

A cryptic new species of *Crocidura* from Gran Canaria and Tenerife, Canary Islands (Mammalia: Soricidae)

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Abstract. Shrews recently discovered in Gran Canaria represent a species different from *Crocidura canariensis*, the endemic shrew previously described from the eastern Canary Islands. A comparison of the new species *Crocidura osorio* with recent and fossil shrews from Africa and Europe indicates that it probably derived from the same lineage which produced *C. canariensis* as well as the North African *C. whitakeri* and *C. tarfayaensis*. At present *C. osorio* seems to be confined to the north-eastern highlands of Gran Canaria; the single record from Tenerife may be due to human transport.

Key words. Mammalia, Soricidae, *Crocidura*, Canary Islands, Gran Canaria, new species, evolution.

Introduction

The unexpected discovery of shrews in some of the Canary Islands (Martín et al. 1984) resulted in the description of the new species *Crocidura canariensis*, after the study of their morphology, karyotype, and biology (Hutterer et al. 1987). At that moment we thought that only one biological species of *Crocidura* would occur in the archipelago, differing from island to island. Furthermore, our data from the large islands Tenerife and Gran Canaria were very scanty. From Tenerife we had a single juvenile shrew from the town of Santa Cruz, the main port of this island. From Gran Canaria we had no material at hand, only a somewhat dubious record of „shrews and voles” by Floericke (1903), and some observations by local people. Although traplines for small mammals were set in Gran Canaria by us and other colleagues several times since 1981, not a piece of a shrew could be obtained.

The situation changed recently when several shrews were found in the field by people of Gran Canaria, giving us the opportunity to study their morphology in detail. To our surprise, they represent an animal very different from *C. canariensis*, both in morphology and ecology. The shrews from Gran Canaria are smaller, have shorter feet and most obvious, smaller ears (Fig. 2); also the skull is smaller and more slender. Another striking difference is their habitat; until now they were found in seven localities in the green north-eastern part of Gran Canaria, in one case close to a remnant evergreen forest. In contrast, *Crocidura canariensis* occurs mainly in semi-desert lowlands. After comparison of the new material with *C. canariensis* and with recent and fossil species of Morocco and Western Sahara, we come to the conclusion that the Gran Canaria shrews plus a single specimen from Tenerife represent a further new species of endemic Canarian shrews.

Materials and methods

The new material from Gran Canaria was casually found by local people of Gran Canaria. In order to accumulate more information a survey was made of many villages in the north-

eastern part of the island. A sample of *Crocidura* from Gran Canaria and Tenerife representing a total of 14 individuals was studied and measured by the standard techniques applied in former studies (Hutterer 1987, Hutterer et al. 1987). Abbreviations for measurements are as follows: Head and body length (HB), Tail length (TL), Hindfoot length (HF), Ear length (E), Condylar-incisive length (CIL), Interorbital width (IOW), Greatest width of skull (GW), Height of the cerebral capsule (HCC), Maxillary breadth (MB), Palatal length (PL), Postglenoid width (PGL), Upper toothrow length (UTR), Lower toothrow length (LTR), Height of coronoid process of the mandible (COR), Length and Width of upper third molar (M³-L, M³-W). Drawings were made by R. Hutterer unless otherwise stated. Our sample was compared with study specimens of the following species: *Crocidura canariensis* Hutterer, López-Jurado & Vogel, 1987, *C. russula yebalensis* (Cabrera, 1913), *C. tarfayaensis* Vesmanis & Vesmanis, 1980, *C. whitakeri* De Winton, 1897, *C. suaveolens* (Pallas, 1811), *C. sicula* Miller, 1901, and the fossil *C. marocana* Rzebik-Kowalska, 1988. The material studied is deposited in the following collections: CJN, Collection of Prof. J. Niethammer, Bonn; DZUL, Departamento de Zoología, Universidad de La Laguna, Tenerife; IZEA, Institut de zoologie et d'écologie animale, Lausanne; JBC, Jardín Botánico Canario, Gran Canaria; MNHNP, Muséum National d'Histoire Naturelle Paris; NMW, Naturhistorisches Museum Wien; PASC, Institute of Systematic and Experimental Zoologie, Polish Academy of Sciences, Cracow; USNM, National Museum of Natural History, Washington; ZFMK, Zoologisches Forschungsinstitut und Museum Alexander Koenig, Bonn.

Systematics

Crocidura osorio n. sp.

Crocidura russula yebalensis, — Martín et al. 1984: 8 (specimen from Santa Cruz).

Holotype: Skin and skull of a young adult female, collected by personal of the Finca de Osorio during April/May 1987 at Monte Osorio, north-eastern Gran Canaria, Canary Islands; field number 42, at present deposited in the collections of DZUL until a Natural History Museum has been established in Gran Canaria.

