THE STONE MARTEN *MARTES FOINA* (ERXLEBEN, 1777) (MAMMALIA, CARNIVORA) FROM IBIZA (PITIUSIC, BALEARIC ISLANDS)

M. DELIBES & F. AMORES

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The Stone Marten Martes foina *(Erxleben, 1777) (Mammalia, Carnivora) from Ibiza (Pitiusic, Balearic Islands).*– One skin and 38 skulls of martens from Ibiza have been studied. The results confirm the specific identity of these martens as *Martes foina* (Erxleben, 1777). On average, Ibiza Stone Martens are smaller than the European ones, with the exception of some teeth measurements. There is a sexual dimorphism in size, males being bigger than females. Craniometrically, Ibiza martens seem to be similar to those from Crete, Crimea and the Middle East. The species has probably become extinct in the island within the last fifteen years.

Key words: *Martes foina,* Stone marten, Body size, Ibiza, Mediterranean islands.

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INTRODUCTION

The specific identity of the martens of Ibiza (Balearic Islands; aprox. 39° N, 1° 30' E) has been a subject of controversy for some time. In the first papers (i.e. BARCELÓ, 1875 and KÖLLER, 1931) the Stone Marten was cited as the species inhabiting the island, but later almost all the authors, even if they had not examined any specimens, accepted as more probable the presence there of the Pine Marten (*Martes martes*), since this species already occupies Majorca and Minorca (i.e. COMPTE-SART, 1966; ANDERSON, 1970; ALCOVER, 1977). Only recently, following the examination of a series of skulls, DELIBES et al. (1979) established that the species living in Ibiza was the Stone Marten and this information was included by ALCOVER (1979) in his book on the mammals of the Balearic Islands.

The purposes of this paper are: 1) to prove the specific identity of the Ibiza marten, 2) to give a detailed quantitative description of its skull, allowing future comparisons (in paleontology, zoogeography, etc), 3) to compare from a morphometrical point of view the Ibiza Stone Marten with other populations of the species and 4) to bring up to date the available information on the status of *Martes foina* on the Island.

MATERIAL AND METHODS

We have examined one skin and 38 skulls of Ibiza martens from the collections of the Museum für Naturkunde der Humboldt-Universität of Berlin (MHUB). All of them were probably sent to the Museum by H. Grün during the years 1929-1930. Only one skull co-

rresponds to a very young individual, still without its definitive dentition, and it has been eliminated from the analysis. Forty-five cranial measurements were taken with a caliper to the nearest tenth of a millimeter. All of them are described in ANDERSON (1970), and/or shown in figure 1.

Colours are cited following SMITHE (1975).

RESULTS AND DISCUSSION

1. Specific determination

The Stone and the Pine Marten are quite similar morphologically, but several authors, from MILLER (1912) and CABRERA (1914) to ANDERSON (1970) and ALTUNA (1973), have looked for differences between the skulls of

