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NEW LOCALITY RECORDS OF *Vipera ammodytes transcaucasiana* Boulenger, 1913 IN TURKEY

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ABSTRACT. *New data on the distribution of the Transcaucasian Nose-horned Viper (Vipera ammodytes transcaucasiana) from Anatolia are presented, based on fieldwork carried out in June 2015. Two new localities from Çankırı and Sivas provinces were recorded along with a few ecological data. The species' range was extended to more southern parts of Anatolia, especially with the Sivas (Başıbüyük plateau, Çavuş Mountain) record. Also we noticed that the habitat at the Sivas location is quite different from the species' usual habitat.*

KEY WORDS: *Transcaucasian Nose-horned Viper, range extension, morphology, new habitat, Turkey.*

INTRODUCTION

This paper presents new information about the Transcaucasian Nose-horned Viper (*Vipera ammodytes transcaucasiana*) in Anatolia. New locations and unexpected habitat features are highlighted and compared with known information. This taxon was described by Boulenger in 1913 on the basis of specimens from Georgia. First record within the contemporary Anatolian border was given by Derjugin (1901) as Bortschcha (Borçka), a

town in the province Artvin, northeastern Turkey. Subsequently, several more localities were published, mainly from along the Black Sea coast, in some cases also from more inland Anatolia (summarized in Göçmen et al. 2014).

Vipera ammodytes transcaucasianais sometimes treated as a full species (Obst 1983, Nilson et al. 1999, Mallow et al. 2003), but Heckes et al. (2005) refrained from this action. Also Ursenbacher et al. (2008) remained cautious about its status. Their research resulted in grouping this taxon within the southeastern clade of *ammodytes,* at best being a subspecies, but the available data were too few to be conclusive. Finally, ecological data on the Transcaucasian Nose-horned Viper are still scarce and data on its distribution is far from complete. With this publication the authors aim to contribute to the distributional and ecological knowledge of the Transcaucasian Nose-horned Viper in Anatolia.

MATERIALS AND METHODS

In June 2015 the provinces Sivas and Çankırı were visited by two authors (BG, MK), resulting in two new localities of the Transcaucasian Nose-horned Viper. The other authors contribute their extensive knowledge on this species and Anatolian herpetofauna in general, and several field trips in the 90s by JM to Sivas province, where he found this species and gathered information on its behaviour.

Colour pattern characteristics of the specimens were photographed while alive and in their natural environment. Pholidotic features and descriptive characteristics were counted, measured and photographed. The ventral plates were counted, using the system proposed by Dowling (1951). Snout-vent length and tail length were measured to the nearest millimeter, using a tape measure and a ruler, respectively. Other morphometric characters were measured with a digital caliper. For bilateral pholidotic features, counts were recorded on both left and right sides (L/R). Geographical coordinates of the observed specimens were recorded.

The vipers had to be captured, handled and restrained in order to gather data. Ethical permission (Ege University Animal Experiments Ethics Committee, 2010#43) was received and special permission (2011#7110) for field studies from the Republic of Turkey, Ministry of Forestry and Water Affairs.

RESULTS

Four specimens from new locations were recorded:

Locality A. 1 adult female, northern part of Işık Mountain, Çerkeş, Çankırı province, 40°41'N, 32°46'E, 1.470 m. a.s.l., June 15, 2015.

Locality B. 2 males, 1 female (all subadult), Başıbüyük plateau, Çavuş Mountain, Sivas province, 39°55'N, 37°10'E, 1.960 m. a.s.l., June 26, 2015, which represents the highest locality for this taxon to date.

Figure 1 depicts the four specimens in their natural environment. Pholidosis counts and body measurements are presented in Table 1. The morphological characters measured broadly match the ranges known for *Vipera ammodytes transcaucasiana* (see Biella 1983 and references therein). In this publication we refrain from analysing these pholidotic counts in detail, but provide them for later reviews of this taxon.

The habitat at the Çankırı location largely resembles those found elsewhere for *V. ammodytes transcaucasiana*. In contrast, the habitat at the Sivas location was quite unusual compared to those known (Nilson et

Table 1. Some metric and meristic characters of the *Vipera ammodytes transcaucasiana* individuals presented in this paper.

