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# Archaic and recent *Ursus spelaeus* forms from Lombardy and Venetia Region (North Italy)

Formas arcaicas y recientes de *Ursus spelaeus* en  
Lombardía y la región de Venecia (Norte de  
Italia)

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## ABSTRACT

Some *Ursus spelaeus* Rosenmüller-Heinroth, 1784 cranial and mandibular remains coming from Northern Italy (Lombardy Region -Buco dell'Orso Cave, Laglio, Como-) and from Venetia Region (Cere, S. Donà di Lamon and Velo), are biometrically analysed. The compared fossils could be inserted in two typological forms: archaic and modern. To the first belongs a part of Venetia Region remains and to the second, the Buco dell'Orso Cave fossils and some of the Venetia Region caves too. The probable thesis of derivation of *U. spelaeus* by *U. arctos* is mentioned, although the phylogenetic hypothesis *U. etruscus* → *U. deningeri* → *U. spelaeus*, is still effective.

**Key words:** *Ursus spelaeus*, archaic and modern forms, comparison

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## INTRODUCTION

The *Ursus spelaeus* Rosenmüller-Heinroth, 1784 remains are very abundant in the Northern Italy caves (SANTI & ROSSI, in press, for a bibliographic analysis), but the last discoveries taken in the Venetia Region have shown the probably presence of archaic elements of this species. The fossils (about fifteen among the skulls and mandibles) come particularly from Cerè Cave, near Verona: this cave is placed along the Falconi Vajo near Ceredo (figure 1 A). Together with these bear fossils, have been found a great quantity of mammals remains that "...*sembra rappresentare in realtà più momenti del Pleistocene*" (BON *et al.*, 1991, p.189). Skulls and mandibular bears remains from Cerè Cave are fragmentary, with the exception of two skulls and one mandible, partially deformed by fossilization process. These ones have the typical "*spelaeus*" characters, in particular those linked to a more herbivorous diet.

1) DOME CONFORMATION OF THE FRONTALS. This character is clearly visible in some fossils (V 160 and V 162), less in the V 161 specimen because of post-mortem process. The frontal region convexity has been signalled in some *U. deningeri* "modern" elements too (KURTÉN, in TORRES, 1988), but not in the "archaic" forms. Furthermore, in lateral view a profile of the cranic vault little convex, similar to the *U. spelaeus* one, is evidenced. The small dimensions of the V 161 specimen suggest the possibility that this fossil could belong to this species. The lack of P<sup>2</sup> could not destroy this hypothesis: in fact the *U. deningeri* dental

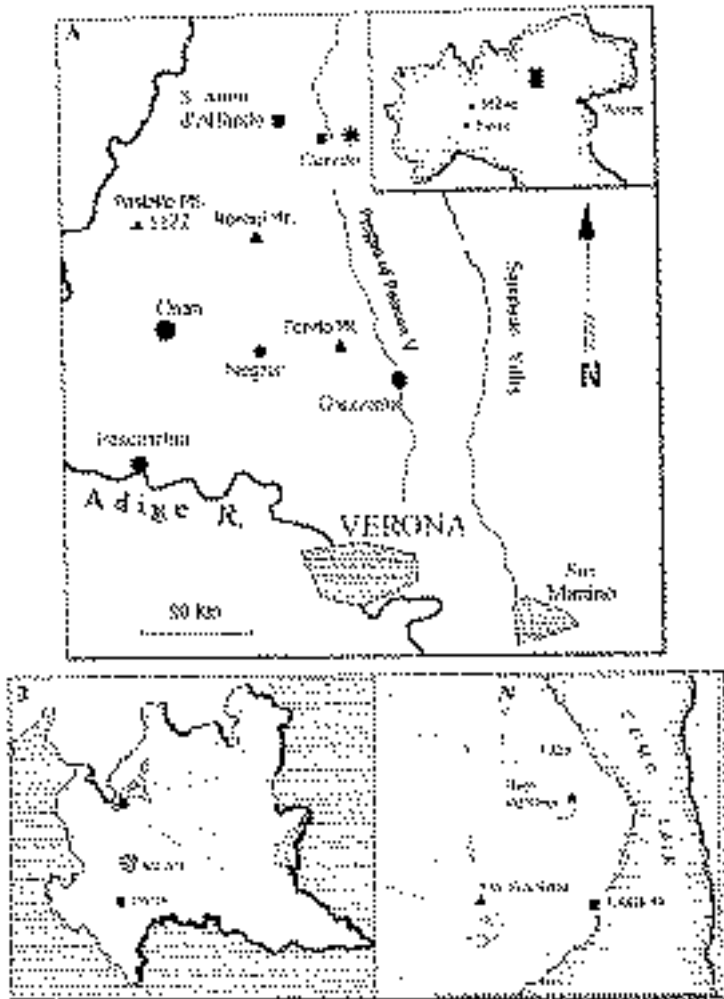
formula is very variable and the lack of second premolar remain, as in this case, has been signalled.