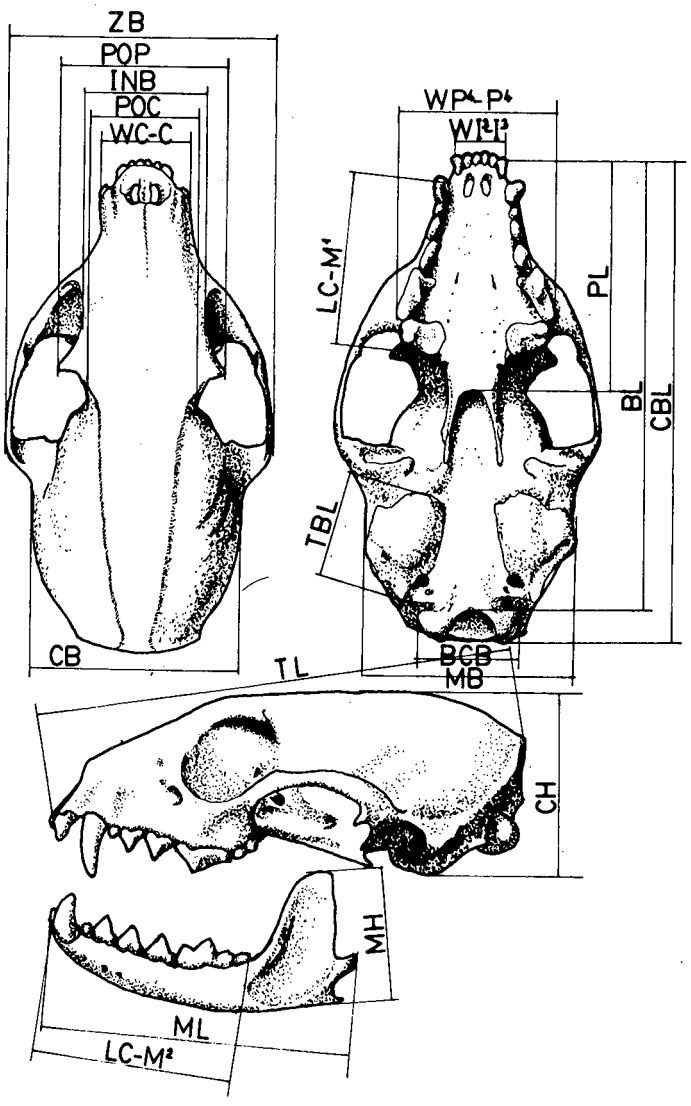

Fig. 1. Cranium and mandibule of an Ibiza Stone Marten showing the way measurements were taken.

Cráneo y mandíbula de una garduña de Ibiza mostrando la forma en que han sido tomadas las medidas.

both species. We use some of these differences to prove the specific identity of the Ibiza martens.

1.1. Shape of the postorbital region

Morphological differences in this area are well known, but only ALTUNA (1973) gives a method for separating *Martes foina* from *Martes martes* in relation to this character. According to this author, the skulls of both species are separated in a graph in which the distance FED (fig. 2) between the line which joins the postorbital processes and the line which joins the borders of the postorbital constriction, would be placed in ordinates, and in abcyses an index,

$$\text{Altuna's I} = \frac{\text{POC} \times 100}{\text{POP}}$$

Arranged in such a graph, all of the Ibiza martens skulls studied belong to the area corresponding to *Martes foina* (fig. 2).

1.2. Distance between the foramina mentoniana

For ANDERSON (1970), quoting JANOSSY (1963), the distance between the anterior and posterior mental foramina of *Martes foina* is from 2.0 to 3.4 mm, while in *Martes martes* they are set farther apart (from 5.9 to 9.6 mm). ALTUNA (1973) dates back the criterion to a paper of 1888 by Winterfeld and confirms its validity, the distance being from 2.0 to 4.3 mm in the Stone Marten and from 4.0 to 8.0 mm in the Pine Marten.

The anterior and posterior mental foramina have fused into one (distance nil) in 10 (27.5%) of the 36 left jaws we examined. In the other 26 this distance varies from 2.2 to 4.5 mm, with a mean $\bar{x} = 3.63$ and a standard deviation S.D. = 0.558. If the total sample is considered, the statistical parameters are n = 36, $\bar{x} = 2.63$, S.D. = 1.717 and a range from 0 to 4.5 mm. These results remain within the range of variation corresponding to *Martes foina.*

1.3. Other criteria

Following MILLER (1912), various authors recognize a differential character in the concave-convex shape (in *Martes martes*) or biconvex shape (in *Martes foina*) of the P_3 crown. Also, the antero-posterior length of the inner lobe of M^1 with respect to the lenght across the paracone-metacone of this tooth would be bigger in *Martes martes.* Both characteristics confirm that the Ibiza skulls are of Stone Martens.

2. Body measurements and coloration

We have examined the skin nº 42674 (MHUB) whose data in the label are: "San Juan, Ibiza, Pityusen; 4.3.1930; Ipa T., H. Grün S.; 380, 305, 55, 40". If the last numbers correspond to the body measurements (Head and body lenght, HBL; Tail lenght, TL; Hind foot lenght, FL; Ear lenght, EL), the specimen would be young (small HBL), but with long ears and tail. The data for FL must be erroneous. KÖLLER (1931) gives the following external measurements for a male of Ibiza: HBL 510, TL 240, FL 80 and EL 30. They are quite similar to those of the Iberian specimens (CABRERA, 1914, gives for two males of Madrid: HBL 445-470, TL 230-223, FL 75-82, EL 32-33), even if the first author remarks that the tail is always shorter in the Ibiza Martens.

