A new locality record of *Phrynocephalus maculatus* 
**ANDERSON, 1872, from Jordan**

One adult male of the Spotted Toad-headed Agama *Phrynocephalus maculatus* **ANDERSON, 1872**, was collected on highway 5 (Maán to the Saudi Arabian Border) between Al-Mudawwara and Al-Mudawwara Al-Jadida, about 3 km north of Al-Mudawwara Al-Jadida at approximately 29°14'5.74"N / 36°3'37.84"E, 690 m a.s.l. on May 10, 2011 by one of the authors (S. S.). This record is located about 300 km south of the population at Abar al-Hazim. Because of the largely unknown distribution of *P. maculatus* in Jordan, this new locality record is considered important enough to be reported. The specimen was preserved in 96 % ethanol at the capture site and later transferred to 70 % ethanol. Morphometric data were taken with a digital caliper at an accuracy of 0.1 mm. The specimen is now kept in the collection of the Zoologisches Forschungsmuseum A. Koenig in Bonn, Germany (ZFMK 92815).

*Phrynocephalus maculatus* inhabits a wide range from SW Pakistan, S Afghanistan through Iran and eastern Arabia to SE Jordan (**SINDACO & JEREMCENKO 2008**). The type locality of the species “Awada, Shiraz, Persia” was corrected to Abadeh, north of Shiraz by **BLANFORD (1876)** which is according to **BARABANOv & ANANJEvA (2007)** located in the Province of Fars, Iran, at approx. 31°10'N, 52°37'E.

*Phrynocephalus m. maculatus* is found from the Central Plateau of Iran, at elevations from about 500-3,000 m a.s.l., eastward through southern Afghanistan and Baluchistan as far as Nushki, Pakistan (**ANDERSON 1999**). Records of *P. maculatus* west of the Zagros Mountains (i. e., Arabian Peninsula) should be assigned to the taxon
longicaudatus which is currently known from Jordan, Kuwait, Saudi Arabia, Oman and the United Arabian Emirates (Arnold 1980; Anderson 1999; Baker et al. 2005; Gardner 2005, 2009; Sindaco & Jeremenenko 2008). Furthermore, the species is mentioned to occur in Iraq by Smith (1935), Khalaf (1959) and Wermuth (1966). Arnold (1986) also included Syria into the range of the species. The subspecies P. m. longicaudatus Haas, 1957 was described on the basis of specimens originating from Doha Dhalum, Saudi Arabia. As the name implies, the subspecies is characterized by a long tail which is longer than twice the distance from the gular fold to the vent. Further diagnostic characteristics given by Haas (1957) are: (i) enlarged posterior supraorbital scales, which are larger than the mid-dorsal scales, (ii) nostrils which are directed anteriorly, and (iii) a few dorsal scales keeled or with an indication of mucronation. However, Arnold (1986) states that the characters listed by Haas (1957) as diagnostic for longicaudatus do not consistently separate Arabian populations from more eastern ones.

A population of this lizard was just recently discovered in Jordan, and thus, is not listed for the country in the comprehensive work on the herpetofauna of Jordan by Disi et al. (2001). The first record of P. m. longicaudatus in Jordan was published by Baker et al. (2005) based on specimens from the close vicinity of Abar Al-Hazim. Al-Quran (2009) mentions the presence of P. maculatus from the vicinity of Wadi Araba without giving exact locations or descriptions of the respective specimens.

Figure 1 gives an overview of verified locations of P. maculatus. It includes distribution data from Boulenger (1920), Parker (1931), Haas & Haas (1957), Battersby (1959), Gallagher (1971), Eissa & El-Assy (1975), Arnold (1980), Al-Sadoon (1988), Ross (1989), Martens (1996), Meinig & Kessler (1998), and Seuffer et al. (1999). Additional information was obtained from the following sources: Arctos - MVZ Herp Catalog; California Academy of Sciences (CAS) - CAS Herpetology Collection Catalog; Field Museum - FMNH Herpetology Collections; Florida Mus Nat Hist (UF) - Herpetology speci-
Table 1: Information on the collected specimen (ZFMK 92815) of *Phrynocephalus maculatus longicaudatus* HAAS, 1957, compared with data from Baker et al. (2005) and Haas (1957). SVL - Snout-vent length, TL - Tail length, TOTL - Total length, L/R - left/right, ZFMK - Zoologisches Forschungsmuseum A. Koeng, Bonn, * - derived from data for TL and TOTL, ** - derived from data for SVL and TL, M - male(s), F - female(s).