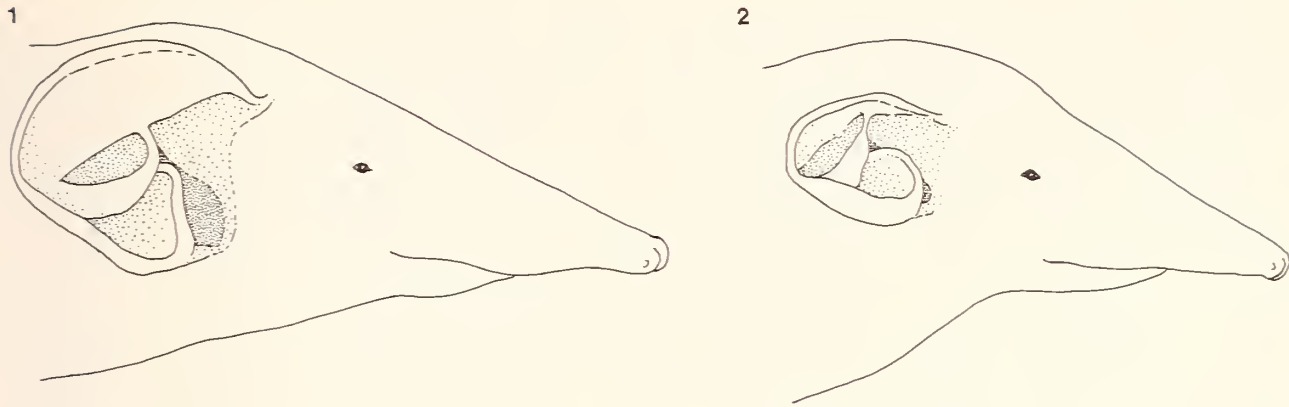
Paratypes: Skin and skull of a young male, no. 41, skeleton of juvenile, no. 50, same data as holotype (both in JBC); 3 dried animals later transferred into alcohol, skulls extracted, collected by personal of the Finca de Osorio in 1988 near Teror, Gran Canaria, field numbers 1, 2 (JBC), 3 (ZFMK 89.54); 3 animals in spirit, field numbers 87, 88, 89 (JBC) from Firgas, collected 29 April 1989 by Olegario Perdomo; one specimen from Cambalud, collected 9 May 1989 by the cat of J. Gil (in JBC).

Other material examined: 1 specimen in spirit from Firgas, May 1987, and another from Zumacal, June 1987, both from the private collection of J. F. Santana Domínguez, professor at the Enseñanza General Básica; fragments of upper and lower jaws of 7 shrews, from kestrel pellets collected by F. Rodríguez near Arucas, Gran Canaria (in JBC); skin and skull of juvenile male, collected 28 June 1984 in the suburb Somosierra of Santa Cruz, Tenerife (DZUL no. 176).

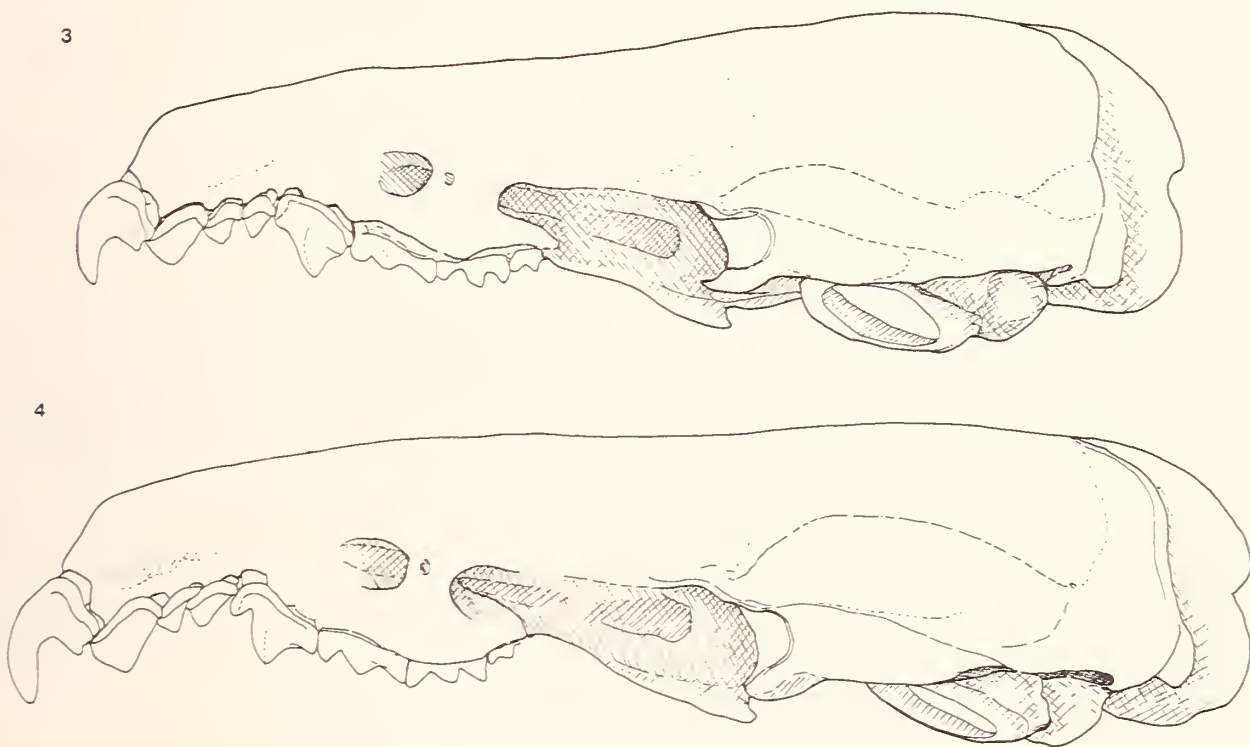
Measurements: See Table 1.

Diagnosis: A uniformly greyish-brown *Crocidura* with short feet and small ears, pelage hairs short; skull with a short but pointed rostrum and a broad infra-orbital bridge; teeth small, parastyle of fourth upper premolar indistinct, third lower molar with a broad talon.

Description: *Crocidura osorio* is a small shrew (HB 55.5 ± 7.7 , $n = 9$), comparable in size with *C. suaveolens* or *C. whitakeri*. Its overall colour is greyish-brown with the belly being slightly more grey, however, there is no sharp distinction between dorsal and ventral coloration. The hairs at back are rather short, 3.2 mm. Ears, limbs and tail are of the same general colour but slightly paler. The head of the shrew is



Figs. 1—2: Sketches of the heads of (1) *Crocidura canariensis* and (2) *Crocidura osorio* n. sp. to show differences in shape and size of the ear conch.