The skin nº 42674 is Raw Umber on the legs, Burnt Umber on the tail, a mixture of Clay and Antique Brown on the back and Clay on the sides and the belly. Underfur is whitish, as is the throat patch. This skin is noticeably more reddish and lighter in colour than those of Sierra Morena (SW Spain), which have the back Burnt Umber (col. Estación Biológica de Doñana, EBD, Sevilla, Spain). On the other hand, it is similar to the type of *M. f. mediterranea* (Barret-Hamilton, 1898) deposited in the British Museum (Natural History) of London, but probably both pelts are discoloured. In spite of this, KÖLLER (1931) describes the Ibiza martens: "The colour of the back is a light yellowish brown,

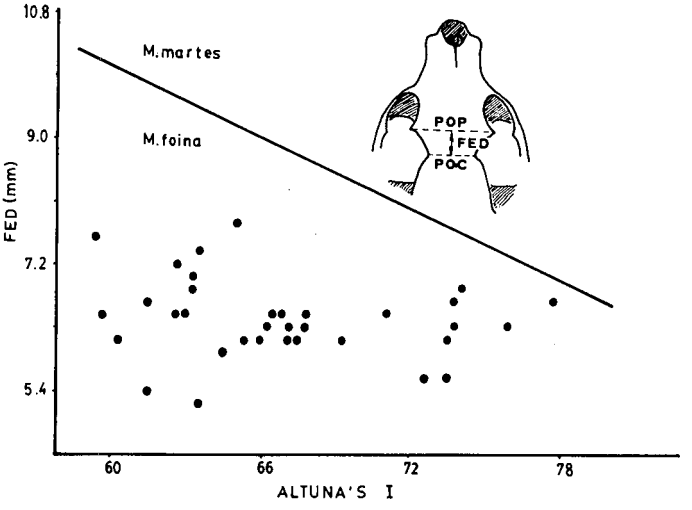

Fig. 2. Relationship between the index of Altuna and the distance FED shown; ● Ibiza martens. All of them are in the zone corresponding to *Martes foina.*

Relación entre el índice de Altuna y la distancia FED mostrada en el dibujo; ● *Garduñas de Ibiza. Todos ellos se encuentran en la zona correspondiente a* Martes foina.

less brown that in *M. foina foina.* Underfur is also lighter than that of the typical form". It could be that the Ibiza Martens were lighter in colour than the continental ones. This question remains unsolved.

3. Sexual dimorphism

The genus *Martes* shows important sexual dimorphism: males are usually bigger than females (ANDERSON, 1970). Unfortunately only one of the examined skulls, a female, has the sex noted in its label. To try sexing the remaining skulls we have relied on the method suggested by VAN BREE et al. (1970), based on the lenght of the largest diameter of the lower canine at the level of the edge of the enamel (LCL).

By comparing the distribution frequencies of this diameter in the Stone Martens of Ibiza and those of Central Europe (data of VAN BREE et al., 1970) (fig. 3), it is found that: a) As a rule, specimens of Ibiza have lower values than those of Central Europe and therefore, the useful limits for VAN BREE et al. (1970) are not directly aplicable to this mate-

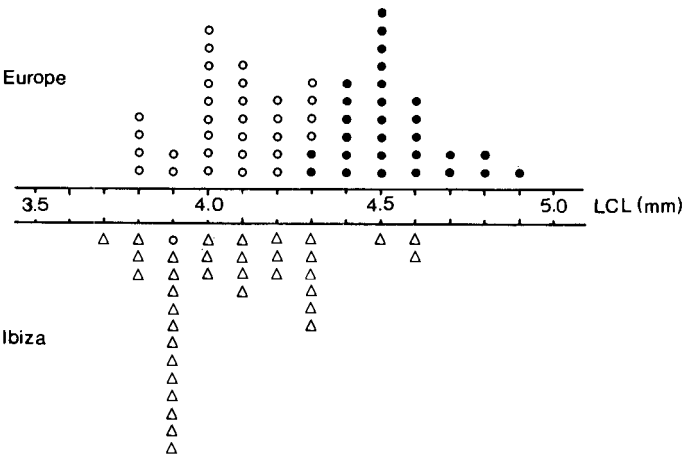

Fig. 3. Distribution of the Stone Martens of Central Europe (BREE et al., 1970) and Ibiza according to their lower canine lengths: ○ Females; ● Males; △ Indeterminate sex.

