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New Records of Naked-footed Gerbil *Gerbillus nanus* and Pygmy Gerbil *Gerbillus* cfr. *henleyi* (Rodentia, Muridae) from Iran

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Gerbillus nanus is a highly polytypic species exhibiting considerable geographical variation, both in external and cranial characters. In the present study, specimens were collected from different localities in the northeastern, eastern, central and southern Iran. The values for external end cranial measurements have been given. The specimens present the existence of two different morphotypes of Baluchistan gerbil – short-tailed and long-tailed – existing sympatrically, especially in the southern parts of Iran. Moreover, in this study, one specimen was captured from Abarkouh desert and identified as *Gerbillus* cfr. *henleyi* which is the first report of the presence of this species in Iran. This new record expands the distribution of *G. henleyi* because it is the most eastern record of this species..

Key words: Gerbil, *Gerbillus, G. nanus, G. henleyi*, Iran

INTRODUCTION

The genus *Gerbillus* Desmarest, 1804 is one of the most diversified groups of rodents inhabiting arid and semiarid habitats in north and east Africa, Arabaian penisula, Iran, Afghanistan, Pakistan and India (Lay, 1983; Nowak, 1991; Abu Baker and Amr, 2003). The number of species in the genus *Gerbillus* has been always controversial. Ellerman (1940) listed 37 species for the entire range of this genus, while Petter (1975) reduced it to 20. Lay (1983) in an inclusive study recognized 62 species for this species. Musser and Carleton (2005) considered 36 species as valid for *Gerbillus*, while separated the genus *Dipodillus* from it.

Four species of *Gerbillus* have been so far reported from Iran: *G. nanus* Blanford, 1875 distributed widespread in southern, central and eastern Iran (Harrison and Bates, 1991; Darvish et al, 2006); *G. aquilus* Schlitter and Setzer, 1972 distributed in southeast Iran; *G. mesopotamiae* Harrison, 1956 and *G. cheesmani* Thomas, 1919 both distributed in southwest Iran. *G. nanus* and *G. mesopotamiae* are both naked-footed species but the latter is distinguishable by the lack of a well defined terminal tuft in tail (Harrison and Bates, 1991). *G. aquilus* and *G. cheesmani* are both hairy-footed gerbils.

In this study we morphologically compare the specimens which belong to *G. nanus* from different localities in Iran and report the existence of one new record of *Gerbillus* from the Iranian Plateau.

MATERIAL AND METHODS

The study is based on 45 specimens which were collected from 10 localities through the northeast, east, center and south Iran (table 1, fig. 1). Collected specimens were identified to species level based on the identification keys (Harrison and Bates, 1991; Qumsiyeh, 1996; Abu Baker and Amr, 2003).

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FIG 1.- Sampling Localities of *Gerbillus* in Iran.

Nine linear measurements were taken with vernier callipers to the nearest 0.1 mm from each adult skull. The abbreviations used are: GLS, greatest length of skull; CBL, condylobasal length of skull; ZW, zygomatic width; DL, diastema length; IC, Interorbital constriction; UMTL, upper molar tooth row length; LMTL, lower molar tooth row length; TL, tail length; HBL, head and body length. Statistical procedures were performed using SPSS (ver. 13, 2004). Standard voucher specimens were deposited in the Zoology Museum of Ferdowsi University (ZMF), Mshhad, Iran..

TABLE 1.- The localities and the number of specimens (N) were examined in this study.

		Latitude	Longitude	N
1	Kharanagh	32° 30′	54° 40′	3
2	Saghand	32° 42′	55° 23′	7
3	Mehriz	31° 27′	54° 53′	2
4	Kashmar	35° 13′	58° 25′	7
5	Zabol	31° 01′	61° 36′	2
6	Konarak	25° 38′	60° 31′	3
7	Abarkouh	30° 49′	53° 33′	7
8	Tabas	33° 45′	56° 48′	5
9	Bardsir	29° 55′	56° 33′	8
10	Jajarm	37° 08′	57° 20′	1

All of the captured specimens studied here had naked sole; hair bases on tail rump white; and tympanic bulla well developed so that the posterior margin of mastoid chamber exceeds the level of supraoccipital bone. These characters are special for *G. nanus* (Corbet, 1978; Harrison and Bates, 1991; Abu Baker and Amr, 2003).

Misonne (1959) recorded *G. nanus* from southeast and south Iran up to Bandar Abbas. Harrison and Bates (1991) and Panteleyev (1998) reported the presence of this species in southern and central parts of Iran. Etemad (1978) reported the northmost point of the presence of this species in Tabas,

however Darvish et al. (2006) extended its distribution up to Kashmar and Jajarm which are the most northern part of this species in the world.