Figs. 3—4: Lateral view of the skulls of (3) *Crocidura osorio* n. sp. (paratype ZFMK 89.54) and (4) *Crocidura russula yebalensis* (IZEA 1573). Scale is 1 mm.

small and pointed, the ear conch is rather small ($E\ 7.0 \pm 0.7$, $n = 11$) and round (Fig. 2) but well set apart from the fur. The hindfoot is 11.4 ± 0.6 ($n = 12$) long on average, being smaller than in any other species with which *C. osorio* may be confused (Table 2). The tail is of medium length ($T\ 38.5 \pm 3.1$, $n = 12$; 69 % of HB) and covered approximately over 72 % of its length with very fine long bristles.

The cuneiform skull is small ($CIL\ 18.5 \pm 0.3$, $n = 5$) and delicate. Its braincase is slightly domed, and from there the dorsal profile slopes gradually down to the tip of the rostrum. In dorsal and ventral view the bimaxillary region appears rather narrow. One obvious character is the form of the infra-orbital bridge, which is very broad relative to the size of the skull (Fig. 3). The mandible is short and stout, the posterior surface of the condylar process is considerably higher than broad, unlike in *C. canariensis* (Figs. 6, 8).

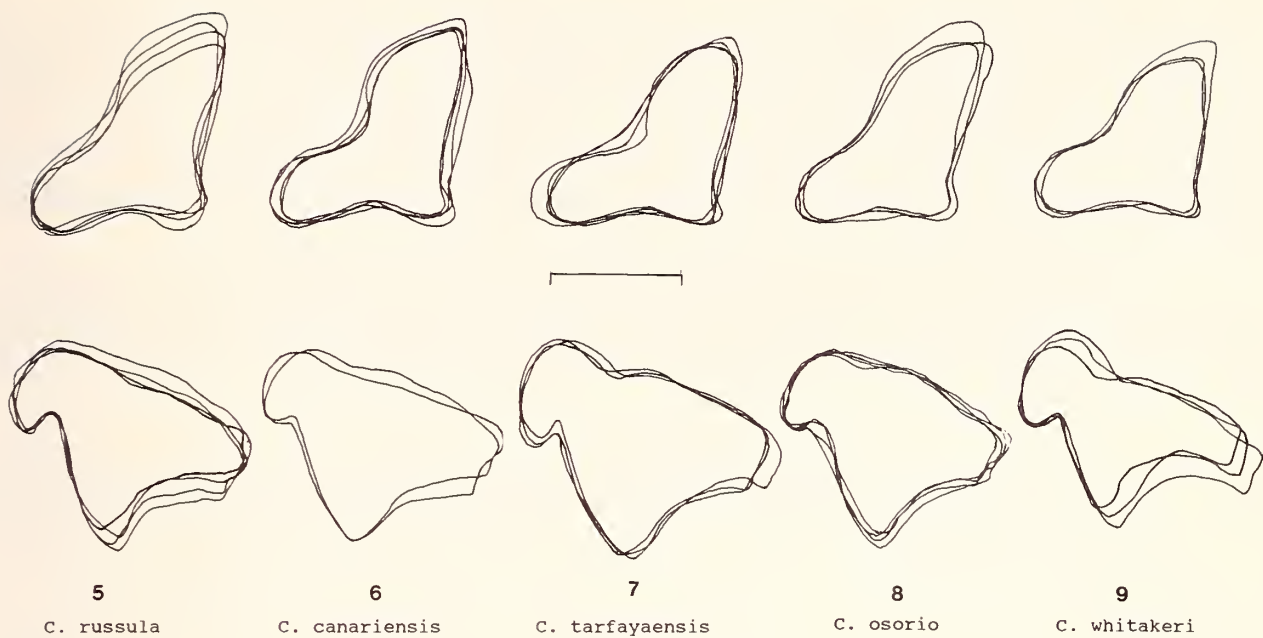
Table 1: Measurements of *Crocidura osorio* n. sp.

Measurement	No. 42*	No. 41	No. 50	No. 1	No. 2	No.3	No. 176
Weight, g	6.3	6.2	—	—	—	—	4.7
HB, mm	70	60	—	60	51	46	59
TL	41	35	—	40	32	36	38
HF	12	11.5	—	11	10	11	11
E	7.3	7.7	—	5.5	6	7.3	6.5
CIL	18.6	18.8	—	18.7	18.0	18.4	—
IOW	4.0	4.1	3.6	4.1	3.8	3.9	—
GW	8.7	9.0	—	8.8	8.1	8.6	—
HCC	4.7	4.9	—	4.4	4.6	4.7	—
MB	5.6	5.7	5.2	5.6	5.3	5.4	5.6
PL	7.6	7.5	7.2	7.7	7.5	7.8	7.1
PGL	5.7	5.8	—	5.8	5.6	5.7	—
UTR	8.0	8.1	7.6	8.1	7.9	7.9	7.7
LTR	7.4	7.4	7.1	7.5	7.5	7.3	7.4
COR	4.6	4.5	4.1	4.5	4.2	4.6	4.6
M ³ -L	—	0.76	—	0.74	0.72	0.72	—
M ³ -W	—	1.56	—	1.56	1.52	1.48	—

* Holotype

The dentition is weak. I¹ has a short apex and an indistinct talon; U¹ is twice as large as U²⁻³, the tips of the latter surpass the parastyle of P⁴; the fourth upper premolar is short, its parastyle is indistinct, sometimes almost absent (Fig. 8). M¹ and M² are rather short, M³ is fully developped, not reduced. The lower incisor is short and its cutting edge lacks any denticulation; I₂ is very small in length and height; P₄ lacks additional cusplets; M₁₋₂ show no special features but M₃ has a very broad talon similar to *C. tarfayaensis* (see Hutterer 1987, Fig. 4). Paratype JBC 41 exhibits a remarkable dental abnormality; its second upper incisors (U¹) are split on both sides and have two cusps instead of one; in addition, one of the small upper unicuspid (U²) is missing in the right toothrow.

