

## New Locality Records of Snakes (Ophidia: Colubridae: *Dolichophis, Eirenis*) in Eastern Anatolia

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**Abstract.** We report new localities of *Dolichophis jugularis*, *Dolichophis schmidtii* and *Eirenis (Pediophis) eiselti* from Malazgirt (Muş province) in eastern Anatolia, Turkey. *Dolichophis schmidtii* and *Eirenis eiselti* were recorded from Muş province for the first time while we present the easternmost locality of *Dolichophis jugularis* in Turkey with a considerable range extension.

**Key words:** *Dolichophis jugularis*, *Dolichophis caspius*, *Eirenis (Pediophis) eiselti*, distribution, morphology, Turkey.

### Introduction

The diversity and distribution of reptiles in Anatolia, Turkey, has been and still is of great interest for herpetologists around the world due to Anatolia's biogeographical history and location as a bridge between Europe and Asia. Invaluable efforts of several local and foreign scientists resulted in the present knowledge of snakes of Turkey (Bodenheimer 1944, Mertens 1952, Eiselt 1970, Clark & Clark 1973, Baran 1976, Başoğlu & Baran 1977, Teynié 1987, 1991, Mulder 1995, Baran et al. 2004, Göçmen et al. 2009b). Especially after extensive studies led by Prof. Muhtar Başoğlu, we gained considerable information on the systematics, distribution and ecology of snakes in Turkey as well as other reptiles. New snake records (e. g. *Walterinnesia morgani*, *Telescopus nigriceps*, *Vipera dorevskii*) (Ugurtas et al. 2001, Geniez & Teynié 2005, Göçmen et al. 2007) and descriptions of new snake species (e.g. *Rhynchocalamus barani*, *Letheobia episcopus*) (Franzen & Wallach 2002, Olgun et al. 2007) in Turkey as a result of recent increased studies show that the snake fauna of Turkey still needs attention and deserves further investigation.

*Eirenis (Pediophis) eiselti* was described by Schmidtler & Schmidtler (1978) based on material collected from 25 km W of Viranşehir, Şanlıurfa, Turkey (type locality). It can be found mainly in southeastern Anatolia. Although some discussions arose about the validity of this species (Baran 1982), recent molecular phylogenetic studies based on DNA sequences confirmed its validity and it is included in the subgenus *Pediophis* Fitzinger, 1843 (Nagy et al. 2003).

*Dolichophis jugularis* occurs in Turkey, Aegean islands (e. g. Dodecanese), Cyprus, Syria, Iraq, Iran, Lebanon, Jordan and Israel (Clark & Clark 1973, Başoğlu & Baran 1977, Latifi 1991, Budak & Göçmen 2008). In Turkey, *D. jugularis* is known to be distributed mainly in the southern part, but it can also be found in eastern Anatolia according to a few locality records (Başoğlu & Baran 1977). *Dolichophis schmidtii* is distributed in Turkey, Turkmenistan, Azerbaijan, Armenia, northern Iran, Syria and Jordan. In Turkey, its distributional range includes central, eastern and southeastern regions (Başoğlu & Baran 1977, Latifi 1991, Baker et al. 2002, Budak & Göçmen 2008). According to recent taxonomic knowledge, Nagy et al. (2004) have referred five Asian and Eastern Mediterranean species, including *D. jugularis* and *D. schmidtii*, previously assigned to *Hierophis* Fitzinger, 1843 by Schätti & Utiger (2001), to *Dolichophis* Gistel, 1868, based on mitochondrial and nuclear DNA sequences.

In this paper, we present new localities for three snake species mentioned above with their morphological features.

### Material and methods

During our scientific excursion in eastern Anatolia (Turkey), we collected *E. (P.) eiselti*, *D. jugularis* and *D. schmidtii* in Karakaya, Malazgirt, Muş province on 30th of August 2012. We collected the specimens after mid-day (at about 4 p.m). Collected specimens were fixed and stored in 96% ethanol in order to keep DNA material more stable for future molecular phylogeny studies (Göçmen et al. 2007) and deposited in the Zoology Museum of Harran University (ZMHRU) in Şanlıurfa, Turkey, with the following

museum numbers: *Eirenis (Pediophis) eiselti*, ZMHRU 212/147:1-2 (1 ♀, 1 juv.), Karakaya, Malazgirt/Muş, 30 July 2012, leg. B. Göçmen, B. Akman, N. İğci, M. A. Oğuz, O. Özkan; *Dolichophis jugularis*, ZMHRU 212/146:1 (1 ♀), Karakaya, Malazgirt/Muş, 30 July 2012, leg. B. Göçmen, B. Akman, N. İğci, M. A. Oğuz, O. Özkan; *Dolichophis schmidti*, ZMHRU 212/145:1 (1 ♂), Karakaya, Malazgirt/Muş, 30 July 2012, leg. B. Göçmen, B. Akman, N. İğci, M. A. Oğuz, O. Özkan.