Distribución de las garduñas de Europa Central (BREE et al., 1970) e Ibiza según las longitudes de sus caninos inferiores: ○ *Hembras;* ● *Machos;* △ Sexo indeterminado.

rial; b) The bimodality of the measurements of the Ibiza skulls strongly suggests the existence of a noticeable sexual dimorphism in this population, even if the intermediate position of some dimensions makes it imposible to sex each specimen solely under this criterion.

A graphical representation of the condylobasal lenght (CBL) against the largest diameter of the canine (fig. 4) shows not only the correlation between both dimensions ($r = 0.762$; $p < 0.001$), but also the trend of the points to place themselves into two groups, most likely corresponding to both sexes. Five individuals can be considered uncertain with regard to sex. Then, the measurements of the postorbital constriction are plotted against those of the zygomatic breadth, which constitutes the method used by ANDERSON (1970) to sex martens. All the presumed males are well separated from the presumed females. Four of the uncertain cases are included with the females and one with the males (fig. 5).

Thus, presumably, all the skulls can be sexed whenever it is possible to measure CBL, POC, ZB, and LCL, specially if the relative age is known.

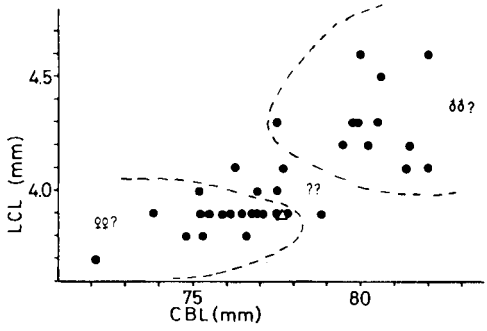

Fig. 4. Relationship between condylobasal length and lower canine length: △ Female; ● Indeterminate sex.

Relación entre la longitud condilobasal y la longitud del canino inferior: △ Hembra; ● Sexo indeterminado.

4. Craniometry

The range, mean, standard deviation and size of the sample for each measurement, without regard to sex, are shown in table 1.

Although the sex is only presumed, the same statistical parameters for some of the measurements of males and females are presented in table 2.

The cranial capacity has also been measured, ranging from 19.59 to 24.80 cc for males ($n = 9$; $\bar{x} = 21.83$) and from 15.99 to 22.08 cc for females ($n = 19$; $\bar{x} = 18.63$). Considering each sex as a separate sample, there is not a close relationship between the cranial capacity and the general size (i.e. CBL) of the skull (correlation coefficient $r = 0.07$ for males and $r = -0.02$ for females).

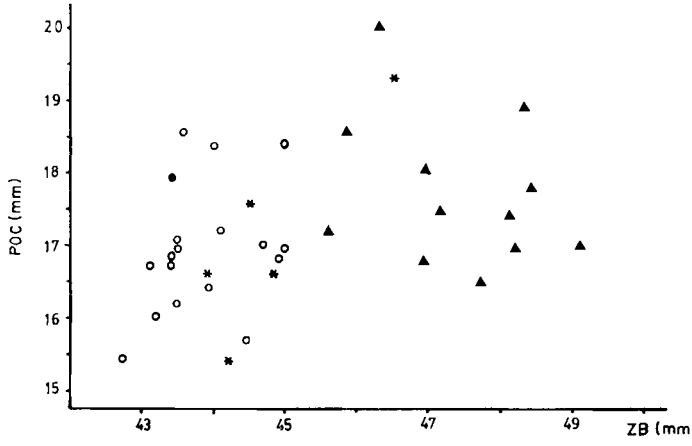

Fig. 5. Relationship between zygomatic breadth and postorbital constriction in the Stone Martens from Ibiza: ○ Presumed females in fig. 4; ● Female; ▲ Presumed males in fig. 4; * Indeterminate sex in fig. 4.

*Relación entre la anchura cigomática y la anchura postorbital en las garduñas de Ibiza: ○ Presuntas hembras en la fig. 4; ● Hembra, ▲ Presuntos machos en la fig. 4; * sexo indeterminado en la fig. 4.*

Table 1. Cranial and dental dimensions in mm of the Ibiza Stone Martens compared with those of Central Europe (data from ANDERSON, 1970): n. sample size; s.d. standard deviation; sign. statistical differences (Student t test); *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; NS: $p > 0.05$. For measurements, see figure 1.