Distribution: At present we have seen specimens from 7 localities and have reliable records from further 5 sites (Fig. 10). The species seems to be confined to the more temperate and green highlands of north-eastern Gran Canaria, between 200 and 1000 m above sea level. The single specimen from Tenerife remains a problem: it is a juvenile specimen, and this fact would argue for reproduction of the species in Tenerife. However, it was found in the city of Santa Cruz from where a daily ferry connection with Las Palmas de Gran Canaria exists. From the region where *C. osorio* lives in Gran Canaria, large quantities of fruit, vegetables as well as mineral water (Firgas) are exported to other islands. This is a rather likely way how a shrew could get a lift to Tenerife. However, it remains obscure why the range of *C. osorio* within Gran Canaria is then so limited, as the same goods are distributed over the entire island as well. Martín et al. (1985) analyzed 2058 prey items from barn owl pellets from different sites in Tenerife and found no remains of shrews. However, the distribution of barn owls in Tenerife is restricted to the coastal lowlands (see map in Martín 1987), the lack of bone remains of shrews therefore is no disproof for the existence of such mammals in the highlands.



Figs. 5—9: Superimposed outlines of the posterior view of the condylar process of the mandible (upper row) and the external view of the fourth upper premolar (lower row), shown for (5) *Crocidura russula yebalensis*, (6) *C. canariensis*, (7) *C. tarfayaensis*, (8) *C. osorio*, and (9) *C. whitakeri*. Scale is 1 mm.

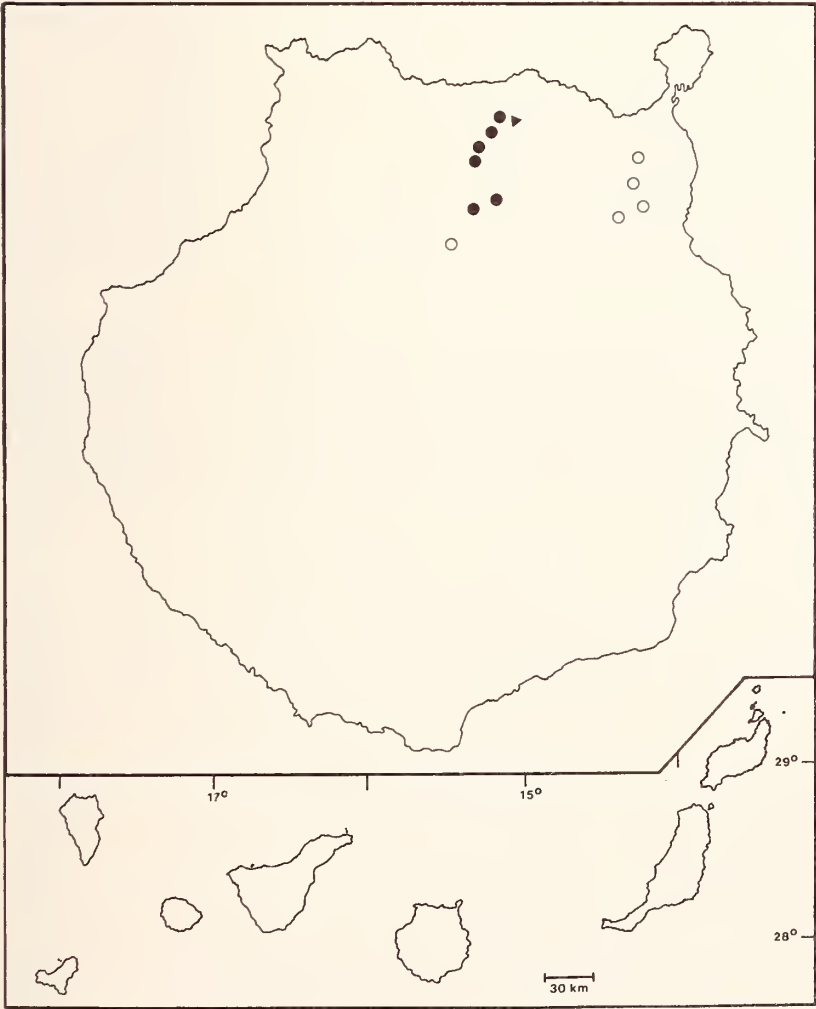


Fig. 10: Known distribution of *Crocidura osorio* n. sp. in Gran Canaria, Canary Islands. Black dots = records based on captures; triangle = record based on kestrel pellet material; open circles = reliable observations by local people.

Notes on a living specimen: After this text had been written, a living shrew was collected near Cambalud (Fig. 13) and observed in captivity at Las Palmas; a specimen of *C. canariensis* from Lanzarote was also kept at the same time. Of the two, *C. osorio* had a more brownish pelage, while the *C. canariensis* looked more dark grey. *C. osorio* had a more pointed snout, and it was less shy and timid than *C. canariensis*.

Etymology: Named for the Monte Osorio, from where Floericke (1903) mentioned shrews for the first time, and from where the holotype was collected 84 years after.

Table 2: Means of weight and external measurements of Canarian and Moroccan species of *Crocidura* (data for Morocco from Hutterer 1987, and for *C. canariensis* from Martín et al. 1984).

