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ORIGINAL ARTICLE

Morphological characteristics of worm lizard, *Diplometopon zarudnyi* (Squamata: Trogonophidae), in the central region of Saudi Arabia

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Abstract We report morphometric data for 133 specimens of *Diplometopon zarudnyi* (Squamata: Trogonophidae) collected across its range within Riyadh province of Saudi Arabia. One-way analyses of variance revealed that differences exist in most characters. Snout-vent length and vent-tail length showed slight and inconsistent differences among samples. *D. zarudnyi* is characterized by 164–175 body annuli; 165–178 dorsal annuli; 13–17 caudal annuli with absence of caudal autotomy. In addition, 2–4 lateral annuli; 45–54 mid-body segments; 39–50 posterior segments; 4–5 head's plates and 4–6 pre-cloacal pores were recorded in both males and females without gender difference. The present study revealed the widespread distribution of this species in the studied region, since land topography in this area is characterized by the absence of any natural barriers which could restrict the spread of this amphisbaenian lizard *D. zarudnyi*.

1. Introduction

Amphisbaenians, burrowing reptiles that live as subterranean predators (Pianka and Vitt, 2003) are poorly known ecologically due to their fossorial life style and the scarcity of researchers studying the group. Adaptations for underground locomotion include a robust skull (Gans, 1975), elongated and cylindrical body covered by scales arranged in rings, rudimentary eyes (since they hunt mostly in darkness), limbless animals highly specialized for burrowing (Gans, 1978).

The limited locomotor abilities of amphisbaenians should have limiting dispersal, yet worm lizards occur widely distributed throughout the tropics and subtropics including the America, Europe, the Middle East and Africa (Vidal et al., 2008). There are over 200 species in 24 genera, usually distributed in four families—Bipedidae, Amphisbaenidae, Trogonophidae, and Rhineuridae (Kearney, 2003; Gans, 2005). Species in the Trogonophidae (four genera and six species) are sand specialists found in the Middle East, North Africa and the island of Socotra, while the Amphisbaenidae is the

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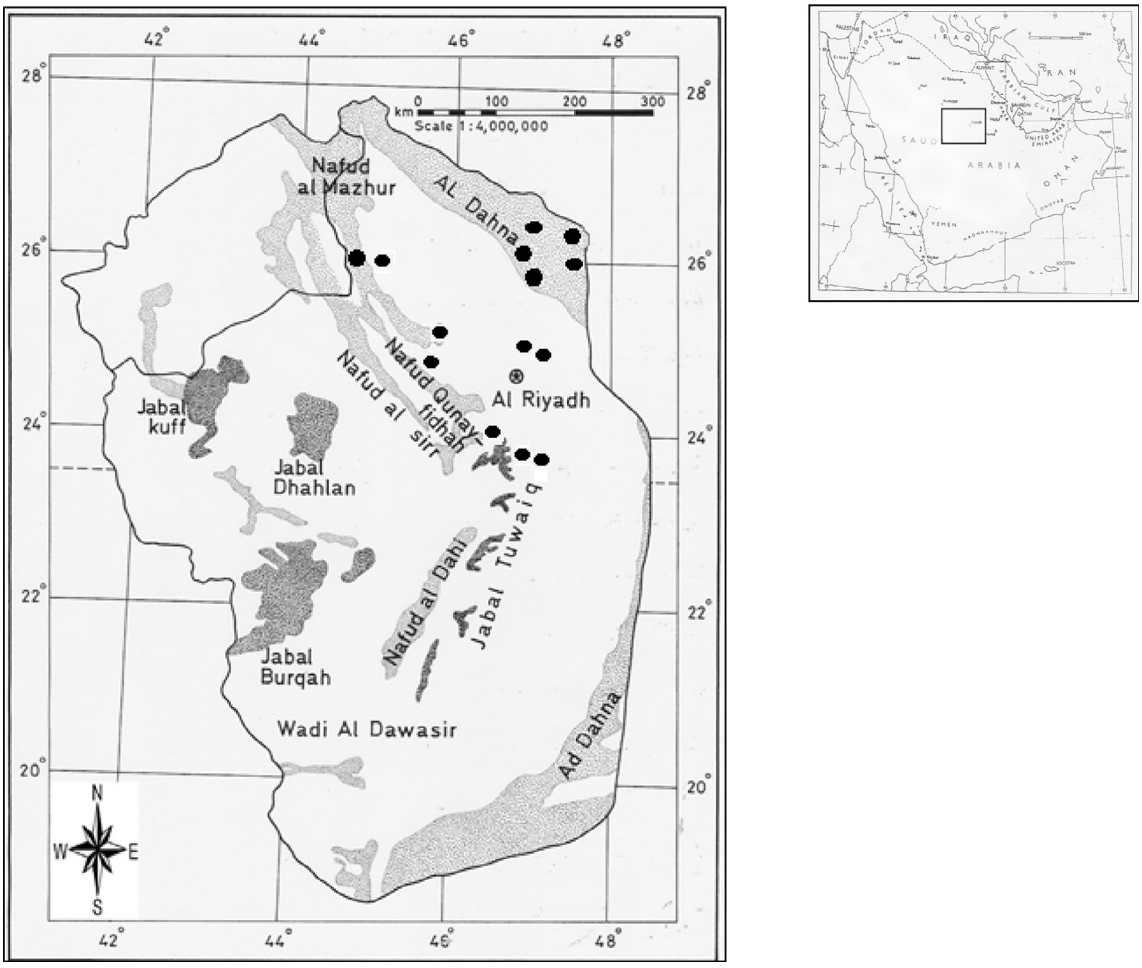

