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PLEISTOCENE AVIAN REMAINS FROM PRÁDENA (SEGOVIA, CENTRAL SPAIN)

Restos de aves del Pleistoceno de Prádena (Segovia, España)

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RESUMEN: Se estudian restos, probablemente del Pleistoceno superior, de cuatro taxones avianos procedentes del karst de Prádena. La singularidad del conjunto consiste en el predominio del Tarro Canelo *Tadorna ferruginea*, anátida poco frecuente en nuestros días en Europa occidental.
Palabras clave: Península Ibérica. Pleistoceno. Aves fósiles. Paleornitología. Cuaternario.

ABSTRACT: This paper reports the occurrence of four avian taxa in the karst of Prádena village, very probably from the Upper Pleistocene period. Its most striking feature is the relative abundance of the Ruddy Shelduck *Tadorna ferruginea*, a currently non-frequent anatid in West Europe.
Key words: Iberian Peninsula. Pleistocene. Fossil birds. Paleornithology. Quaternary.

1. Introduction

The fossil bones studied in this paper were collected in the karst of Prádena, a village situated in the province of Segovia, in the northern slope of the sistema Central (Central ridge) of the Iberian peninsula (Figure 1). There is no notice about the method used for retrieving the items, although we may presume that the fossils were directly picked out from the stratigraphical profile and then were kept at the paleontological collection of the Museo Nacional de Ciencias Naturales (MNCN). There were two ways for the incorporation of these remains into the MNCN collection: the gathering of faunal remains from some caves of the area of the village (Molino del Monte, Las Grajas, del Jaspe) realized in the

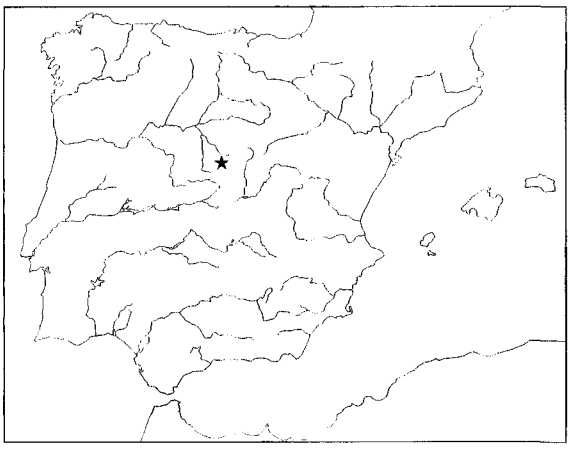

FIG. 1. *Geographic situation of Prádena in the Iberian peninsula. Current shore lines.*

sixties by F. García Novo (F. García, 2000, pers. com.) or, alternatively, as the result of a visit by some paleontologists to a cave known as Prádena (Sos, 1932).

The fossil remains belong to birds and lagomorphs, as well adults as juveniles. By the high degree of fossilization, the items must be fairly attributed to the Pleistocene better than to the Holocene. The bones were coated by compact red clay, typical of karstic cavities and infillings. There is a single layer composed of red clay in the cave of Prádena, which was poorly described by Ruiz Argilés (1976) and contains some lithic tools corresponding to the Mousterian phase.

The first exploration of Prádena cave was organized by the Sociedad Española de Historia Natural and the Museo Nacional de Ciencias Naturales, in wich some of the most prestigious investigators of the first third of century XX participated. The fossil bones were scattered in some points of the cavity and were attributed to the Pleistocene based on the degree of fosilization (Sos, 1932: 262). Some years later, Ruiz Argilés carried out three campaigns of excavation. During these works, a limestone prominence covered with a red clay matrix was found, which should be the remain of a large room opened to the outside and used as a shelter by Pleistocene humans. The sediments, fullfilling completely the cavity and its entrance, were very rich in faunal remains (Figure 2), which were attributed to Lower and Middle Pleistocene (Ruiz Argilés, unpublished memorandum, 1974).

One disease in 1974 obliged Ruiz Argilés to leave the the practice of archaeology (Ruiz and Ruiz, 1988), reason why the works in this

FIG. 2. *Historical picture of faunal remains from the area of the entrance to the cavity (photography by V. Ruiz Argilés).*