Medidas craneales y dentales en mm de las garduñas de Ibiza y comparación con las de Europa Central (datos de ANDERSON, 1970): n. tamaño de la muestra; s.d. desviación típica; sign. significación estadística de las diferencias (test de la t de Student). Para las medidas, ver la figura 1.

	Ibiza				Europe	
Measurements	n	range	mean	s.d.	mean	sign.
Condylobasal lenght (CBL)	36	72.1-82.0	77.64	2.406	79.39	***
Total length (TL)	34	73.8-84.7	79.44	2.540	–	–
Basilar length (BL)	35	65.6-75.4	71.11	2.300	–	–
Zygomatic breadth (ZB)	35	42.7-49.1	45.18	1.855	49.20	***
Palatal length (PL)	36	34.0-38.7	36.47	1.460	38.51	***
Rostral breadth a. canines (WC-C)	34	14.6-16.8	15.53	0.603	16.93	***
Bimolar breadth (WP^4-P^4)	37	24.3-27.4	25.60	0.890	26.66	***
Interorbital breadth (INB)	37	18.3-20.9	19.49	0.699	20.88	***
Postorbital processes breadth (POP)	36	24.2-29.4	25.95	1.200	–	–
Postorb. constriction breadth (POC)	35	15.4-19.3	17.20	0.975	18.61	***
Mastoid breadth (MB)	36	33.7-37.4	35.79	1.073	38.09	***
Cranial height (CH)	36	27.1-31.0	28.68	1.056	–	–
Cranial box breadth (CB)	34	33.0-36.8	34.96	1.018	–	–
Bicondylar breadth (BCB)	34	17.6-19.8	18.61	0.659	–	–
Tympanic bulla length (LTB)	35	17.0-19.5	18.30	0.574	–	–
Mandible length (ML)	36	46.3-54.0	50.38	1.837	52.84	***
Mandible height (MH)	36	21.1-25.1	22.67	1.148	24.23	***
Ramus depth between M_{1-2} (DM_{1-2})	36	7.9-9.9	8.96	0.536	9.47	***
Maxillary tooth row length (LC-M^1)	36	24.6-28.1	26.07	0.865	28.41	***
Mandibular tooth row length (LC-M_2)	35	29.7-33.7	31.68	1.147	33.46	***
Incisor breadth (WI^3-I^3)	31	8.0-9.7	8.75	0.409	8.74	NS
Upper canine length (LCU)	35	3.5-4.2	3.86	0.230	3.99	*
Upper canine breadth (WCU)	35	2.9-3.4	3.13	0.172	3.29	**
Lower canine length (LCL)	35	3.7-4.6	4.06	0.230	4.52	***
Lower canine breadth (WCL)	35	2.9-3.7	3.21	0.176	3.41	***
Length first upper premolar (LP^1)	32	1.7-2.4	1.18	0.138	–	–
Length first lower premolar (LP_1)	20	1.5-2.2	1.87	0.166	1.88	NS
Length second upper premolar (LP^2)	36	3.8-4.4	4.02	0.121	–	–
Length second lower premolar (LP_2)	35	3.6-4.4	3.94	0.188	–	–
Length third upper premolar (LP^3)	36	4.4-5.7	5.11	0.260	5.26	**
Length third lower premolar (LP_3)	35	4.3-5.1	4.68	0.212	–	–
Length fourth upper premolar (LP^4)	36	8.0-9.6	8.77	0.421	8.91	NS
Length fourth lower premolar (LP_4)	34	5.0-5.9	5.40	0.287	–	–
Length of protocone of P^4 (LP^4pc)	35	1.7-2.4	1.84	0.391	2.21	***
Breadth of protocone of P^4 (WP^4pc)	36	3.9-4.8	4.43	0.244	5.50	***
Breadth of blade of P^4 (BP^4bl)	35	3.1-3.7	3.35	0.168	3.31	NS
Upper molar breadth (BM^1)	36	7.4-8.5	7.87	0.310	8.45	***
Upper molar inner length (LM^1i)	35	4.9-5.8	5.33	0.293	5.58	**
Upper molar mid length (LM^1m)	36	3.7-4.3	3.95	0.169	–	–
Upper molar outer length (LM^1o)	36	4.1-5.0	4.53	0.256	–	–
Length first lower molar (LM_1)	34	9.4-10.7	10.00	0.379	9.26	***
Trigonid length of M_1 (LM_1tr)	33	6.7-8.2	7.53	0.330	6.64	***
Talonid breadth of M_1 (WM_1tal)	35	3.3-3.9	3.49	0.149	3.96	**
Length second lower molar (LM_2)	33	2.7-3.7	3.26	0.219	3.29	NS
Breadth second lower molar (WM_2)	33	2.9-3.6	3.13	0.513	3.31	*