Species	n	Weight	HB	TL	HF	E
<i>C. canariensis</i>	(> 9)	7.5	65.4	39.4	13.1	8.7
<i>C. russula</i>	(>26)	6.4	69.3	37.8	12.1	8.8
<i>C. tarfayaensis</i>	(6)	6.5	63.8	38.7	13.3	10.2
<i>C. osorio</i> n. sp.	(> 5)	5.7	55.5	38.5	11.4	7.0
<i>C. whitakeri</i>	(6)	5.5	61.2	34.3	12.0	9.5

Table 3: Comparison of some cranial measurements of Canarian and Moroccan species of *Crocidura* (sources as in table 2).

Species	n	CIL	UTR	MB
<i>C. canariensis</i>	(>11)	19.44	8.16	5.68
<i>C. russula</i>	(>32)	19.00	8.04	5.79
<i>C. tarfayaensis</i>	(>11)	18.59	7.93	5.87
<i>C. osorio</i> n. sp.	(> 5)	18.51	7.93	5.51
<i>C. whitakeri</i>	(>11)	17.36	7.19	5.41

Comparisons: *Crocidura osorio* is a cryptic species, both in life style and in its morphological characters, most of which are rather subtle. There are two species with which a first comparison is required: *Crocidura canariensis*, the endemic shrew of the eastern Canary Islands, and *C. russula*, the most common shrew of the temperate zones of North Africa.

From *C. canariensis* the new species is easily distinguished by its small size, short feet, and smaller ears (Table 2, Figs. 1—2). The dorsal pelage is more brownish and shorter (3.2 mm) than in *C. canariensis* (4.5—5.0 mm). Cranially *C. osorio* differs by its smaller dimensions of CIL, UTR, and of all tooth measurements; also the infra-orbital bridge is broader in *C. osorio*; further differences are found in the form of the basisphenoid bone, the condylar process, and the M³. There is some overlap between skull measurements, small and juvenile specimens of *C. canariensis* approach the range of adult *C. osorio* (Fig. 11). However, the qualitative characters shown in the figures 6 and 8 discriminate the two species well. For example, the first specimen of a shrew ever collected for a museum in the Canary Islands (NMW 9100,

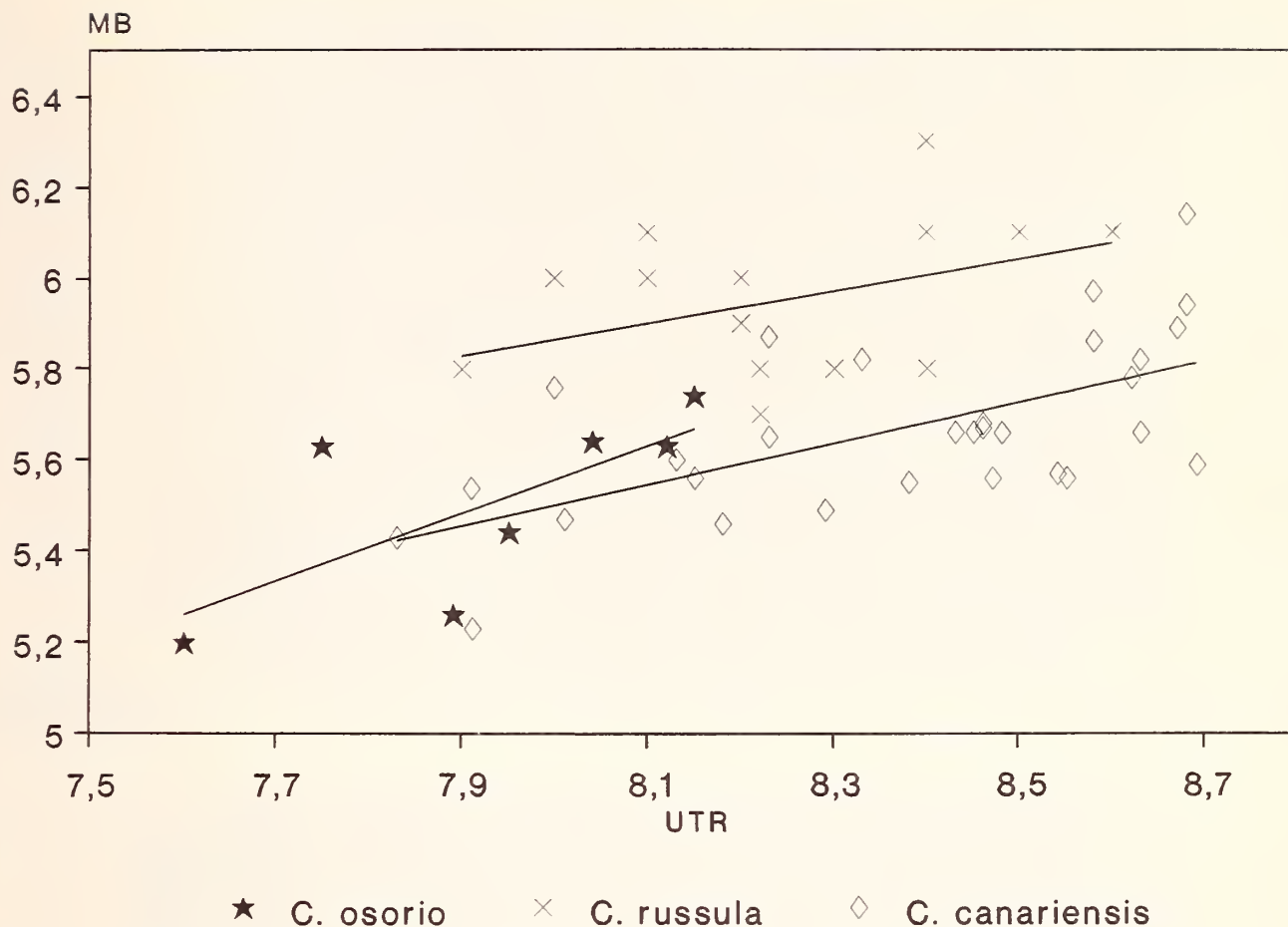


Fig. 11: Upper tooththrow length (UTR, in mm) plotted against Maxillary breadth (MB) for samples of *C. osorio* n. sp., *C. canariensis* (Fuerteventura) and *C. russula* (Morocco); regression lines indicated.

