# New record of the rare *Vipera barani* Böhme & Joger, 1983

Baran's Adder, *Vipera barani* Böhme & Joger, 1983, is a little known and rarely encountered viper, reported only from a few localities along the northern coast of Turkey (Fig.1; Böhme & Joger 1983; Joger et al. 1997; Baran et al. 1997, 2001, 2005; Baran & Atatür 1998; Franzen & Heckes 2000; Sindaco et al. 2000; Avci et al. 2004). Along with *Vipera darevskii* Vedmederja, Orlov & Tuniyev, 1986, *Vipera kaznakovi* Nikolsky, 1909 and *Vipera pontica* Billing, Nilson & Sattler, 1990, it is one of four Turkish viper species, repeatedly assigned to the subgenus *Pelias* Merrem, 1820 *sensu* Zerova (1992) and Nilson & Andrén (1997) in the last decades (e.g., Garriguesa et al. 2005; Ananjeva et al. 2006). However, the systematic position of *V. barani* appears unsetteled (compare e.g., the contradictory results of Joger et al. 2003 and Kalyabina-Hauf et al. 2004 versus e.g., Garriguesa et al. 2005) which is why morphological data of a recently found specimen is presented here, including a brief overview of current knowledge on this viper's systematic status.

In a classical morphological view, the subgenus *Pelias* Merrem, 1820 differs from related taxonomic units such as *Vipera* s. str. Laurenti, 1768 and *Acridophaga* Reuss, 1927, in having large and normally irregularly fragmented head plates, two apical plates in contact with the rostral, and the upper preocular separated from the nasal by loreals (Mallow et al. 2003). Moreover, *Vipera barani* is differentiated from other taxa of the *V. berus* 'superspecies' complex in having higher counts of ventrals and subcaudals for females, fragmented loreals and head plates and unique coloration (Böhme & Joger 1983; Franzen & Heckes 2000; Baran et al. 2001, 2005).

To clarify the taxonomic status of *V. barani* and reveal the phylogenetic relationship to related taxa, different studies were applied using biochemical methods. Joger et al. (1997) studied the phylogeny of the *V. berus* complex with the specific aim of elucidating the phylogenetic position of the

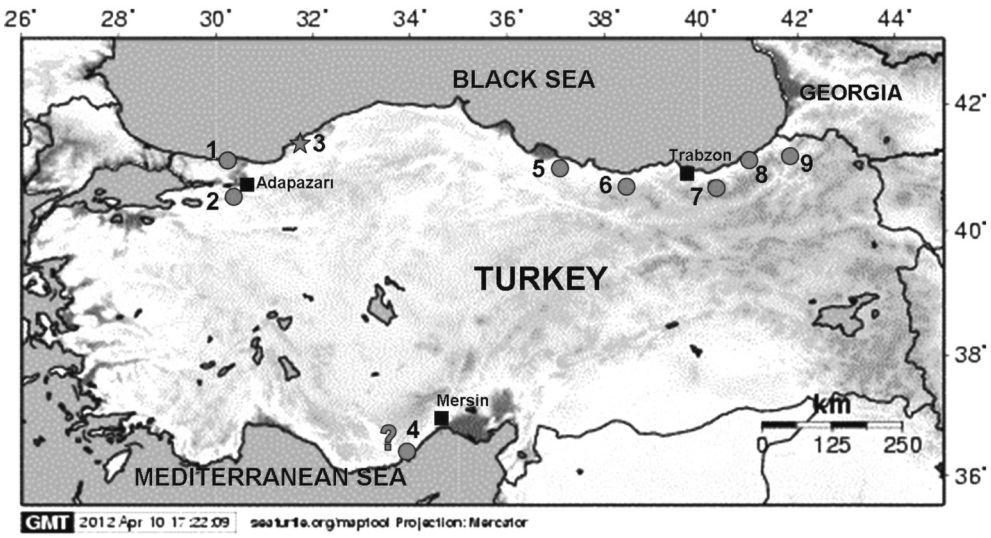


Fig. 1: Known record localities of *Vipera barani* Böhme & Joger, 1983, with a star indicating the new locality at Kozlu. 1 - 60 km N of Adapazarı (type locality), 2 - Geyve, Adapazarı, 3 - Kozlu, Zonguldak, 4 - Silifke, Mersin (?), 5 - İkizce, Ordu, 6 - Dereli, Giresun, 7 - Çaykara, Trabzon, 8 - Ardeşen, Rize, 9 - Artvin. Data from Böhme & Joger (1983), Joger et al. (1997), Baran et al. (1997, 2001, 2005), Franzen & Heckes (2000) and Avci et al. (2004).