Figure 1 Map showing the distribution area from which specimens of *D. zarudnyi* were recorded in the Riyadh province, central region of Saudi Arabia. Specimens recorded (●).

largest and most diverse family, with about 180 species in 18 genera (Kearney and Stuart, 2004; Gans, 2005).

The species belonging to Trogonophidae family, share many derived features including acrodont dentition, absence of caudal autotomy, strong craniofacial angle, short tail, enlarged sternal plate and spade-shaped head with sharp cutting edges except genus Trogonophis (Kearney, 2003). These morphometric features were recently described and discussed in several other new species belonging to family Amphisbaenidae such as *Amphisbaena carli* (Pinna et al., 2010), *Amphisbaena littoralis* (Roberto et al., 2014) and *Amphisbaena metallurga* (Costa et al., 2015).

Among the four genera that belong to family Trogonophidae, Agamodon include four species Pachycalamus contain one species, Trogonophis include two species. However, Diplometopon is represented by a single species, *Diplometopon zarudnyi*, widespread in arid habitats in western Iran, southern Iraq, Kuwait, Oman, and northern Saudi Arabia (Gans, 1978; Al-Sadoon et al., 2016). It inhabits Aeolian sand deposits and emerges onto the surface to breed (Maisano et al., 2006) but there is little detailed information on the ecology of this species. The description of amphisbaenians have been based mainly on external morphological characters, for example, number of body annuli, segments per body annulus and number of precloacal pores (Ribeiro et al., 2016). Knowledge of amphisbaenian morphology is poor compared to other squamates. This paper deals with morphological characters of samples of *D. zarudnyi* collected from Al-Riyadh province, central region of Saudi Arabia.

2. Materials and methods

2.1. Study area

This study was conducted within the Riyadh province (24°38′N, 46°43′E), central region of Saudi Arabia (Fig. 1).

2.2. Sample collection

A total of 133 specimens of worm lizard *D. zarudnyi* (75 males and 58 females) were collected from the study area over a period extending from October, 2013 to September, 2014.

Field trips to the study area were conducted twice per month for a period of one year. During field visits, the animals were found through active search during which notable traces left on the soil surface were searched for, followed by digging 10–30 cm depth either using hands or with the help of hoe.