

# **The wolverine (*Gulo gulo* L.) in Spain – one of the south most spreading during the Pleistocene**

El Glotón (*Gulo gulo* L.) en España: una de las distribuciones más meridionales durante el Pleistoceno

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## **ABSTRACT**

**This paper is a contribution to the study of the wolverine (*Gulo gulo*) in Europe. The scarce findings of this species in the Iberian Peninsula are described and metrically compared with those living representants from Scandinavia.**

**Key words: Wolverine, Iberian peninsula, Pleistocene**

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**FINDINGS**

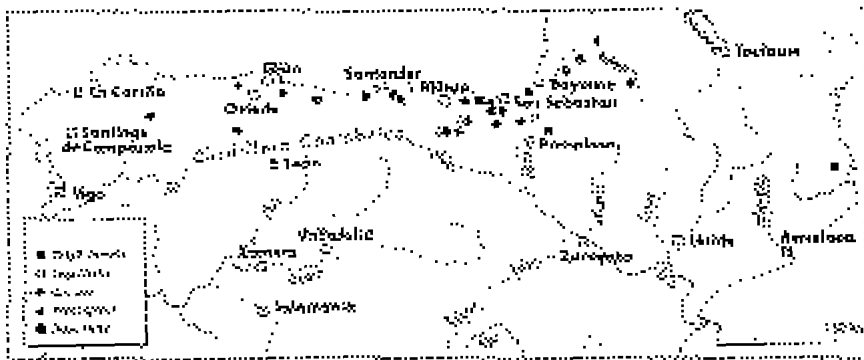
On the occasion of my dissertation theme "The wolverine in Europe during the Pleistocene" I am going to give a brief summary of the Spanish wolverine remains (figure 1 and table 1) and compare them with the living *Gulo gulo* from Scandinavia.

The first wolverine findings of the Peninsula Iberia are located in Lezetxiki (province Guipúzcoa). This cave is situated in the NW of Mondragón, in the eastern slope of the Karraskgain Mountain near Garagarza. You can reach the entrance trough the valley of the river Kobate. The cave has two entrances, which are connected by a straight tunnel system. The south and north entrance are approx. 2 m wide and 2,5 m high and the whole

system is 20 m long. There are also 2 stone windows on the eastern side (direction of the valley of Kobate).

Justo Jáuregui found Lezetxiki in 1927. A big excavation campaign started in 1956 and ended 1968. The archaeological finds where made at the south entrance, in an area of 6m x 8m. During these excavations they found a new cave (cueva de Leibar) at the coordinates 9A and 11A. During the 13 excavations campaign 3773 bones (334 MIN) were be determined (table 2). Approx. half of the bones belonged to the group of bears (*Ursus spelaeus* and *U. deningeri*). Further they found carnivores, ungulates, marmots and finally the group of micromammals.

The archaeological findings present the whole spectrum of the Palaeolithic



**Figure 1.** Sites of the wolverine and other arctic companions in North Spain (ALTUNA, 1996).

cave	province	position	sea level	Total length	trip	leaves	Paleolithic
Lezetxiki	Guipúzcoa	2°21'35" W 42°05'20" N	275 m	20 m	Altuna, 1972	+	+
Madrugueras XI	Alava	0°55'50" W 42°10'20" N	370 m	22 m	Altuna & Etxebarri, 1988:24	+	+

**Table 1:** General account of the Spanish wolverine sites.

period (ALTUNA, 1996): 28: Magdalenian (layer I), Solutrian (II), Gavettian (II), Aurignacian (III, IV) and Mousterian (V, VI, VII).

The rest of the wolverine comes from the layer II and consists of a left maxilla fragment with P3, P4 and M1. The first time this fossil find was mentioned in Spain by J. ALTUNA in 1963. He published further details of this finding (1972: Taf. VI, figure 3). The companions of the wolverine were wolf (MNI 1), fox (MNI 2), cave bear (MNI 2), red deer (MNI 3), roe (MNI 2), great bovid (MNI 2), chamois (MNI 8), ibex (MNI 3), horse (MNI 1) and woolly rhinoceros (MNI 1). In other words, the ungulates of the layer II were dominated with 90,2 % (ALTUNA, 1972: 144).

The second wolverine site in Spain is located in **Mairuelegorreta XI**. This cave is situated in the N of the province Alava, between Bilbao and Vitoria. This karstic zone is named Macizo del Gorbea with the Monte Gorbea (1.475 m).

The small cave is situated on the SE site of Monte Gorbea. The size of its entrance measures 1 m wide and 3 m high near by Mairuelegorreta I. Its total length is 23 m. The first and only excavation took place from November 1977 to May 1988. In the 8 layers there was only a little fauna (see table 2). A double scraper was found in layer I (0-45 m).

The wolverine rests consist of a left distal tibia-fragment, a left metatarsus II and a left metatarsus V-fragment (ALTUNA & BALDEÓN, 1986: 56). The rests came from the layer V (112-120 cm) together with *Ursus spelaeus* and *Cervus elaphus*.

