http://www.pjbs.org

PJBS

ISSN 1028-8880

Pakistan Journal of Biological Sciences

ANSInet
Asian Network for Scientific Information
308 Lasani Town, Sargodha Road, Faisalabad - Pakistan

Pakistan Journal of Biological Sciences 3 (12): 2197-2198, 2000

Does *Crocidura pergrisea arispa* Spitzenberger, 1971 Occur in Turkey?

Coşkun Tez[1] and Haluk Kefelioğlu[2]
[1]Department of Biology, Faculty of Arts and Science,
Erciyes University, 38039, Kayseri, Turkey
[2]Department of Biology, Faculty of Arts and Science,
Ondokuz Mayis University, 55139, Kurupelit-Samsun, Turkey

Abstract: In this study, total of 86 specimens were collected from the type and paratype localities of *Crocidura pergrisea arispa* Spitzenberger, 1971 and surrounding those localities areas. Morphological and karyological analyses of the collected specimens were carried out. According to the morphological and karyological characteristics of the collected specimens, it was determined that *C. pergrisea arispa* is not distributed in Turkey, but rather that it is a synonym of *Crocidura suaveolens* (Pallas, 1811).

Key words: *Crocidura pergrisea arispa, Crocidura suaveolens,* synonym, Turkey

Introduction

The genus *Crocidura* Wagler, 1832, which has more than 150 recognised species (Hutterer, 1993), is the most speciose of mammalian genera. However, since these shrews are morphologically very conservative, distinguishing closely-related species by morphology alone is often difficult (Ruedi *et al.,* 1990).

Thomas (1906) carried out the first taxonomic studies on populations belonging to *Crocidura* genus distributed in Turkey, describing two new subspecies (*Crocidura leucodon lasius* (Thomas, 1906) and *Crocidura russula monacha* (Thomas, 1906). Shortly thereafter, Satunin (1914) described another subspecies (*Crocidura russula aralychensis* (Satunin, 1914). Subsequently, (Spitzenberger (1971) described *Crocidura pergrisea arispa* Spitzenberger, 1971), a subspecies from Niğde-Ulukişla, Madenköy. After Spitzenberger's (1971) studies, only Kumerloeve (1975), Jenkins (1976) and Corbet (1978) stated that this subspecies was distributed in Turkey. From these studies, it was also stressed that this subspecies was distributed in Turkey, however, Simsek (1979) stated that *C. pergrisea arispa* populations were non-existent in Turkey.

The purpose of the present study was to explain the taxonomic status of *Crocidura pergrisea arispa* from Turkey.

Materials and Methods

Specimens were collected from 12 localities between 1995 and 1999 (Denizli-6, Antalya-2, .Konya-7, Mersin-7, Niğde-27, Kayseri-23, Osmaniye-2, Hatay-2, Maraş-3, Gaziantep-2, Malatya-2, Elaziğ-3) (Fig. 1). Chromosome preparations from bone marrow were made in accordance with to Ford and Hamerton (1956) and about 25 metaphase cells of each animal were examined. Morphological studies were performed using the measurements given by Spitzenberger (1971). The skulls, skins and karyotypes were deposited in the Department of Biology, Faculty of Arts and Science, Ondokuz Mayis Universty in Samsun and Erciyes University in Kayseri.

Results and Discussion

Spitzenberger (1971) compared a female *Crocidura* specimen captured in Niğde-Ulukişla, Madenkoy with *Crocidura pergrisea pergrisea* Miller, 1913 and other *Crocidura pergrisea* Miller, 1913 subspecies. She stated that her specimen had a smoky grey colour underneath and upperside of body and a hipoconus on P^4 and M^{1+2} were narrow and tail was longer. Spitzenberger (1971) stated that her specimen differed from *C. pergrisea* subspecies in terms of these characteristics and, therefore, she described her specimen to be *C. pergrisea arispa.* In addition, Spitzenberger (1971) also reported that the body's dorsal and ventral colours were not separated from each other at the sides in *C. pergrisea arispa,* that the ears are distinctively long, and especially that the skull is flat and slender. At the time, it is a taxon living on rocks. Spitzenberger (1971) also collected a female specimen from Antalya-Elmali, Kohu Mountain (1750 m)-Ciğlikara as a paratype.

