hoyle's Mouth has resulted in very varied rates of recovery and conservation of avian bone in the separate areas of the cave: trenches 1, 2 and 3 in the entrance, trench 4, the east fissure and the Bear and Reindeer chambers in the interior of the cave. The main concentrations of bird bones were found in the East fissure and the Bear chamber, with very limited assemblages from trenches 1, 2 and 3, in the entrance and a similar paucity of material from the excavations in the Reindeer chamber in the deepest part of the cave.

Site Study

The rescue excavations by Savory in 1973 explored the areas outside and within the cave entrance: trenches 1, 2 and 3 and apparently recovered very few bones of birds. The paucity of avian bone in this sector was confirmed during the years 1986 – 1996 by the work of Aldhouse-Green. Excavations at the entrance of the cave included the entrance chamber itself, trench 1, and the recess, trench 2, and followed by trench 3. No avian bone was recovered from trench 2, a few bones survived from trench 1, level 2 at depths of 35-75 cm. They represent the remains of wildfowl, a pattern consistent with the late Pleistocene bird fauna at Little Hoyle, with two passerine bones, indicating a wintering thrush and a starling. The three bird bones from trench 3 may be more equivocal: two from the SW quadrant and one recovered during cleaning from the SE quadrant at a depth of over 1 metre. This last, a robin, *Erithacus rubecula*, might be accepted as a late glacial specimen but may equally have been deposited during the Holocene or in very recent times.

Excavations during the years 1900-1996 were carried out in the interior sectors at Trench 4 in the East fissure, Trench 5, the Bear chamber and Trench 6, the Reindeer chamber.

Trench 4 was rich in avian bone with a diversity of species. Most of the bone came from layer 1 and the sample was dominated by passerine species, whose bones appear extremely fresh and lack patination or soil derived colouration. Apart from a vertebra that was probably from a domestic fowl, all the small passerines, from the distribution of skeletal elements, appear as though they might have been washed into the fissure from the outside at some time during the Holocene, or even quite recently. This will be examined in more detail later. There were, however, three bones from level 2, 2a and Unit 4 of trench 4 that carry a quite different patination: HM2513, a sternum fragment of barnacle goose, *Branta leucopsis*, that was stained dark brown in a way that is similar to the goose bones at Little Hoyle; a willow grouse, *Lagopus lagopus* ulna (HM2576); and a mallard, *Anas platyrhyncos*, coracoid, (HM2755). These seem to form a separate group and may have belonged to an earlier deposition phase.

The Bear and Reindeer chambers appear to present a different situation.

The range of species in the Bear chamber, Trench 5, over 30 m beyond the daylight zone within the cave, demonstrates the rich diversity of habitat niches available in the Ritec valley at that period. Most numerous are the ones of mallard, *Anas platyrhyncos*, but with these were other bones of dabbling ducks and marginal feeders, waders and the occasional small passerine and raptorial species.

It indicates the presence of quite a complex avifauna that equates quite closely with other assemblages of similar date from south-west Britain and Aquitaine.

By contrast, very little in the way of bird remains was recovered from trench 6 in the Reindeer chamber, but the few were all bones of duck, once again showing the importance of the Ritec and its valley in the subsistence patterns of the late glacial occupation.

A more detailed examination of the avifauna from the sequence of trenches shows that there was a considerable variation in both the quantity and ecological pattern of the bird remains.

Trench 1. Outer chamber Recess.

Species:		Bone:
Anas penelope	wigeon	humerus
Anas / Tadorna	shelduck / mallard	radius
Turdus iliacus	redwing	ulna
Sturnus vulgaris	starling	ulna

These four bones from the recess in the entrance chamber are of limited significance but supply a few clues as to the seasonality of their deposition. The presence of wildfowl reflects the proximity of a wetland habitat. If a late Glacial dating is assumed, these species would most likely be present during the winter months. At the present day, the mallard is ubiquitous at all seasons but the shelduck moves southwards in the autumn to feed on the shorelines and marshes and in the same way the wigeon migrates in south westerly from its Fennoscandian breeding locations at about the same time. The redwing also migrates south-westwards in winter and flocks of them arrive in Pembrokeshire as soon as any harsh weather arrives. In the same season the county is invaded by starlings, many hundreds of thousands at a time, coming westward out of England and continental regions further east.

No bird remains are recorded from trench 2 and only 3 from trench 3.

Trench 3. Interior of main entrance.