Tabla 2. Some selected measurements of sexed Ibiza Stone Martens: n. sample size; s.d. standard deviation.
Parámetros estadísticos habituales de algunas medidas de las garduñas de Ibiza sexadas: n. tamaño de muestra; s.d. desviación típica.

Measurements	Presumed males				Presumed females			
	n	range	mean	s.d.	n	range	mean	s.d.
CBL	13	77.5-82.0	80.2	1.41	22	72.1-78.8	76.2	1.49
ZB	13	45.6-49.1	47.3	1.09	21	42.7-45.0	43.9	0.69
INB	13	19.3-21.2	20.2	0.57	22	18.3-19.6	19.1	0.36
MB	13	35.6-37.4	36.9	0.56	22	33.7-36.3	35.2	0.74
ML	13	51.0-54.0	52.7	0.91	22	46.3-53.3	49.7	1.19
MH	13	22.3-25.1	23.8	0.77	22	20.6-23.2	21.9	0.65
CB	12	35.5-36.5	35.9	0.53	22	33.0-36.8	34.5	0.87

5. Comparison with other populations

Ibiza Stone Martens are significantly smaller than European ones in almost all the measurements considered (table 1), even if probably more than 60% of the specimens in the Ibiza sample were females. The main exceptions correspond to the lengths of the lower carnassial (LM_1 and LM_1tr), statistically larger in Ibiza, and the lenght of P^4, which does not differ in both samples. Other measurements which do not show statistical differences correspond to very short distances or are too difficult to be taken accurately.

The CBL and the ZB of 11 populations of Stone Martens have been compared, including that of Ibiza (fig. 6). To do this both sexes have been pooled for each population. Geographic origin, subspecies (according to ELLERMAN & MORRISSON-SCOTT, 1966) and source of data of each sample are as follows (from East to West): 1. Mongolia (*Martes foina intermedia*), data in CHOTOLCHU et al. (1980); 2. Siberia (*M. f. intermedia*), STROGANOV (1962); 3.Caucasus (*M. f. nehringi*), HEPTNER et al. (1967); 4. Crimea (*M. f. rosa-*

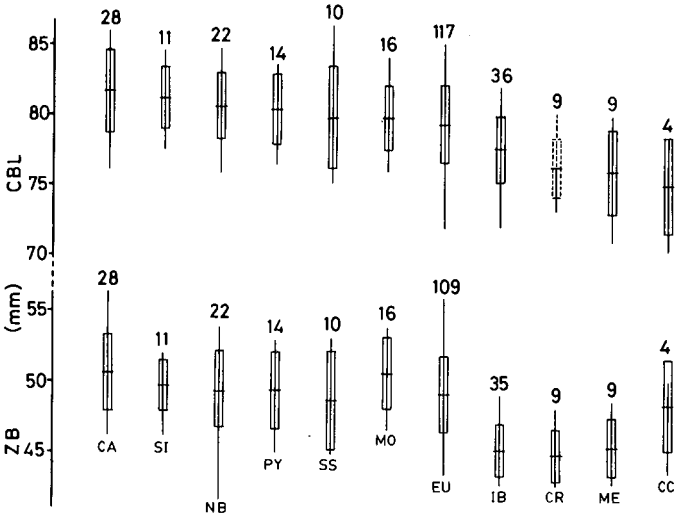

Fig. 6. Range, mean, standard deviation and size of the sample for the condylobasal length and the zygomatic breadth of *Martes foina* from 11 geographic regions: CA. Central Asia; SI. Siberia; NB. Northern Burgos (Spain); PY. Pyrenees; SS. Southern Spain; MO. Mongolia; EU. Central Europe; IB. Ibiza; CR. Crimea; ME. Middle East; CC. Crete.
Recorrido, media, desviación típica y tamaño de la muestra para la longitud condilobasal y la anchura cigomática de Martes foina *en 11 zonas geográficas.*

