Tr. J. of Zoology
22 (1998) 93-98
© TÜBİTAK

Research Article

A new subspecies of Jerboa from Turkey; *Allactaga euphratica kivanci** subsp. n.

Ercüment ÇOLAK, Nuri YİĞİT
Department of Biology, Faculty of Science, University of Ankara-TURKEY

Received: 22.11.1996

Abstract: In this study, 42 specimens of *Allactaga euphratica* from Urfa (Turkey) were examined based on morphological, cranial, external and karyological characters. A comparison of specimens from Urfa with those from Syria, Jordan, Kuwait and Iraq showed that specimens from Urfa, Syria and Jordan, Kuwait and Iraq showed that specimens from Urfa, Syria and Jordan differ from those from Kuwait and Iraq. Thus, specimens from Urfa (Turkey), Syria and Jordan were included in a new subspecies, *Allactaga euphratica kivanci* subsp. n.

Key Words: *Allactaga euphratica kivanci* subsp. n., Turkey.

Türkiye'den yeni bir araptavşanı Alttürü; *Allactaga euphratica kivanci* subsp. n.

Özet: Bu çalışmada Urfa (Türkiye)'dan toplanan 42 *Allactaga euphratica* örneği morfolojik, kafatası, dış ve karyolojik özelliklerine göre incelendi. Urfa örneklerinin Suriye, Ürdün, Irak ve Kuveyt örnekleri ile karşılaştırılması; Urfa, Suriye ve Ürdün örneklerinin Kuveyt ve Irak örneklerinden farklı olduğunu gösterdi. Böylece, Urfa (Türkiye), Suriye ve Ürdün örnekleri yeni bir alttüre *Allactaga euphratica kivanci* subsp. n. dahil edildi.

Anahtar Sözcükler: *Allactaga euphratica kivanci* subsp. n., Türkiye.

Introduction

Thomas (1) described *Allactaga euphratica* from Iraq (no exact locality). Ellerman (2) collected 14 specimens of *A. euphratica* from Syria, Amman (Jordan), Bağdat (Iraq) and Kuwait. Misonne (3) examined 15 specimens from Harran (Turkey). Ellerman and Morrison-Scott (4), Hatt (5), Misonne (6), Lewis et al (7), Lay (8) and Atallah (9) considered a monotypic species of *euphratica* and noted that its distribution to the west is unknown. Harrison (10) stated that this taxon occurs in southern Turkey (Urfa and Mardin). Atallah and Harrison (11) demonstrated that *Allactaga williamsi* and *A. euphratica* formed a perfect cline, and they reduced *williamsi* to subspecific status under *euphratica.* Harrison (10), Corbet (12) and Harrison and Bates (13) accepted Atallah and Harrison (11)'s findings. Çolak et al., (14) confirmed that *williamsi* and *euphratica* are two separate species, but up to now, there has been no study on geographical variation within *euphratica.*

Materials and Methods

In this study, field notes, karyotypes, penis, skulls and skins of 42 specimens collected from Urfa (Turkey) were examined. Four external character measurements and body weight (g) were taken from fresh material in the field. Karyological preparations, penis preparations, cranial and external measurements were performed in accordance with Patton (15), Lidicker (16), Harrison and Bates (18), respectively. Specimens were examined after the ages of all specimens were determined.

Holotype, paratypes and other specimens along with karyotype preparations were deposited in the University of Ankara, Faculty of Science, Department of Biology.

Results

Allactaga euphratica kivanci subsp. n.

Holotype: AFFBB 584, adult female, skin and skull

* *kivanci* is dedicated to our supervisor, Dr. Erkut KIVANÇ

from Çaylıkköyü [redacted] Ur[redacted] Prov[redacted] Turkey[redacted] September [redacted]3 b[redacted] cum[redacted] O[redacted] n dep[redacted] Universit[redacted] of A[redacted] a F[redacted] of Biolog[redacted] (A[redacted]BB[redacted]

