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AUTHORS: Hatice ÖZKAN,Ufuk BÜLBÜL,Halime KOÇ

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## RESEARCH ARTICLE

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### New locality record of *Ablepharus budaki* (Squamata: Scincidae) in Turkey

#### *Ablepharus budaki* (Squamata: Scincidae)'nin Türkiye'deki yeni lokalite kaydı

Hatice ÖZKAN<sup>1</sup>, Ufuk BÜLBÜL<sup>2</sup>, Halime KOÇ<sup>3</sup>

Department of Biology, Faculty of Science, Karadeniz Technical University, Trabzon, Turkey

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\*Corresponding author:

e-mail: [ufukb@ktu.edu.tr](mailto:ufukb@ktu.edu.tr)

ORCID: 0000-0001-6691-6968

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#### ABSTRACT

The Budak's snake-eyed skink (*Ablepharus budaki*) is recorded from Sütçüler District of Isparta province in Turkey. The metric and meristic characters of the specimens were found similar to the specimens of *A. budaki* reported in the literature. Surprisingly, the new locality in the present study coincides exactly among to the distribution areas of *A. kitaibelii*, *A. budaki* and the mixed clade specified in the literature.

#### Öz

Bu çalışmada, Budak'ın İnce Kertenkelesi (*Ablepharus budaki*) Türkiye'nin Isparta ilinin Sütçüler ilçesinde kayıt edildi. Örneklerin metrik ve meristik özellikleri, literatürdeki *A. budaki* örnekleri ile benzer olarak bulundu. Şaşırtıcı bir şekilde, bu yeni lokalite literatürde *A. kitaibelii*, *A. budaki* ve karma klad için belirtilen dağılış alanlarının arasında yer almaktadır.

#### Keywords:

Distribution, Isparta, Budak's snake-eyed skink, pholidosis.

#### Anahtar kelimeler:

Dağılış, Isparta, Budak'ın ince kertenkelesi, folidosis.

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## 1. INTRODUCTION

Recently, a new subspecies of *Ablepharus kitaibelii* (Bibron & Bory, 1833) was reported by Göçmen et al. (1996) by name *Ablepharus kitaibelii budaki* from the northern Cyprus. Later, the subspecies was raised to full species by Schmidtler (1997) and he also introduced a new subspecies *Ablepharus budaki anatolicus* from the Anatolian mainland. Based on molecular data, Poulakakis et al. (2013) provided a support indicating the difference of *A. budaki* from *A. kitaibelii*.

The Budak's snake-eyed skink, *Ablepharus budaki* has been classified in the LC (Least Concern) category in the IUCN red list. It has two subspecies; *A. b. budaki*, which is distributed in Cyprus and Levantine region from the Antitaurus in the north to northern Lebanon in the south and *A. b. anatolicus* is found in South Anatolia from Muğla province in the west to the Kahramanmaraş province in the east (Schmidtler, 1997; IUCN, 2019).

Previous studies related to *A. budaki* were mainly performed on the locality records and herpetological observations [Muğla province (Schmidtler, 1997; Tiedemann & Grillitsch, 1999; Kumlutaş et al., 2015), Antalya province: (Schmidtler, 1997; Budak et al., 1998; Franzen & Glaw, 2007; Kumlutaş et al., 2011; Kucharzewski, 2015), Mersin province (Schmidtler, 1997; Tiedemann & Grillitsch, 1999; Franzen & Glaw, 2007; Kucharzewski, 2015), Adana province (Schmidtler, 1997; Tiedemann & Grillitsch, 1999; Sarıkaya et al., 2017), Hatay province: (Schmidtler, 1997), Kilis province (Schmidtler, 1997) and Kahramanmaraş province (Schmidtler, 1997)].

