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## Rediscovery of Maynard's Longnose Sand Snake, *Lytorhynchus maynardi*, with the geographic distribution of the genus *Lytorhynchus* Peters, 1863 in Iran

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An adult male of Maynard's Longnose Sand Snake (*Lytorhynchus maynardi*) was collected on 24 July 2009 from the east of Sistan and Baluchistan Province in south-eastern Iran. The new locality is the westernmost record of this species in western Asia, and the first record for 42 years from Iran. Information on the geographic distribution of the genus *Lytorhynchus* Peters, 1863 in Iran, comparative morphology and some ecological data are presented here.

**Keywords:** Maynard's Longnose Sand Snake, *Lytorhynchus maynardi*, *Lytorhynchus diadema* gaddi, distribution, Iran.

### Introduction

The small Saharo-Sindian genus *Lytorhynchus* Peters, 1863 comprises six species, all occurring in the Middle-East and northern Africa. Species of this genus are characterised by their projecting flat snout and large rostrum. Their eyes have elliptical pupils. The nostril forms an oblique slit between two large nasals (Gasperetti, 1988). In the phylogenetic tree of Pyron et al. (2011), *Lytorhynchus*, represented only by *L. diadema*, is positioned at the base of the cluster including *Macroprotodon cucullatus* and Old World whip snakes (*Coluber dorri* and *C. zebrinus*), but little is known about the phylogenetic relationships within the genus. In their revision, Leviton and Anderson (1970) identify two morphological groups: “*diadema*”, including *L. diadema* and *L. kennedyi* (according to Sindaco, Venchi, & Grieco, 2013, *L. gasperettii* can also be assigned to this group) and “*ridgewayi*” that includes *L. maynardi* Alcock & Finn, 1896, *L. paradoxus* (Günther, 1875), and *L. ridgewayi* Boulenger, 1887. Three species are known to occur in Iran: *L. diadema* (Figure 1a), *L. ridgewayi* (Figure 1b) (Latifi, 2000) and *L. maynardi* (Baloutch, 1972, 1977; Rastegar-Pouyani, Kami, Rajabzadeh, Shafiei, & Anderson, 2008). There is only one previous record of *Lytorhynchus maynardi* from Iran: a single specimen was collected by Baloutch (1972) from Shahrokhabad, south Shahdad, Kerman Province. However, Sindaco et al. (2013) referred to Shahrokhabad as a doubtful record.

We report here a record of *Lytorhynchus maynardi* from Sistan and Baluchistan Province, which seems to be the first unambiguous record of this species in Iran. We also review here the geographic distribution of the genus *Lytorhynchus* Peters, 1863 in Iran.

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Figure 1. Above: *Lytorhynchus diadema gaddi* (28°48'N, 56°31'E, 22 July 2010); Below: *Lytorhynchus ridgewayi* (28°55'N, 56°31'E, 23 September 2009). Khabr National Park, Kerman Province, Iran (photos by N. Moradi).



### *Lytorhynchus maynardi* Alcock & Finn, 1896

**Material.** During fieldwork on the herpetofauna of south-eastern Iran on 24 July 2009, one adult male specimen of *L. maynardi* was collected from Niatak (approximately 31°08'N, 61°37'E) at an elevation of 496 m a.s.l. in Sistan and Baluchistan Province. The specimen was collected and deposited in Museum of Kerman Department of Environment, Kerman, Iran (DOE 20). Morphometric measurements were taken with calliper to the nearest 0.01 mm.

**Diagnosis.** Head slightly distinct from neck, with cuneiform projecting snout; rostral large, four-sided, projecting, concave inferiorly; nostril an oblique slit between two nasals. Suture between the internasals shorter than that between the prefrontals. Eye moderate, pupil vertically elliptical; 2 suboculars; loreals squarish. Four infralabials in contact with anterior chin shield; posterior chin-shields as long as the anterior, and separated from each other by two little scales. Snout-vent length (SVL; from tip of the snout to vent): 215 mm; tail length (TL; from cloaca to tip of the tail): 85 mm; head length (HL; from tip of snout to angle of jaw): 16.1 mm; head width (HW; behind eyes): 7.25 mm; and head height (HH; behind eyes): 4.55 mm. The other comparative pholidosis characters of the Iranian *Lytorhynchus* specimens are presented in Table 1. – Colouration: Dorsum pale buff with a series of 71 rhomboidal brown spots; alternate much smaller spots on flanks (Figure 2a); a dark median band along the nape, confluent with a pincer mark on head (Figure 2b). An oblique dark band behind the eyes, but never in contact with angle of the mouth. Venter uniform white.

