

present study it was observed that the homing ability in bats reflected an inverse proportionality to the distance where it was released. HASSELL (1963) reached the same conclusion with *Myotis sodalis* and reported that beginning with 44% returns at the smallest distance, 19 km, the percentage went down to one at 212 km and zero beyond it.

The longest flight back home in our studies was 45 km by one *Rhinopoma microphyllum*, 20 km for *R. hardwickii* and 18 km for *Taphozous perforatus*. The longest known homing flight, 724 km, was recorded for *Eptesicus fuscus* (SMITH and GOODPASTER 1958, quoted by GRIFFIN 1970).

It has been observed that migratory bats usually have better homing ability. Among the bats studied by us *R. microphyllum* is by far the best migrant and, therefore, it is not surprising that it also possesses very superior homing ability.

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Description of a new species of shrew of the genus *Crocidura* (Mammalia: Insectivora: Soricidae) from southwestern Iran

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Four species of the genus *Crocidura* Wagler, 1832, i. e. *C. russula* Hermann, *C. leucodon* Hermann, *C. suaveolens* Pallas and *C. zarudnyi* Ognev, have been sampled in Iran and Iraq (HATT 1959; LAY 1967; NADER 1969; ANDĚRA 1972). Seven specimens collected in 1971 and 1973 at three localities in Khuzistan Province, south-

western Iran, have been assigned to this genus on the basis of unpigmented teeth, elongated bristles on the tail, and the presence of only three upper unicuspid (cf. ELLERMAN and MORRISON-SCOTT 1951). These specimens form a morphologically cohesive group that represents an undescribed species.

Order Insectivora — family Soricidae

Crocidura susiana, new species

Holotype

University of Michigan Museum of Zoology (UMMZ) number 120206; adult male preserved in alcohol with the skull extracted and cleaned. Collected January 26, 1971, by R. W. REDDING from Iran, Khuzistan Province, 8 km south-southwest of Dezful (32° 19' N., 48° 21' E.). This locality is a tomb-garden complex known as Imamsadeh 'Ibin Jaffar.

Paratypes

Six additional specimens, UMMZ 120207, 120243, and 121121—23 and RWR 526 (field number). The last specimen is in the collection of the National Museum of Natural History of Iran, Teheran. All specimens are preserved as skins and skulls except UMMZ 120207 and 120243, which are in alcohol the latter with the skull extracted.

UMMZ 120243 was collected near a slough outside Qali Wand, a village 9 km south of Dezful. UMMZ 121123 was caught near a backwater channel of the Dez River, about 15 km south-southwest of Dezful. All other specimens were captured at the same locality as the Holotype.

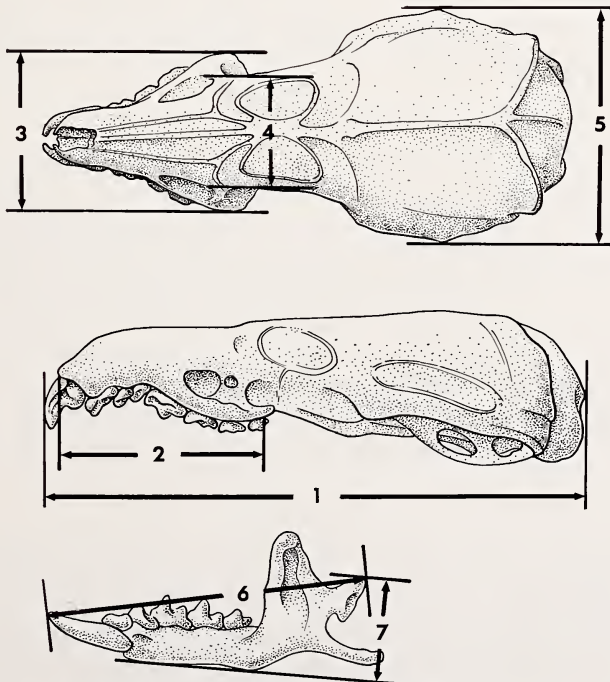


Fig. 1. Cranial measurements. 1 = condylo-incisive length; 2 = upper tooth row length; 3 = greatest width of maxilla; 4 = least interorbital width; 5 = greatest width of braincase; 6 = mandible length; 7 = height of articular condyle

Measurements of the holotype of *C. susiana* and samples of five species of *Crocidae*
(mean and range; localities given in text)

