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ON SNAKE SPECIES OF THE WESTERN TAURUS RANGE, TURKEY

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A total of 85 specimens belonging to 14 snake species collected from the Western Taurus Mountain Range were examined in this study. Along with morphological information about the species, the study contains some topographical observations concerning the localities. The collection of material from a number of new localities helped efforts to complete missing information related to the distribution of species in this region. Moreover, the data obtained were compared with those contained in the relevant literature with the purpose of shedding light on the taxonomical status of the species.

Key Words: Western Taurus, snakes, herpetofauna, new locality, Turkey

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Obrađeno je ukupno 85 primjeraka odnosno 14 vrsta zmija prikupljenih u gorju Zapadni Taurus. Rad donosi morfološke osobitosti vrsta te neka topografska opažanja lokaliteta. Prikupljeni materijal pomogao je upotpuniti nedostatke u poznavanju rasprostranjenja vrsta koje žive u ovoj regiji. Prikupljeni podaci uspoređeni su s relevantnom literaturom u svrhu produbljivanja znanja o taksonomiji vrsta.

Ključne riječi: zapadni Taurus, zmije, herpetofauna, novo nalazište, Turska

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INTRODUCTION

In recent years, herpetofauna studies covering a given locality have gained more significance (KASPAREK, 1990; BARAN *et al.*, 1992; BARAN *et al.*, 1994; TOK, 1995; BARAN *et al.*, 1997; KUMLUTAS *et al.*, 1998). The reason for this is that the number and the distribution of the species as well as the variations among species, subspecies and hybrid forms are thus able to be observed better.

The Western Taurus Mountains, which separate the Mediterranean coastline with its Mediterranean climate from the central Anatolian region, which is sparsely populated and has a steppe climate, have a great importance in Southwest Turkey. As the Western Mediterranean coast rises to high altitudes in a very narrow area of land and exhibits significant climatic changes, certain morphological changes in many reptile species may be caused. Thus, some new species and subspecies have been described from the Southwest Anatolian Region (BASOGLU, 1967; EISELT & BARAN, 1970, BASOGLU & ATATÜR, 1975; BASOGLU & BARAN, 1976; BARAN & BUDAK, 1978; BARAN & ATATÜR, 1980; EISELT & SCHMIDTLER, 1987; FRANZEN & KLEWEN, 1987; SCHMIDTLER, 1997).

The main objective of this study is to present detailed descriptions of the snake populations of the Western Taurus Range, an area of great importance from the viewpoint of not only geography but also vegetation but not as yet fully explored. Collective research on the snake species of this region will not only enable researchers to discover new localities by completing the missing information about the vertical distribution and the biotopes of these species, but also shed light on their taxonomical characteristics with the relevant literature.

MATERIAL AND METHODS

A number of scientific excursions were made into the Western Taurus Range between the years 1994–1999. 85 specimens belonging to 14 snake species have been collected from the region. Localities where the specimens have been caught are shown in Fig. 1. The specimens, given ZDEU (Zoology Department of Ege University) collection codes, are kept in the laboratories of Akdeniz University Faculty of Science and Literature. In the specimens, which were examined with respect to pholidosis, body measurement and colour-pattern features, the number of ventral plates was determined according to DOWLING (1951). Morphometric measurements, except for the total body length were taken using a dial caliper with an accuracy of 0.02 mm.

RESULTS AND DISCUSSION

Typhlops vermicularis Merrem, 1820

Specimen: 9 (♂♂, ♀♀): 169/1994, 1, Kisalar Village-Manavgat, 24.04.1994, Leg. M. Öz; 305/1996, 1, Finike, 07.03.1996, Leg. M. Öz; 374/1996, 1, Oba Village-Alanya, 13.04.1996, Leg. M. Öz; 306/1996, 1, Akseki-Gündogmus junction, 11.05.1996, Leg.

