

New locality records for the Turkish worm lizard, *Blanus strauchi aporus* (Werner, 1898) (Sauria: Amphisbaenidae) in Southeast Anatolia, Turkey

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Abstract: Three specimens of *Blanus strauchi aporus* are reported from Siirt province, southeast Anatolia. Previously, Mardin province was the easternmost locality known for *B. s. aporus* in Anatolia. Before this study, all localities recorded for the species were west of the Tigris River, which is perhaps an important dispersal barrier for animals. This study represents the first record of this species from east of the Tigris River in Turkey and extends its known distribution area by 150 km northeast. Additionally, twelve specimens from old localities were used for comparison. All specimens were evaluated with respect to morphological characters.

Key Words: *Blanus strauchi aporus*, Amphisbaenidae, distribution range, Siirt, southeastern Anatolia.

Introduction

The Turkish worm lizard, *Blanus strauchi* (Bedriaga, 1884), is distributed in some Mediterranean countries such as Turkey, Syria, Lebanon, and eastern Iraq (Alexander 1966, Sindaco et al. 2000, Göçmen et al. 2008). However, Alexander's (1966) report of the species from Israel was mistaken (Werner 1988). In Anatolia, *B. strauchi* includes three subspecies: *B. s. strauchi* (Bedriaga, 1884) in western Turkey and the islands Kos, Rhodes and Cyprus; *B. s. bedriagae* (Boulenger, 1884) in southwestern Turkey near Xanthos and Fethiye; and *B. s. aporus* (Werner, 1898) from southern

Anatolia (Elmalı-Antalya) to south-east Anatolia (Mardin) (Alexander 1966, Baran & Atatür 1998, Budak & Göçmen 2005, Göçmen et al. 2008a). Even though *B. s. strauchi* was reported in Cyprus, no specimen was found in the last studies (Göçmen et al. 1996, Tok 1999, Göçmen et al. 2008b). Recently several herpetofaunal studies were carried out in southeast Anatolia, resulting in new herpetofaunal records for Turkey: *Walterinnesia morgani* (Uğurtaş et al. 2001), *Eublepharis angramainyu* (Göçmen et al. 2002, Üzümlü et al. 2008), *Mesalina brevirostris* (İlgaz et al. 2005), *Telescopus nigriceps* (Göçmen et al. 2007), etc. Additionally, the distribution ranges of

some species were extended: *Assacus elisae* (Baran et al. 2003), *Leptotyphlops macrorhynchus* (Uğurtaş et al. 2006; Göçmen et al. 2009), *Hemidactylus turcicus* (Yıldiz et al. 2007, Uğurtaş et al. 2007) etc. Although in some species lists *B. strauchi* was reported with localities (Kumlutaş et al. 2000, Uğurtaş and Yıldırımhan 2000, Erdoğan 2002, Avci et al. 2008), in other studies only its morphological and pholidotal characters were given (Zaloğlu 1968, Budak et al. 1998, Tok 1999, Göçmen et al. 2008). Alexander (1966) recorded *B. s. aporus* 30 km near Gaziantep province and Mardin province in southeast Anatolia. Franzen (2000) reported a specimen of *B. strauchi* at Halfeti, Şanlıurfa. Sindaco et al (2000) has recorded *B. strauchi* east to Tigris River as points on a distribution map without giving any information so that this record was suspicious.

Before this study, all localities of *B. s. aporus* had been recorded west of the Tigris River. . We present new distribution sites, including the first report of *B. s. aporus* from east of the Tigris River in Turkey, and evaluate the external features of all specimens encountered.