nowi), HEPTNER et al. (1967); 5. Middle East (*M. f. syriaca*), HARRISON (1968); 6. Crete (*M. f. bunites*), MILLER (1912) and ANDERSON (1970); 7. Central Europe *s.a.* (*M. f. foina*), ANDERSON (1970); 8. Pyrenees (*M. f. foina*), VERICAD (1970); 9. Ibiza, this paper; 10. Northern Burgos, Spain (*M. f. foina*), this paper: skulls of the EBD collection; 11. Southern Spain (*M. f. mediterranea*), this paper: col. EBD.

The standard deviation from the range (SNEDECOR & COCHRAN, 1967) for the samples of Siberia and Crimea (ZB) was estimated. The upper limit of the range and the standard deviation of the CBL are unknown for the Crimea sample. Recently, CORBET (1978) has included the subspecies *nehringi, rosanowi, syriaca* and *mediterranea* in *M. f. foina.*

CBL in Ibiza is statistically smaller than those of all the other populations, except the Middle East, Crete and Crimea. This occurs also with regard to ZB, although in this case the small sample from Crete only differs statistically from those of Ibiza and Crimea (fig. 7).

Two groups are easily differentiated in figure 7: on one hand, the continental Eurosiberian populations and on the other the insular (Crete, Ibiza), extreme peninsular (Crimea) and Southernmost (Middle East) populations. With minor exceptions, samples do not differ statistically within these groups.

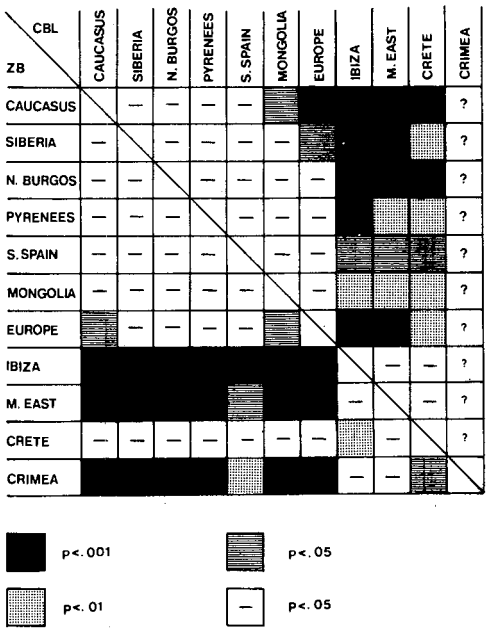

Fig. 7. Statistical comparison (Student t test) of the condylobasal length and the zygomatic breadth of *Martes foina* from 11 geographic regions. ■ $p < 0.001$; ▤ $p < 0.005$; ▦ $p < 0.01$ ⊟ $p < 0.05$.

Comparación estadística mediante la t de Student de la longitud condilobasal y la anchura cigomática de Martes foina *en 11 zonas geográficas.* ■ $p < 0,001$; ▤ $p < 0,005$; ▦ $p < 0,01$; ⊟ $p < 0,05$.

6. Anomalies in the skull and the dentition

In a small isolated population, founder effect (MAYR, 1963) and genetical drift can be manifest in the way of morphological anomalies. Thus, anomalous characteristics in the skull and teeth of the Ibiza Martens, have been looked for.

The frequency with which the two mental foramina are fused into one in the Stone Martens of Ibiza (27.5% of the cases) has not been observed in continental populations of the species and it is the clearest symptom of genetical drift in this sample. Moreover, in one of the skulls a tympanic bulla is atrophied. Two skulls lack a P^1, neither P_1 is present in ten mandibles (31.3%), two others lack the left P_1 and other two the right P^1. On the whole, 43.8% of the mandibles lack some P_1. Two mandibles lack both M_2. The lack of some of these teeth, specially P_1, is not rare in continental Spanish and French Stone Martens (authors, unpublished).

Seven skulls and/or mandibles (20%) show signs of old injuries in the lack of a tooth or group of teeth and in bone deformations. Possible caries appear in the M^1 of one skull. In some cases injury could be the result of trapping.