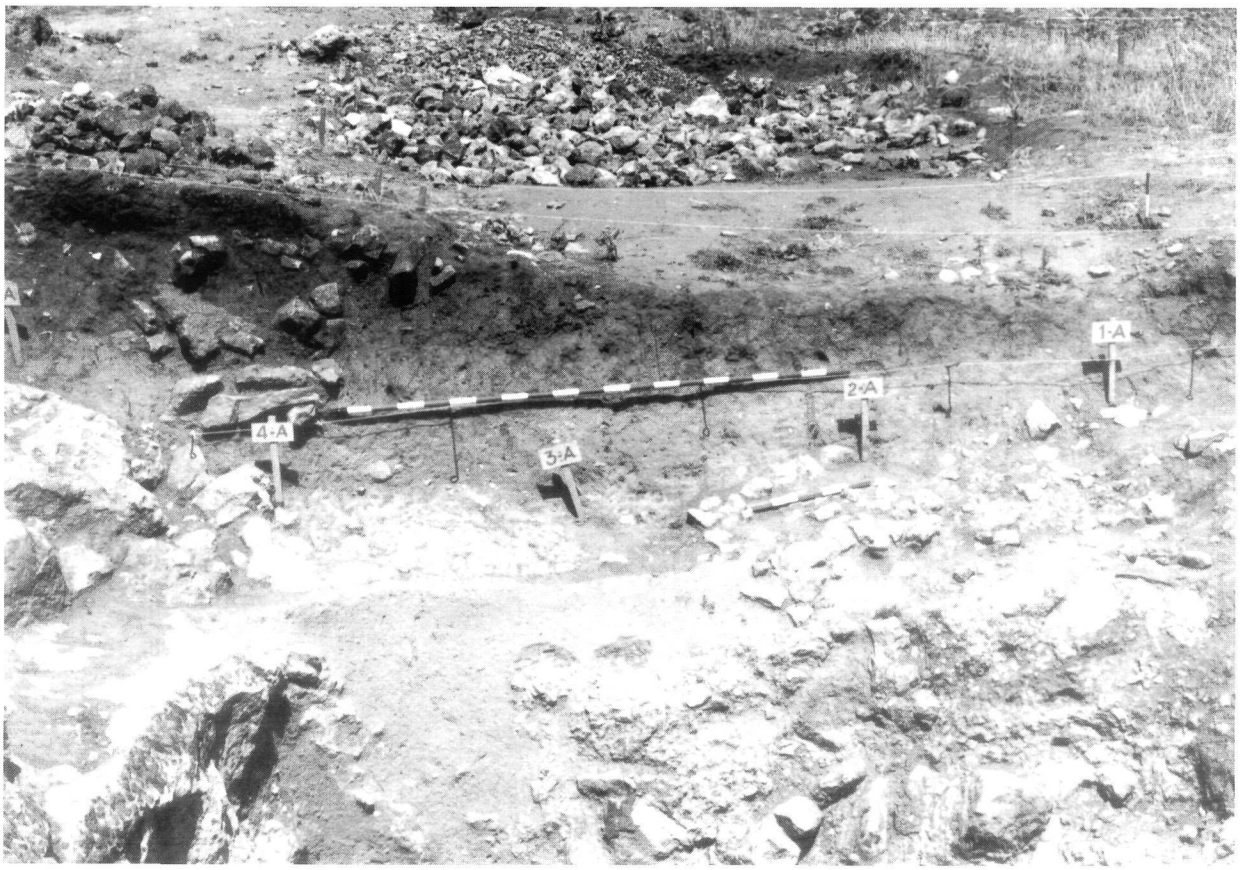

FIG. 3. *General view of north profile (photography by V. Ruiz Argilés).*

area were without concluding. Fortunately, the relatives of Ruiz Argilés have allowed access to the authors of the present paper to a rich collection of photographs and documents on this section of the cavity (Figure 3). Later field works undertaken in this outcrop affected other points of the cavity (Municio & Piñón, 1991), thus the interest by the entrance area being abandoned.

2. Avian remains

Much of the avian bones from this locality have been belong to the species *Tadorna ferruginea*. There are also three other fossil remains, each one attributed to one species.

O. ANSERIFORMES Bechstein 1804
F. Anatidae Leach 1818
Subf. Tadorninae Reichenbach "1850"
Tadorna Boie 1822
Tadorna ferruginea (Pallas 1764) – Ruddy Shelduck

Material:

Coracoids: 1 complete bone, 1 cranial end and 4 distal ones. Humeri: 2 proximal ends and 3 distal ones. Ulnae: 1 proximal and 2 distal ends. Carpometacarpi: 1 complete bone, 4 proximal ends and 1 distal one. Femorae: 1 distal bone. Tibiotarsi: 2 distal ends.

Comparisons:

According to the morphology of the fossil remains, they have been attributed to *Tadorna*

FIG. 4. *Wiew of the lower unit of north profile (photography by V. Ruiz Argilés).*

ferruginea after being compared to the other species of this genus *(T. tadorna)* and to *Anas*, *Melanitta*, *Clangula*, *Mergus*, *Somateria*, *Bucephala*, *Aythya* and *Branta*. The size of the shelducks falls between *Branta* and the remaining mentioned genera.

