

O REBOLAL: A NEW CAVE IN GALICIA (NW SPAIN) WITH RECENT CAVE BEAR REMAINS: PRELIMINARY REPORT

Aurora GRANDAL-D'ANGLADE¹, Juan Ramón VIDAL-ROMANÍ¹,
Marcos VAQUEIRO-GONZÁLEZ² & Eduardo MÉNDEZ²

Abstract: In this paper we describe a new cave with cave bear remains located at the NW of Spain in which the most recent cave bears, up to now, from the Iberian Peninsula were found. The range of ages varies from 30,000 to 13,000 years BP. In the material recovered it is possible to recognise different individuals of all ages. The cave walls also show scratches made by the young bears that inhabited the cave. All these would indicate that the bears used the cave frequently as a winter den for a long period of occupation. The southerly location of this cave and the range of ages allow us to interpret this site as a refugium for the cave bears during the Last Glacial Maximum, and where the bears survived along the postglacial until the beginning of the Holocene.

Key words: *Ursus spelaeus*, Galicia, glacial refugium, postglacial, bear scratches.

INTRODUCTION

Galicia is a region situated in the Northwest of the Iberian Peninsula in which cave bear remains of recent age were found into several karstic caves. These sites correspond to the westernmost populations of this species. Some of the sites have been extensively studied, such as Eirós (GRANDAL-D'ANGLADE 1993; GRANDAL-D'ANGLADE & VIDAL 1997), Liñares (GRANDAL-D'ANGLADE *et al* 2000; GRANDAL-D'ANGLADE & LÓPEZ-GONZÁLEZ 1998; LÓPEZ-GONZÁLEZ & GRANDAL-D'ANGLADE 2001; LÓPEZ-GONZÁLEZ, 2003) and A Ceza (GRANDAL-D'ANGLADE *et al* 2000; LÓPEZ-GONZÁLEZ & GRANDAL-D'ANGLADE 2001; GRANDAL-D'ANGLADE & LÓPEZ-GONZÁLEZ 1998). In recent times, a new site was found in a cave situated more southerly than the above mentioned. This is the Rebolal Cave, in the nearby of the village Cobas (Rubíá, Ourense) (fig. 1).

This karstic cave opens out in a rocky wall facing north, at 505 m a.s.l. and presents a complicated topography (fig. 2).

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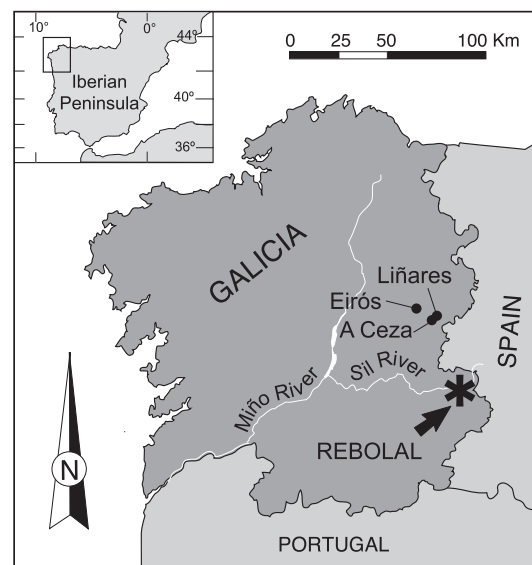


Figure 1. Situation map indicating other Galician cave bear sites.

¹ Instituto Universitario de Xeoloxía "Isidro Parga Pondal". Universidade da Coruña. Campus de Elviña s/n. 15071 A Coruña, SPAIN. xeauroa@udc.es

² Clube Espeleolóxico Maúxo, C/Manuel de Castro, 8 - 3ºD, 36210 Vigo, SPAIN. mauxo@mauxo.com

one of the entrances of the cave. All but two were identified as belonging to *Ursus spelaeus*.

The bones had become integrated into sediment together with quartzitic pebbles and fragments of stalagmitic crust. All of this seems to indicate that the material comes from an old excavation in the entrance probable dating from the Spanish war, as was documented in other caves of this area (fig. 3).

The bone remains were identified (tab. 1) and cleaned, and some samples were taken for different analysis. The bones were then consolidated and some of them measured (those that were in good conditions).

DESCRIPTION-DISCUSSION

The morphology of two upper P4 is different, one of them being simple according to the morphodynamic classification after RABEDER (1999). The other, although broken, seems more complex (fig. 4).

The bone sample, although scarce, includes senile, adult and juvenile specimens. This indicates that the cave was not an occasional refuge for bears, but a fully cave bear den, used at least by females with cubs.

Another clue that lead to this cave being considered as a typical bear den is the presence of bear scratches in the cave. However these scratches according to their dimensions were made by the young bears. The breadth of the scratches (four fingers or toes) is up to 32 mm. The breadth of those that are full grown (five fingers or toes) is about 42 mm.

The scratches were found in a cave wall and also in blocks (fig. 5 a & b). The situation of some of the scratches suggests that they were made with paws and also with the feet, as if the cubs were trying to climb up the cave wall.

