

Geographical distribution and conservation biology of the Mesopotamian spiny-tailed lizard *Saara loricata* in Bushehr Province, southern Iran

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INTRODUCTION

Spiny-tailed lizards are inhabitants of the deserts and semi-deserts of North Africa, Arabia, and the Middle East (Wilms et al., 2009). Three species are found in Iran: *Uromastix aegyptius*, *Saara asmussi* and *Saara loricata* (Anderson, 1963, 1974, 1999; Firouz, 2000; Wilms, 2005; Sindaco and Jeremcenko, 2008, Šmíd et al., 2014). The Mesopotamian spiny-tailed lizard (*S. loricata*) is confined to the Mesopotamian plain and Zagros foothills of Iraq and southwestern Iran, and the Gulf coastal plain of southwestern Iran (Leviton et al., 1992; Anderson, 1999). In Iran, this includes the provinces of Kordestan, Kermanshah, Khuzestan, Lorestan, Bushehr and Fars (Anderson, 1974; Wilms, 2005). The species is possibly present in Kuwait, however this needs to be confirmed (Papenfuss et al., 2008).

Most studies of the Mesopotamian spiny-tailed lizard have concerned the taxonomic status of the species and its affinities (Haas and Werner, 1969; Joger, 1986; Moody, 1987; Anderson, 1999; Wilms et al., 2009). Investigation of conservation ecology has been limited to a handful of papers (Frynta, 1997) and there has been no recent information on the distribution and abundance of the species in Iran for assessment of conservation issues. The species is categorised as Least Concern (LC) in the IUCN Red List (Papenfuss et al., 2008), in Appendices II of CITES (CITES, 2009). It is protected by wildlife conservation laws of Iran (Department of the Environment, 2006). The aim of the present study is to provide up-to-date data on the geographic distribution and conservation biology of *Saara loricata* in Bushehr Province, Iran.

MATERIAL AND METHODS

Field work was carried out in Bushehr Province, southern Iran. We listed all the areas in which we observed *S. loricata*. We then made a more detailed survey of the Genaveh area (Fig. 1). We delineated the potential range of the lizards based on previous reports and interviews with local people. Then we looked for lizards 8.00 and 10.00 a.m. local time and looked for signs (scats, feeding or resting signs and tracks) by hiking along trails and sometimes by using pseudo-random transects. We tried to visit all villages and interviewed more than 40 elderly local-born people,



Figure 1. Map showing the location of Bushehr Province and the locations of the detailed areas (numbered 1-5) mentioned in the text

including farmers, for information about the species. We asked them about existence and relative abundance in the past and present at different localities. We asked whether they had ever seen the Mesopotamian spiny-tailed lizards, when they had seen them and how many they had seen. We also enquired as to problems with the lizards and whether they had seen or heard of them being eaten.

RESULTS AND DISCUSSION

Distribution

Based on our field observations, the geographic distribution of *Saara loricata* in Bushehr County is as follows: (1) Hillsides by the road from Tangestan to Khaeiz (28°49'37.3'' N, 51°20'02.2'' E); (2) Borazjon, Abol Firouz village, (29°8.00'07.6'' N, 51°11'31.9'' E); (3) Borazjan, Shul Village (29°29.00'26.1'' N, 51°09'51.3'' E); (4) Genaveh near to Shul-e Kuchek Village (29°48.00'13.8'' N, 50°30'42.4'' E); (5) Genaveh on the road to Deylam (29°40.00'43.7'' N, 50°24'01.7'' E). The locations of these five areas are shown in Fig. 1.

Habitat

S. loricata inhabits three main habitats throughout its range in southern Iran: hilly areas, deserts and agricultural lands (Fig. 2). The most important need appears to be for compact soil to facilitate burrowing, although in rocky habitats in the Zagros Mountains the lizards select gravel soils and in the coastal Persian Gulf they are found in strips of wasteland between agricultural areas. Other reptile species often observed in the same habitats include *Trapelus agilis*, *Stenodactylus affinis*, *Bunopus crassicauda*, *Echis carinatus* and *Coluber* spp. The main stronghold of the species is the foothills of Genaveh plain.

The largest of three burrows that we measured was 240 cm in length with 3-4 bends. The burrows extended to about 70 cm under the ground surface (Fig. 3): they have an initial part which slopes at about 30-45° leading to a horizontal, more spacious, section which is used for resting at night and egg-laying (Fig. 3). If lizards are resting by day, this tends to be in the sloping part of the burrow. There may be subsidiary burrows connecting with the horizontal chamber, but these appear to be little used.

S. loricata are primarily herbivores, mostly feeding on leaves and twigs of shrubs in the genus *Prosopis* (which are closely related to North American mesquites). Wheat and barley plants may be consumed in agricultural areas. Occasionally the lizards pick up grasshoppers and other insects.