poorly known species *V. barani* and *V. nikolskii*. Based on morphology, hemipenis structure and mtDNA information, the authors concluded that *barani* might either constitute a subspecies of *V. berus*, or represent a distinct species within the *V. berus* 'superspecies' complex. No definitive new classification was proposed. Joger et al. (2003) and Kalyabina-Hauf et al. (2004) analyzed the phylogeographic relationships within the *V. berus* complex based on mitochondrial gene sequences (cytochrome *b*, 12S and 16S RNA) and classified *V. barani* as one of five haplotype groups of the '*Vipera berus* s. l. group'.

Baran's Viper was first described from 60 km N of Adapazarı in northwestern Anatolia, based on a single female specimen (Böhme & Joger 1983). Later, four specimens were confiscated by the Turkish customs authorities from a private snake collector who reported that they were captured near Silifke, southern Turkey. Presence of the species in this locality is however strongly doubted (Joger et al. 1997; Baran & Atatür 1998; Baran et al. 2001, 2005). The occurrence of the viper at Çamlıhemşin was mistakenly reported under the name *V. pontica* (Baran et al. 1997) as was the picture of a specimen captured in the neighborhood of Çamlıhemşin, Rize (Baran & Atatur 1998). Franzen & Heckes (2000) captured three specimens in the provinces of Giresun (south of Dereli) and Rize (south of Ardeşen), Black Sea Mountains in northeastern Turkey, compared their morphological characters with the data given in previous studies and provided information on the species' habitat. Baran et al. (2001) described the morphology and its variation in three specimens of *V. barani*, two from the Trabzon Province (Arpagözü High Plateau, southeast of Çaykara) and one from northwest of Artvin (near the Georgian border). The latter authors concluded that *V. pontica* is conspecific with *V. barani* as both names refer to a single species of small viper occurring along the Black Sea Coast of Anatolia. Avci et al. (2004) subsequently reported *V. barani* from İkizce, Province of Ordu, in the Black Sea Mountains in northeastern Turkey. Twenty-one years after the original description of the species, an adult female specimen was recorded from near

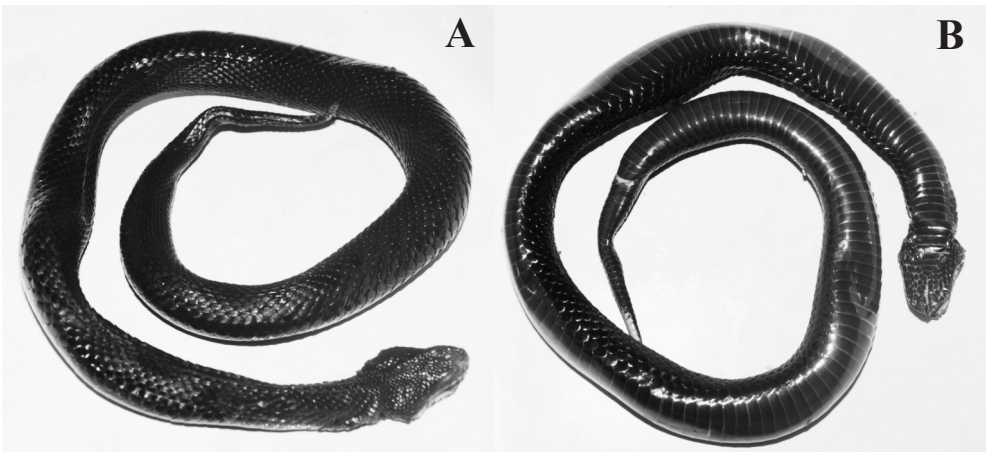


Fig. 2: The new record of a male specimen of *Vipera barani* Böhme & Joger, 1983, from Kozluk, Zonguldak, Turkey (ZDEU.11/2010) from dorsal (A) and ventral (B).

Adapazarı (Geyve) again (Baran et al. 2005).

Material.- ZDEU.11/2010 (Fig. 2), male *V. barani* from Kozlu, Zonguldak, Turkey, found dead at 445 m a.s.l., on November 11, 2010, by Muhsin Çoğal. The specimen which was fixed in 96 % ethanol and later kept in 70 % ethanol (Başoğlu & Baran 1980) was incorporated into the collection of ZDEU (Zoology Department of Ege University, Turkey) and stored in the Zoology Lab of the Department of Biology at Science Faculty.