“Kanarische Inseln”, leg. V. Frič 1887; see Martín et al. 1984) is a very small animal and was supposed by us to eventually represent the new species; however, a re-examination of the specimen showed that it represents a very juvenile female but exhibits all the characteristic features of *C. canariensis*, such as the L-shaped coronoid process, the shape of the parastyle of P⁴, the heavy first upper incisor, and the narrow infra-orbital bridge. Also the ecology of both species is very different: while *C. canariensis* is abundant in semi-desert lowlands such as the “malpais”, our records of *C. osorio* come from the most humid parts of Gran Canaria.

Crocidura russula is distinguished from *C. osorio* by larger size, slightly longer hindfeet and larger ears. Cranially the two species are well separated (Figs. 3—4): *C. russula* lacks the cuneiform shape of the skull, the infra-orbital bridge is narrow, and the shape of the P⁴ and the M₃ are very different (Fig. 5). Also the bimaxillary region is broader in *C. russula* (Fig. 11). Curiously, the form of the condylar process of the mandible (Figs. 5, 8) is more similar between the two species than between *C. osorio* and *C. canariensis*.

Crocidura tarfayaensis replaces *C. russula* in the desert-like areas of southern Morocco and Western Sahara. From *C. osorio* it is distinguished by larger size, longer hindfeet, by extremely large ears, by a pale grey dorsal and a sharply contrasting white ventral coloration, long (4—6 mm) and soft hairs at back, a white tail heavily covered with long bristles, and by its white feet. The cranium is similar in length (Tab. 3) but short and stout, not slender as in *C. osorio*. The bimaxillary region is as broad



Fig. 12: *Crocidura canariensis* from Fuerteventura (R. Hutterer phot.). About natural size.



Fig. 13: *Crocidura osorio* n. sp. from Cambalud, Gran Canaria (O. Molina phot.).

as in *C. russula*. Also the condylar process of *C. tarfayaensis* differs in shape from that of *C. osorio* (Figs. 7—8).

C. whitakeri is a small lowland species whose range covers large parts of Morocco and Algeria (Aulagnier & Thévenot 1987, Rzebik-Kowalska 1988). Externally it differs from *C. osorio* by a white venter sharply contrasted against the dorsum and by whitish hindfeet. Also the ears of *C. whitakeri* are longer (Tab. 2). Cranially the species is smaller in all measurements (Tab. 3) and differs also in the shape of the condylar process of the mandible (Fig. 9), the first upper incisor, the fourth upper premolar (Fig. 9), the narrow form of the upper molars, and the reduced talon of the third lower molar (see Hutterer 1987, Fig. 4).

C. suaveolens is similar in size to *C. osorio* but differs externally by larger ears (Fig. 15) and a hairier tail. The skull is smaller in most populations (see Vlášak & Niethammer, in press), the rostrum is shorter, the fourth upper premolar has a different shape, and the third upper molar is comparatively large (Hutterer & Harrison



Fig. 14: *Crocidura russula* from Germany (A. Nadolski phot.).



Fig. 15: *Crocidura suaveolens* from Lower Austria (R. Hutterer phot.).

1988). In the present sense *C. suaveolens* does not occur in North Africa except for a single record from Egypt and a possibly isolated population in Libya, described by Vesmanis (1977) as *C. alexandrisi*; however, this population must be restudied to clarify its taxonomic position.

C. marocana was recently described from mid-Pleistocene fossils from western Morocco (Rzebik-Kowalska 1988). The species falls into the size range of *C. osorio* but from the type material, which was kindly made available to us by Mrs. Rezebik-Kowalska, it is evident that *C. marocana* is a species very close to *C. whitakeri*, and not to *C. osorio*.

C. sicula was only recently confirmed as the endemic species of Sicily (Vogel 1988, Vogel et al., in prep.). It has the same karyotype ($2n = 36$, $NF = 56$) as *C. canariensis*, which led Vogel (1988) to the hypothesis of a closer phylogenetic relationship between the two species. New morphological studies of *C. sicula*, *C. canariensis* and *C. osorio* by one of us (R. H.) show that all three species are clearly separable on

qualitative and quantitative characters. *C. sicala* differs from *C. osorio* in its bicoloured appearance, in larger body measurements (HB, HF) (Vesmanis 1976), a longer skull and a considerably larger maxillary breadth.

Conservation: *Crocidura osorio* seems to be quite well adapted to its present-day habitat, which consists of meadows, fields, villages and towns intermixed with patches of bush, herbs, forest, barrancos, steep cliffs and rocky areas. However, the distribution area of this species is extremely small, and the rapid urbanization together with changes caused by the increasing desiccation of the island might threaten the species quite suddenly. We therefore propose a legal protection of *C. osorio*, and the inclusion of the species as “rare endemic”, together with *C. canariensis*, in the Red Data Book of Spanish Vertebrates (ICONA 1986).