Materials and Methods

Three scientific excursions were conducted in western Anatolia in May 2008 and Eastern Anatolia during April and May 2009. All specimens were anesthetized with ether, fixed by 96% ethanol injection into their body and deposited in 96% ethanol to preserve them for future DNA studies. Specimens were numbered and deposited in the Zoology Department of Ege University (ZDEU). Fifteen specimens were collected at six localities. (1a) ZDEU 30/2009 (n=2), Çetinkol village, Erüh, Siirt province, altitude 982 m a.s.l. (37° 44' 11.01" N, 42° 09' 24.86 E), 1 May 2009, Leg. B. Göçmen, M. Z. Yıldiz, B. Akman, D. Yalçinkaya. (1b) ZDEU 69/2009 (n=1) Meydandere village, Siirt province, 853 m a.s.l. (37° 55' 25.80" N, 42° 05' 14.50 E), 19 May 2009, Leg.

E. A. Yağmur (Fig.1), (2) ZDEU 6/2009 (n=6), Taşobası, village, Tarsus, Mersin province, 257 m a.s.l (37° 05' 35.83" N, 34° 55' 25.67 E), 25 April 2009, Leg. B. Göçmen, M. Z. Yıldiz, B. Akman, D. Yalçinkaya. (3) ZDEU 144/2007 (n=2), Türkönü village, Ödemiş, İzmir province, 183 m a.s.l. (38° 11' 28.35" N, 28° 04' 01.29 E), 25 May 2008, Leg. B. Göçmen, M. Z. Yıldiz, B. Akman, D. Yalçinkaya. (4) ZDEU 64/2008 (n=1), Türkönü village, Ödemiş, İzmir province, 183 m a.s.l. (38° 11' 28.26" N, 28° 04' 01.24 E), 1 May 2008, Leg. B. Göçmen, M. Z. Yıldiz, B. Akman, D. Yalçinkaya. (5) ZDEU 7/2008 (n=1) Halfeti, Şanlıurfa province, 400 m a.s.l. (37° 14' 16.76" N, 37° 52' 22.64 E), 24 March 2008, Leg. E. A. Yağmur. (6) ZDEU 69/2009 (n=1), Meydandere village, Siirt Province, 658 m a.s.l. (37° 56' 59.83" N, 41° 49' 47.54 E), 19 May 2009, Leg. E. A. Yağmur. All localities are shown in Fig 1.

Mensural, meristic and qualitative data were recorded following Alexander (1966). All pholidotic features were examined using a stereo microscope. Morphological measurements, except snout-vent lengths, were recorded using a digital calliper (Mitutoyo 500-181 U) with an accuracy of 0.02 mm. SVL was measured to the nearest millimeter using a ruler. For bilateral pholidotic features, counts were taken on both left and right sides (L/R). The exact locality of the specimens was detected by GPS receiver (Magellan XL). Data on color patterns (and photos) were recorded from living animals. Detailed photos (Fig. 2) were taken after fixation.

Results

We collected 15 specimens, but their gender was not determined. As Alexander (1966) reported no external sexual dimorphism in *B. s. aporus*, gender can be accurately determined only by examining gonads, which is a destructive technique. Thus, values for all specimens were pooled.

We collected the Siirt specimens (n=3) around 1300h under stones on a dry, chalky stony slope, covered with dense stands of grasses, herbs and shrubs (Fig.3). Cloud cover was partial, air temperature 23°C. Sympatric species included lizards (*Apathya*

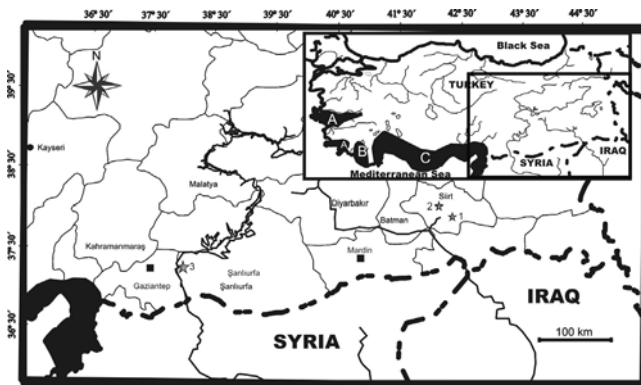


Figure 1. Localities of *B. s. aporus* painted area and square refer to old localities, asterisk refer to new localities.
1. Meydandere village, 2 km E to Siirt, 2. Çetinkol village, 30 km SE to Siirt, 3. Halfeti, Şanlıurfa.