### Geographic distribution and habitat

The geographic distribution of all three species in Iran was mapped (Figure 3): *Lytorhynchus maynardi* was observed about 60 km from the Iran-Afghanistan border on sandy terrain (Figure 4). The vegetation is dominated by *Tamarix* sp. and a syntopic snake species is *Echis carinatus*. *Lytorhynchus diadema gaddi* inhabits sandy coastal plains or sandy soil in the southwest, sandy and gravelly terrain covered by bushes in the south, to elevated gramineous plains up to about 1700 m a.s.l in the southeast (Figure 4) (Moradi, Shafiei, & Sehhatisabet, 2013). *Lytorhynchus ridgewayi* is most commonly found on sandy soils with various degrees of compaction, mixed with gravel

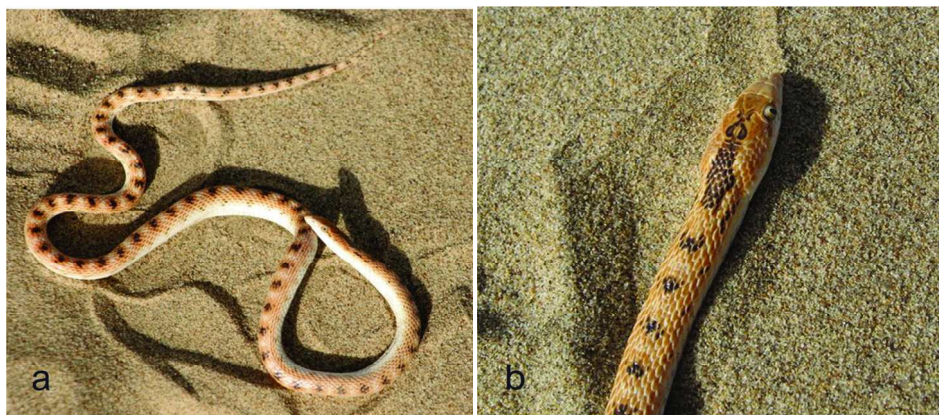


Figure 2. *Lytorhynchus maynardi*, Sistan and Baluchistan Province, Iran (31°08'N, 61°37'E, 25 July 2009) (photos by H. Fahimi).

Table 1. Morphological characters of Iranian *Lytorhynchus*. Rs = rostral scale (shape and position), SL = supralabial scales, InfL = infralabial scales, Lor = loreal scale, PreO = preocular scale, POO = postocular scales, Temp 1 = temporal scales (anterior temporals), Temp 2 = posterior temporals, INCS = infralabial scale count in contact with anterior chin shields, D1, D2, D3 = dorsal scales (D1: dorsal scales around the body at a head's length behind the head, D2: at mid-body, D3: at a head's length before the vent), V = ventral scales, SubC = subcaudal scales, and A = anal plate. Data on *L. ridgewayi* and *L. diadema gaddi* from Latifi (2000).

Characters	<i>L. ridgewayi</i>	<i>L. diadema gaddi</i>	<i>L. maynardi</i>
<b>Rs</b>	Pointed	Broadly truncated	Pointed and cuneiform
<b>SL</b>	5–9 (usually 7 or 8)	8	7
<b>InfL</b>	6–11 (usually 10 or 11)	9	11–12
<b>Lor</b>	2	1	1
<b>PreO</b>	2	2	2
<b>POO</b>	2–3	2	2
<b>Temp1</b>	usually 2	usually 2	2
<b>Temp 2</b>	usually 3	usually 3	2
<b>INCS</b>	4	3	4
<b>D1:D2:D3</b>	?:21:?	?:19:?	19:19:15
<b>V</b>	169–201	184–198	198
<b>SubC</b>	41–55	36–46	65
<b>A</b>	Rarely divided	Divided	Divided

of many sizes, and hard silty surfaces around saline deserts/plains (Figure 4) (Moradi, pers. observation).

## Discussion

*Lytorhynchus maynardi* occurs within the same range as *L. ridgewayi* in the southeast, and the two species are syntopic; however, each one has a distinct niche. Similarly, *L. ridgewayi* and *L. diadema* are syntopic in the southern parts of Iran. The colour pattern of all three species reflects their habitat features, so that *L. maynardi* has a lower density of melanin pigment and *L. diadema* has the highest. *Lytorhynchus maynardi* is differentiated from the other *Lytorhynchus* species that occur on the Iranian Plateau by the shape of the rostral scale and the higher number of subcaudals. There are some similarities in habitat features between *L. diadema* and *L. maynardi*, but *L. maynardi* seems to be absent from southwestern Iran.

*Lytorhynchus maynardi* is separated from *L. diadema* by the lower number of supralabials and higher count of infralabials. According to Latifi (2000), *L. ridgewayi* differs from *L. maynardi* and *L. diadema* by the higher number of dorsal scales. Leviton and Anderson (1970) placed *L. maynardi* as a member of the “*ridgewayi*” group, with its probably closest relative being *Lytorhynchus paradoxus*, which occurs in Pakistan and northwestern India. There are some distinctive characters shared by *L. paradoxus* and *L. maynardi*. *Lytorhynchus paradoxus* is characterised by a higher number of supralabials and preoculars, entering fifth supralabial scale to the eye, and lower subcaudals (Boulenger, 1890), but it has not been found in Iran. We can now say with certainty that the *L. maynardi* is found in Iran.