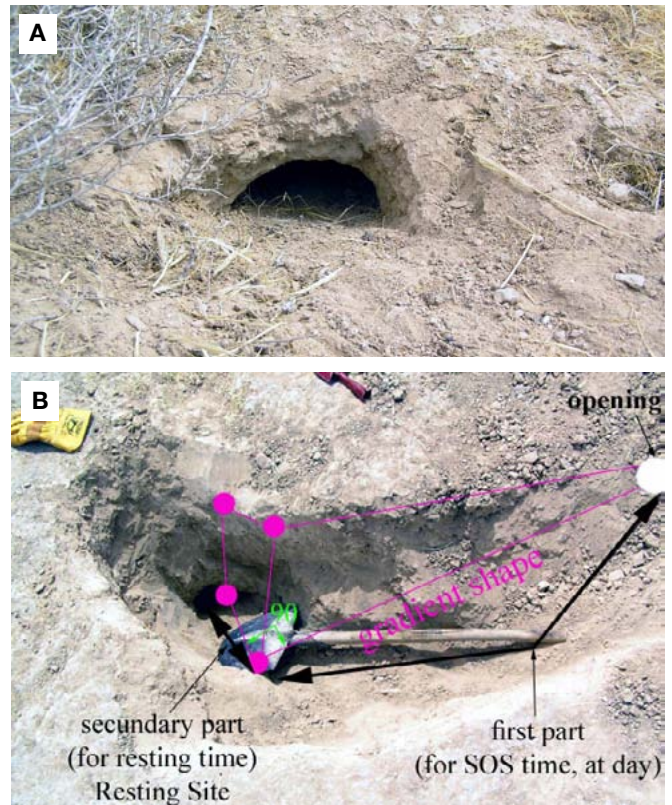


Figure 3. Shelter sites of *S. loricata*. (A) burrow opening, (B) interior of one burrow

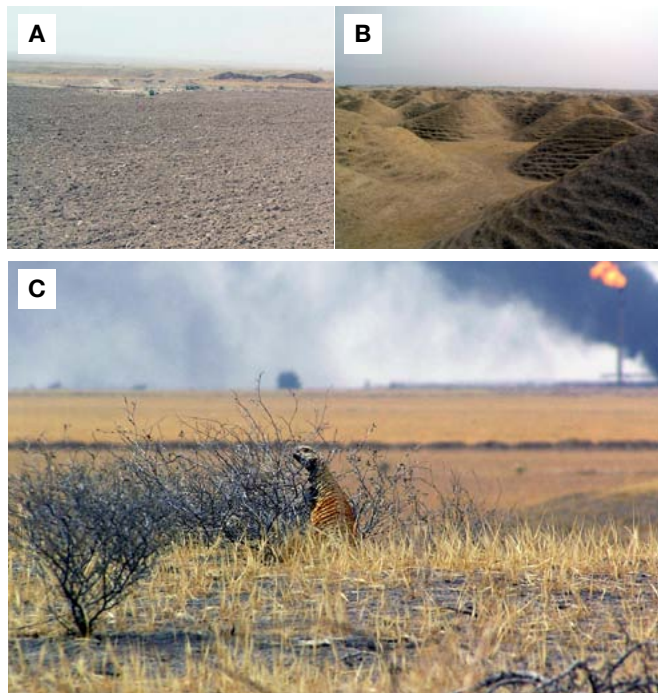


Figure 2. Some habitats of *S. loricata* in Bushehr Province (A) agriculture land, (B) hilly land, and (C) desert land

Conservation: threats to the species.

The lizards are most abundant in the Khaeiz area (location 1 in Fig. 1), where they appear to be under no serious threat. This is a mountainous area and human activity is prohibited. Near to Borzjan, road building companies has destroyed some of the habitat, but substantial lizard

populations remain. Around Shul village, however, where according to local people the species was abundant 20-30 years ago, destruction of the natural habitat by date palm plantations has severely reduced populations. The lizards are now found mostly in fragments of natural habitat at farm boundaries. General intensification of agriculture and recent droughts are the greatest threats in the Borozjan area. In the area around Genaveh oil and gas extraction have severely modified the habitat and result in considerable disturbance (Fig. 2C), and over-grazing by domestic animals is also problem.

The ideal solution to these problems would be the creation of special conservation areas where vehicular and agricultural activity should be prohibited. The data embodied in Fig. 1 show where such reserves would be most useful for the conservation of *S. loricata*. Since Bushehr Province is a biodiversity hotspot in the N.E. Persian Gulf, this would be a particularly appropriate area in which to set up reserves of this kind. In the meantime, as with most conservation needs, public education has an important role to play – spiny-tailed lizards are still feared by many people. Finally, the data presented here suggest that, at least so far as Iran is concerned, the “least concern” status of *S. loricata* should at least be re-examined.

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