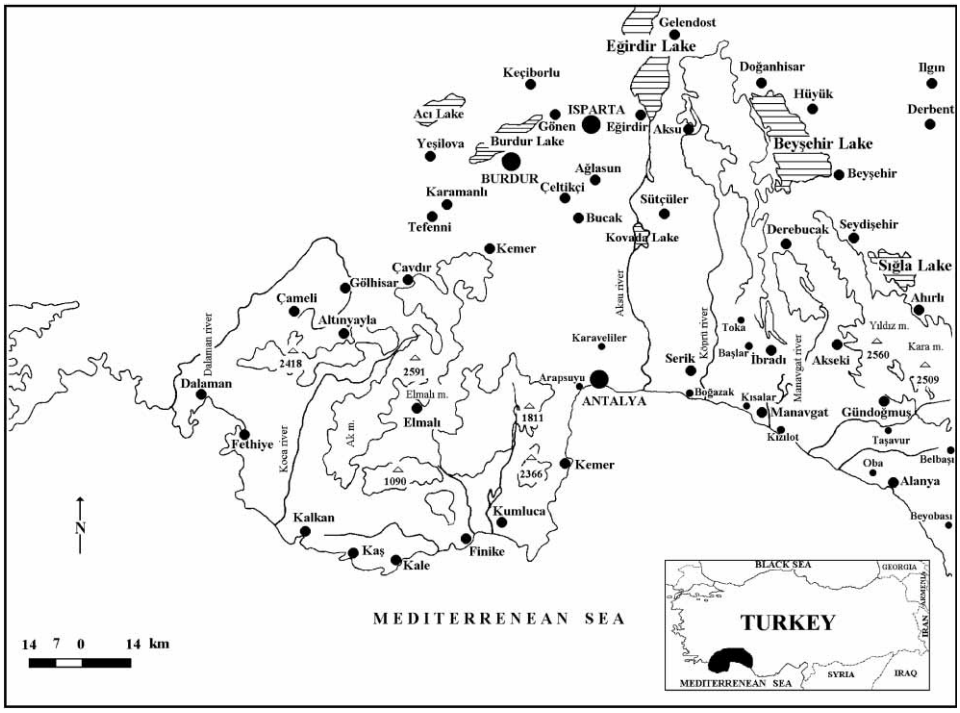

Fig. 1. The map showing the collection localities of specimens.

M. Öz; 307/1996, 1, Tasavur-Gündogmus, 11.05.1996, Leg. M. R. Tunç; 260/1997, 1, Between Çavdir and Sögüt, 24.05.1997, Leg. Y. Kumlutas-H. Durmus; 259/1997, 1, Üzümdere-Ibradi junction, 15.05.1997, Leg. M. Öz-M. R. Tunç; 261/1997, 1, Yuva Village, 26.05.1997, Leg Y. Kumlutas-H. Durmus; 118/1998, 1, Finike, 28.04.1998, Leg. M. Öz-M. R. Tunç.

There is a pair of nasals. The skin is covered with cycloid type of scales. The number of supralabials is 2 and sublabials 3 on each side. The mean number of scales is 23.22 (22–24) around the body, and 20.77 (20–21) around the tail. The mean total body length of the specimens is 190.12 (101.32–243.22 mm).

The colour of the dorsum is yellowish brown. The venter is yellowish white.

The vertical distribution of the specimens, usually caught under stones in the scrub and forest areas, varied between 50–1650 m. The time of capture was between 09:00 and 16:00 and the temperature between 25–35 °C. Kisalar Village, Oba Village, Akseki and Tasavur are places within the distribution range of the species, but this was the first time any material was collected from these places.

The morphological features of the specimens collected in the region typically resemble those of *T. vermicularis* species as stated previously by a number of researchers (BODENHEIMER, 1944; BARAN, 1976; BARAN & ATATÜR, 1998).

Hierophis jugularis (Linnaeus, 1758)

Specimen: 10 (4 ♂♂, 1 ♀, 5 Juv.): 163/1994, 1 juv., Bereket Village-Manavgat, 10.04.1994, Leg. M. Öz; 164/1994, 1 juv., Belek-Serik, 24.04.1994, Leg, M. Öz; 165/1994, 1 juv., Bogazak Village-Serik, 08.08.1994, Leg. M. Öz; 142/1995, 1 juv., Arapsuyu-Antalya, 05.08.1995, Leg. M. Öz; 312/1996, 1 juv., Kizilot-Manavgat, 25.08.1996, Leg. M. Öz; 253/1997, 1♂, Baslar Village-Ibradi, 15.05.1997, Leg. M. Öz; 254/1997, 1♂, 1♀, Kizilot-Manavgat, 16.06.1997, Leg. O. Türkozan; 255/1997, 1♂, Kircami-Antalya, 16.06.1997, Leg. M. Öz; 113/1998, 1♂, Kizilot-Manavgat, 26.06.1998, Leg. F. Kiremitçi.