Metric measurements and meristic characters were recorded according to the previous literature (Zinner 1972, Başoğlu & Baran 1977, Schmidtler & Schmidtler 1978) with some additions and characters presented in Tables 1-4 for each specimen. The ventral plates were counted according to Dowling (1951). Snout-vent length and tail length were measured to the nearest millimeter using a ruler, with the help of a string when needed. Head length was measured as the distance from the back of the skull (posterior edge of the parietal bone) to the tip of the snout using a digital caliper. Other morphometrical measurements were taken using a digital caliper of 0.02 mm sensitivity (Mitutoyo 500-181 U). To record color-pattern features, animals were photographed while alive in their natural environment and in the laboratory. The geographical coordinates of the sampled specimens were computed with a Magellan XL GPS device.

## Results

We found all the specimens from the same area, a mountainous part (Kartevin Mt.) near to Karakaya Village which is a border between Malazgirt (Muş province) and Patnos (Ağrı province) (39° 14' N 42° 38 E, elev. 1865 m a.s.l.) with a bushy vegetation after mid-day, at about 4 p.m. (Fig. 1). *Dolichophis jugularis* and *D. schmidti* were collected while they were actively moving and *E. (P.) eiselti* specimens were collected under stones. We also observed the following amphibians and reptiles in the same area as syntopic species: *Pseudepidalea variabilis*, *Testudo graeca*, *Paralaudakia caucasia*, *Ophisops elegans* and *Trachylepis aurata*.

### *Eirenis (Pediophis) eiselti* Schmidtler & Schmidtler, 1978

Pholidosis characteristics and morphometric measurements of our specimens are summarized in Tables 1 and 2, respectively. Photographs of live specimens are given in Figs 2A-C. Our morphological findings of examined material are generally in accordance with the data in the previous literature for *E. (P.) eiselti* (Schmidtler & Schmidtler 1978, Tayhan et al. 2011). Tayhan et al. (2011) previously recorded this species from Van province and our new locality confirmed its occurrence in eastern



**Figure 1.** General view of the biotope from Karakaya/Malazgirt (Muş province) where the specimens were collected (29 August 2012).

Anatolia. Previously known localities of *E. (P.) eiselti*, with the new locality, are presented on a map in Fig. 3.

### *Dolichophis schmidti* (Nikolsky, 1909)

Pholidosis characteristics and morphometric measurements of our specimen are summarized in Tables 3 and 4, respectively. A photograph of the live specimen is given in Fig. 2D. The dorsum is brownish and outer borders of dorsal scales are white (typical for this species). Morphological features and color-pattern characteristics of our specimen generally agree with the literature data (Başoğlu & Baran 1977). We have recorded this species from Muş province for the first time. Previously known localities of *D. schmidti*, with a new locality, are presented on a map in Fig. 4.

### *Dolichophis jugularis* (Linnaeus, 1758)

Pholidosis characteristics and morphometric measurements of our specimen are summarized in Tables 3 and 4, respectively. A photograph of the live specimen is given in Figs 2E-F. The dorsum of our specimen is bright black with some red maculations. These maculations are also apparent on the head plates (Fig. 2F). Throat coloration is discussed in the next section. Our morphological findings and color-pattern characteristics of examined material generally agree with the previous literature data (Clark & Clark 1973, Başoğlu & Baran 1977, Budak & Göçmen 2008). As an exception, although the number of the dorsal scales at mid-body was given as 19 in the literature (Clark & Clark 1973, Başoğlu & Baran 1977, Budak & Göçmen 2008), without knowing the exact position of dorsal scale row reductions, our specimen showed 18 mid-dorsal scale rows. Kumlutas et al. (2004) also reported 18 dorsals in their *D. jugularis*