Simsek (1979) collected 840 specimens in Turkey and reported that he was unable to catch any *C. pergrisea* specimen from the type locality, paratype locality or other localities, In his study, he did not state that *C. pergrisea arispa* was not distributed in Turkey. However, he also did not suggest that *C. pergrisea arispa* was a synonym of *C. suaveolens* because he examined his specimens only using morphological characters.

Kumerloeve (1975), Jenkins (1976) and Corbet (1978) agreed that *C. pergrisea arispa* is a valid subspecies according to Spitzenberger (1971) data. Hutterer (1993) revised the Insectivore and reported the distribution of *C. pergrisea* as" Mountains of W Himalaya (Kashmir). "In his account, he makes no mention of this subspecies. Karyological analysis of Russian *C. pergrisea* specimens were analysed by Grafodatsky *et al.* (1988) and they determined the diploid number as 2n = 22 and the fundamental number as NF = 34 in a female specimen of this species. The authors indicated that five pairs of autosomes were acrocentric, the others biarmed and X chromosome is acrocentric in this species.

Specimens collected from 12 localities (Fig. 1) were compared with characteristics given for type and paratype (Table 1) and with the data from Grafodatsky *et al.* (1988). Karyological analysis of the specimens that were morphologically similar to *C. pergrisea arispa* was analysed, it was determined that they had 2n = 40 and NF = 50 (Fig. 2). This karyotype was compared to the karyotype characteristic of Russian *C. pergrisea* given by Grafodatsky *et al.* (1988), In terms of both 2n and NF values, there were significant differences between the Russian and Turkish specimens.

Finally, except for Spitzenberger (1971) none of researchers could capture the specimen belonging to *C. pergrisea arispa* in Turkey. The researchers who mentioned *C. pergrisea arispa* in their publications (Kumerloeve, 1975; Jenkins, 1976; Corbet, 1978) also could not collected any samples, belonging to this subspecies.

Table 1: Measurements of cranial and external characters of collected samples from localities in Fig. 1 (Belonging to *C. suaveolens*) (SD = Standard deviation n = number of specimens)

Measurements	n	Mean	Range	SD
Length of head and body	86	73.05	65.88	5.30
Length of tail	86	43.56	37-51	2.75
Length of hind foot	86	13.73	13-15	0.68
Length of ear	86	8.52	7-10	0.63
T × 100/HB*	86	59.88	49.38-71.21	5.21
Greatest length of skull	86	18.78	17.40-19.95	0.58
Condylobasal length	86	17.97	16.30-19.30	0.59
Postpalatal length	86	7.60	6.75-8.40	0.28
Braincase length	86	10.35	9.55-11.10	0.32
Length of upper toothrow	86	8.18	7.45-8.90	0.26
Basal length	86	15.49	14.10-16.55	0.47
Length of lower toothrow	86	7.33	6.20-8.05	0,37
M^1 to M^3 length	86	4.12	3.75-4.45	0,18
Postglenoid breadth	86	5.98	5.55-6.40	0.16
Interorbital breadth	86	4.21	3.95-4.55	0.15
Antorbital foramina breadth	86	3.35	3.15-3.65	0.12
Bratricase breadth	86	8.68	8.05-9.95	0.38
Skull height	86	5.24	4.80-5.65	0.19
Zygomatic breadth	86	5.69	5.30-6.05	0.19
Mandible length (Including incisor)	86	10.14	9.30-10.85	0.34
Coronoid height	82	4.52	4.20-4.90	0.18