Based on mtDNA and nuDNA genes, Skourtanioti et al. (2016) has been proposed a biogeographic scenario for *Ablepharus* showing that *A. kitaibelii* occurs in Western Anatolia, *A. budaki* is distributed in Southern Anatolia, *A. chernovi* occurs in Central Anatolia (from Taurus mountains to Northern Anatolia), *A. pannonicus* is

distributed in Eastern Anatolia and a mixed clade (*Ablepharus* sp.) may occur in Southwest Anatolia (including Muğla and Antalya provinces). It seems that the researches based on the systematic status of the *Ablepharus* genus in Turkey will be continued.

The present study provides a new locality record from the province of Isparta in the Mediterranean region of Turkey (Figure 1) and metric and meristic characters of *A. budaki* specimens.



**Figure 1.** Distribution areas of *Ablepharus budaki* (IUCN, 2019). The red colored circle shows the new locality.

## 2. MATERIAL AND METHOD

During our field surveys in the summer of 2019, the individuals (4 ♂♂) of *A. budaki* were collected from a locality; Yukarı Kırıntı, Isparta, (on 28 June 2019, GPS data, 37°32'319'' N and 31°15'188'' E, 868 m a.s.l.). The habitat was consisted of a wooded area near the creek (Figure 2). The lizards were caught among the fallen leaves near the big rocks. Because of their accidental discovery, we observed a small number of lizards. After the individuals were photographed in their natural habitat, they were anesthetized with MS 222. Then, 10% formaldehyde was injected to the specimens and they were stored in 70% ethanol. Collection number (KZL-357) was given to the specimens and they were placed at the Karadeniz Technical University.

Mensural and meristic data were obtained by modifying the systems of Göçmen et al. (1996) and Budak et al. (1998). We used a stereomicroscope to observe the morphological characteristics and a digital caliper to measure the morphometric characters to the nearest to 0.01 mm. We obtained some pholidolial features: frenal plates (right-left, FAPa-FAPb), frenoculars (right-left, FOa-FOb), supraciliars (right-left, SCPa-SSCPb), the number of supralabial plates in front of subocular plate (right-left, SRLa-SRLb), the number of vertical rows of scales

between the ear opening and masseter (right-left, VRSM-EOa-VRSM-EOb), number of scales around the body (MBS), supraocular plates (right-left, SOa-SOb), number of the subdigital lamellae under the 4th toe of the hind limb (right-left, SDLFLa-SDLFLb).



**Figure 2.** Habitat of *Ablepharus budaki* from Yukarı Kırıntı, Sütçüler-Isparta.

The morphometric measurements were: snout-vent length (SVL); tail length (TL); head width (HW); head length (HL); fore limb length (FLL); hind limb length (HLL).

## 3. RESULTS

### 3.1. Examined Specimens

*Ablepharus budaki*: Turkey, Isparta, Yukarı Kırıntı, 4 ♂♂, 28.06.2019, U.BÜLBÜL and H.ÖZKAN. KZL-357/2019, KTU, Trabzon.

### 3.2. Pholidolial characteristics

SCPa and SCPb were 3 in three specimens and 4 in one specimen. SRLa were 4 in three specimens and 5 in one specimen while SRLb was 4 in two specimens and 5 in two specimens. SOa and Sob were 2 in all specimens. VRSM-EOa and VRSM-EOb were 3 in all specimens. MBS was 20 in one specimen and 21 in three specimens. SDLFa and SDLFb were 17 in all specimens.

### 3.3. Morphometric measurements

Minimum SVL was recorded as 33.13 mm, while maximum SVL was 37.50 mm. TL was ranged from 43.60 mm to 46.72 mm. The mean HW was 4.31 mm while the mean HL was 7.21 mm. FLL ranged from 6.19 mm to 6.51 mm while HLL was ranged from 9.81 mm to 10.11 mm.

The metric and meristic characteristics of the collected lizards are given in Table 1.

**Table 1.** Some metric and meristic features of *Ablepharus budaki* specimens collected from Yukarı Kırıntı population. For abbreviations see text.