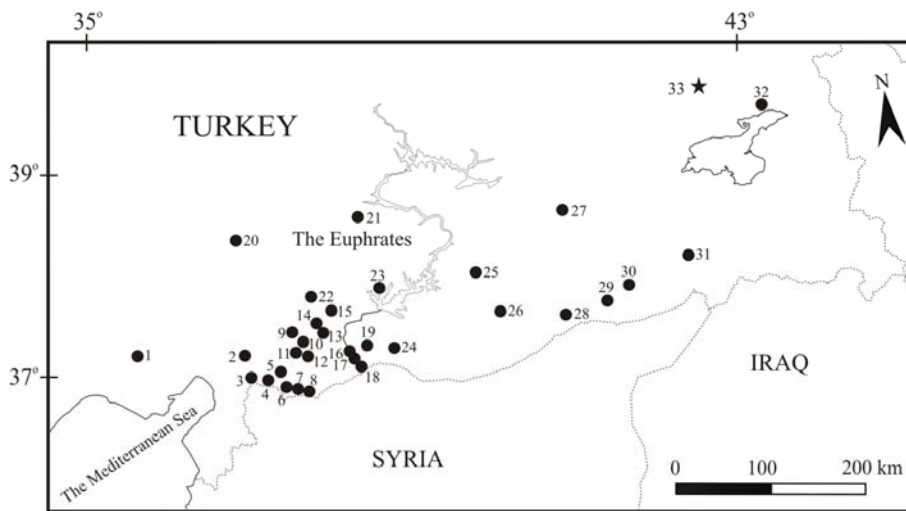
**Figure 2.** Photographs of live snakes collected from Malazgirt (Muş). **A-B:** Adult female *Eirenis (Pediophis) eiselti*, **C:** juvenile *Eirenis (Pediophis) eiselti*, **D:** subadult male *Dolichophis schmidtii*, **E-F:** adult female *Dolichophis jugularis*.

**Table 1.** Pholidotic characters of our *Eirenis (Pediophis) eiselti* specimens from Karakaya, Malazgirt, Muş. For bilateral pholidotic features, counts were taken on left side.

Characters	<i>Eirenis eiselti</i> ♀ (ZMHRU 2012/147)	<i>Eirenis eiselti</i> juv. (ZMHRU 2012/147)
Preocular	1	1
Postocular	2	2
Temporals	1	1
Supralabials	7	7
Sublabials	8	8
Gulars (contact with anterior inframaxillaries)	1	1
Temporals+Dorsals (around/touching the parietals)	6T+6	6T+6
Collar band length (dorsal scales)	15	16
Collar band width (dorsal scales)	5	4
Ventrals	176	146
Dorsals around midbody	15	15
Subcaudals	56	63

**Table 2.** Biometric measurements (in mm) of our *Eirenis (Pediophis) eiselti* specimens from Karakaya, Malazgirt, Muş.

Characters (mm)	<i>Eirenis eiselti</i> ♀ (ZMHRU 2012/147)	<i>Eirenis eiselti</i> juv. (ZMHRU 2012/147)
Snout-vent length (SVL)	217.00	147.00
Tail length	50.00	42.00
Total length	267.00	189.00
Rostral width	2.06	1.40
Rostral length	1.22	1.07
Distance between the nostrils	2.61	1.67
Eye diameter	1.45	1.10
Pileus length	7.51	6.98
Pileus width	4.00	3.38
Head length	11.46	9.69
Head width	5.70	4.88
Supraocular width	2.23	1.92
Frontal width	1.56	1.18
Frontal length	2.97	2.32
Anterior inframaxillar (chin shield) length	2.30	1.98
Posterior inframaxillar (chin shield) length	1.91	1.42



**Figure 3.** Currently known localities (circles) of *Eirenis (Pediophis) eiselti* in Turkey based on previous literature (Schmidtler & Schmidtler 1978, Mulder 1995, Sindaco et al. 2000, Nagy et al. 2003, Tayhan et al. 2011) and the new locality recorded in the present study (star).