Pa[redacted]yp[redacted] Ç[redacted] Nr 60[redacted]29 [redacted] vembe[redacted] 19[redacted] Nr [redacted] 1992, [redacted] A[redacted] Nr 6[redacted] AFFBB N[redacted] 6[redacted] Nove[redacted] 92, 627-2 Feb[redacted]3, [redacted] Nr 6[redacted] ary 1993, 2 [redacted] Nr 6[redacted] 1 AFFBB[redacted] 93 +10 AFFB[redacted] Nr [redacted]15, [redacted] 721, 690; 69[redacted], 695, 696 6[redacted] 718, 729-[redacted] Nr 73[redacted]5- July 1993, 1 [redacted] Nr 77[redacted] 1 +1 AFFBB Nr [redacted]344, [redacted] August 1993, 1 AFFBB Nr 886-20 A[redacted]gust [redacted]993 4 +3 AFFBB Nr 886, 894, 908[redacted] 889

Other Material: Meydan[redacted]apı Köyü (Urfa), 8 May 1992, 1 AFFBB Nr 266 [redacted]

Measurements of holoty[redacted]: Total length, 320 mm; head and body length, 129 mm; tail length, 191 mm; hind foot, 57 mm; ear, 37 mm; body weight, 92 g; condylobasal length, 30 mm; occipito-nasal length, 30.5 mm, zygomatic breadth, 23.6 mm; interorbital contriction, 8.2 mm; greatest length of skull, 32.7 mm; basal length, 25.8 mm; nasal length, 4.7 mm; length of facial region, 16.7 mm; mastoid width, 11.3 mm; height of braincase, 13.1 mm; occipital width, 14 mm; braincase width, 16.7 mm; diastema, 9.77 mm; palatal length, 17.6 mm; foramen incisivum 5.99 mm; tympanic bullae, 8.4 mm; mandible, 18.9 mm; mandibular tooth row, 6.55 mm; maxillary tooth row, 6.88 mm. Measurements of paratypes are given in Table 1.

Diagnosis: The fur on dorsal is pale buff. The tail is distinctly trizonal on dorsal aspect; a narrow buff zone is succeeded by black subterminal band, and the white tip.

External characters: Fur on dorsal aspect is pale buff, turning into whitish with black tinge to sides. The hairs on dorsal surface are slate-gray for rather more than half their length, the distal parts of hairs are pale buff. Underparts are pure white. The line of demarcation along the flanks is fairly distinct. The external surface of thighs is buff, internal surface is white. The forehead and the face are lighter than dorsal fur. The cheeks are white. The ears areexternally covered with very dark thin hairs, their edges with [redacted] hairs. The [redacted] is pale buff on its dorsal [redacted] is [redacted] nter [redacted] tral [redacted] de. The tail is dis-[redacted] trizo[redacted]al on dor[redacted] aspect; [redacted] buff zone is [redacted] black s[redacted]minal [redacted] nd the white [redacted] foot is [redacted] ed [redacted] white hairs, [redacted] own [redacted] colorat[redacted] with a fringe [redacted] on edges [redacted] soles. W[redacted] forearms are [redacted] and [redacted].

Ta[redacted] cranial and external characters of [redacted] A. [redacted]ratica kivanci subsp. n. (SD: Standard [redacted]ation)

Characters (mm)[redacted]	[redacted]	Mean	Range	±SD
[redacted]	[redacted]	294.04	260-320	12.97
[redacted]d body	28	117.74	101-129	8.09
Tail length	28	181.41	159-192	9.66
Hind foot	29	56.10	53-59	2.24
Ear	29	35.43	31-38	1.80
Weight (g)	29	66.32	48-92	11.39
Zygomatic breadth	27	22.74	21.8-23.6	0.45
Interorbital constriction	27	8.14	7.7-8.5	0.37
Condylobasal length	27	29.07	27.8-30.9	0.69
Occipitonasal length	26	30.10	29.4-31.3	0.65
Greatest length of skull	27	32.15	31.2-34.0	0.63
Basal length	27	26.07	24.4-27.3	0.71
Nasal length	26	11.90	11.2-13.5	0.54
Nasal width	26	4.42	3.8-4.8	0.16
Length of facial region	27	16.05	15.3-16.7	0.45
Mastoid breadth	27	11.01	10.4-11.6	0.36
Skull height	26	13.08	12.0-13.7	0.42
Occipital width	26	14.12	13.0-14.8	0.40
Braincase width	25	16.57	15.9-17.0	0.37
Diastema	28	9.21	8.66-9.99	0.39
Palatal length	28	17.34	15.8-18.6	0.55
Foramen incisivum	28	6.05	5.77-6.77	0.36
Tympanic bullae	26	9.04	8.4-9.5	0.54
Mandible	27	18.95	18.2-20.0	0.57
Maxillary tooth row	27	6.59	5.77-6.99	0.25
Mandibular tooth row	19	6.62	6.11-6.99	0.20