Measurements (in mm)	<i>C. susiana</i> (holotype)	<i>C. susiana</i> (n = 4-7)	<i>C. russula</i> (n = 37-42)	<i>C. snavcolens</i> (n = 12-13)	<i>C. zarudnyi</i> (n = 7)	<i>C. leucodon</i> (n = 6-8)
Total length	148	138.2 (134-148)	113.7 (101-126)	99.8 (91-108)	107.6 (101-116)	117.9 (105-126)
Tail length	63	58.6 (56-63)	43.2 (35-51)	35.5 (32-39)	44.9 (40-50)	41.7 (38-46)
Hindfoot length	16	15.6 (15-16.5)	13.6 (11-15)	12.5 (11.5-14)	12.6 (12-14)	14.2 (13-15)
Ear height	9	8.9 (8.5-9)	9.0 (7-11)	8.8 (8-9)	9.4 (8-10.5)	9.2 (9-10)
Condylar-incisive length	20.55	20.72 (20.55-21.01)	18.94 (17.83-19.85)	18.27 (17.62-18.84)	18.32 (17.67-18.94)	20.83 (20.12-21.30)
Upper tooth row length	8.10	7.92 (7.32-8.32)	7.41 (7.01-7.86)	7.16 (7.00-7.46)	6.93 (6.66-7.18)	8.27 (8.01-8.62)
Greatest width of maxilla	5.73	5.94 (5.73-6.35)	5.60 (5.17-5.98)	5.39 (5.20-5.77)	5.39 (5.15-5.70)	6.26 (5.95-6.68)
Least interorbital width	4.31	4.35 (4.24-4.44)	4.08 (3.83-4.37)	3.90 (3.71-4.22)	3.86 (3.68-3.97)	4.47 (4.11-4.71)
Greatest width of braincase	9.24	9.25 (9.01-9.42)	8.74 (8.38-9.29)	8.23 (8.04-8.54)	8.18 (7.97-8.33)	9.84 (9.55-10.03)
Mandible length	12.56	12.79 (12.56-13.15)	11.63 (10.96-12.30)	11.23 (10.81-11.65)	11.11 (10.67-11.51)	13.11 (12.79-13.53)
Height of articular condyle	3.83	3.78 (3.60-4.05)	3.45 (3.05-3.90)	3.38 (3.14-3.76)	3.29 (2.83-3.52)	3.82 (3.40-4.31)

Measurements

Cranial measurements made as depicted in Fig. 1 are presented in the Table.

Description of holotype

A large shrew. Ratio of tail to head and body length equals 0.74, hindfoot relatively long (see Table). Hair of dorsal pelage 5–6 mm in length, grey with distal 1.0–1.5 mm brown; dorsal pelage uniformly colored Warm Sepia (RIDGWAY 1912). Hair of ventral pelage 4–5 mm in length, grey colored with tips in the abdominal region washed with light grey/white and in the pectoral region with light brown. No sharp demarcation between the dorsal and ventral pelage; tail not bicolored. The parastyle (Jackson 1928:15; the antero-external cusp of HARRISON 1964, and antero-

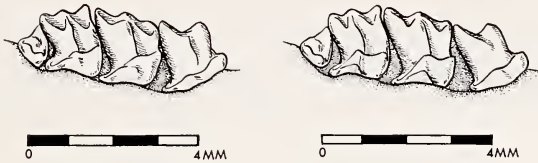


Fig. 2. Lingual view of right upper cheek-tooth row. Left: *Crociodura russala*; right: *Crociodura susiana*

lateral cusp of ANDĚRA 1972) of upper premolar is large, equaling or exceeding in height the last unicuspid. Protocone of M^1 and M^2 extends posteriorly in a ridge that overlaps the hypocone, passing labially to it, thus, producing a rectangular lingual profile for the anterior two-thirds of each of these (Fig. 2b).

Comparisons

The total length of *C. susiana* exceeds that of the other species occurring in Iran and Iraq (see Table) and places *C. susiana* among the larger species in this genus. A ratio of tail to head and body length exceeding 0.70 separates *C. susiana*, *C. russula*, and *C. zarudnyi* from *C. leucodon* and *C. suaveolens*. *C. susiana* can be distinguished from *C. russula* and *C. zarudnyi* by its larger skull and longer mandible. For other differences in cranial measurements, see Table.

The lingual profile of the M^1 and M^2 of *C. susiana* is also distinctive (Fig. 2). The *C. susiana* sample is composed of both young and old individuals. Only in specimens with heavy tooth wear did the lingual profile of individuals of *C. russula*, *C. suaveolens*, and *C. leucodon* approximate the profile of *C. susiana*. The lingual profile characteristic of *C. susiana* is not the result of age-related wear patterns.

Ecologic data

The Susiana Plain is part of a semi-arid steppe that lies on a piedmont between the Zagros Mountains and an alluvial arid area, the Mesopotamian Plain. The elevation of the Susiana Plain varies between 100 to 300 m. It receives an average of 300 to 400 mm of precipitation per year. Three perennial rivers, the Karun, Karkheh and Dez, transect the plain and the area is extensively irrigated.

All specimens were collected from localities with the following characteristics: 1. running water for most or all of the year; 2. dense grasses; 3. small numbers of trees (*Ziziphus* sp., *Populus* sp. and/or *Tamarix* spp.) one to five meters high. *Mus*

musculus was trapped at all localities. All of the specimens of *C. susiana* were taken in Museum Specials baited with dates, perhaps attracted to insects that collected on the bait.

Material examined

Specimens examined are contained in the collections of the Field Museum of Natural History and the Museum of Zoology, University of Michigan. The *C. russula* sample, n = 42, is composed of specimens from Afghanistan (12), Turkey (11), Iran (18) and Iraq (1). The samples of *C. leucodon*, n = 8, and *C. zarudnyi*, n = 7, are composed of Iranian specimens. *C. suaveolens*, n = 13, is represented by specimens from Afghanistan (11) and Iran (2).

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Nach einer kurzen Darstellung der verschiedenen Untersuchungsmethoden zum Tauchvermögen mariner Säugetiere geben die Verfasser einen knappen Überblick über physiologische und anatomische Anpassungen für das Tauchen, während dessen Dauer z. B. eine Brady-

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