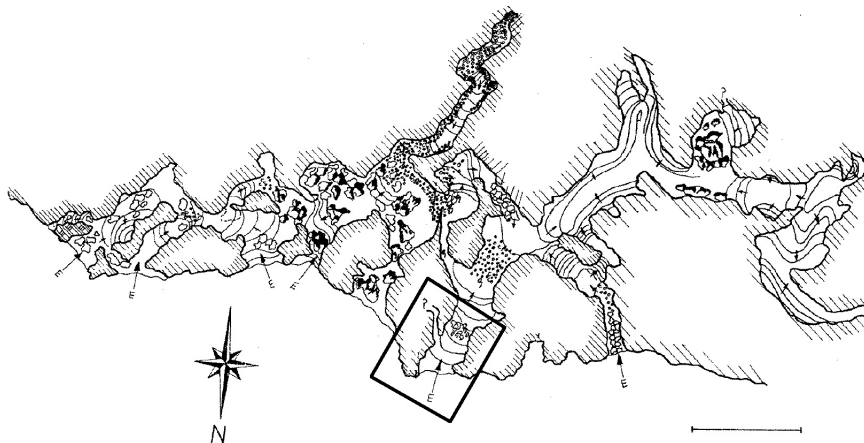


Figure 2. Topography of Rebolal Cave (GES Ártabros, 1979). The square marks the gallery detailed in fig. 3.

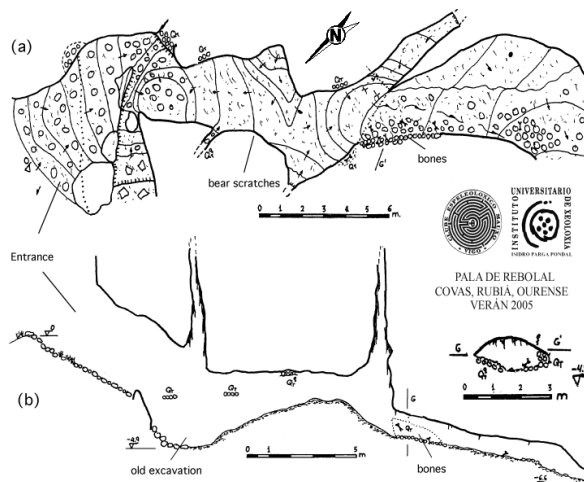


Figure 3. Rebolal Cave. (a) Topography and (b) section of the gallery where the bones and scratches were found (Clube Espeleológico Maúxo, 2005).

Table 1
List of bones recovered in the cave.

Num	Bone	Side	Age	Conservation	Observations
RC-1,2,3	Maxilar (fragment)	dex	adult	P4 broken M1 good M2 broken and worn out	M1 root dated
RC-4	Upper canine	dex	adult	just root	
RC-5	Jaw	dex	adult	no teeth, just canine rooth (4) very fragmented. with concretions	sampled and dated
RC-6	Jaw	dex	senile	m3 & m2 very worn out. very fragmented	small size
RC-7	Upper P4	dex	adult	good	primitive morphotype
RC-8	First phalanx	-	adult	good	
RC-9	Tibia	sin	adult	distal half	
RC-10	Tibia	sin	adult	distal epiphysis	same than 9?
RC-11	Tibia	sin	adult	proximal epiphysis	
RC-12	Long bone		adult	fragment	humerus?
RC-13	Long bone		adult	fragment	diaphysis
RC-14	Rib		adult	fragment	
RC-15	Humerus	sin	subadult	regular	sampled and dated
RC-16	Femur	dex	juvenile	diaphysis	sampled and dated
RC-17	Femur	dex	adult	broken, <i>Cervus elaphus</i>	distal fragment
RC-18 to 26	Indet. fragments				
RC-27	Long bone	-	adult	(same than 28??)	
RC-28	Humerus	-	adult	fragment, lacking prox epiphysis	
RC-29	Humerus?	-	adult	broken	fragment prox epiphysis?
RC-30 to 33	Vertebrae	-	adult	fragment	
RC-34 to 37	Ribs	-	adult	fragment	
RC-38	Palatine	-	adult	broken	
RC-39	Skull		subadult	parietal, temporal and occipitalis	3+1 pieces
RC-40 to 46	Indet. fragments				
RC-47	Humerus	-	adult	fragment	small sized carnivore

Table 2
Ages of the dated bones.

Sample	bone	age	Lab. reference
RC-2	root of M1	13,785 ± 110 (cal 14,600 BC)	Ua-24252
RC-5	adult jaw	22,915 ± 445	Ua-24939
RC-16	juvenile femur	27,970 ± 600	Ua-24941
RC-15	subadult humerus	30,455 ± 795	Ua-24940

