

## Notes on the reproduction of the Transcaucasian Nose-horned Viper, *Vipera ammodytes transcaucasiana* Boulenger, 1913 (Ophidia: Viperidae) from the Işık Mountain (Çankırı, Turkey)

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**Abstract.** We report on the reproduction of the Transcaucasian Nose-horned Viper, *Vipera ammodytes transcaucasiana*, from a northern locality of Işık Mountain (near Yoncalı village, Çerkeş, Çankırı province) in Turkey. During our fieldwork on 15 June 2015, we found a female in gestation period and brought it to the laboratory for our venom-milking studies. It was kept in a terrarium until it died on 17 November 2015. The specimen (snout to vent length= 533 mm, tail length= 62 mm) was dissected after the preservation procedure and the eight embryos found in it were measured: mean Length= 23.74 mm, mean Width= 13.78 mm, mean Weight= 1.87 g.

**Key words:** Transcaucasian Nose-horned Viper, *Vipera ammodytes transcaucasiana*, reproduction, embryo, litter size, Turkey.

True vipers (subfamily: *Viperinae*) are distributed in Europe, Asia, and Africa and include generally ovoviviparous species (Mallow et al. 2003, Budak & Göçmen 2014). *Vipera ammodytes transcaucasiana* was described by Boulenger (1913) on the basis of specimens from Georgia and it too is an ovoviviparous member of the *Viperinae* (Stidworthy 1974). It has a wide distribution range mainly along the Black Sea coast of Turkey, in some cases more inland Anatolia (Sindaco et al. 2000, Budak & Göçmen 2014, Göçmen et al. 2014, 2015). *Vipera ammodytes transcaucasiana* is listed as near threatened ver 3.1 in the IUCN Red List and the major threats to this viper species are given as over-collecting for the illegal international pet trade and converting of the rocky habitats for agricultural development (Tuniyev et al. 2009).

Characteristic habitats of the Transcaucasian Nose-horned Viper are situated in the zones of xerophytic forests and rocky areas. The species prefer rocky slopes overgrown with *Quercus* sp., *Pinus brutia* and *Corylus* sp. The specimens are mostly noted on forest edges, screes and rock outcrops in river valleys (Başoğlu & Baran 1980, Tuniyev et al. 2009, Budak & Göçmen 2014). The activity period of the species depends on the altitude but generally starts from late March-early April until the end of October-early November. The Mating season is a bit different from the one that generally occurs in April or May (Başoğlu & Baran 1980, Biella 1983, Mallow et al. 2003, Strugariu 2006).

In June 2015, during a herpetological field trip to central and north Anatolia, we collected an embryo-carrying female Transcaucasian Nose-horned Viper, *Vipera ammodytes transcaucasiana* in the northern part of Işık Mountain, near Yoncalı Village, Çerkeş, Çankırı province (Fig. 1).

We brought the specimen to the laboratory and kept it in a terrarium (60x40x40 cm, LxWxH) until it died on 17 November 2015. The specimen [snout to vent length= 533 mm, tail length= 62 mm] was dissected after the preservation procedure. We found eight embryos in the specimen. The average weight of the embryos was 1.87 g (range= 1.75-2.03 g), length 23.74 mm (range= 19.55-26.02 mm), width 13.78 mm (range= 12.61-14.74 mm), respectively (Table 1). Also a general view of the embryos was photographed and numbered (Fig. 2) as in Table 1.

Ethical permission (Ege University Animal Experiments Ethics Committee, 2010#43) as well as special permission (2011#7110) for

**Table 1.** Length, width (in mm) and weight (in gram) of the embryos.

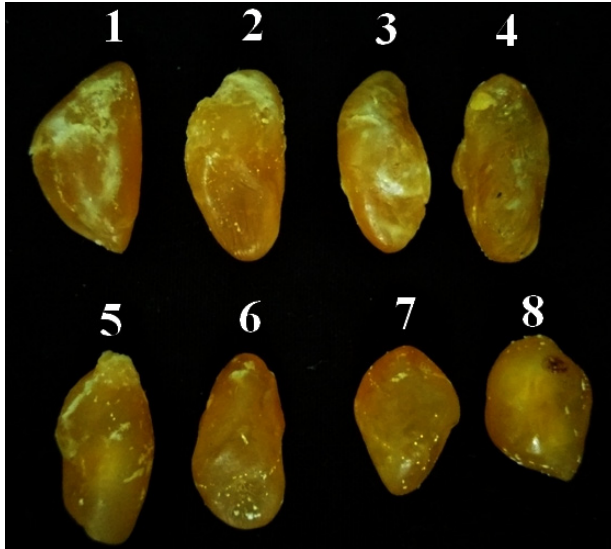
Numbers / Characters	Length (mm)	Width (mm)	Weight (g)
Embryo no. 1	26.02	14.74	1.89
Embryo no. 2	25.94	15.02	2.03
Embryo no. 3	25.64	13.12	1.82
Embryo no. 4	25.82	13.31	1.96
Embryo no. 5	24.97	12.61	1.84
Embryo no. 6	22.24	14.07	1.75
Embryo no. 7	19.55	13.52	1.76
Embryo no. 8	19.78	13.88	1.91



**Figure 1.** General aspect of embryo-carrying female specimen from northern part of Işık Mountain, near Yoncalı Village, Çerkeş, Çankırı province.

field studies from the Republic of Turkey, Ministry of Forestry and Water Affairs were received.

Holzberger (1980) indicated that for *Vipera ammodytes*, seven young were born, ranged 20-23 cm in total length weighed from 7-10 g in captive breeding. It fits with our data as we found eight embryos. However, in another study, they observed that four young were born and they were approximately 20 cm in total length and weighed between 6-8 g in captivity (Gulden 1988). This study had fewer numbers of embryos than in our findings. Actually, as a common knowledge *Vipera ammodytes* may give birth one to twenty



**Figure 2.** General view of the embryos. They numbered as in Table 1.

young specimens ranging 14-24 cm in total length and birth weight is about 6-8 g are reported (Başoğlu & Baran 1980, Kudryatsev et al. 1993, Mallow et al. 2003, Strugariu 2006).

In conclusion, our results confirmed previous data on reproduction of *Vipera ammodytes* and *Vipera ammodytes transcaucasiana*. However, most of the available data were obtained from captive specimens in captive breeding. We immediately need to obtain data on the ecology of *Vipera ammodytes transcaucasiana* in the wild and about their natural habitats to protect the near threatened species from future possible threats.

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