<table>
<thead>
<tr>
<th>Data source</th>
<th>Sex</th>
<th>Locality</th>
<th>n</th>
<th>SVL (mm)</th>
<th>TL (mm)</th>
<th>TOTL (mm)</th>
<th>Distance from gular fold to vent (mm)</th>
<th>Upper labials (l/r)</th>
<th>Lower labials (l/r)</th>
<th>Nasals</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZFMK 92815</td>
<td>M</td>
<td>Madawwarah, Jordan</td>
<td>1</td>
<td>61.0</td>
<td>88.0</td>
<td>149</td>
<td>41.6</td>
<td>17/16</td>
<td>12/12</td>
<td>1 (3)</td>
</tr>
<tr>
<td>Baker et al. (2005)</td>
<td>F</td>
<td>Abar al Hazim, Jordan</td>
<td></td>
<td>67</td>
<td>99</td>
<td>166**</td>
<td>45</td>
<td>14/15</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>4</td>
<td>56-64</td>
<td>80-89</td>
<td>136-155**</td>
<td>37-46</td>
<td>14-18</td>
<td>13-16</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Haas (1957)</td>
<td>M</td>
<td>Doha Dhalum, Saudi Arabia</td>
<td>3</td>
<td>72-73*</td>
<td>114-124</td>
<td>186-196</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>2</td>
<td>63-66*</td>
<td>96-105</td>
<td>159-171</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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</tr>
</tbody>
</table>

Fig. 2: Dorsal aspect of *Phrynocephalus maculatus longicaudatus* HAAS, 1957, ZFMK 92815.

Fig. 3: Ventral aspect of *Phrynocephalus maculatus longicaudatus* HAAS, 1957, ZFMK 92815.
mens; University of Kansas Biodiversity Institute - Herpetology Collection (Accessed on 8/12/2011 through the HerpNet2 Portal at <http://www.herpnet2.org>). The new locality record represents the westernmost verified population of the species. Furthermore, it may indicate the presence of populations in northwestern Saudi Arabia.

**Pholidosis.** The posterior supraorbital scales are enlarged and flattened and somewhat larger than the middorsal scales. The original sculation of the central upper head area is obscured by a scar but the enlarged character of these scales is still evident being of a rather irregular shape and longer than wide as described in HAAS’s (1957) diagnosis. The dorsal scales are not keeled, but slightly mucronate closer to the neck. The mental is larger than the adjacent labials. The number of upper labials is 17/16 (left/right), of lower labials 12/12. The nasals are separated by one enlarged scale; above and below this central scale, the nasals are separated by three scales. The nostrils are directed anteriorly.

**Measurements.** Total length is 149.0 mm, snout-vent length 61.0 mm and tail length 88.0 mm; distance from gular fold to vent is 41.6 mm. Accordingly, the tail length is 1.44 times the snout-vent length and 2.1 the distance from gular fold to vent. The head is 16.3 mm long and 14.7 mm wide. Table 1 gives an overview on some metric and meristic data published by HAAS (1957) and BAKER (2005) in comparison with the specimen from Mudawwara.

**Color and pattern (Figs. 2-4).** The top of the head is greyish with some light scales interspersed between darker ones but without forming any distinct pattern. The dorsal surface of the body is greyish, speckled with small light-colored dots arranged in a somewhat regular manner. A total of seven brown crossbands can be counted from the neck to the level of the vent. The tail is banded with five dark-grey to black crossbands and terminates in a black tip for the posterior third of its length. The ventral aspect shows a light grey to dirty white gular area and a whitish belly. The tail has a deep salmon to orange coloration from the vent across the anterior half of its length. The posterior half of the tail is of a solid black coloration.
Notes on biology.- The specimen was found basking on the highway on May 10, at about 11:00 a.m. The surrounding habitat was a hard and stony ground with minimal, almost absent vegetation cover. This is clearly different from the preferences of *Phrynocephalus arabicus* ANDERSON, 1894, which exclusively occurs in or close to sand dune habitats (BAKER et al. 2004; Dist et al. 2001; S. S., F. S. & C. R. pers. obs.). In the vicinity of Al-Mudawwara both *P. arabicus* and *P. maculatus* can be found, but are spatially separated from each other by their different habitat preferences (Dist pers. comm.; S. S., F. S. & C. R. pers. obs.).

Like the Jordanian specimens from Abar Al-Hazim, the individual from Al-Mudawwara conforms to the diagnosis of *Phrynocephalus maculatus longicaudatus*. Despite of the lack of consistent morphological differences between the subspecies of *P. maculatus*, biogeographical implications suggest that both taxa may be separated on species level (ANDERSON 1999). The main fact pointing in this direction is the spatial discontinuity between the ranges of *P. m. maculatus* and *P. m. longicaudatus* combined with the observation that there is no other species of *Phrynocephalus* which developed subspecies on both sides of the Zagros Mountains. This mountain range could therefore be considered a major biogeographic barrier to the members of the genus *Phrynocephalus*. Further studies are needed to evaluate the morphology, biogeography and phylogeny of the taxa within *P. maculatus*.

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KEY WORDS: Reptilia: Squamata: Sauria: Agamidae; Phrynocephalus maculatus longicaudatus, new locality record, Al-Mudawwara, southern Jordan, Middle East, distribution, morphology

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