Discussion

We believe that *Crocidura osorio* is a cryptic mammal. Small size, short ears, and the difficulty to obtain the species with traps point to a rather secretive way of life. As *C. canariensis*, this animal has escaped the notice of the many naturalists who visited the islands since the 18th century. Apart from Floericke (1903) we found only one other reference which might refer to the new shrew: Viera y Clavijo (1866) mentioned and described in his famous dictionary of the natural history of the Canary Islands also shrews (as “Musgaño [*Sorex musaraneus*, Linneo]). As the author lived mainly in Gran Canaria, his notes might well refer to *C. osorio*. A mystery is the lack of any fossil evidence of shrews in Gran Canaria, although we have good samples of fossil vertebrates from cave deposits at hand. However, the localities where *C. osorio* was found are all in an area of high humidity where a rapid turnover of organic material prevents the preservation and fossilization of bones. By way of contrast, *C. canariensis* lives in hot and arid lowlands, and we have therefore numerous remains of this species from owl pellets and fossil deposits.

Crocidura osorio is the second endemic shrew discovered in the Canary Islands (Fig. 13), and it increases the number of Canarian endemic mammals to six, three of which got extinct during the Quaternary (Tab. 4). Four species from this list were discovered only within the past five years, which reflects the increased activities of

Table 4: Endemic Canarian mammals discovered so far.

Taxon	Islands*	Status	Sources
Chiroptera			
<i>Plecotus teneriffae</i>	T, H, P	extant	Ibañez & Fernández 1985, and DZUL
Insectivora			
<i>Crocidura canariensis</i>	F, Lo, L, G, MC	extant	Hutterer et al. 1987
<i>Crocidura osorio</i>	GC, T?	extant	this paper
Rodentia			
<i>Malpaisomys insularis</i>	F, Lo, L, G	extinct	Hutterer et al. 1988
<i>Canariomys bravoii</i>	T	extinct	Crusafont-Paíro & Petter 1964
<i>Canariomys tamarani</i>	GC	extinct	López-Martínez & López-Jurado 1987

* T = Tenerife, H = Hierro, P = La Palma, GC = Gran Canaria, F = Fuerteventura, Lo = Lobos, L = Lanzarote, G = Graciosa, MC = Montaña Clara.

mammalogists in the Canary Islands. Taking *C. osorio* as an example, then there seems to be a good chance for the existence of other unknown mammals in the archipelago, namely in the islands of the western group.

Concerning the systematic relationships of *C. osorio*, we can only consider its morphology and ecology at present; we hope to obtain more animals in the future for the study of their karyotype and biochemical distance to related taxa. *Crociodura osorio* shares with *C. canariensis* a similarly narrow front skull (Fig. 11) which may indicate a similar feeding strategy as well as a close relationship. This also applies to *C. whitakeri*, while *C. russula*, *C. tarfayaensis* and *C. sicula* have much broader muzzles (see Tab. 3). The condylar process of the mandible (Figs. 5—9) is L-shaped in *C. canariensis*, *C. tarfayaensis* and more or less in *C. whitakeri*, while in *C. osorio* and *C. russula* it is not. While the first three species live in arid areas, the other two prefer temperate zones; *C. osorio* occupies the green north-eastern slopes up to 1000 m in Gran Canaria, and *C. russula* humid places up to an altitude of 2800 m in Morocco (Vogel & Maddalena 1987). Their similar ecological requirements may be reflected by a similar shape of the condyle, which forms part of the chewing apparatus. The broad infra-orbital bridge of *C. osorio* (Fig. 3) is not shared by any of the other species compared. The parastyle of the fourth upper premolar (Figs. 5—9) is indistinct or rounded in *C. osorio*, *C. canariensis*, *C. tarfayaensis* and *C. whitakeri*, but prominent and hook-like in *C. russula* and *C. sicula* (not figured). The parastyle seems to be a useful character, as this part of the tooth is not used for chewing and therefore should not be subject to adaptive changes. The same applies to the third lower molar, the talon of which is little used for chewing. In *C. osorio* and *C. tarfayaensis* the lingual part of the talon is large, while it is indistinct in *C. canariensis* and *C. russula*, and very small in *C. whitakeri*. To conclude, there is some evidence for a grouping of *C. osorio* with *C. canariensis*, *C. tarfayaensis* and *C. whitakeri*. The most parsimonious hypothesis is that *C. osorio* and *C. canariensis* share a common ancestor and have subsequently adapted to different niches on their respective islands. Secondly, we think that the Canarian shrews share a common ancestor with a North African group of shrews which includes *C. tarfayaensis*, *C. whitakeri*, and possibly *C. cinderella* (see Hutterer 1987). African affinities of *C. canariensis* were already supposed by Hutterer & López-Jurado (1989) after a study of the shrew's vocalization. Vogel (1988) also supposed a closer relationship of *C. sicula* and *C. canariensis*; however, the two species have no derived morphological characters in common which would support this hypothesis.

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Zusammenfassung

Auf der Kanareninsel Gran Canaria wurden 1987 und 1988 von Landarbeitern mehrere Spitzmäuse gefunden, die erstmals eine morphologische Analyse dieser Inselpopulation er-

möglichen. Danach kommen wir zu dem Ergebnis, daß die Spitzmäuse von Gran Canaria, zusammen mit einem weiteren Exemplar von Teneriffa, eine bisher unbekannte Art repräsentieren, die als *Crocidura osorio* n. sp. beschrieben wird. Die neue Art führt eine sehr versteckte Lebensweise, nur wenige Tiere wurden bisher in kühl-feuchten Hochlagen der Insel gefunden. Sie besiedelt Gran Canaria und möglicherweise andere Westinseln, während die Ostinseln von *C. canariensis* bewohnt werden. Beide Arten sind endemisch für die Kanaren. Eine engere Verwandtschaft scheint sowohl untereinander als auch mit den nordafrikanischen Arten *C. tarfayaensis* und *C. whitakeri* zu bestehen.

