

# THE QUATERNARY AVIFAUNA OF THE WALOU CAVE (TROOZ, PROV. LIEGE)

by

M.-C. GROESSENS-VAN DYCK<sup>1</sup>

## RESUME

Les fouilles archéologiques de la grotte Walou, actuellement en cours, ont mis à jour une coupe stratigraphique quaternaire exceptionnelle pour l'Europe occidentale, tant par la longueur de la période concernée que par la richesse de son contenu paléontologique (vertébrés, invertébrés et pollens). L'étude des restes fossiles d'oiseaux provenant de diverses couches permet de détecter les variations climatiques et écologiques subies par l'environnement de la grotte et de reconnaître la succession des périodes froides et de réchauffement caractérisant le Quaternaire.

## ABSTRACT

The archaeological excavation of the Walou cave shows an exceptional stratigraphical section in the Quaternary from western Europe by the length of the period concerned and by its rich palaeontological content. The study of fossil birds from different horizons allows the recognition of climatical and ecological changes and hence the succession of cold and warm periods typical for the Quaternary.

## MOTS CLES

Quaternaire, stratigraphie, oiseaux fossiles, paléoclimatologie.

## KEY WORDS

Quaternary, stratigraphy, fossil birds, palaeoclimatology.

## 1. INTRODUCTION

Studies of fossil faunas allow ecological and climatological reconstructions. On this prospect,

the avifauna is a precious tool : birds are closely related with their ecological environment and their great mobility allows them to join very quickly optimal life conditions.

At this point of view, the Walou<sup>2</sup> fauna presents particular interest. This fauna has been unearthed during the SOWAP's<sup>3</sup> archaeological excavations under the direction of M. Dewez. Stratigraphically, the Walou cave's fill covers a very long period lasting from middle Paleolithic till Mesolithic and Neolithic times. After S. Colcutt (Oxford University), practically the whole of Pleistocene is present and we can observe all the events modifying the Walou site during the period.

On the archaeological point of view, some levels contain stone industries assigned to the Creswellian (level A6), the Magdalenian (level B4), the Perigordian (level B5) and the Aurignacian (level C6).

A well diversified fauna has been discovered at different places of the cave at different levels within the outcrop. Macro and micromammals have been found in the site together with birds, reptiles and amphibians. Fish remains are also numerous. These faunas are studied in the laboratories of Vertebrate paleontology of the Universities of Liège, Louvain (at Louvain-la-Neuve) and Bordeaux. Their main interest is to show, in combination with palynological data (J. Heim, UCL), the regional climatical and ecological modifications during the Quaternary.

## 2. INTEREST AND LIMITS OF THE AVIFAUNA

The study of fossil birds increases the insight in the climatological and ecological characteristics. Their mobility allows them to remain almost exclusively within their optimal environment. C. Mourer Chauvire (1975b) classified the birds after their habitat.

However, birds are frequently defectuous as paleontological

<sup>1</sup> Belgian Geological Survey, Rue Jenner 13 - B-1040 Bruxelles.

<sup>2</sup> Walou, the cave's name comes from the names Walter and Louis who discovered it.

<sup>3</sup> Wallonian Society of Paleontology

	Interstade of Arcy	Preboreal	Boreal	Atlantid
<i>Lagopus lagopus</i>	D F	D F		
<i>Lagopus mutus</i>	R F	R F		
<i>Perdrix perdrix</i>	D T			
<i>Mergus merganser</i>		A F		
<i>Tringa totanus</i>	A I			
<i>T. cf ochropus</i>	A I			
<i>Gallinago gallinago</i>	A F			
<i>Eudromias morinellus</i>	D F			
<i>Pluvialis squatarola</i>	D F			
<i>P. apricaria</i>	D F	D F		
<i>Crex crex</i>	D T	D T		
<i>Porzana porzana</i>	A T			
<i>Asio flammeus</i>	D T			
<i>Falco sp.</i>		D ?		
<i>Cinclus cinclus</i>	A T			
<i>Oenanthe oenanthe</i>	D T			
<i>Turdus pilaris</i>	D T	D T		
<i>Turdus sp.</i>			??	??
<i>Erithacus rubecula</i>				F T
<i>Lullula arborea</i>	D T			
<i>Alauda arvensis</i>	D T			
<i>Anthus trivialis ?</i>		D T		
<i>Coccothraustes cocc.</i>				F T
<i>Hirundo rustica</i>	D T			
<i>Hirundo rupestris ?</i>	R T			