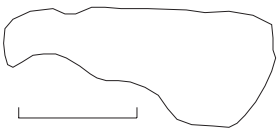

Figure 1. Lacrimal bone of *A.e. kivanci* subsp. n. (scale: 2 mm)

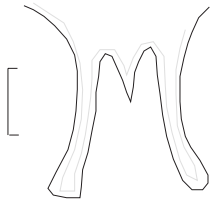

Figure 2. Notch on the palatine of *A.e. kivanci* subsp. n. (scale: 2 mm)

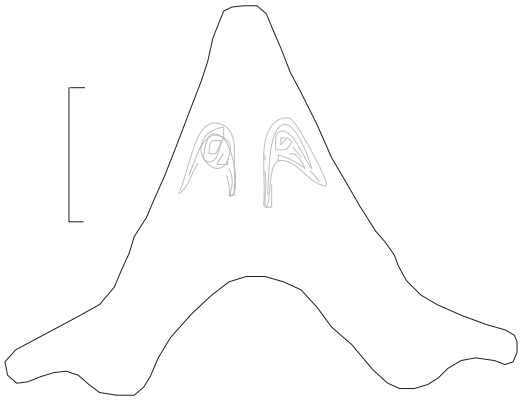

Figure 3. Basioccipital bone of *A.e. kivanci* subsp. n. (scale: 2 mm)

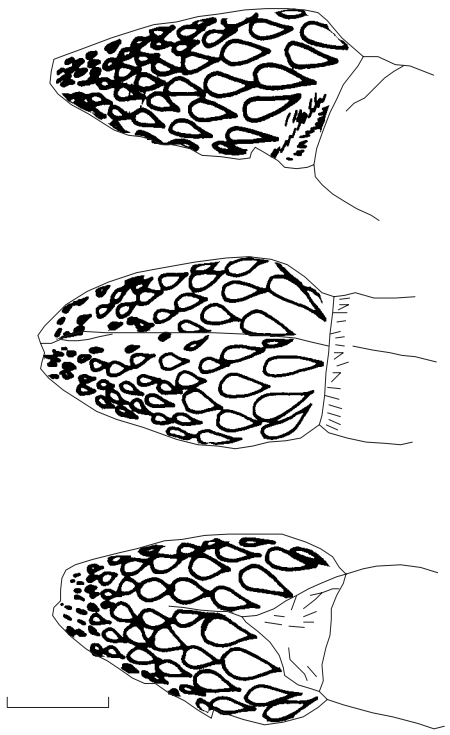

Figure 4. Glans penis of *A.e. kivanci* subsp. n.; Top: Laterally; Centre: Dorsally; Bottom: Ventrally. (scale: 2 mm)

Cranial characters: Nasal bones are short, their anterior ends much constricted at interorbital region. There is a distinct median concavity at the posterior ends of nasals. The superior aspect of the parietal is slightly inflatted in adults. Lacrimals are small and narrow (Figure 1). Posterior palatine foramina are consid-