Although pholidosis and colour-pattern characteristics of our specimens generally agree with the literature data, there can be some slight differences. For instance, the number of dorsal scales, ventrals and subcaudals were given as 19, 189–215 and 99–128, respectively by BASOGLU & BARAN (1977) and BARAN & ATATÜR (1998), whereas the number of dorsal scales in 20 % of our specimens was 18; and that of ventrals, 196–202 in males, 196 in the female and 194–202 in juveniles. Subcaudals were 108–116 in males, 94 in the female and 102–108 in juveniles (not sex determined in juveniles for all species). Nevertheless, these small differences do not necessarily imply a difference at subspecies level. Body measurement and indices for five adult specimens are given in Tab. 1.

The juvenile specimens were collected under stones in bushy vegetation in the morning (09:00–10:00), and the adults were caught while in motion at altitudes of 25–900 m at temperatures of 25–38 °C during noontime hours (11:00–13:00). Although within the range of distribution, Arapsuyu and Baslar Villages are new localities for this species.

The genus, known as *Coluber*, was renamed *Hierophis* by SCHÄTTI (1988).

Tab. 1. The results of descriptive statistics on some of the characteristics of *Hierophis jugularis* (These measurements are given as millimetres, **N**: Sample size, **Mean**: Mean of all values, **Min**.: Minimum value, **Max**.: Maximum value, **S.D**.: Standard Deviation, **S.E**.: Standard Error, **HW**: Head width, **HL**: Head length, **SVL**: Snout-vent length, **TL**: Total length, **Tail L**.: Tail Length, **WR**: Width of rostrale, **HR**: Height of rostrale, **LF**: Length of frontale, **WF**: Width of frontale).

Characters	N	Mean	Min	Max	SD	SE
HW	5	10.25	8.14	13.02	2.09	0.93
HL	5	23.24	18.06	30.18	5.03	2.25
SVL	5	900.60	660.00	1170.00	194.05	86.78
TL	5	1243.40	960.00	1600.00	263.45	117.82
(HW / HL) X 100	5	44.26	41.44	50.04	3.55	1.59
(Tail L / TL) X 100	5	27.58	22.90	31.25	3.20	1.43
WR	5	5.78	4.42	7.96	1.45	0.65
HR	5	3.78	2.76	4.72	0.89	0.40
LF	5	8.67	7.14	10.72	1.55	0.69
WF	5	5.45	4.48	6.48	0.90	0.40

Hierophis caspius (Gmelin, 1789)

Specimen: 1♂: 201/1999, 1♂, Çamkuyu-Elmali, 14.07.1999, Leg. M. Öz.

The number of preoculars is 2, frenals 1 and postoculars 2 on each side. The number of temporals is 3+4. There are 8 supralabials and 9 sublabials on each side. The mean number of dorsal scales in the median line between 90th and 115th ventral plates is 19, of ventrals 231 and of subcaudals 105.

The ratio of rostral height to width is 1.54. The head width is 10.70 and length 24.28 mm. The total length of the specimen is 1240.04 mm, the tail length being 350 mm.

The specimen, which was collected from Çamkuyu, was spotted at a height of 1400 m in an artificial bird nest in a *Cedrus libani* forest at 11:30 when the temperature was 31 °C.

The morphological character of the only adult specimen that was caught agrees with that of the *H. caspius* species in BARAN's (1976) study; however, the number of ventrals was reported as 190–215 in the same study, while the ventral value was found to be higher at 231 in our study.

Hemorrhois nummifer (Reuss, 1834)

Specimen: 5 (2 ♂♂, 2 ♀♀, 1 Juv.): 313/1996, 1 juv., Tasavur-Gündogmus, 11.05. 1996, Leg. M. Öz; 314/1996, 1 ♂, Duaci Village-Antalya, 18.05.1996, Leg. A. Dinç; 252/1997, 1 ♂, Tefenni-Korkuteli, 25.05.1997, Leg. Y. Kumlutas; 111/1998, 1 ♀, Irmasan passegaway-Akseki, 26.06.1998, Leg. M. Öz; 112/1998, 1 ♀, Beskonak-Antalya, 10.10.1998, Leg. O. Türkozan.