*Tail length as % of head and body length

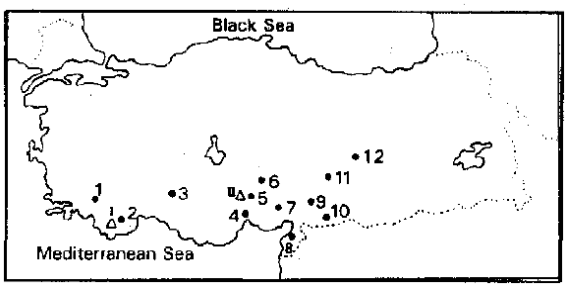

Fig. 1: The map of Turkey showing the collecting localities for the Crocidura specimens: (△) Record localities of Spitzenberger (1971); (•) Record localities for the present study. (I) Ciğlikara Kohu Mountain, Elmali-Antalya; (II) Bolkar Mountains, S Madenköy, Ulukişla-Niğde; (1) Pamukkale-Denizli; (2) Elmali-Antalya; (3) Akşehir-Konya; (4) Tarsus-Mersin; (5) Ulukişla-Niğde; (6) Kayseri; (7) Toprakkale-Osmaniye; (8) Iskenderum-Hatay; (9) Afşin-Elbistan-Maraş; (10) Gaziantep; (11) Akçadağ-Malatya; (12) Sivrice-Elaziğ

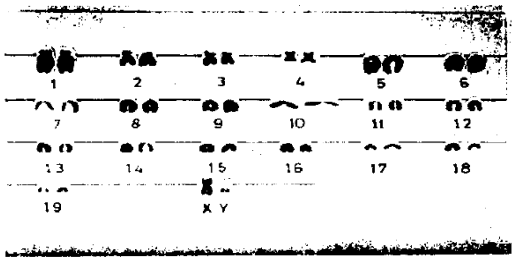

Fig. 2: 2n = 40 Karyotype of *C. suaveolens* obtained from the specimens collected from localities in Fig. 1 (Niğde- Ulukişla, Madenköy; Male)

However, they apparently supported Spitzenberger (1971) idea that *C. pergrisea arispa* was a valid taxon.

According to this study, it was determined that *C. pergrisea arispa*, originally described as a subspecies of *C. pergrisea* (with 2n = 22 karyotype) by Spitzenberger (1971), is not distributed in Turkey and that *C. pergrisea arispa* subspecies is a synonym of C. *suaveolens* (with 2n = 40 karyotype).

Acknowledgements

We thank Dr. Servet Ozcan and Donna Sue Ozcan for improving the English.

References

Corbet, G.B., 1978. The Mammals of the Palaearctic Region: A Taxonomic Review. Cornell University Press, London, Pages: 314.

Ford, C.E. and J.L. Hamerton, 1956. A colchicine, hypotonic citrate, squash sequence for mammalian chromosomes. Stain Technol., 31: 247-251.

Grafodatsky, A.S., S.I. Radzhabli, A.A. Sharshov and M.V. Zaitsev, 1988. Karyotypes of five *Crocidura* species of the USSR fauna. Tsytologya, 30: 1247-1255.

Hutterer, A., 1993. Order Insectivora. In: Mammal Species of the World: A Taxonomic and Geographic Reference, Wilson, D.E. and D.M. Reeder (Eds.). Smithsonian Institute Press, Washington, DC., pp: 69-133.

Jenkins, P.D., 1976. Variation in Eurasian shrews of the genus *Crocidura* (Insectivora: Soricidae). Bull. Br. Mus. (Nat. Hist.) Zool., 30: 269-309.

Kumerloeve, H., 1975. Die saugetiere (Mammalia) der Turkei; Die saugetiere (Mammalia) syriens und des Libanon. Veroff. Zool. Stattssamml. Monchen, 18: 82-84.

Ruedi, M., T. Maddalena, H.S. Yong and P. Vogel, 1990. The *Crocidura fuliginosa* species complex (Mammalia: Insectivora) in Peninsular Malaysia: Biological, karyological and genetical evidence. Biochem. Syst. Ecol., 18: 573-581.

Satunin, K.A., 1914. New mammals from Transcaucasia. Mit. Kaukas. Mus., 8: 92-92.

Simsek, N., 1979. Distribution and taxonomic status of the genus *Crocidura* (Mammalia: Insectivore) in Turkey. Ph.D. Thesis, Faculty of Science, Ankara University, Turkey.

Spitzenberger, F., 1971. Eine neue, tiergeographisch bemerkenswerte *Crocidura* (Insectivora, Mammalia) aus der Turkei. Annalen des Naturhistorischen Museums in Wien, 75: 539-552.

Thomas, O., 1906. LVI.-New insectivores and voles collected by Mr. A. Robert near Trebizond. J. Nat. Hist., 17: 415-421