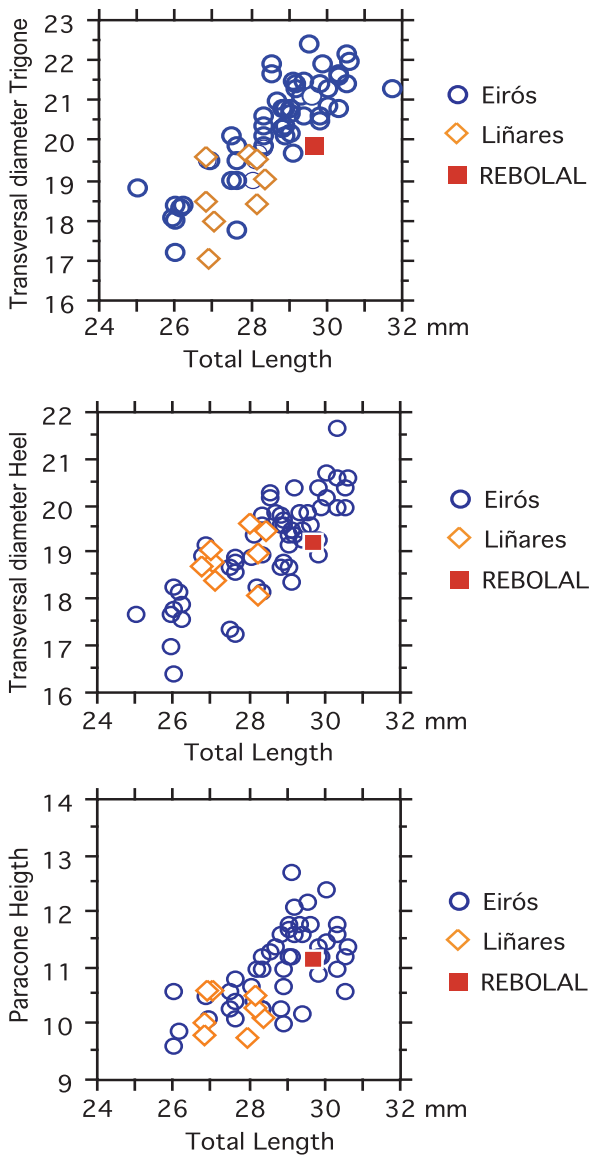


Figure 6. Bivariate diagrams of the main dimensions of the upper first molar of Rebolal and other Galician sites.

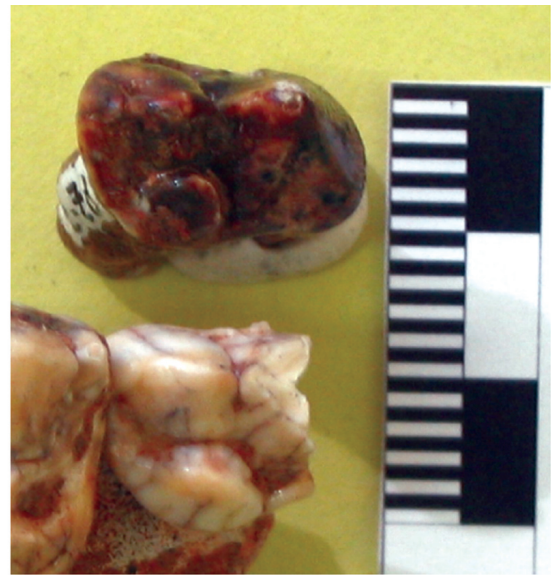


Figure 4. Two fourth upper premolars showing different morphologies.



Figure 7. The upper first molar dated in $13,785 \pm 110$ BP.



Figure 5. Scratches of young cave bears on the cave wall (a) and blocks (b).

CONCLUSIONS

Four radiocarbon datings (AMS 14C) were made, yielding ages between 13.5 and 30.5 Ky BP, indicating a long occupation of the cave by the bears, and the youngest ages known in the Iberian Peninsula for this species (tab. 2). The youngest age was yielded by an upper first molar with undoubtful *U. spelaeus* size (fig. 6) and morphology (fig. 7).

During 2007 it is planned to start palaeontological excavations in the cave for the localization of the main site, since the bones here studied come from sediments removed in the past by unknown people, probably partisans from the Spanish Civil War. Due to the material found so far, we expect to find a large deposit of cave bear bones dating at least from the last glacial period to the very beginning of the Holocene. That could represent a remnant population at the southwest of the cave bear distribution that probably reached this latitude in the last glacial maximum, and survived in what could be considered a glacial refuge for this species.

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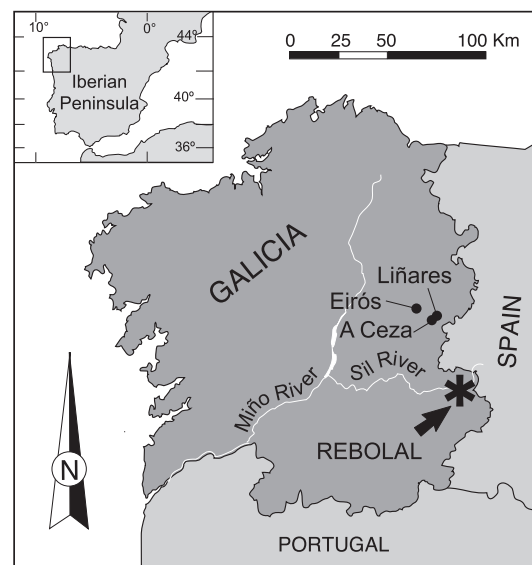


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