[1: Adana; 2: Hanağzı, Gaziantep; 3: Between Kilis and Hassa; 4: 33 km west of Kilis; 5: Aşağkalecik, Musabeyli, Kilis; 6: Between Kilis and Gaziantep; 7: Küplüce, Kilis; 8: Between Kilis and Elbeyli; 9: Karabıyıklı, Gaziantep (border to Kahramanmaraş), 10: İncesu, Gaziantep; 11: Sarısalkım, Gaziantep; 12: Şehitkamil, Gaziantep; 13: Yavuzeli, Gaziantep; 14: Balık, Gaziantep; 15: Between Araban and Besni, Gaziantep; 16: Saray, Nizip, Gaziantep; 17: Nizip, Gaziantep; 18: Karkamış Dam, Gaziantep; 19: Between Şanlıurfa and Birecik; 20: 24 km north of Göksun, Kahramanmaraş; 21: Malatya; 22: 30 km southwest of Gölbaşı, Adıyaman; 23: Bağınar, Adıyaman; 24: Between Suruç and Adıyaman; 25: Siverek, Şanlıurfa; 26: Viranşehir, Şanlıurfa; 27: 20 km south of Lice, Diyarbakır; 28: Kızıltepe, Mardin; 29: Mardin; 30: Midyat, Mardin; 31: Siirt (10 km west of Şırnak); 32: Erciş, Van; 33: Karakaya, Malazgirt, Muş (new locality).]

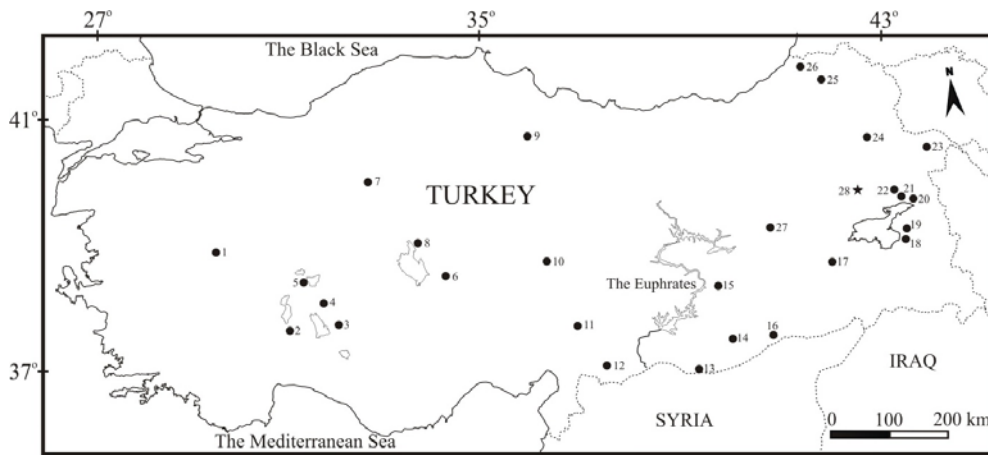
specimens from southern Anatolia. Our new finding represents the easternmost locality for this species in Turkey. Previously known localities of *D. jugularis*, with the new locality, are presented on a map in Fig. 5.

**Discussion**

The new locality where the specimens were collected is in a mountainous area near the border between Muş (Malazgirt) and Ağrı (Patnos) prov-

**Table 3.** Pholidotic characters of our *Dolichophis jugularis* and *Dolichophis schmidti* specimens from Karakaya, Malazgirt, Muş. For bilateral pholidotic features, counts were taken on left side.

Characters	<i>Dolichophis jugularis</i> ♀ (ZMHRU 2012/146)	<i>Dolichophis schmidti</i> ♂ (ZMHRU 2012/145)
Preocular	2	2
Postocular	2	2
Temporals	2	2
Posttemporals	3	3
Supralabials	8	8
Sublabials	9	9
Ventrals	205	198
Dorsals around midbody	18	19
Subcaudals	110	88
cloacal plate divided or not	2	2
Frenals (loreal)	1	1
Prefrontal	2	2



**Figure 4.** Currently known localities (circles) of *Dolichophis schmidti* in Turkey based on previous literature (Teynié 1987, Eiselt 1970, Başoğlu & Baran 1977, Sindaco et al. 2000, Baker et al. 2002, Baran et al. 2004, Afsar & Tok 2011) and the new locality recorded in the present study (star).