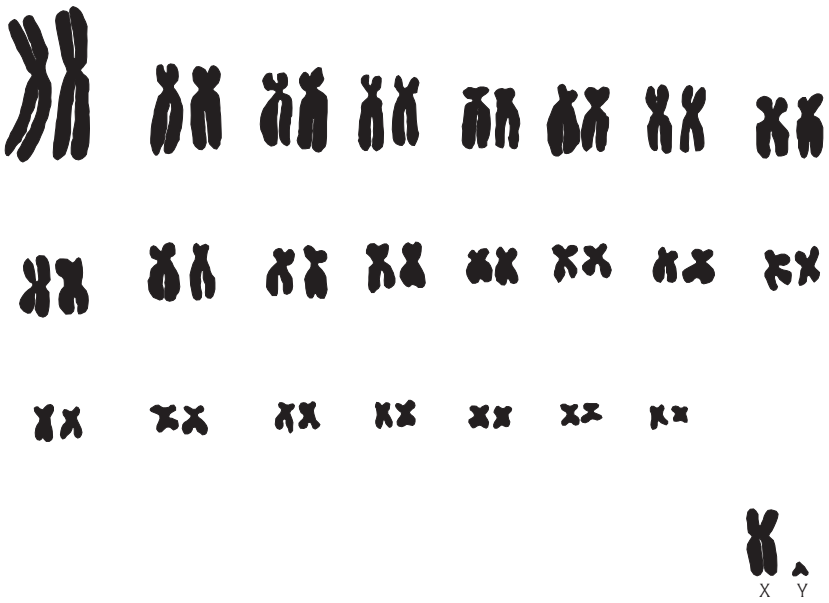

Figure 5. Karyotype of male *A.e. kivanci* subsp. n.

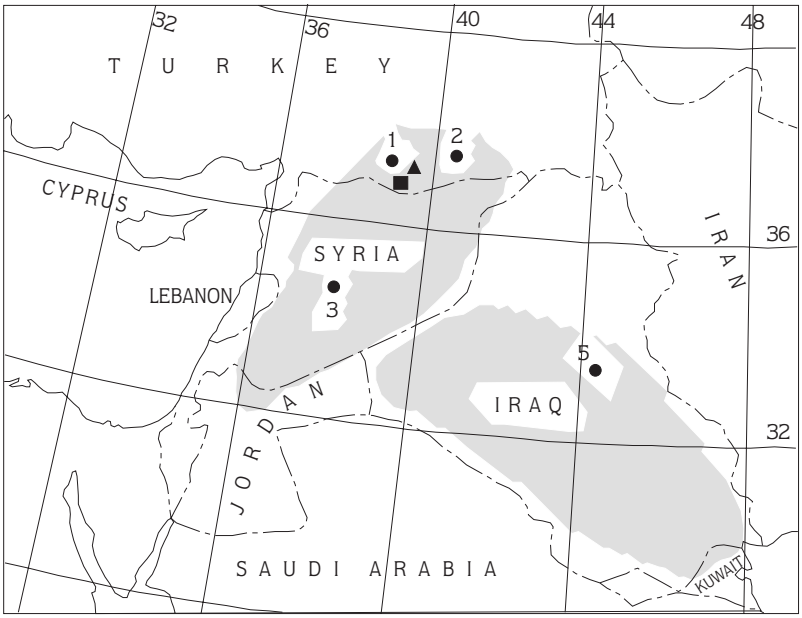

Figure 6. The map showing distribution areas of *A.e. kivanci* subsp. n. (1, 2, 3 and 4) and A.e. euphratica (5). The gap between two subspecies indicates the possible hybrid zone. 1: Urfa; 3: Palymra; 4: Amman; 5: Baghdad; ▲: Çalıkköyü (type locality); ■: Harran.

erably large in relation to the skull. There is a notch with angled line on the posterior end of palatine (Figure 2). The lateral edges of basioccipital bone are even (Figure 3). This condition gives a triangular appearance to this bone. The upper incisors are strongly pro-odont, without a vertical groove. The small upper premolar is retained. M^1 is slightly larger than M^2. M^1 and M^2 have 4 roots, M^3 with 2 or 3; M_1, M_2 and M_3 with 2 roots.

Penis characters: There is no baculum. The tip of the penis is mostly truncated. Glans penis is covered throughout with 140-150 spines. Longitudinal furrow is very marked, always reaching to the tip (Fig. 4).

Karyology: 2n=48; NFa=92. There is a single largest pair of submetacentrics in the karyotype. The karyotype has 16 pairs of submetacentrics, 7 pairs of metacentrics. The X chromosome is submetacentric. The Y chromosome is telocentric. (Figure 5).

Distribution: Urfa, Mardin (Turkey), Syria, Jordan (Figure 6).