2) THE NASAL AREA, as in *U. spelaeus*, is lightly concave (MAZZA & RUSTIONI, 1994).

3) THE ZYGOMATIC ARC presents an arcuated profile with the convex boundary in the upper side and the concave below. Dorsally, the orbits' profile of the specimens as in *U. spelaeus*, is rounded and a little protruding (TORRES, 1988, figure 1.8 a). On the contrary, in *U. arctos* is protruding and triangular (TORRES, 1988, figure 1.9 a).

4) THE VERTICAL RAMUS of the mandible has a posterior straight boundary like the inferior side of the coronoid crest that always link it vertically to the horizontal ramus (cf. TORRES, 1988, figs 7.2 b, c).

Biometric data confirm the observations following the morphology, but show a decrease in size in comparison to the average found in the classic speloid elements. In particular, size is intermediate between the typical *U. spelaeus* and *U. arctos* (figures 2-3). Biometric values show that the skulls V 161 and V 162 (figure 2) and the mandibles belonging to the more robust elements (figures 3-4), fall in the field defined by *U. spelaeus*. Graphic of the figure 3 shows the typical speloid characters: in fact observing that the mandible V 4886 is the smaller among all the analysed specimens, it is possible to extend similar morphometric characters also to the other mandibular remains. Therefore, considering the assigned age of Cerè deposit (BON *et al.*, 1991) and the observed morphological and biometric characteristics,



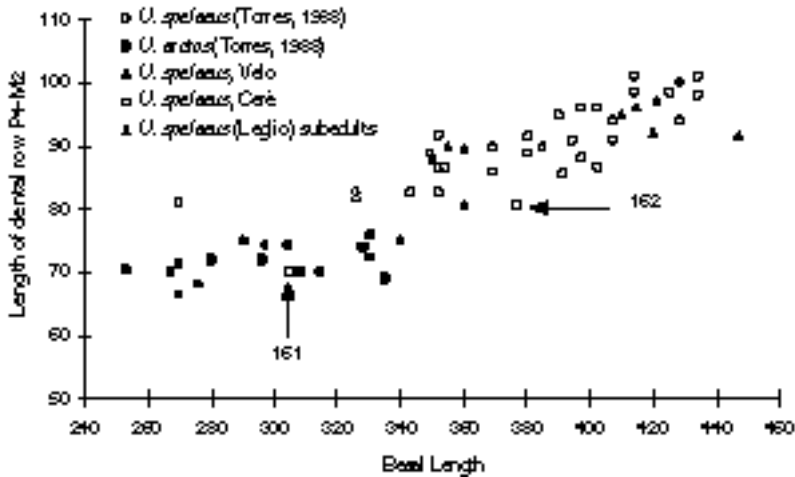
**Figure 1. Geographic position of the fossiliferous localities of Cerè (Verona) (A) and Buco dell'Orso (Laglio) (B) Caves.**

it is possible to assign the analysed fossils to the archaic forms of *U. spelaeus*, only supposing, while waiting for new data, the presence of *U. deningeri*.