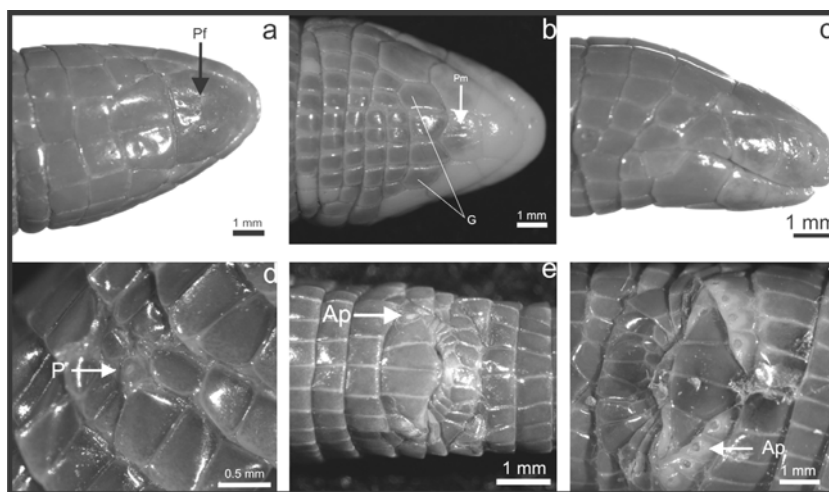


Figure 2. Some detailed photographs of *B. s. aporus* specimens after fixation. Pf: Prefrontal, G: Postgenial, P: Pectoral pore, Ap: Anal pore. (a: c: f: ZDEU: 30/2009, Siirt specimen, b: d: e: ZDEU: 6/2009, Mersin specimen).



Figure 3. General view of new locality for *B. s. aporus* in Çetinkol village, Siirt. Date: 01.May.2009.

Table 1: Some metric (mm) and meristic characters and derived ratio of investigated specimens.
SD: Standard deviation

Subspecies:	<i>B. s. strauchii</i>	<i>B. s. aporus</i>	<i>B. s. aporus</i>	<i>B. s. aporus</i>	<i>B. s. aporus</i>	<i>B. s. aporus</i>
Locality:	Türkönü village - Ödemiş-İzmir	Taşobası village Tarsus-Mersin	Samandağ-Hatay	Tartus-Syria	Halfeti -Şanlıurfa	Çetinkol village-Eruh Meydandere village-Siirt
	Mean-SD Range	Mean-SD Range	Mean-SD Range	Mean-SD Range	Mean-SD Range	Mean-SD Range
n=	3	6	1	1	1	3
Snout-vent length	137.58±30.99 111-172	112.3±23.71 87-142	58.1	122.75	187.00	134.7±35.73 107-175
Tail length	17.23±4.02 13.19-21.22	15.33±4.21 11.37-22.07	21.60	15.65	20.82	16.48±4.66 12.30-21.50
Prefrontal length	2.47±0.39 2.11-2.88	2.27±0.44 1.92-2.91	2.92	2.03	2.91	2.49±0.18 2.33-2.68
Prefrontal width	2.37±0.35 1.97-2.62	2.38±0.28 2.15-2.75	2.76	2.20	2.98	2.7±0.24 2.5-2.97
Body diameter	5.67±1.54 4.16-7.24	5.58±1.58 4.09-7.80	9.20	6.79	8.13	6.14±0.99 5.26-7.21
Body diameter/ Body Length	0.0370±0.003 0.325-0.038	0.043±0.003 0.040-0.048	0.0511	0.0490	0.039	0.0414±0.004 0.037-0.044
Supralabials	3-3	3-3	3-3	3-3	3-3	3-3
Infralabials	3-3	3-3	3-3	3-3	3-3	3-3
Body annuli	113.33±1.53 112-115	100±1.79 97-102	98	93	107	106±1.73 104-107
Lateral annuli	3±0 3-3	2.67±0.52 2-3	3/3	17	3	3±0 3-3
Caudal annuli	17.33±1.15 16-18	17.5±0.84 17-19	17	3/2	18	17.67±1.16 17-19
Segments per a mid- body annulus	34.33±3.21 32-38	37±1.41 35-39	35	41	36	36.67±1.15 36-38
Precloacal pores	7±1 6-8	4±0 4-4	6	6	7	8±0 8-8
Pectoral pore	+	+	+	+	+	+
State of precloacal pores row	On a segment row disjunct midventrally	On a segment row disjunct midventrally	On a segment row disjunct midventrally	On a segment row disjunct midventrally	On a segment row disjunct midventrally	On a segment row disjunct midventrally
postmental and lateral shields of the first postgenial row broad. Narrow or absent	Narrow	Narrow	Narrow	Narrow	Narrow	On one Narrow. the others absent
Contact between second supralabial and prefrontal shields	Broad	Broad	Broad	Narrow	Broad	Narrow