Although the captured specimens we are dealing with in this study show the characters of *G. nanus*, their allocation to two different morphotypes is evident:

Long-tailed morphotype: typically known for *G. nanus*. The ratio of tail length to head and body length is more than 1.40 (table 2)

Short-tailed morphotype: the ratio of tail length to head and body length is less than 1.30 (table 2). The most distinguished specimen for this morphotype is from Abarkouh (shown as Abarkouh2 in table 2) in which the tail length is as short as 83 mm and the ratio of tail length to head and body length is 0.98. This ratio, which is the only record less than 1.0 for the genus *Gerbillus* of Iran, has been only known for *Dipodillus maghrebi* (schlitter and Setzer, 1972) and *D. Simoni* Lataste, 1881 (Lay, 1983) which are only distributed in north Africa and their characters are significantly different from *G. nanus*. The taxonomic status of this specimen is yet obscure.

Harrison and Bates (1991) state that *G. nanus* is a highly polytypic species exhibiting considerable geographical variation, both in external and cranial characters. Of course it is right, but these two morphotype cannot be simply attributed to geographic variation because they both occur sympatrically in the Iranian plateau, especially in the southern parts.

TABLE 2.- Selected measurements (in mm) of different populations of *Gerbillus nanus* (Mean ± SD). See the text for abbreviations.

	N	GLS	CBL	ZW	DL	IC	UTL	LTL	TL	HBL	TL/HBL
Kharanagh	3	26.7±0.6	23.3±0.2	13.9±0.5	6.8±0.03	4.7±0.08	3.6±0.2	3.6±0.1	119±2.6	80±2.6	1.49±0.01
Saghand	7	26.6±0.5	23.9±0.4	14.4±0.3	6.7±0.2	4.7±0.2	3.9±0.1	3.6±0.1	113±8.5	79±7.1	1.43±0.05
Mehriz	2	26.1±0.9	23.3±0.8	14.4±0.6	---	4.9±0.1	3.8±0.3	3.8±0.2	98.5±0.7	80±1.4	1.23±0.01
Kashmar	7	25.5±1.0	22.7±1.4	13.1±0.3	6.2±0.2	4.4±0.03	3.2±0.3	3.4±0.2	93.0±4.2	67.5±5.0	1.32±0.15
Zabol	1	25.2	22.5	---	6.3	4.8	3.3	3.4	112.0	75.0	1.49
Zabol 2	1	25.5	22.7	---	6.2	4.5	3.1	3.5	104.0	81.0	1.28
Konarak	3	26.6±0.3	23.2±0.4	13.8	6.2±0.2	4.5±0.2	3.5±0.2	3.5±0.2	119±1.4	70.5±4.9	1.69±0.09
Abarkouh	6	26.2±0.1	23.2±0.2	14.0±0.4	6.8±0.1	4.7±0.4	3.8±0.2	3.7±0.2	117.3±8.8	83.8±6.7	1.40±0.2
Abarkouh2	1	---	23.4	---	6.7	4.4	3.8	3.9	83.0	85.0	0.98
Tabas	4	26.5±0.5	23.7±0.7	14.1±0.5	6.5±0.4	4.5±0.1	3.7±0.3	3.6±0.2	112±2.8	78.5±4.9	1.43±0.05
Tabas2	1	26.30	23.76	---	5.66	4.48	3.38	3.50	92.00	72.0	1.28
Bardsir	7	26.3±1.1	23.0±0.8	13.6±0.4	6.4±0.2	4.7±0.2	3.3±0.1	3.3±0.2	126±4.9	79.5±7.8	1.67±0.3
Bardsir2	1	24.5	21.6	13.1	5.8	4.7	3.3	3.5	79	72	1.09
Jajarm	1	Data not available									

***Gerbillus* cfr. *henleyi* de Wintin, 1905**

Common name: Pygmy Gerbil

Type locality: Egypt, Wadi Natron, Zaghig

Gerbillus henleyi is distributed from North Africa and from eastward to Jordan, with scattered records in west Saudi Arabia, north Yemen, and Oman (Harisson, 1972; Lay, 1983; Harrison and Bates, 1991; Musser and Carleton, 1993, 2005; Abu baker and Amr, 2003). This species has never been recorded from Iranian plateau nor from Iraq. It is significantly a different species from all other species of the genus *Gerbillus* by its smaller size. Harrison and Bates (1991) report its dimensions as follows (in mm): TL, 85.6 (73 – 107); TBL (total body length including the tail and head and body), 151.4 (125 – 182); FL (hind foot length), 19.0 (15.8 – 20.0); EL (ear length), 9.0 (7.8 – 10); in skull CBL, 18.8 (17.2 – 19.9); BB (braincase breadth), 11.1 (10.5 – 11.6); ZW, 11.9 (10.9 – 12.9); UMTL, 2.5 (2.2 – 2.7); LMTL, 2.6 (2.3 – 3.0). Abu Baker and Amr (2003) distinguish this species from the rest of the naked-soled gerbils of Jordan by its head and body length less than 68 mm and the greatest length of skull less than 22.5.