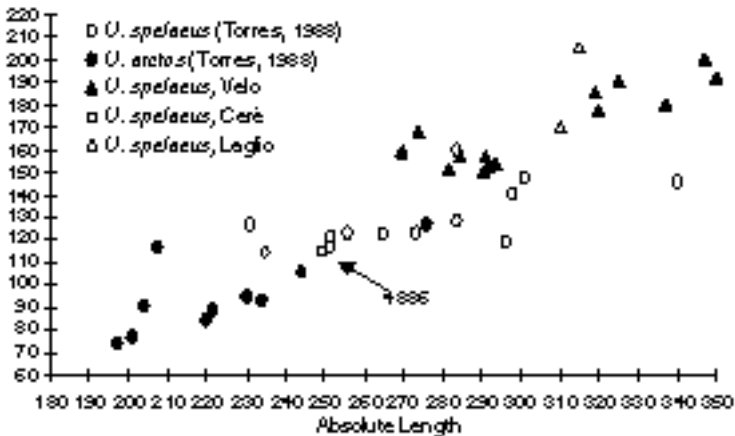
The *U. spelaeus* remains from the Buco dell'Orso Cave near Laglio (Como) (figure 1 B) have been studied by ROSSI & SANTI (in press a) and by SANTI & ROSSI (in press). The effected analyses

have demonstrated that the studied forms fall well in the morphologic and biometric spectrum typical of *U. spelaeus*, although the reduced size could let think to *U. deningeri* appurtenance (RABEDER, com. pers.) with the exception of one maxillary fragment. For it we have advanced an *U. arctos* appurtenance.

Diagrams of figures 2-3-4 propose a



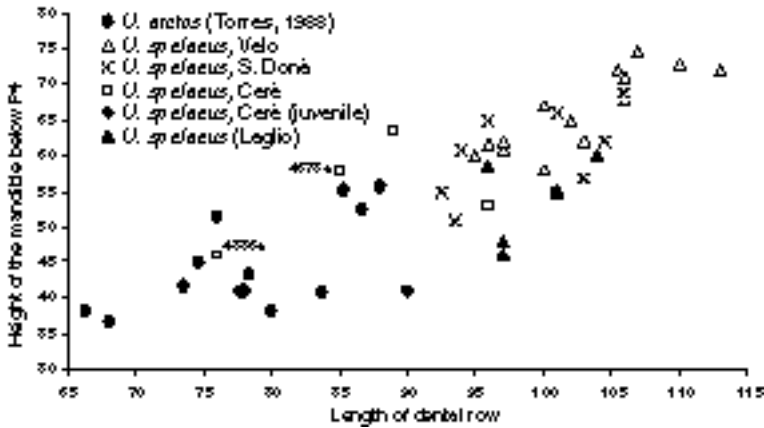
**Figure 2. Graphic relative to the relation between the Basal length and the Length of the dental row ( $P^4-M^2$ ) (in mm) in bears skulls (by: ROSSI & SANTI, in press b, mod.).**



**Figure 3. Graphic relative to the relation between the Absolute length and Height of the vertical ramus (in mm) in bears mandibles (by: ROSSI & SANTI, in press b, mod.).**

first, meaningful comparison between the cranial and mandibular morphometry of the Buco dell'Orso Cave and Cerè remains compared to the bears ones (*U. spelaeus* and *U. arctos*) from venetian (Velo and S. Donà) and foreign localities (Spain). We put first is that we have utilised the main

meaningful parameters useful to this aim. Therefore the few data available demonstrate until now the clear difference of the points' position referred to Cerè and Laglio fossils. Referring to diagram of figure 2 the Laglio bears representative points are placed in order to the boundary