Coracoid: The head shows a smooth curvature in *Tadorna*. The shape is more bended in the other genera of the anseriforms. The internal distal angle is more acute in *T. tadorna* than in *T. ferruginea*. In *Branta* this bone is clearly bigger and more robust.

Humerus: In the proximal end of *Tadorna*, the biccipital surface is broad and the humeral head is reduced and pointed. On the contrary, in *Mergus*, *Bucephala* and *Melanitta*, the bicipital surface is short and less prominent, and the humeral head is larger than observed in *Tadorna*. *Anas*, *Aythya*, *Netta*, *Melanitta* and *Clangula* have the head less curved and smoother than in *Tadorna*. In *Branta*, the external tuberosity is more prominent than in *Tadorna*. In the recent skeletons used as comparative material, the medial crest in *Tadorna ferruginea* reaches the tuberculum ventrale more slantly than in *T. tadorna*. Notwithstanding, such an observation has not previously been reported. Probably it might not be deemed as a regular character.

The features of the distal end of this bone are of scant discriminant value. In the fossils, the ectepicondilar prominence is lightly defined. The internal condyle is prominent distally. The ectepicondyle is very small. The entepicondyle is reduced, not reaching to the level of the internal condyle. In *Branta*, the ectepicondylar prominence is more developed than in *Tadorna*.

Ulna: In the fossils of *Tadorna*, the external cotyla clearly descends distally and the external condyle extends up proximally a little. This condyle bends to the lateral face of the bone. This features are not observed in *Mergus*, *Anas*, *Melanitta*, *Clangula* and *Somateria*. The three latter genera have a more developed olecranon than *Tadorna*. In *Branta*, *Bucephala* and *Aythya*, the external cotyla has a short progression distally.

Carpometacarpus: The main character to distinguish *Tadorna* from the other anseriforms, as well to discriminate the two recent species of this genus is the metacarpal process of digit I (Woelfle, 1967). In *Tadorna*, this process is prominent, horizontal and pointed. This character is even more developed in *T. ferruginea* than in *T. tadorna*.

Femur: The articular head as well as the fibular and external condyles are less robust than in the other genera, with the exception of *Anas*, where both condyles are relatively smaller than in the rest of the genera. The femoral head in *Branta* is very short.

Tibiotarsus: In distal view, the internal condyle of *Tadorna* blunts of the external one. Such feature is also only observed in *Anas*. Maintaining the distal view, the shape of the bone is rectangular in *Tadorna* while it is square in *Anas*.

Tarsometatarsus: Fossils show diaphysis not flattened laterally and robust ends. On the contrary, in diving species *(Mergus, Bucephala, Melanitta, Clangula and Aythya)*, the diaphysis is flattened. This bone is very short in *Somateria*. In *Anas*, the ends are relatively less developed than in the other genera compared.

O. ACCIPITRIFORMES Savigny 1809
F. Accipitridae Savigny 1809
Gyps Savigny 1809 / *Aegypius* Savigny 1809 – Griffon or Black Vulture

Material:

Small fragment (*ca.* 6 cm) of the shaft of one ulna. General shape and size correspond to vultures, but specific identification is not possible.

O. COLUMBIFORMES (Latham 1790)
F. Columbidae (Illiger 1811)
Columba Linnaeus 1758
Columba livia Gmelin 1789 / *C. oenas* Linnaeus 1758 – Rock or Stock Pigeon

Material:

Diaphysis with part of the distal end of one humerus. The size of the bone corresponds to the recent *Columba livia* or *C. oenas*. Both species of doves are indistinguishable on the fragment found in Prádena (Fick, 1974; Weesie, 1988).

O. STRIGIFORMES (Wagler 1830)
F. Tytonidae Ridgway 1914
Tyto Billberg 1828
Tyto alba (Scopoli 1769) – Barn Owl

Material:
Diaphysis of one humerus. The humerus of the barn owl can be easily differentiated from other strigiforms.

3. Discussion and conclusions

Fossil bones from pigeons and barn owls constitute very common findings in karstic infillings from the Quaternary of Europe (Mourer-Chauviré, 1975; Sánchez Marco, 2004). The occurrence of remains of vulture is not so common, although its fossil record is not scarce in the Upper Pleistocene. The affinity of these species with caves and cliffs agrees with the geological and geographical features of a cave. These birds are not reliable indicators for infering the climate and environmental conditions of the Prádena region during the time of sedimentation. The Ruddy Shelduck is the only species that may provide information about the landscape. The current geographical distribution of this anatid is based upon scattered groups of small numbers of individuals. Shelducks can nests in hollows in the ground, although this aspect of its behaviour does not explain its relative abundance (Cramp, 1998). No anthropic marks have been recorded on the bones. In spite of this fact, the abundance of the Ruddy Shelduck puts the question of the hominid-bird connections.

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