[1: Between Kütahya and Uşak; 2: Isparta; 3: Konya; 4: Kemer, Sultan Mountains, Konya; 5: Sultan Mountains, Akşehir; 6: Aksaray; 7: Ankara; 8: Şereflikoçhisar, Ankara; 9: Amasya; 10: Pazarören, Kayseri; 11: Kahramanmaraş; 12: Gaziantep; 13: Akçakale, Şanlıurfa; 14: Viranşehir, Şanlıurfa; 15: Çermik, Diyarbakır; 16: Mardin; 17: Baykan, Siirt; 18: Van; 19: Between Van and Erçek Lake; 20: Ünseli, Muradiye, Van; 21: Erciş, Van; 22: Altındere Harası, Erciş, Van; 23: Mount Ağrı, Iğdır; 24: Between Karakurt and Kağızman, Kars; 25: Ardanuç, Artvin; 26: Borçka, Artvin; 27: Bingöl; 28: Karakaya, Malazgirt, Muş (new locality).]

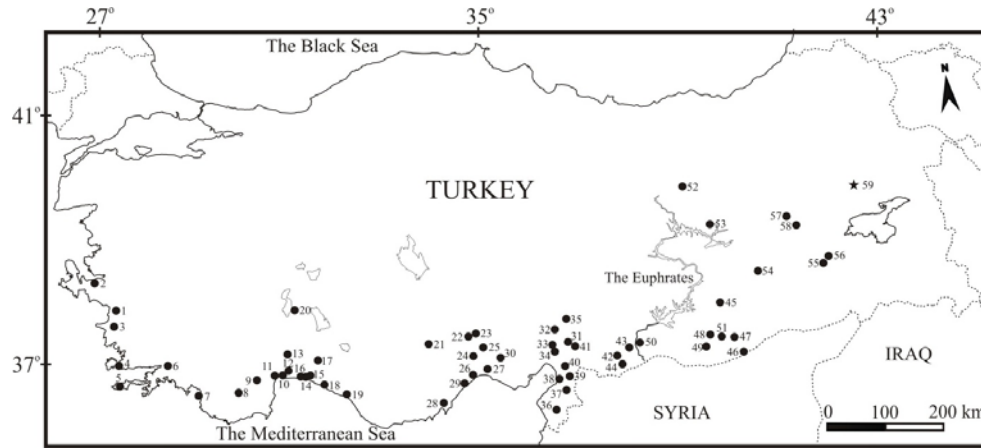
inces. Thus, it is likely that all three species (*D. jugularis*, *D. schmidti*, *E. eiselti*) will eventually be found on the other side of the border in Ağrı province. *D. schmidti* is already known from more eastern localities in Turkey (i. e. Van province) and is found as far as Azerbaijan and Iran. Although *D. jugularis* prefers mainly Mediterranean biotopes, it can be found in transitional regions between the Irano-Turanian and Mediterranean biotopes (Başoğlu & Baran 1977, Amr & Disi 2011). These two closely related *Dolichophis* species inhabit similar

biotopes (Başoğlu & Baran 1977). When these localities and informations are evaluated together, we presume that the distribution of *D. jugularis* extends eastwards from our new locality in Anatolia, probably inhabiting all suitable habitats in the gap between eastern Anatolia and Azerbaijan-Iran, similar to condition for *D. schmidti*.

Four subspecies of *D. jugularis* are currently recognised: *D. j. jugularis* (Linnaeus, 1758) in Anatolia and Northern Syria, with red throat; *D. j. asianus* (Boettger, 1880) in southern Syria,

**Table 4.** Biometric measurements (in mm) of our *Dolichophis jugularis* and *Dolichophis schmidtii* specimens from Karakaya, Malazgirt, Muş.

Characters (mm)	<i>Dolichophis jugularis</i> ♀ (ZMHRU 2012/146)	<i>Dolichophis schmidtii</i> ♂ (ZMHRU 2012/145)
Snout-vent length (SVL)	111.00	78.00
Tail length	37.00	24.00
Total length	148.00	102.00
Rostral width	6.02	4.72
Rostral length	5.07	4.04
Distance between the nostrils	8.74	6.64
Eye diameter	4.92	4.30
Loreal length	2.78	2.05
Pileus length	24.89	19.69
Pileus width	12.8	10.38
Head length	29.25	24.28
Head width	15.58	13.69
Supraocular width	7.57	6.37
Frontal width	5.63	4.81
Frontal length	8.33	6.28
Anterior inframaxillar (chin shield) length	7.41	6.45
Posterior inframaxillar (chin shield) length	8.47	6.78



**Figure 5.** Currently known localities (circles) of *Dolichophis jugularis* in Turkey based on previous literature (Eiselt 1970, Clark & Clark 1973, Başoğlu & Baran 1977, Teynié 1987, 1991, Mulder 1995, Budak et al. 2000, Sindaco et al. 2000, Kumlutas et al. 2004, Göçmen et al. 2009b) and the new locality recorded in the present study (star).