Turdus iliacus	redwing	left tibiotarsus
Erithacus rubecula	robin	right tibiotarsus

Anthus cf. petrosus / spinoletta, a pipit, possibly either a rock or water pipit

Despite the radiocarbon date of 26,500 ± 500 BP on reindeer antler from the basal silts in Trench 3, there is no firm indication that any of these bird remains might pre-date the last Glacial Maximum. All three are found to be present on a wide variety of sites in differing ecological zones of Western Europe throughout the Pleistocene and Holocene.

The only feature worth noting is that the patination / staining of the redwing bone is appreciably darker than the others, possibly suggestive of an earlier deposit but with such a small sample its reliability as an indicator is probably minimal.

Bone	*Branta leucopsis*	cf. *Tadorna* sp.	*Anas platyrynchos*	cf. *Gallus gallus*	*Lagopus lagopus*	*Anthus* cf. *pratensis*	*Anthus* sp.	*Troglodytes troglodytes*	*Erithacus rubecula*	*Turdus merula*	*Turdus iliacus*	*Turdus philomelos*	*Sturnus vulgaris*	*Passer domesticus*	*Carduelis carduelis*	*Emberiza* cf. *cirlus*
Laterality	LR	LR	LR	LR	LR	LR	LR	LR	LR	LR	LR	LR	LR	LR	LR	LR
cranium								1								
maxilla													1			
coracoid			1L		1L	1R			1L 1R							
scapula						1L										
furcula													1			
sternum	1						1									
vertebra		1		1												
humerus						1R			1L			1R		1L		
radius						1L	1L									
ulna						2R			1L 1R	1R						
carpal																
carpometacarpus															1L	
pelvis						1										
femur									1R							1R
tibiotarsus									1L 1R		1R		1R			
fibula																
tarsometatarsus						1R			1L 1R				1			
Totals	1	1	1	1	1	8	2	1	10	1	1	1	2	1	1	1
MNI	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1

Table 1. *East Fissure. Bird bone elements indicating the possible numbers for each species represented.*

The list of avian species found in excavation of the East Fissure is more comprehensive than in the entrance and most of the bone has a fairly fresh appearance. There was a total number of 34 identifiable bones in the assemblage from this sector:

Branta leucopsis	barnacle goose*
cf. Tadorna sp.	Shelduck species
Anas platyrhyncos	mallard*
cf. Gallus gallus	domestic fowl
Lagopus lagopus	willow grouse*
Anthus cf. pratensis with another *Anthus* sp.	Meadow pipit or similar
Troglogytes troglodytes	wren
Erithacus rubecula	robin
Turdus merula	blackbird
Turdus iliacus	redwing
Turdus philomelos	song thrush
Sturnus vulgaris	starling
Passer domestica	house sparrow
Carduelis carduelis	linnet
Emberiza cf. Cirlus	bunting *cf. Cirl*

As noted above and as this list shows, the bird remains from the East Fissure is made up of a high proportion of bones of small passerines, although the number of individuals would appear to be very small for each species. It seems extremely doubtful that they were deposited as a result of anthropogenic action, or even by the intervention of carnivores like fox. It is possible that the ten bones of robin, *Erithacus rubecula*, all belonged to a single individual. Territorial competition is very strong amongst robins and one bird will pursue a rival to its death in order to maintain its own patch. Recent examination of the geology of the cave has shown further accumulation of bone and other debris at the present time in the East Fissure including remains of possibly a small thrush and a collection of acorns. It would appear that this corner of the cave, within the zone of daylight penetration has seen and continues to acquire a natural accumulation of vegetable and animal material over a considerable period of time.

There is less certainty about the origin, whether through natural processes or as a result of predation of the few bones of waterfowl and the grouse. Their presence is consistent with the patterns of bird life in the Ritec valley at any time from the late Glacial and early Holocene up until early modern times. The starred specimens like the willow grouse, *Lagopus lagopus*, ulna and the mallard, *Anas platyrhyncos*, coracoid were part of the U series recovery and thus fall into a separate category. The fragment of sternum of barnacle goose, *Branta bernicla*, raises a particular question because of its dark staining or patination that distinguishes it from the other bone in this sector. The bird remains from Little Hoyle show a preponderance of Barnacle geese amongst a range of Anseridae but this bone is only one of two barnacle goose bones on this site and both are very dark in colour. The second was found in the Bear Chamber.