Two metric measurements (taken to the nearest millimeter using a ruler) and 12 pholidosis counts of the new specimen are presented along with comparative information to 16 other known specimens. The ventral plates were counted according to Dowling (1951), the terminology used in describing the specimen conforms to Böhme & Joger (1983) and Nilson & Andrén (2001).

Fig. 3: Habitat of *Vipera barani* Böhme & Joger, 1983, at Kozluk, Zonguldak, Turkey, 445 m a.s.l.

Table 1: Pholidosis counts and metric measurements of 17 known specimens of *Vipera barani* Böhme & Joger, 1983. A-H (data source), (1)-(9) Dot in map Figure 1.

A - Böhme & Joger 1983, B - Joger et al. 1997, C - Baran et al. 1997, D - Franzen & Heckes 2000, E - Baran et al. 2001, F - Avci et al. 2004, G - Baran et al. (2005), H - this study.

Measurands: A - apicals, C – canthals (left/right), CO - circumoculars (left/right), DS - longitudinal rows of dorsal scales (at mid-body i.e., level of ventrals number 60-75), EUL - scale rows between eye and upper labials (left/right), F - female, G – gulars (left/right), L - numbers of loreals (left/right), LL - lower labials (left/right), M – male, SC – subcaudals (left/right), SSO - scales between supraoculars (counted along imaginary straight lines), SVL - snout-vent length, TL - tail length, UL - upper labials (left/right), V - ventrals (including preventrals).

| | A-H - Data source, (1)-(9) - Dot in map Fig. 1. | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A (1) | B (4) | B (4) | B (4) | B (4) | C (8) | D (6) | D (6) | D (8) | E (7) | E (7) | E (9) | F (5) | G (2) | G (2) | G (2) | H (3) |
| Locality | 60 km N of Adapazarı | ? Silifke Mersin | ? Silifke Mersin | ? Silifke Mersin | ? Silifke Mersin | Ardeşen Rize | Dereli Giresun | Dereli Giresun | Ardeşen Rize | Çaykara Trabzon | Çaykara Trabzon | Artvin | İkizce Ordu | Geyve Adapazarı | Geyve Adapazarı | Geyve Adapazarı | Kozlu Zonguldak |
| Gender | F | M | F | F | F | F | M | F | F | F | F | M | M | F | M, juv. | M, juv. | M |
| L | 5/5 | 6/6 | 6/6 | 5/5 | 5/6 | 5/5 | 5/4 | 4/4 | 11/9 | 5/5 | 4/5 | 4/5 | 4/5 | 5/5 | 5/5 | 6/5 | 4/4 |
| CO | 11/12 | 10/10 | 14/11 | 11/10 | 11/11 | 12/12 | 11/10 | 9/9 | 11/10 | 9/8 | 9/9 | 11/12 | 12/13 | 11/13 | 11/11 | 12/12 | 11/13 |
| A | 2 | 2 | 2 | 2 | 2 | —- | —- | —- | —- | 1 (2) | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| UL | 10/10 | 9/9 | 9/9 | 9/9 | 9/9 | 9/9 | 9/8 | 9/10 | 9/9 | 9/7 | 9/8 | 8/9 | 9/9 | 9/9 | 9/9 | 10/9 | 9/9 |
| LL | 12/12 | 10/11 | 11/11 | 11/11 | 11/11 | 11/11 | 12/12 | 11/11 | 12/13 | 9/9 | 10/11 | 10/10 | 12/12 | 11/11 | 11/11 | 13/11 | 12/12 |
| G | —- | 4/4 | 4/4 | 4/4 | 5/5 | 4/4 | 4/4 | 4/4 | 4/4 | 5/4 | 5/6 | —- | 4/4 | —- | —- | —- | 4/4 |
| C | 3/3 | 2/2 | 2/2 | 2/2 | 2/2 | 2/2 | 2/2 | 2/2 | 2/2 | 2/2 | 2/2 | —- | —- | 2/2 | 2/2 | 2/2 | 2/2 |
| SSO | 5 | 5 | 8 | 3 | 5 | —- | —- | —- | —- | 4 | 5 | —- | 4 | —- | —- | —- | 5 |
| EUL | 1/1 | 1/1 | 1/1 | 2/2 | 2/2 | —- | —- | —- | —- | 1/1 | 1/1 | —- | 1/1 | —- | —- | —- | 1/1 |
| DS | 21 | 23 | 21 | 21 | 23 | 21 | 21 | 21 | 23 | 21 | 21 | 23 | 22 | —- | —- | —- | 23 |
| V (F) | 145 | | 141 | 143 | 145 | 145 | | 146 | 145 | 142 | 142 | | | 145 | | | |
| V (M) | | 142 | | | | | 142 | | | | | 145 | 147 | | 139 | 139 | 145 |
| SC (F) | 37/37 | | 30/30 | 31/31 | 30/30 | 31/31 | | 31/30 | 31/30 | 28/29 | 25/28 | | | 33/33 | | | |
| SC (M) | | 35 | | | | | 36-36 | | | | | 35-36 | 34-35 | | 42 | 38 | 33-34 |
| SVL | 472 | 435 | 510 | 436 | 482 | 426 | 545 | 605 | 595 | 514 | 395 | —- | 415 | 503 | 170 | 170 | 460 |
| TL | 68 | 69 | 64 | 56 | 59 + ? | 50 | 73 | 68 | 65 | 69 | 51 | —- | 57 | 62 | 29 | 29 | 60 |