[1: Selçuk, İzmir; 2: Kilizman, İzmir; 3: Aydın; 4: Bodrum, Muğla; 5: Reşadiye (Datça) Peninsula, Muğla; 6: Muğla; 7: Kayaköyü, Fethiye, Muğla; 8: Antalya; 9: Antalya; 10: Arapsuyu, Antalya; 11: Kırçami, Antalya; 12: Perge, Antalya; 13: Between Antalya and Burdur; 14: Belek, Serik, Antalya; 15: Bereket, Manavgat, Antalya; 16: Peri, Manavgat, Antalya; 17: Başlar, Ibradi, Antalya; 18: Kızılot, Manavgat, Antalya; 19: Alanya, Antalya; 20: Near Eğridir Lake, Isparta; 21: Ayrancı, Karaman; 22: Between Dar Bogaz and Gümüş (Bolkar Mountains), Niğde; 23: Bolkar Mountains, Ulukışla, Niğde; 24: Sebil, Mersin; 25: Gülek, Mersin; 26: Mersin; 27: Tarsus, Mersin; 28: Silifke, Mersin; 29: Elvanlı, Mersin; 30: Adana; 31: Haruniye, Osmaniye; 32: Sarıtaşmanlı, Kadirli, Osmaniye; 33: Castabala Hieropolis (Kastabala), Kadirli, Osmaniye; 34: Cevdetiye, Osmaniye; 35: Kahramanmaraş; 36: Antakya, Hatay; 37: Kırıkhan, Hatay; 38: Sariseki (10 km north of Iskenderun), Hatay; 39: Aktepe (11 km south of Hassa), Hatay; 40: Amanos Mountains; 41: Arslanlıbel (Nurdağ) Pass, Gaziantep; 42: Gaziantep; 43: Altındağ, Gaziantep; 44: Aydıncaya, Gaziantep; 45: Karacadağ, Şanlıurfa; 46: Ceylanpınar, Şanlıurfa; 47: Viranşehir, Şanlıurfa; 48: Tek Tek Mountains, Şanlıurfa; 49: Sumatar (Yardımcı), Şanlıurfa; 50: Ayrancık, Birecik, Şanlıurfa; 51: Akkese (west of Viranşehir), Şanlıurfa; 52: Kemah, Erzincan; 53: Burmagedit, Tunceli; 54: Diyarbakır; 55: South of Baykan, Siirt; 56: North of Baykan, Bitlis; 57: Buglan Pass (between Bingöl and Muş); 58: Kızılağaç, Muş; 59: Karakaya, Malazgirt, Muş (new locality).]

Lebanon, Jordan and Mediterranean Israel, with 1972) from Cyprus island, with mostly black black and white throat; *D. j. cypriacus* (Zinner, venter, anteriorly speckled with some red and a

newly described *D. j. zinneri* Cattaneo, 2012 in Rhodes archipelago (Dodecanese, Greece), with yellow throat and less intense dorsal dark color (Zinner 1972, Göçmen et al. 2008, Göçmen et al. 2009a, Cattaneo 2012). Our specimen has less reddish throat coloration compared to *D. j. jugularis*, with black and white throat. Thus, the taxonomic status of our specimen was accepted as *D. j. asianus* and its color-pattern as part of its geographic variation. Alternatively, the reddish colouration on each dorsal scale and head plates possibly indicate that this specimen is a hybrid between *D. j. asianus* and *D. schmidtii*. This result suggests that this area may be a contact zone between *D. j. asianus* and *D. schmidtii* and further studies, including more sampling combined with morphological and molecular investigations, should be done to clarify this situation.

In conclusion, we contributed to the knowledge of snake distribution in eastern Anatolia, Turkey with new locality records. We have recorded *E. (P.) eiselti* and *D. schmidtii* from Muş province for the first time. Additionally, our new easternmost record of *D. jugularis* extends its distribution approximately 120 km air distance to the east, representing a considerable range extension. Also our *E. (P.) eiselti* locality seems to be the northernmost locality of this species and our results confirmed its distribution in eastern Anatolia. Our findings show that taxonomy and distribution of snakes in Turkey still need attention and deserve further studies.