Discussion

Thomas (1) stated, in his original description that the fur of the type of *A. euphratica* is very long and soft; above slate-coloured for half its length, then pale fawn, the tips black. Thomas (1) for the type and Harrison (10) for a specimen from Iraq, reported that the proximal white band of banner on the tail is almost entirely lacking. In this study, we examined 29 adult specimens from Urfa and found that the fur on the dorsal is pale buff and that there is a proximal buff band on the banner on the tail of specimens from Urfa and that the subterminal band is black. This shows that specimens from Urfa are different from the nominant form in these aspects. We compared measurements of the type specimen with those from Urfa and revealed that the new subspecies, *kivanci*, differs from type specimen in the following external and cranial measurements; tail length, ear, hind foot, greatest length of skull, zygomatic breadth. Atallah and Harrison (11), Harrison (10) gave some measurements of specimens from Iraq, Kuvait, Jordan and Syria. We compared these measurements with those of specimens from Urfa (Figure 7). It was determined that specimens from Urfa are consistent with those from Syria and Jordan. They are larger than those from Kuwait and Iraq, in the following external and cranial measurements: total length, head and body length, tail length, ear, hind foot, zygomatic breadth, condylobasal length, braincase width (Figure 7). Harrison (10) also reported that aldults from Iraq are distinctly smaler than those from Jordan and Syria, noting clinal variation in size in the region. In contrast to Harrison (10), Çolak et al (14) found that there is no clinal variation in *Allactaga.* Also, Atallah and Harrison (11) demonstrated that four specimens of *Allactaga* from Palmyra, Syria seem to be intermediate between two forms, *euphratica* and *williamsi* and further material obtained in 1966 by Atallah (9) in northeastern Jordan confirmed their impression. Çolak et al (14) revealed that Palmyra (Syria) may be in a hybrid zone