Bone	*Ardea cinerea*	*Anser erythropus*	*Branta leucopsis*	*Tadorna tadorna*	*Anas platyrynchos*	*Anas acuta*	*Anas penelope / strepera*	*Anas crecca*	cf. *Aquila* sp.	*Charadrius dubius*	*Tringa totanus*	cf. *Scolopax rusticola*	*Sterna* cf. *Chlidonias niger*	Raptor cf. *Tyto alba*	*Sturnus vulgaris*	*Carduelis cannabina / flavirostris*	**Totals**
Laterality	LR	LR	LR	LR	LR	LR	LR	LR	LR	LR	LR	LR	LR	LR	LR	LR	
cranium																	
maxilla																	
mandible					1											1	2
coracoid					3L 2R		1L	1L							1L		8
scapula		1		1R													2
furcula					1												1
sternum			1		2												3
vertebra					1												1
humerus					2L											1L 1R	4
radius					1R												1
ulna																	
carpal																	
carpometacarpus					1L 1R	1R					1L 1R						5
digit ala													1				1
pelvis												1					1
femur																	
tibiotarsus			1R	1L 1R	2L					1R							6
tarsometatarsus			1R	1R													2
Pes phalange	1							2	1					1			5
claw																	
Totals	1	1	3	4	17	1	1	3	1	1	2	1	1	1	1	3	42
MNI	1	1	1	1	3	1	1	1	1	1	1	1	1	1	1	1	

Table 2. *Bird bone from the Bear Chamber, Trench 5.*

The species list for Trench 5 seems to reflect a fairly concentrated exploitation of the game resources of the Ritec valley and has implications for the types of habitat it may have offered to both resident and migratory wetland species at the time.

The list includes:

Ardea cinerea	grey heron
Anser cf. erythropus	lesser whitefront goose
Branta leucopsis	barnacle goose
Tadorna tadorna	shelduck
Anas platyrhyncos	mallard
Anas acuta	pintail
Anas penelope/strepera	wigeon / gadwall
Anas crecca	teal
cf. *Aquila* sp.	?eagle
Charadrius dubius	little ringed plover
Tringa tetanus	redshank
cf. *Scolopax rusticola*	woodcock
Sterna sp. cf. *Chligonias niger*	tern species, cf. black winged tern
cf. *Tyto alba*	medium sized raptor cf. barn owl
Sturnus vulgaris	starling
Carduelis sp. cf. *cannabina* / *flavirostris*	linnet / twite

In this list there are four species represented only by foot bones and, in consequence, although their morphology appears thoroughly compatible, the determination relies to some degree on probability. Total numbers for each species are small and represent an insignificant proportion of the subsistence requirements of a predator but the diversity of species presents an interesting picture of the nature of the Ritec valley at the moment of exploitation.

The possible presence of heron and the numbers of Anatidae, dabbling ducks, suggest that there were pools or larger expanses of water accommodating the mainly plant eating dabbling ducks but with the availability of fish for the heron also. The latter preferentially nests and roosts in trees that may indicate some level of arboreal cover but is known to use reed beds and tussocks of grass. The geese tend to forage on grassland and marshy grounds. It would be interesting to discover the depths of the deposits in the Ritec valley, that may have been subjected to scouring when the ice and its floodwater retreated, creating ponding and a lakeside environment.

Migration patterns

Present day migration patterns amongst these species suggest that seasonality is an important factor in their behaviour and hence exploitation.

Of the geese, the lesser white fronted *Anser erythropus* is currently found in northern Fennoscandia during the breeding season, moving to wintering sites mainly in continental Europe with increasing numbers coming to western Europe during the Autumn. Herons, *Ardea cinerea*, are largely resident in Britain at the present day but more northern and continental populations disperse in a south westerly drift in winter. The ducks have different patterns of migration in winter. The mallard, *Anas platyrhyncos,* being adapted to a wide variety of habitat and climatic conditions is largely resident in Britain as is the teal at the present day. But the continental populations of teal and the wigeon, gadwall, and pintail *A. crecca, A. penelope, A. strepera* and *A. acuta* are all migratory, moving southwards and

westwards to their wintering grounds in autumn and returning to breed during the spring months. This pattern of seasonal movement may have been displaced further towards the south and southwest during times of glacial onset and retreat.

The other wetland species would have foraged along the edges and margins of open water, like the redshank, *Tringa tetanus*, and the little ringed plover, *Charadrius dubius*, or among the grassy marshland beyond, like the woodcock, *Scolopax rusticola*. The event of a possible tern species arriving in the valley would have been unusual but not unlikely as they are seen occasionally flying over inland waters.