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#### References

- Afsar, M., Tok, C.V. (2011): The herpetofauna of the Sultan Mountains (Afyon-Konya-Isparta), Turkey. *Turkish Journal of Zoology* 35(4): 491-501.
- Amr, Z.S., Disi, A.M. (2011): Systematics, distribution and ecology of the snakes of Jordan. *Vertebrate Zoology* 61(2): 179-266.
- Baker, M.A., Rifai, L., Joger, U., Nagy, Z.T., Wink, M., Amr, Z. (2002): Occurrence of *Coluber (Hierophis) schmidtii* Nikolsky 1909 in Jordan (Squamata: Serpentes: Colubridae). *Herpetozoa* 15(1/2): 29-36.
- Baran, İ. (1976): Türkiye Yılanlarının Taksonomik Revizyonu ve Coğrafi Dağılımları. TBTA Yayınları No: 309, Ankara.
- Baran, İ. (1982): Zur Taxonomie der Schlangen in Südost und Ost Anatolien. *Spixiana* 5: 51-59.
- Baran, İ., Kumlutaş, Y., Tok, C.V., Ilgaz, C., Kaska, Y., Oldun, K., Türkozan, O., İret, F. (2004): On two herpetological collections made in East Anatolia (Turkey). *Herpetozoa* 16(3/4): 99-114.
- Başoğlu, M., Baran, İ. (1977): Türkiye Sürüngenleri Kısım II. Yılanlar (The Reptiles of Turkey Part II. The Snakes). Ege Üniversitesi Fen Fakültesi Kitaplar Serisi No: 81, İzmir.
- Bodenheimer, F.S. (1944): Introduction into the Knowledge of the Amphibia and Reptilia of Turkey. Review of the Faculty of Science, University of İstanbul Série B. 9: 1-78.
- Budak, A., Atatür, M.K., Tok, C.V. (2000): Reşadiye (Dağca) Yarımadası'nın Kurbaga ve Sürüngenleri [*Amphibians and Reptiles of Reşadiye (Dağca) Peninsula*]. Ege Üniversitesi Fen Fakültesi Yayın No: 165, İzmir, 45 pp.
- Budak, A., Göçmen, B. (2008): Herpetoloji. 2nd edition. Ege Üniversitesi Yayınları Fen Fakültesi Yayın No: 194, İzmir.
- Cattaneo, A. (2012): Il Colubro Gola Rossa Dell' Arcipelago Di Rodi: *Dolichophis jugularis zinneri* subsp. nova (Reptilia: Serpentes) (The Large Whip Snake of the Rhodes Archipelago: *Dolichophis jugularis zinneri* subsp. nova). *Naturalista Siciliano* 36(1): 77-103.
- Clark, R.J., Clark, E.D. (1973): Report on a collection of amphibians and reptiles from Turkey. *Occasional Papers of the California Academy of Sciences* 104: 1-62.
- Dowling, H.G. (1951): A proposed standard of counting ventrals in snakes. *British Journal of Herpetology* 1: 97-99.
- Eiselt, J. (1970): Ergebnisse zoologischer Sammelreisen in der Türkei: Bemerkenswerte Funde von Reptilien. I. *Annalen des Naturhistorischen Museums in Wien* 74: 343-355.
- Franzen, M., Wallach, V. (2002): A new species of *Rhinotyphlops* from southeastern Turkey (Serpentes: Typhlopidae). *Journal of Herpetology* 36(2): 176-184.
- Geniez, P., Teynié, A. (2005): Discovery of a population of the critically endangered *Vipera dorevskii* Vedmederja, Orlov & Tuniyev, 1986 in Turkey, with new elements on its identification (Reptilia: Squamata: Viperidae). *Herpetozoa* 18(1/2): 25-33.
- Göçmen, B., Nilson, G., Yıldız, M.Z., Arkan, H., Yalçınkaya, D., Akman, B. (2007): On the occurrence of the Black cat snake, *Telescopus nigriceps* (Ahl, 1924) (Serpentes: Colubridae) from the southeastern Anatolia, Turkey with some taxonomical comments. *North-Western Journal of Zoology* 3: 81-95.
- Göçmen, B., Werner, Y.L., Elbeyli, B. (2008): Cannibalism in *Dolichophis jugularis* (Serpentes: Colubridae): More than random? *Current Herpetology* 27: 1-7.
- Göçmen, B., Atatür, M.K., Budak, A., Bahar, H., Yıldız, M.Z., Alpagut-Keskin, N. (2009a): Taxonomic notes on the snakes of Northern Cyprus, with observations on their morphologies and ecologies. *Animal Biology* 59: 1-30.
- Göçmen, B., Franzen, M., Yıldız, M.Z., Akman, B., Yalçınkaya, D. (2009b): New locality records of eremial snake species in southeastern Turkey (Ophidia: Colubridae, Elapidae, Typhlopidae, Leptotyphlopidae). *Salamandra* 45(2): 110-114.
- Kumlutaş, Y., Öz, M., Tunç, M.R., Kaska, Y., Özdemir, A., Düsen, S. (2004): On snake species of the Western Taurus Range, Turkey. *Natura Croatica* 13(1): 19-33.
- Latifi, M. (1991): *The Snakes of Iran*. Society for the Study of Amphibians and Reptiles, Oxford.
- Mertens, R. (1952): Nachtrag zu "Amphibien und Reptilien aus der Türkei". Review of the Faculty of Science, University of İstanbul Série B. 18: 118-128.
- Mulder, J. (1995): Herpetological observations in Turkey (1987-1995). *Deinsea - Annual of the Natural History Museum Rotterdam* 2: 51-66.
- Nagy, Z.T., Lawson, R., Joger, U., Wink, M. (2004): Molecular systematics of racers, whipsnakes and relatives (Reptilia: Colubridae) using mitochondrial and nuclear markers. *Journal of Zoological Systematics and Evolutionary Research* 42: 223-233.