Character	Göçmen et al. (1996)				Budak et al. (1998)					This study			
	n	Males (♂♂)	n	Females (♀♀)	1♂♂	2♂♂	3♀♀	4♂♂	5♀♀	1♂♂	2♂♂	3♂♂	4♂♂
FAPa-FAPb	-	-	-	-	-	-	-	-	-	1-1	1-1	1-1	1-1
FOa-FOb	-	-	-	-	-	-	-	-	-	1-1	1-1	1-1	1-1
SCPa-SSCPb	48	2-2	34	2-2	3	4	3	4	4	3-3	3-3	4-4	3-3
SRLa-SRLb	-	-	-	-	3	4	3	4	4	4-4	5-5	4-4	4-4
VRSM-EOa-VRSM-EOb	48	3-4	57	3-4	3	3	3	3	3	3-3	3-3	3-3	3-3
MBS	48	18-21	57	18-20	20	19	20	20	20	20	21	21	21
SOa-SOb	-	2-2	-	2-2	-	-	-	-	-	2-2	2-2	2-2	2-2
SDLFLa-SDLFLb	48	11-17	57	12-17	17	16	15	16	17	17	17	17	17
SVL	48	31.30 - 43.55	57	32.50 - 48.00	36	34	30	35	32	33.13	46.72	35.60	34.85
TL	34	38.00 - 71.00	37	31.00 - 69.50	40	43	-	-	43	43.60	46.72	-	-
HW	48	3.35 - 4.50	57	3.10 - 4.35	-	-	-	-	-	4.19	4.51	4.30	4.24
HL	48	6.00 - 8.50	57	5.10 - 7.05	-	-	-	-	-	7.11	7.35	7.25	7.14
FLL	48	6.05 - 7.90	57	5.85 - 7.75	-	-	-	-	-	6.19	6.51	6.40	6.33
HLL	48	9.10 - 12.0	57	9.05 - 12.00	-	-	-	-	-	9.81	10.11	10.02	9.96
HL/HW	-	-	-	-	1.749	1.705	1.663	1.835	1.697	1.69	1.62	1.68	1.68
SVL/TL	-	-	-	-	0.900	0.791	-	-	0.744	0.75	0.80	-	-

### 3.4. Color pattern

In the specimens of *A. budaki*, the color of the back side was bright brown with four rows of black spots extending to the end of tail. The black spots were also existed on the limbs. There were also white spots on the fore and hind limbs. Color of the subtemporal bands specific to the species was brown and these bands were extended to the fore limb on both sides of the body. The sides of the body were dark brown, extending from the front and back of the eye to end of the tail. The ventral was whitish up to the tail and grayish on the tail while ends of the tail were yellow (Figure 3).

## 4. DISCUSSION

In the present study, we reported a new locality record of *A. budaki* from Sütçüler District of Isparta province. Metric and meristic characteristics of the lizards in Yukarı Kırıntı population were found similar to those of the samples observed in the studies of Göçmen et al. (1996) and Budak et al. (1998), except slightly higher number of supraciliar and supraocular plates in specimens of the present study.

The new locality in the present study reveals a surprising situation. The new locality is located among to the distribution areas of *A. kitaibelii*, *A. budaki* and the mixed clade specified by Skourtanioti et al. (2016) who suggested the biogeographic scenario for *Ablepharus*

genus. They suggested two alternative hypotheses: (a) the mixed clade is member of the group of *A. budaki* and *A. rueppellii* or (b) the mixed clade is the basal lineage of a wider group that includes *A. kitaibelii*, *A. chernovi*, *A. budaki*, and *A. rueppellii*.

Although our morphological data suggest that the individuals from Sütçüler population belonged to *Ablepharus budaki*, we did not evaluate the molecular data. Genetic distance of the Sütçüler population to the *A. budaki*, *A. kitaibelii* or the mixed clade in the study of Skourtanioti et al. (2016) is not known. Comprehensive observations, including molecular data are necessary to compare the Sütçüler population with other Turkish populations of *Ablepharus*. The number of field studies related to the species is quite low. More observations are needed in the areas where species of *Ablepharus* may distribute.



**Figure 3.** The male specimen of *Ablepharus budaki* from Yukarı Kırıntı population.

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