Characters	Sivas specimen no. 1 ♂	Sivas specimen no. 2 ♀	Sivas specimen no. 3 ♂	Çankırı specimen ♀
Snout-vent length (mm)	259	314	325	533
Tail length (mm)	41	33	46	62
Rostrum height/width	1.11	1.19	1.07	1.16
Dorsals	21	21	21	21
Ventrals	148	154	154	148
Subcaudals (left/right)	35/35	28/28	39/39	32/32
Supralabials (left/right)	9/9	10/10	9/9	10/9
Sublabials (left/right)	11/10	9/10	11/11	12/12
1st circumoculars (left/right)	11/11	11/12	11/10	12/14
2nd circumoculars (left/right)	13/14	14/14	13/14	13/16
Crown scales	42	36	44	54
Total scale number forming the "horn"	8	8	8	9

Figure 1. Four *Vipera ammodytes transcaucasiana* from two new localites: Sivas province with A (dull colour due to renewal stage of ecdysis), B (shortly before ecdysis), and C; from Çankırı province with D.

al. 1988, Mallow et al. 2003, Göçmen et al. 2014). The area is located around 2000 m a.s.l. and is void of any woody vegetation. Only grasses and herbs between limestone boulders are present. Figure 2 gives an impression of this habitat. On the other hand, such habitat has been noted for this species before, however in other subspecies and countries (e.g., Mebert et al. 2015).

Figure 2. Habitat in Çavuş Mountain, Sivas province.

DISCUSSION

The recorded localities were new and are located far inland. Actually the Sivas location is one of the two most southern locations and therefore important to be published. The other southern records may originate from Hıdırlık, Divriği, Sivas province, by Coskun et al. (2012), who wrote in their article about the discovery of a *Macrovipera lebetina* at Hıdırlık: “In the same biotope, sympatric species, the nose-horned viper (*Vipera ammodytes*, L. 1758) were observed”. However, no voucher was given, neither as a photo nor any indication of a live or preserved specimen and the complete lack of further information (GPS, habitat, number of

specimens) leaves some doubts about the correctness, or requires at least verification. Nonetheless, these records increase the known area in the central part of *V. ammodytes transcaucasiana* in Anatolia. Other *V. ammodytes* mentioned from Kuşadası (only exuviae, leg. M. Erbstösser in Eiselt & Baran 1970), the Taurus Mountains, south of Konya province (see in Eiselt & Baran 1970, Nilson et al. 1988) and west of Gaziantep province (one smashed adult with a zig-zag pattern, J. Garzoni, pers. comm. to A. Teynié and provided to us) have never been confirmed or may represent confusions with *Montivipera* spp. and are not regarded as valid until proof is available.

One of our new samples was discovered in Çankırı province. This represents the first record of *V. ammodytes transcaucasiana* for this province, hence partly filling the gap between records from the provinces Bolu and Ankara to Kastamonu. The other three specimens of our new samples were found in Sivas province, from where it was already known to occur north of Zara, approximately 50 km farther east (Eiselt & Baran 1970; Baran 1976; Mulder 1995). However, our new records reduce the gap between those Zara-localities and the remote Tokat record, approximately 60 km farther northwest from our record. The latter is from Baran (1978), allegedly from a village with the name Gediağzı village/farm located approximately 10 km southeast of Tokat city.

The habitat of Transcaucasian Nose-horned Vipers is mainly composed of rocky outcrops on sun exposed slopes overgrown with trees and bushes. They often inhabit sunny slopes in rivers valleys or smaller streams (e.g. Bozhanskii & Kudryavcev 1986). Remarkably the newly detected Sivas location is quite unusual compared to known habitats. Void of any woody vegetation, the vipers live there between and under limestone boulders with only grasses and small herbs as vegetation cover. Due to the relatively high altitude, almost 2000 m. a.s.l., this habitat reminds us of the high elevation steppes inhabited by meadow vipers (*V. anatolica-ursinii-eriwanensis*-complex).

Lizards and arthropods (especially grasshoppers) are known to be common in such habitats and these could serve as food for these Nose-horned Vipers. An in situ observation by the second author at another Sivas

location of a Nose-horned Viper feeding on a Dwarf Lizard (*Parvilacerta parva*) corroborates the assumption of saurophagy as at least part of its feeding strategy. Wall Lizards (*Podarcis muralis*) were successfully fed to Transcaucasian Nose-horned Vipers in a study by Akkaya & Uğurtaş (2012).

In any case the species probably is more ubiquitous and could be found on hitherto unthought-of habitats, like barely vegetated high altitude regions.

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