- Nagy, Z.T., Schmidtler, J.F., Joger, U., Wink, M. (2003): Systematik der Zwergnattern (Reptilia: Colubridae: *Eirenis*) und verwandter Gruppen anhand von DNA-Sequenzen und morphologischen Daten. *Salamandra* 39(3/4): 149-168.
- Olgun, K., Avci, A., Ilgaz, Ç., Üzümlü, N., Yılmaz, C. (2007): A new species of *Rhynchocalamus* (Reptilia: Serpentes: Colubridae) from Turkey. *Zootaxa* 1399: 57-68.
- Schätti, B., Utiger, U. (2001): *Hemerophis*, a new genus for *Zamenis socotrae* Günther, and a contribution to the phylogeny of Old World racers, whip snakes and related genera (Reptilia: Squamata: Colubrinae). *Revue Suisse de Zoologie* 108(4): 919-948.
- Schmidtler, J.J., Schmidtler, J.F. (1978): Eine neue Zwergnatter aus der Türkei; mit einer Übersicht über die Gattung *Eirenis* (Colubridae, Reptilia). *Annalen des Naturhistorischen Museums in Wien* 81: 383-400.
- Sindaco, R., Venchi, A., Carpaneto, G.M., Bologna, M.A. (2000): The reptiles of Anatolia: a checklist and zoogeographical analysis. *Biogeographia* 21: 441-554.
- Tayhan, Y., Dinçaslan, Y.E., Avci, A., Tok, C.V. (2011): A new record of *Eirenis (Pediophis) eiselti* Schmidtler & Schmidtler, 1978 (Ophidia: Colubridae), in Eastern Anatolia, Turkey. *Biharean Biologist* 5(1): 1-3.
- Teynié, A. (1987): Observations herpétologiques en Turquie 1ère Partie. *Bulletin de la Société Herpétologique de France* 43: 9-18.
- Teynié, A. (1991): Observations herpétologiques en Turquie 2ème Partie. *Bulletin de la Société Herpétologique de France* 58: 21-30.
- Ugurtas, I.H., Papenfuss, T.J., Orlov, N.I. (2001): New record of *Walterinnesia aegyptia* Lataste, 1887 (Ophidia: Elapidae: Bungarinae) in Turkey. *Russian Journal of Herpetology* 8(3): 239-245.
- Zinner, H. (1972): Systematics and Evolution of the Species Group *Coluber jugularis* Linnaeus 1758 - *Coluber caspius* Gmelin 1789 (Reptilia, Serpentes). PhD Thesis, The Hebrew University of Jerusalem, Jerusalem.
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