	Lz		Mx	
	MNI	MNI	MNI	MNI
Insectivora	5	4	-	-
Chiroptera	1	1	-	-
Mammalia, mamota	164	28	4	1
Carnivora	1	1	-	-
Artiodactyla	40	28	-	-
Ursidae	1	1	-	-
Lepus sp.	2	4	-	-
Carnivora				
Canis lupus	34	14	-	-
Vulpes vulpes	29	10	-	-
Ursus spelaeus	215	54	3	4
Ursus arctos	60	5	-	-
Ursus deningeri	282	9	-	-
Mustelidae	5	3	-	-
Martes sp.	1	1	-	-
Martes martes	3	5	-	-
Gulo gulo	1	1	3	1
Felis silvestris	4	2	3	1
Lynx lynx	2	1	-	-
Panthera pardus	27	5	-	-
Panthera spelaea	150	4	-	-
Crocuta spelaea	3	3	-	-
Suidae	7	4	-	-
Cervidae	294	48	2	2
Megacerus gigantiurus	6	2	-	-
Alcega sp.				
Panthera leo	6	3	-	-
Bovidae	481	29	1	1
Pipistrellus pipistrellus	266	34	12	3
Capra ibex	30	16	-	-
Equidae	37	10	-	-
Rhinocerotidae	15	7	-	-

**Table 2. mammal - fauna of Lezetxiki (Lz, ALTUNA, 1972: 141) and Mairuelegorreta XI (Mx, ALTUNA & BALDEÓN, 1986).**

**CONCLUSION**

In this short summary of wolverine in North Spain the sexual dimorphism of these species can be shown - especially in the skull. The univariate and multivariate analysis of WIIG (1989) demonstrate a clear-cut sexual dimorphism in the skull of Norwegian wolverines, the males are 6-14 % larger than the females. The teeth of the maxilla fragment of Lezetxiki (table 5) underline these studies (ALTUNA, 1972).

The elements of the postcranial skeleton are more difficult to differentiate between male and female (table 3 and 4). At

Tibia	recent/fossil	male/female	GL	pB	dB
Mairuelegorreta XI	fossil				20,30
number	recent	male	10,00	8,00	10,00
MIN			132,00	28,10	21,00
MAX			147,40	32,40	24,00
Average value			140,10	30,90	22,90

Index: GL – total length, pB – proximal breadth, dB – distal breadth

**Table 3. Tibia-measurements of Mairuelegorreta XI and living *Gulo gulo* (mm).**

MT V	recent/fossil	male/female	L	pBmax	dB	KD
Mairuelegorreta XI	fossil		53,50	-	-	5,60
number	recent	male	10,00	9,00	6,00	6,00
MIN			51,90	10,20	8,90	4,70
MAX			59,10	12,30	9,60	5,70
Mittelwert			54,46	10,74	9,20	5,18

Index: see table 3

**Table 4. Metatarsus V-measurements of Mairuelegorreta XI and *Gulo gulo* (mm).**

the moment the measurements are too small to show the same result as at the skull. Further investigations at other European Pleistocene material and recent material will follow in regard these results (DÖPPES, in print).

The European spreading in the Pleistocene reached from Great Britain in the west (Tornewton cave, KURTÉN, 1968) to N-Spain (ALTUNA, 1996). His current living areas in Europe are limited

to Norway, Sweden, Finland and N-Russia.

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	razunt/ male fossil female		P <sup>2</sup>		P <sup>1</sup>		M <sup>1</sup>	
	L	B	L	E	L	E	L	E
Lz II	Lezetiki				21,20	12,40	7,60	13,60
1	Azaski	razunt male	15,00	15,00	27,00	27,00	27,00	27,00
	MIN		3,70	4,90	17,40	10,20	5,60	12,00
	MAX		10,60	6,20	21,50	13,00	7,20	14,60
	Mittelwert		10,06	5,62	20,09	11,76	6,22	13,29
WIG	Azaski	razunt m			24			
	MIN				12,3			
	MAX				22,60			
	Mittelwert				20,35			
K & R	Azaski	razunt m			7			
	MIN				20,35			
	MAX				20,31			
	Mittelwert				20,62			
1	Azaski	razunt f	10,00	10,00	12,00	12,00	12,00	12,00
	MIN		3,40	5,00	17,70	10,00	5,30	11,40
	MAX		10,00	5,60	12,70	11,60	7,30	13,70
	Mittelwert		2,44	5,36	13,60	10,27	6,61	12,46
WIG	Azaski	f			72			
	MIN				13,00			
	MAX				20,20			
	Mittelwert				12,07			
K&R	Azaski	razunt f			17			
	MIN				12,07			
	MAX				12,29			
	Mittelwert				12,13			

Index: WIG - Wäg 1959, K & R - Kurten & Rausch 1959

**Table 5. Teeth measurements of Lezetxiki (Lz, ALTUNA, 1972: 141) and *Gulo gulo* of Scandinavia (mm).**

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