cappadocica, *Laudakia stellio*, *Ophisops elegans*, *Timon princeps*, and *Trachylepis aurata*) and snakes (*Eirenis punctatolineatus* and *Typhlops vermicularis*). Characters of the Siirt specimens are compared to those of more western specimens in Table 1. In life, the coloration of the dorsum was uniformly brown and darker than the venter.

The Şanlıurfa specimen was collected in daytime under stone on a dry, chalky stony slope with semi-arid steppe vegetation. Sympatric species included lizards (*Apathya cappadocica*, *Eumeces schneideri*, *Laudakia stellio*, *Ophisops elegans* and *Trachylepis aurata*) and snakes (*Leptotyphlops macrorhynchus* and *Typhlops vermicularis*).

Discussion

Three subspecies of *B. strauchi* are distributed in Anatolia. The distribution range of *B. s. aporus* was known from southern Anatolia (Elmalı-Antalya) to south west Anatolia (Mardin) (Alexander 1966, Baran & Atatür 1998, Budak & Göçmen 2005, Göçmen et al. 2008). Franzen (2000) included a specimen of *B. strauchi* from Halfeti, Şanlıurfa in a material list but did not report its morphological characters and did not determine its subspecies. Our specimen from Şanlıurfa is compatible with character ranges of *B. s. aporus* given by various researchers (Alexander 1966, Başoğlu & Baran 1977, Tok 1999, Göçmen et al. 2008).

Alexander (1966) has recorded Mardin Province in south-east Anatolia as the most eastern locality for *B. strauchi aporus*. No report has been published from southeast Anatolia. Moreover, before the present report, all localities recorded for this subspecies were west of the Tigris River,

perhaps an important dispersal barrier for animals.

According to Alexander (1966), the mean number of body annuli decreases from west to east. However, the body annuli counts in Siirt specimens are higher than in Mersin specimens, but Alexander (1966) indicated having had insufficient material to investigate and clarify the south-eastern populations. However, the other characters of the Siirt specimens are compatible with data ranges published for *B. s. aporus* (Alexander 1966, Baran & Atatür 1998, Başoğlu & Baran 1977, Göçmen et al. 2008). Although Sindaco et al (2000) recorded *B. strauchi* east to Tigris River, they did not give any material list. This study has confirmed Sindaco et al. (2000) with voucher material. New locality records (Çetinkol village, Eruh, Siirt and meydandere village, Siirt) extend the known range of the species within southeast Anatolia ca. 150 km (air distance) to east, as measured from Mardin province.

Conclusions

The Şanlıurfa and Siirt specimens were diagnosed as the subspecies *B. s. aporus* on the basis of detailed pholidotic features and morphological characters. As a result, this paper represents the first record of this species from east of the Tigris river, perhaps an important dispersal barrier for animals in Turkey, and the new distribution boundary of *B. s. aporus* has extended the known range of the species within southeast Anatolia by ca. 150 km eastward.

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