Stratigraphic evidence within the Bear Chamber

Find spot co-ordinates were recorded for many of the bird bones recovered from the Bear Chamber. In terms of horizontal distribution the majority of avian remains were located in sector M2NW [37], with a few [7] from M2SW and a single bone, the starling, from M2NE. The depth measurements are marginally variable and fall into four close groups that could possibly have some significance for the interpretation about the time factor in the exploitation of the birds and the sequence of their deposition. The depth measurements may be divided into four separate groups that may or may not have significance for the dating of the finds.

The lower layer, with recorded depths of 19.25–19.35 cm, 19.23–19.29 cm and 19.17–19.27 cm; at this depth, the species included shelduck, mallard and pintail.

A middle layer recording at depths of 19.18–19.20 cm and 19.17–19.18 cm; in this level came a number of duck species appeared, mainly mallard but also some wading birds including redshank and possibly a heron. This last would be an unusual find, identified at only a few late Glacial sites, one of which was Pinhole Cave in Derbyshire (Jenkinson and Sutherland, 1984) and another in the Magdalenian levels of the Abri Dufaure, one of the sites along the Pastou cliffs, beside the Gave d'Oleron at Sordes L'Abbaye in the Landes Department of France (Eastham, 1995). In general, it is a species rarely recovered in Western Europe in Late Glacial / Early Holocene contexts.

Two bones of raptorial bird species were recovered within the deposits in this level of Trench 5 and belonged to this middle horizon. The recovery consists solely of two foot phalanges, whose determination may only be assessed in terms of context and probability: one, a first phalange, digit 1 has been defined on the basis of the ambient ecology as possibly of a white tailed eagle, *Halieaeetus albicilla.* It occurs on late Glacial and Holocene sites in Britain from Church Hole in Derbyshire to Walthamstow in Essex and was recorded in caves in the south west of Britain, at Clevedon Cave and Soldier's Hole in Somerset and at Cathole on the Gower and a claw from Little Hoyle would appear to belong to this eagle also. In France it is a species most usually recovered from sites of Magdalenian date situated from the Dordogne region to the Pyrenees but in Britain they are found in quantity on sites of Neolithic age in north west Scotland and Orkney associated with burials and even possibly as scavengers on human corpses. But, in the present context, they may have been scavenging on the food remains of other animals or their bones or plumage have been used to make equipment or clothing for the human occupants of the cave.

An upper layer in Trench 5 at a depth of 19.08–19.10 cm contained an avifauna of which the most numerous bones were of mallard, with single bones only of shelduck, *Tadorna tadorna*, and teal, redshank and woodcock. An oddity in the company of these mainly inland aquatic species would be possible pes phalange of a member of the tern family, *Sternidae*. Normally, these are regarded as belonging to a marine environment, though they are known to come to inland lakes and rivers. However, the determination contains some element of uncertainty. Besides the aquatic species, passerine remains are few from the Bear Chamber. Thrushes are totally absent but there was an unstratified mandible of starling and three bones of a species of finch, probably linnet or a twite,

Carduelis sp. The latter is currently a scarce winter visitor to Pembrokeshire, whilst the former is a resident breeder at the present day (Donovan and Rees, 1994).

Two bones were recorded at a slightly shallower depth of 18.80–18.86 cm and 18.85–18.90 cm including one of the only two bones of barnacle goose, *Branta leucopsis*, recovered from this site, despite the fact that at Little Hoyle it is the most frequently recorded species.

Trench 6, Reindeer Chamber

Situated in the deepest part of the cave, the Reindeer Chamber yielded only six bird bones, two of which were not found to be determinable, and of the others, three were mallard and the fourth was probably teal:

Anas platyrhyncos, mallard	sternum, frontal fragment
	radius, proximal epiphysis fragment
	digit ala 2
Anas crecca, teal	pes digit distal section

These few bones offer little in the way of further conclusions of either an environmental nature or in any interpretation of human or animal resources and exploitation except that the species identified are not inconsistent with those from Trench 5 and emphasise the significance of having an adjacent expanse of wetland for the exploitation of predatory animals occupying the cave, whether carnivorous mammal or human.

Evidence for signs of butchery or animal predation

There is no certain evidence for butchery from marks on the avian bone found in Hoyle's Mouth Cave. Only one bone carries any mark that might be attributed to anthropogenic activity, a mallard bone from the Bear Chamber [find: HM1617]. It is a proximal fragment of left humerus with a clear transverse scrape on the ventral fossa. The absence of any marks on even quite large birds is not unusual in a late Palaeolithic context, apart from circumstances where the resultant element was required for another, further use as a tool or other artefact. However, alongside this sign of possible human intervention, a teal coracoid [find: HM1450] was found to have two 1 mm diameter holes pierced through it, matching tooth marks of a small/medium sized carnivore indicating that there was some animal activity involved even if it was not a factor in the initial predation. Nevertheless there was no sign on other bones of incisions made by animal teeth or gnawing.