Resumen

Tras el análisis y comparación de las musarañas halladas recientemente en Gran Canaria con la especie endémica *Crocidura canariensis*, descrita para las islas orientales del archipiélago canario, hemos comprobado que se tratan de especies diferentes. Comparando la nueva especie *Crocidura osorio* con musarañas actuales y fósiles procedentes de África y Europa, se advierte que probablemente deriven de la misma línea filogenética que originó tanto a *C. canariensis* como a las norteafricanas *C. whitakeri* y *C. tarfayaensis*. Hasta el momento *C. osorio* parece estar confinada a una zona del Noreste de Gran Canaria. El frecuente transporte de mercancías entre islas podría explicar la presencia del único ejemplar capturado en Tenerife.

References

- Aulagnier, S. & M. Thévenot (1987): Catalogue des mammifères sauvages du Maroc. — Trav. Inst. Sci. Rabat, Sér. Zool. 41, 164 pp.
- Crusafont-Pairo, M. & F. Petter (1964): Un murine géant fossile des Iles Canaries *Canariomys bravoï* gen. nov. sp. nov. (Rongeurs, Muridés). — Mammalia 28: 608—611.
- Floericke, C. (1903): Aus der Heimat des Kanarienvogels. — Mitt. österr. Reichsb. Vogelkde Vogelschutz Wien 3: 41—44, 56—58, 63—66.
- Hutterer, R. (1987): The species of *Crocidura* (Soricidae) in Morocco. — Mammalia 50: 521—534.
- & L. F. López-Jurado (1989): Vocalization in *Crocidura canariensis* (Mammalia: Soricidae). — Viera 18.
- , — & P. Vogel (1987): The shrews of the eastern Canary Islands: a new species (Mammalia: Soricidae). — J. nat. Hist. 21: 1347—1357.
- , N. López-Martínez & J. Michaux (1988): A new rodent from Quaternary deposits of the Canary Islands and its relationships with Neogene and Recent murids of Europe and Africa. — Palaeovertebrata 18(4): 241—262, 2 pls.
- Ibáñez, C. & R. Fernández (1985): Systematic status of the Long-eared Bat *Plecotus teneriffae* Barret-Hamilton, 1907 (Chiroptera; Vespertilionidae). — Säugetierkundl. Mitt. 32: 143—149.
- ICONA (1986): Lista roja de los vertebrados de España. 400 pp., Madrid.
- López-Martínez, N. & L. F. López-Jurado (1987): Un nuevo murido gigante del Cuaternario de Gran Canaria *Canariomys tamarani* nov. sp. (Rodentia, Mammalia). — Doñana, Publ. ocas. 2: 1—60, 3 pls.
- Martín, A. (1987): Atlas de las aves nidificantes en la isla de Tenerife. — Inst. Estud. Canar., Monogr. 32: 1—275.
- , K. Emmerson & M. Ascanio (1985): Regimen alimenticio de *Tyto alba* (Scopoli, 1769) en la isla de Tenerife (Islas Canarias). — Ardeola 32: 9—15.
- , R. Hutterer & G. B. Corbet (1984): On the presence of shrews in the Canary Islands. — Bonn. zool. Beitr. 35: 5—14.
- Rzebik-Kowalska, B. (1988): Studies on the genus *Crocidura* (Insectivora, Mammalia) in Algeria. — Acta zool. cracov. 31: 167—192.
- (1988): Soricidae (Mammalia, Insectivora) from the Plio-Pleistocene and Middle Quaternary of Morocco and Algeria. — Folia Quaternaria 57: 51—90.

- Vesmanis, I. E. (1976): Beitrag zur Kenntnis der Crociduren-Fauna Siziliens (Mammalia: Insectivora). — Z. Säugetierkunde 41: 257—273.
- (1977): Eine neue *Crocidura*-Art aus der Cyrenaica: *Crocidura aleksandrisi* n. sp. (Mammalia: Insectivora: *Crocidura*). — Bonn. zool. Beitr. 28: 3—12.
- & A. Vesmanis (1980): Beitrag zur Kenntnis der Crociduren-Fauna Marokkos (Mammalia, Insectivora, Soricidae). 1. Die Wimperspitzmäuse aus den Sammlungen des Smithsonian Institution, Washington. — Zool. Abh. Mus. Tierk. Dresden 36: 11—80.
- Viera y Clavijo, J. de (1866, ed. 1982): Diccionario de historia natural de las islas canarias. Indice alfabético descriptivo de sus tres reinos: animal, vegetal y mineral. — Edited and commented by M. Alvar. Mancomunidad de Cabildos de Las Palmas, Las Palmas de Gran Canaria.
- Vlášak, P. & J. Niethammer (in press): *Crocidura suaveolens* (Pallas, 1811) — Gartenspitzmaus. — In: Handbuch der Säugetiere Europas, Bd. 3 (J. Niethammer & F. Krapp, eds.). — AULA, Wiesbaden.
- Vogel, P. (1988): Taxonomical and biogeographical problems in Mediterranean shrews of the genus *Crocidura* (Mammalia, Insectivora) with reference to a new karyotype from Sicily (Italy). — Bull. Soc. vaud. Sci. nat. 79: 39—48.
- & T. Maddalena (1987): Note sur la répartition altitudinale et la fréquence de la musaraigne musette (*Crocidura russula yebalensis*) au Maroc. — Mammalia 51: 465—467.

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