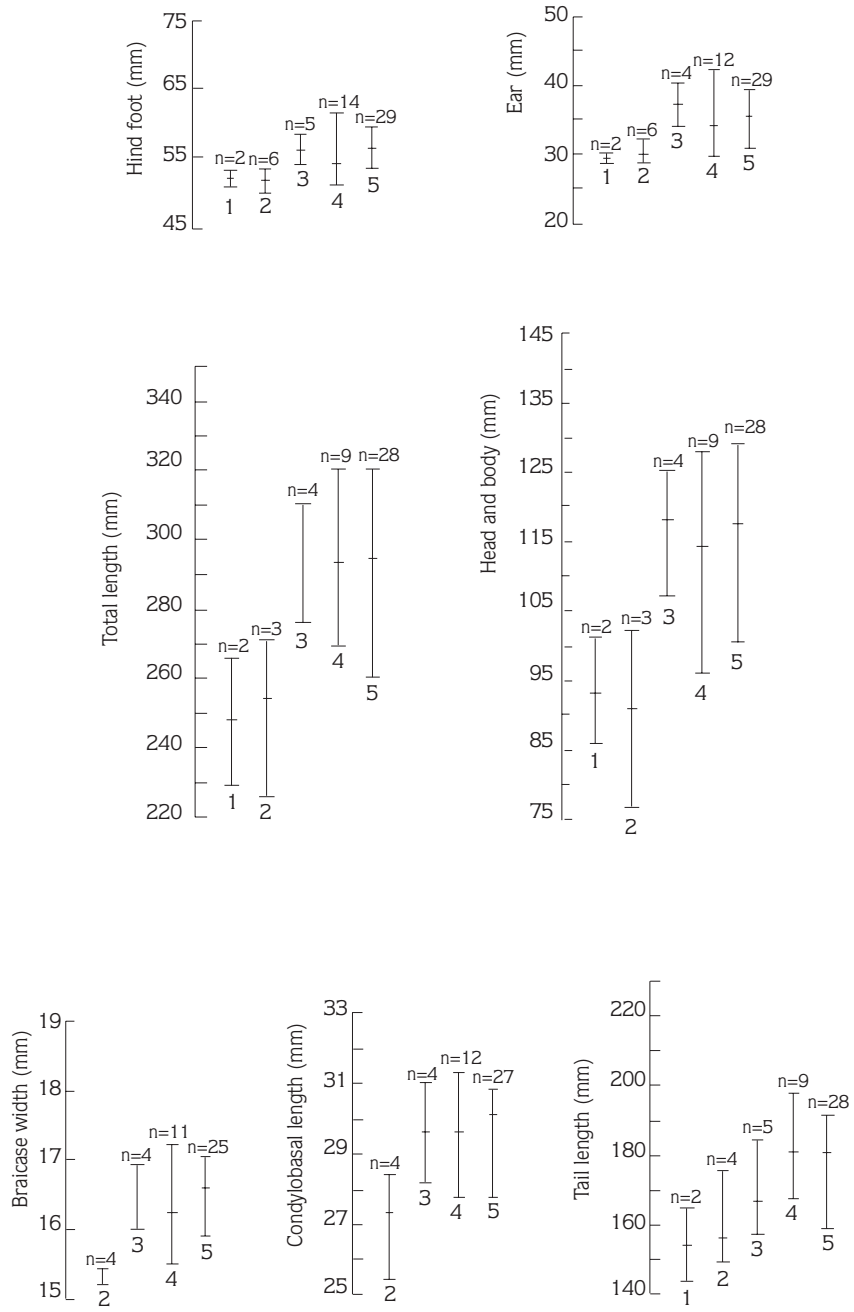

Figure 7. Population-range diagrams of Iraq (1), Kuwait (2), Jordan (3), Syria (4) (Atallah and Harrison, 1968) and Urfa (Turkey) (5).

between possible subspecies of *A. euphratica* rather than between *A. euphratica* and *A. williamsi.* These findings showed that *A. euphratica* is a polytypic species.

Acknowledgements

This study was supported by the Research Fund of Ankara University (Nr: 91250072) and the Scientific and Technical Research Council of Turkey (TÜBİTAK) (TBAG-1187)

References

1. Thomas, O., Description of a new species of Allactaga from Mesopotomia. Ann. Mag. Nat. Hist., 8 (ser. 5): 15-16, 1881.
2. Ellerman, J.R., Key to the Rodents of south-west Asia in the British Museum Collection. Proc. Zool. Soc. Lond; 118: 765-816, 1948.
3. Misonne, X., Mammifères de la Turguie sud-orientale et du nord de la Syrie. Mammalia, 21: 53-68, 1957.
4. Ellerman, R. and Morrison-Scott, T.C.S., Checklist of Palaearctic and Indian mammals, 1758 to 1948. Brit. Mus. nat. Hist., Lond. 810 pp., 1951.
5. Hatt, R.T., The mammals of Iraq. Miscellaneous Publ Mus. Zool. Univ. Mich., No. 106: 1-113, 1959.
6. Misonne, X., Analyse zoogéographique des Mammifères des l'Iran. Mémoires Inst. r. Scl. nat. Belg., (2)59: 1-157, 1959.
7. Lewis, R.E., Lewis, J.H. and Harrison, D.L., On a collection of mammals from northern Saudi Arabia. Proceeding Zool. Soc. Lond; 144: 61-74, 1965.
8. Lay, D.M., A study of the mammals of Iran, resulting from the street Expedition of 1962-63. Fieldiana Zool., 54: 1-252, 1967.
9. Atallah, S.I., A collection of mammals from El Jafr, Southern Jordan. Zeitschrift Säugetierk. 32(5): 307-309, 1967.
10. Harrison, D.L., The Mammals of Arabia: Lagomorpha and Rodentia Vol. 3. Ernest Benn Ltd. 388-670, 1972.
11. Atallah, S.I. and Harrison, D.L., On the conspecificty of Allactaga euphratica Thomas, 1881 and Allactaga williamsi Thomas, 1897 (Rodentia: Dopodidae) with a complete list of subspecies. Mammalia, 32: 628-638, 1968.
12. Corbet, G.B., The mammals of the Palaearctic regions; a taxonomic review. Brith. Mus. nat. Hist., London/Cornell Univ. Press. 314 pp., 1978.
13. Harrison, D.L. and Bates, P.J.J., The Mammals of Arabia. Second edition. Harr. Zool. Mus. Pub. 355 pp., 1991.
14. Çolak, E., Kıvanç, E., Yiğit, N., A study on taxonomic status of Allactaga euphratica Thomas, 1881 and Allactaga williamsi Thomas, 1897 (Rodentia: Dipodidae) in Turkey. Mammalia, 58(4): 591-600, 1994.
15. Patton, J.L., Chromosomes studies of certain pocket mice. Genus Perognathus (Rodentia: Hateromyidae). J. Mammalogy, 48: 27-37, 1967.
16. Lidicker, W.Z., A phylogency of New Fuinea rodent genera based on phallic morphology. J. Mammalogy, 49: 609-643, 1968.