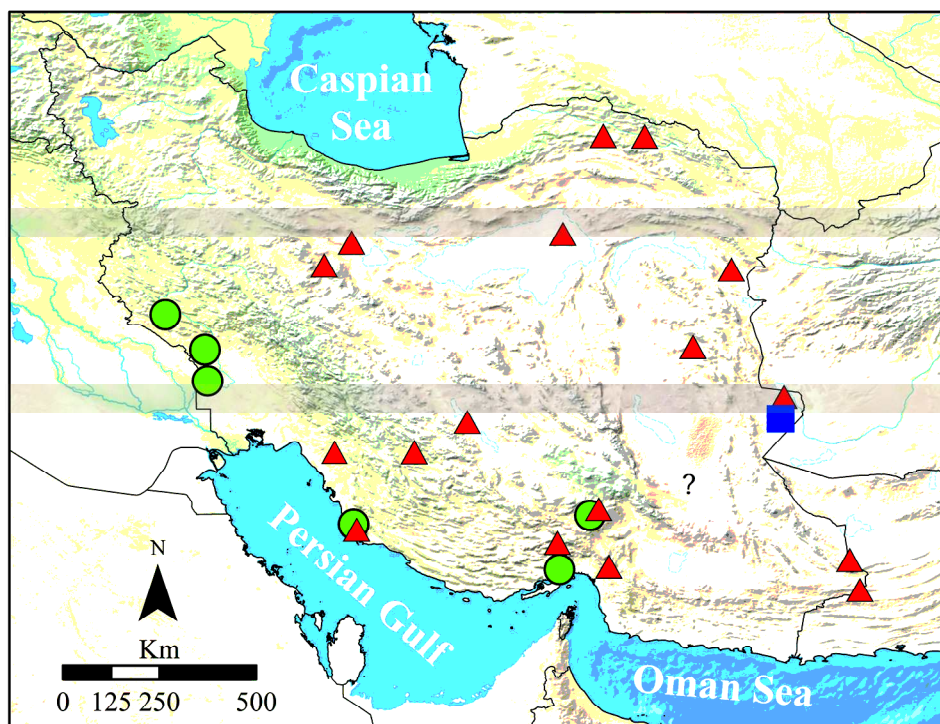


Figure 3. Distribution of the genus *Lytorhynchus* in Iran after Sindaco et al. (2013) and Moradi et al. (2013). Triangles: *L. ridgewayi*; circles: *L. diadema gaddi*, square: *L. maynardi* and (?): *L. maynardi* (Balouch, 1972)

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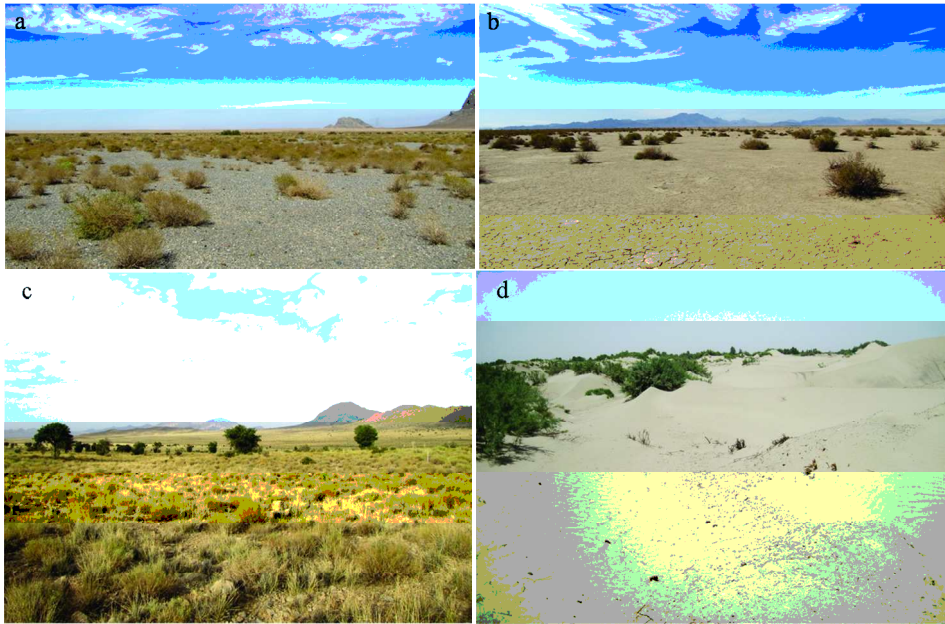


Figure 4. Habitat of members of the genus *Lytorhynchus* in Iran. a-b) *L. ridgewayi*; c) *L. diadema gaddi* from the southeast; d) *L. maynardi* (photos a-b, c by N. Moradi and photo f by M. E. Sehhatiasabet). a & b: Sirjan saline lake, Kerman Province, 5 November 2009; c: Khabr National Park, Kerman Province, 5 July 2010; d: Niatak, Sistan and Baluchistan Province, 26 July 2009.

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