7. Habitat and current status of the species in Ibiza

KÖLLER (1931) gives information on the habitat of the species in the island: "Its way of life resembles that of the Pine Marten. It does not like buildings, and instead it prefers pine forests. It shares this habitat with the Genet as well as the boulders and rocky cliffs, where crevices and natural caves provide a great deal of protection". That confirms that in allopatry with the Pine Marten, the Stone Marten is a generalist in relation to its habitat (DELIBES, 1983).

Judging by the number of specimens collected by Grün in a relatively short period of time, the Stone Marten must have been common in Ibiza around 1930. Around that time, the species probably suffered strong human predation pressure because of its pelt value (the collector sent only skulls (with one exception) to Berlin, contrasting with the 32 skins of Genets (*Genetta genetta*) from the same island and period deposited in the MHUB). Thirty five years later, VERICAD & BALCELLS (1965) considered that this Marten lived in very small numbers on the island, imputing this to human hunting. Also, COMPTE-SART (1966) notes its rarity in the sixties. Ten years ago, according to some hunters, one marten was killed every two or three years (ALCOVER, 1979). One of the authors identified one dropping collected in Ibiza in 1977 as belonging to *Martes foina*. ALCOVER (1983) considers that the species has disappeared from the island at some undetermined date of the last decades. It is very likely that the only insular population of Stone Martens in the Western Mediterranean no longer exists.

8. A comment on the taxonomy

The small size, the teeth proportions and the geographical isolation of the Ibiza Martens could justify the recognition of a new subspecies. However, our very simple analysis does not detect morphological differences between the martens of Ibiza and those of Crete, Crimea and the Middle East. Probably, morphological similarity of these populations is the result of parallel evolutionary changes as a consequence of the insularity conditions. MAYR (1969) writes on this topic: "In the absence of diagnostic differences there is not legitimate excuse for dividing a single polytopic subspecies into several subspecies merely on the basis of locality". Therefore, before more rigorous analysis are done on the insular and Southernmost populations of the species, it is preferable to name the Ibiza martens simply as *Martes foina*.

CONCLUSIONS

Certainly, the martens inhabiting the island of Ibiza were *Martes foina*. This contrasts with the fact that neighbouring islands of Majorca and Minorca are inhabited by *Martes martes*.

Not enough material was examined to be able to discuss the colour pattern of the Ibiza martens, but probably they were lighter and more reddish than the continental ones.

The Ibiza Stone Martens are dimorphic in size and their skulls can be sexed if the following measurements are known: CBL, ZB, POC and LCL. Males are bigger than females in all of the considered dimensions.

Almost all of the measurements of the Ibiza Martens are statistically smaller than those of the Centroeuropean ones. Only the carnassials are of similar size or bigger in Ibiza.

CBL and ZB of eleven compared populations can be classified into two groups: the first one includes the continental Euroasiatic populations, whose measurements are bigger on average, and the second one the insular (Crete, Ibiza, even Crimea) and Southernmost (Middle East) populations.

The only presumed evidence of genetical drift in the Ibiza Stone Martens is reflected by the high frequency with which the two mental foramina are fused into one. Old injuries are also frequent. Almost 50% of the mandibles lack one or both P_1.

Stone Marten occupied the pine forests

and the rocky areas of the island, avoiding the human environments. Probably the species disappeared from Ibiza at some undetermined date in the last ten years.

The presence of *Martes foina* in Ibiza and *Martes martes* in Majorca and Minorca, together with the morphoevolutive trends of the three populations, raises interesting ecological and zoogeographical questions that would deserve further studies.

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RESUMEN

La Garduña Martes foina *(Erxleben, 1777) (Mammalia, Carnivora) de la Isla de Ibiza (Pitiusas, Baleares).*– El estudio de una piel y 38 cráneos de martas procedentes de Ibiza confirma que la especie que existió en la isla fue la garduña o foina *Martes foina*. En promedio, las garduñas de Ibiza son de menor tamaño que las europeas, exceptuando algunas medidas dentarias. Los machos son algo mayores que las hembras. Craneométricamente las garduñas de Ibiza parecen similares a las de Creta, Crimea y Oriente Medio. Probablemente la especie ha desaparecido de la isla en los últimos 15 años.

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