FIG 2.- Dorsal view of the *Gerbillus* cfr. *henleyi* from Abarkouh.

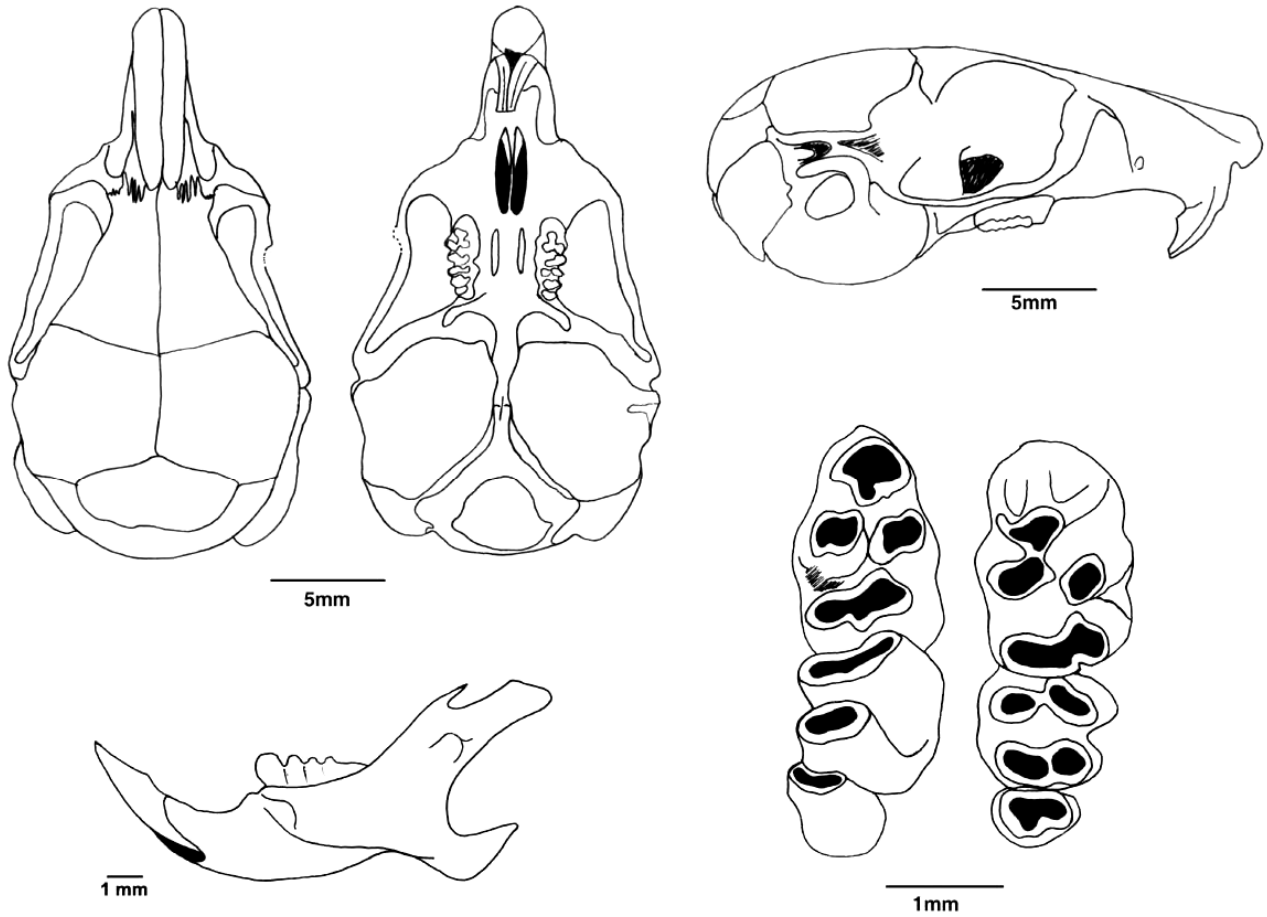

FIG 3.- Skull, mandible and teeth of the *Gerbillus* cfr. *henleyi* from Abarkouh.

In the present study we captured one naked-soled specimen from the border of Abarkouh desert in the southern Iran (table 1, fig. 1; not listed in table 2), its dimensions are in range for *G. henleyi*: TL,

78 mm; HBL, 62 mm; FL, 20 mm; EL, 10 mm (fig. 2); Weight, 10 g; in skull CBL, 19.5 mm; BB, 11.6 mm; ZW, 12.1 mm (fig. 3). The only characters which are not in agreement with the reported measurements of *G. henleyi* are the upper and lower molar tooth row length; in this specimen UMTL: 3.3 mm and LMTL: 3.4 mm..
Since this specimen is geographically too far from the western points where *G. henleyi* is so far reported (west of Saudi Arabia), it should be possible that some characters were not fully in accord with the reported ones. The presence of *G. henleyi* in Iran is biogeographically very interesting because it extends the eastern boundary of this species to the middle of southern Iran.

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