Table 1. : Climatology : I indifferent, F cold, T temperate. Ecology : D open area, A aquatic, R rocks, F woods.

material, which limits seriously the possibilities of their study. These restrictions are mainly due to the structure and morphology of the skeleton. Bones are hollowed out to decrease their weight. This may be an advantage for flying but it renders them delicate and prone to breakage into undeterminable pieces. Furthermore the chances for fossilisation are strongly reduced. In practice, broken bones are frequently undeterminable. Also, the bone morphology does not allow differentiation between the genera belonging to one family (few bones of the passeriforms are recognisable). The excavation and the study of the Walou cave are not yet terminated, consequently the present results are preliminary.

### 3. C6 LEVEL

The C6 level is the oldest actually studied. Its C14 datation is 29.800 +/- 760 till 29.450 +/- 640, and is of the same age as the Arcy interstade. The palynology shows the disappearance of trees ; the archaeologists recognize an Aurignacian stone industry which testifies of a human presence.

The avifauna is dominated by moor and meadow grassy species : the 2 species of Geese, the Grey Partridge, the Redshank and Green Sandpiper, the Snipe, the Dotterel, Golden and Grey Plover, the Corncrake and the Spotted Crake, the Short-eared Owl and the Sky- and Wood-Lark normally are living in this environment. The open landscape

may also explain that there is no evidence of corvidae. Two different lithostratigraphical units are succeeding in this level but there aren't any modifications of the avifauna indicating ecological or climatological modifications. The climate should be cold, as it is actually in the North of Scotland. This is also suggested by the presence of moors and meadows.

At this time, we have few information on the avifauna during the following 20.000 years, because of the preliminary state of the work.

### 4. A6 LEVEL : PREBOREAL

During the Preboreal period- absolute datation with C14 of 9.450 +/- 400- the palynology shows that there were trees at this time near the cave. In the archaeological point of view, remains of Creswellian industry were found, but at other levels than the fauna. The cave was often visited by night bird of prey from which the regurgitations have been accumulated in a 10 cm thick level. The numerous bird bones haven't been diversified but allow biometrical investigations on Goose's limbs bone. It appears that the willow Goose is most numerous at this level whereas the Ptarmigan is rare till accidental. The Corncrake is also frequent as are the Willow Goose and the Golden Plover. They show a high density of grassland in a cold climate. The Goosender and the Trec Pipit indicate a wood environment as does the palynology which shows that conifers are numerous at this level.

A great tarsometatarsian from a falco looks like the one of the "Saker-Lanner-Gyr" group. After Mourer-Chauvire (1975a) *Falco cheryg* and *rusticolus* had probably the same ancestor which lived during the "La Fage" period. She has called it *Falco antiquus*. Unfortunately only one bone has been found in Walou and is not complete enough to determine to the species level.

Although most of the bird remains from this level come from night bird of prey food, no remains from this kind of birds have been founded. The abundance of Goose remains suggests a great rapace as an Eagle Owl or a Snowy Owl.

## 5. A5 LEVEL : BOREAL

The material from this level is not sufficiently classified to work on. We note only the presence of few indeterminably Turdidae in the material actually available.

## 6. A4 LEVEL : ATLANTID

This level illustrates very well the difficulties to determine the material as explained at the beginning of this paper. The fauna list is restricted because of the difficulties to recognize most of the passeriform bones. However, the climatological conditions recognized by palynology and by the

other parts of the fauna were optimal. The presence of snake and salamander testifies of a temperate warm climate.

Among the birds, the passeriforms seem to dominate. The presence of Hawfinch, Robin and Thrush with the disappearance of all the "cold species" from the olders levels (they are no more Gooses) confirms this type of climate.

## 7. CONCLUSIONS

The interest of this unfinished study is already perceptible. It results from the bird's great mobility and from their adaptation to well defined ecological conditions. It became clear that their migration capacity was as great during the Pleistocene as it is actually ; they left regions becoming unfavourable and moved to optimal climatic environment.

## REFERENCES

- MOURER-CHAUVIRE, C., 1975a - Les oiseaux (Aves) du gisement pléistocène moyen des abîmes de la Fage à Noailles (Corrèze). *Nov. Arch. Mus. Hist. nat. Lyon*, 13: 89-112.
- MOURER-CHAUVIRE, C., 1975b - Les oiseaux du Pléistocène moyen et supérieur de France. *Doc. Lab. Géol. Fac. Sc. Lyon*, 64, 624 p.