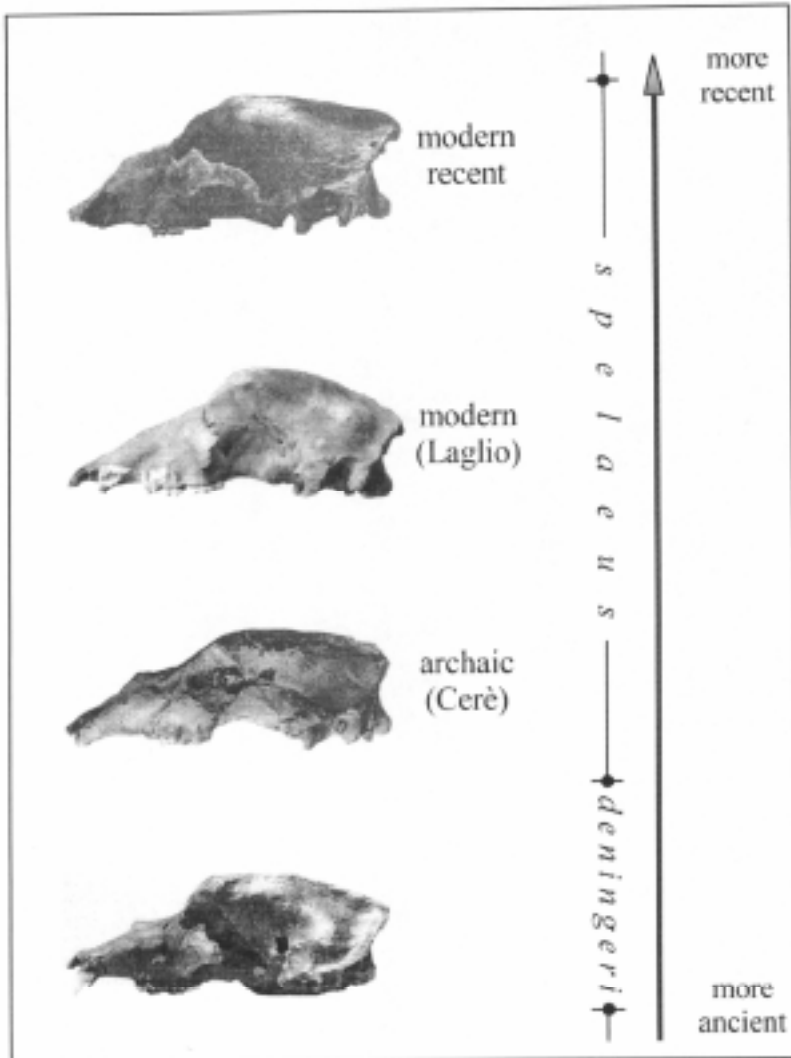
**Figure 4. Graphic relative to the relation between the Length of the dental row and Height of the mandible below P<sub>4</sub> (in mm) in bears mandibles (by: ROSSI & SANTI, in press b, mod.).**

of "*spelaeus*" dispersion data, while in the other graphics are placed very well inside the "*spelaeus*" cloud. The boundary position of the Laglio skulls representative points could have a logic explanation in the consideration that the fossils should belong to subadult forms and therefore still not come to maturity. Considering in particular both the Cerè bears, and the Laglio ones, we found two well distinct "*spelaeus*" types: the typical ones (main part) and the forms that having also "*spelaeus*" morphologic characters, have partially the arctoid ones (V 4886a and V 161 for example) (ROSSI & SANTI, in press b). This "type diversity" could be explained by the presence of *U. spelaeus* archaic forms (supposing only the *U. deningeri* presence) and more "modern" ones. To the first should be referred a part of the considered Cerè elements, and to the second, those of the Laglio and others of the Verona and Venetia region cave ones (figure 5).

Therefore with this first preliminary comparison should confirm for the moment, the hypothesis of the possible presence of *U. spelaeus* archaic forms in the Verona Region. Notwithstanding that on the base of MAZZA & RUSTIONI's (1994) considerations a possible derivation of *U. spelaeus* from *U. arctos* could be advanced, morphologically and palaeogeographically is more acceptable until now a phylogenetic sequence *U. etruscus* *U. deningeri* *U. spelaeus* with the new *U. arctos* invasion in the Middle Galerian that originated the Upper Pleistocene and present arctoid forms (Petronio, pers. com.).

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**Figure 5.** Cranial morphologic variation on the chronological base, by *Ursus deningeri* at *Ursus spelaeus* ("archaic" and "modern"). *U. deningeri* and *U. spelaeus* "modern" are reprised by STUART (1982).

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