Description (For counts and measurements see Table 1).- Head moderately large and fairly distinct, its lateral faces flat and almost vertical. Rostral bumped, virtually not visible from above. Scales and plates on anterior head smooth; carinate scales present only posterior to supraoculars. Two apicals in contact with rostral; four gulars, two canthals, four loreals and one supraocular. Nine upper labials, fourth and fifth are largest, 12 lower labials. Frontal and parietal fragmented. Dorsal scales strongly keeled except those on the rows adjoining the ventrals. The first large pair of gulars encompasses a number of small and fine scutes. Ventrals 2+145; subcaudals paired. Total length 520 mm.

The male specimen is almost totally black (Fig. 2). However, upper labials on each side are yellowish-white with black edges and whitish blotches are present at the posterior half of the lower labials. The whitish blotches on upper and lower labials form fine lines extending backwards to where the ventrals make contact with the first row of dorsal scales and becoming sparse towards the posterior. Whitish spots of different size are present on the underside of the head. The ventral side is of lighter ground color than the deep black dorsal scales and covered with dense white spots, which disappear toward the vent opening. The yellowish white color of the tail tip is restricted to seven terminal subcaudal scales and the last three scale rings on the dorsal side of the tail.

In its morphology and color-pattern, ZDEU.11/2010 corresponds well with the other known individuals (comp. Table 1 based on data from Böhme & Joger 1983; Joger et al. 1997; Baran et al. 1997, 2001, 2005; Franzen & Heckes 2000; Avci et al. 2004). The distance between the records from near Adapazarı (#1 and #2 in Fig. 1, including the type locality of *V. barani*) and İkizce, Ordu (the record locality which is closest to Adapazarı, #5 in Fig. 1), is approximately 560 km. The new specimen from Kozluk, Zonguldak reasonably bridges the important gap between these two distinct geographic regions.

Habitat.- The locality in which the specimen was found showed a rich diversity of ligneous plants (Fig. 3), the dominant species being beech (*Fagus orientalis*), hornbeam (*Carpinus betulus*), oak (*Quercus* sp.), chestnut (*Castanea sativa*) and pine (*Pinus brutia*), including shrubs, such as rhododendron (*Rhododendron luteum*). Sympatric amphibian and reptile species observed were *Bufo bufo* (Linneaus, 1758), *Bufo variabilis* (Pallas, 1769), *Anguis fragilis* Linneaus, 1758, *Darevskia rudis* (Bedriaga, 1886), *Lacerta viridis* (Laurenti, 1768) and *Natrix tessellata* (Laurenti, 1768). In addition, the rodent species *Muscardinus avellanarius* (Linneaus, 1758), *Myodes glareolus* (Schreber, 1780) and *Apodemus uralensis* (Pallas, 1811) were found in the area.

Threats.- The IUCN Red list of threatened species lists *V. barani* as 'Near Threatened' because of a significant decline due to over-harvesting for the international pet trade, which almost qualifies for the status of 'Vulnerable'. This and the negative development of its habitats, along with increasing tourism and persecution through locals, accounts for the major threats (Tok et al. 2009).

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