Seasonal implications for the exploitation of birds

Almost all the wildfowl are wholly or partially migratory at the present day, some species more markedly so than other. The barnacle and the lesser white fronted goose that are discussed in more detail in the paper on Little Hoyle, is known to arrive in western Europe only during the winter months. Shelduck, *Tadorna tadorna*, are only partially migratory in western Europe, moving to moulting grounds from June onwards and returning any time from September onwards, with more northerly populations remaining in more southerly latitudes through the winter months. However, with the exception of the mallard, the *Anatidae*, wigeon, *A. penelope*, pintail, *A. acuta*, teal, *A. crecca* and gadwall, *A. strepera*, all breed in the north, Iceland, Fennoscandia, the Baltic, Siberia of Russia and arrive in wintering sites during the Autumn, having moved to moult areas during the latter part of the Summer. The redshank is another winter visitor. The small number of passerine bird bones at Hoyle's

Mouth provides little positive evidence of seasonal factors. Nevertheless, as noted in the comments on the birds from Trench 1, we find considerable numbers of thrushes, especially redwings and fieldfares and of starlings in many of the Late Glacial sites in south west Britain. This is matched at the present day by the movements of these species often in very large flocks to milder areas during the winter months. Furthermore, there is a southerly drift of the regions of winter habitat for wildfowl and aquatic species during times of glacial advance that continues for a long time into its retreat. This has been found to be a drift of up to 500 kilometres or so and, for example, whooper swan, Bewick's swan and other wildfowl that winter in north and north-west Europe at the present day have been identified on sites in southern and south-west France, dated to around 12 Ka BP.

Conclusions

The total bone assemblage from Hoyle's Mouth is not extensive and, if it is assumed that the material from the East Fissure was largely intrusive, there remains only the material from the Bear and Reindeer Chambers to be seriously considered for their archaeological and ecological significance. Most of the evidence comes from the Bear Chamber with 43 avian bones, representing in total a possible 18 individuals from 16 species, of which 13 were the most likely to have fallen prey to human hunter-gatherer or carnivorous animals. The primary motive in either case was probably the provision of food but it is increasingly recognised that on Upper Palaeolithic human occupation sites dated towards the end of the Last Glaciation, bird plumage both down and wing primaries in particular was being exploited for clothing, arrow flights and for personal adornment. No corroborative evidence has so far been recovered for this practice being in operation in the Ritec valley but patterns of exploitation of species whose primary utility is unlikely to have been for consumption have been noted on many sites in France. One example may be found in the large numbers of snowy owls, *Nyctea scandiaca*, a species with a minimal amount of flesh but spectacular plumage who were gathered in huge numbers on sites in Aquitaine and apparently processed for use probably for their feather and certainly to make tools from the wing bones. Long bones of geese and swans are also found fashioned into useful tubes for flutes and whistles, for fluid storage and dispensers and to make and store fine needles. Since many of these items carried the personalised decoration of their maker they are seldom recovered except by accident or on sites of long-term occupation. As an aside, it is worth noting that, while collared lemming, *Dicrostonyx* appeared at Hoyle's Mouth and there were no snowy owl bones, the sites abundant with snowy owls in Aquitatine contained a variety of vole species but none of them had any evidence of lemming.

Ecological comparisons with other sites

The avifauna at Hoyle's Mouth remains broadly compatible with other British sites of similar dates, either that of the Aurignacian industry, in the pre-last glacial context, [27,900 – 26,200 BP] or the early Post-Glacial occupation of around 12,000 BP. However, apart from the Bear Chamber, there are few bones that give definition to the environmental ecology of the times. Probably the closest comparisons are with the neighbouring sites of Little Hoyle and Ogof-yr-Ychen, now on Caldey Island. The findings are compatible with the upper layers at Pin Hole Cave in Derbyshire (Bramwell, 1960) and not dissimilar to the Creswellian levels in Soldier's Hole in Somerset (Bramwell, 1960; Harrison, 1987). However, the seasonal indications are even more strongly reinforced by evidence of the shift in wintering grounds as shown in the study of the Little Hoyle wildfowl.

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