The five specimens, examined morphologically, displayed the typical characteristics of their species. The number of subcaudals in our specimens, which was 70–103, is in agreement with the figure given by BARAN (1976) (76–102). The number of ventrals is 200 and 201 in males, 196 and 207 in females and 197 in juveniles. The head width of a juvenile specimen was measured as 7.56 mm, head length as

Tab. 2. The results of descriptive statistics on some of the characteristics of *Hemorrhois nummifer*.

Characters	N	Mean	Min	Max	SD	SE
HW	4	11.31	8.30	13.76	2.70	1.35
HL	4	22.65	16.42	29.12	6.76	3.38
SVL	4	736.50	498.00	960.00	229.13	114.56
TL	4	957.95	656.82	1260.00	289.95	144.97
(HW / HL) X 100	4	50.65	47.30	56.56	4.17	2.08
(Tail L / TL) X 100	4	23.28	21.13	24.18	1.44	0.72
WR	4	5.79	4.10	7.76	1.88	0.94
HR	4	3.17	2.54	3.82	0.64	0.32
LF	4	7.76	6.38	9.42	1.57	0.78
WF	4	6.39	4.64	8.00	1.74	0.87

13.56 mm and total body length as 440.72. Body measurements and indices related to the other four specimens are shown in Tab. 2.

The specimens were usually collected at heights varying between 900 and 1800 m and at temperatures of 26–35 °C during 10:00–16:00. Trees, such as *Pinus brutia*, *Quercus* sp., *Juniperus* sp. and *Platanus orientalis* were dominant in the biotopes where the specimens were found. The specimen from Tasavur was caught with a *Telescopus fallax* under the same stone.

The species was called *Coluber nummifer* until recently but was renamed *Hemorrhois nummifer* by SCHÄTTI & UTIGER (2001). Our specimens were found to resemble the species *H. nummifer*, distributed in Western, Southern and Central Anatolia (BARAN, 1976; LEVITON *et al.*, 1992). According to the study conducted by BASOGLU & BARAN (1980), there is no record of this species from the area stretching from Aspendos to Tarsus. The species from Gündogmus shows that this area is inhabited by this species.

Platyceps najadum (Eichwald, 1831)

Specimen: 6 (2 ♂♂, 2 ♀♀, 2 Juv.): 166/1994, 1 Juv., Bogazak Village-Serik, 05.06. 1994, Leg. M. R. Tunç; 143/1995, 1 Juv., Kizilot-Manavgat, 08.04.1995, Leg. N. Turan; 311/1996, 1♂, 1♀, Çiglikara-Elmali, 17.06.1996, Leg. Y. Kumlutas, M. R. Tunç; 114/1998, 1♂, Kovada Lake-Egirdir, 09.06.1998, Leg. M. R. Tunç; 115/1998, 1♀, Arapsuyu-Antalya, 22.06.1998, Leg. S. Düsen.

The number of ventrals was found to be 214 and 216 in males, 216 in females, and 210 and 214 in juveniles. The number of subcaudals is 124 and 127 in males, 132 and 134 in females and 119 and 122 in juveniles. Some of the body indices related to the two juvenile specimens are as follows: Head lengths are 4.38 and 4.42 mm, head+body lengths 230.10 and 273 mm, total body lengths 322.14 and 383.20 mm, frontal lengths 3.62 and 4.18 mm, and frontal widths 2.40 and 2.52 mm. Body measurement and indices belonging to the other specimens are given in Tab. 3.

Tab. 3. The results of descriptive statistics on some of the characteristics of *Platyceps najadum*.

Characters	N	Mean	Min	Max	SD	SE
HW	4	6.84	6.00	8.30	1.00	0.50
HL	4	13.48	12.42	14.38	0.94	0.47
SVL	4	571.15	464.00	705.00	100.08	50.04
TL	4	830.97	664.10	1027.00	150.92	75.46
(HW / HL) X 100	4	50.62	45.90	57.71	5.09	2.54
(Tail L / TL) X 100	4	31.19	30.13	32.54	1.02	0.51
WR	4	3.05	2.28	3.72	0.67	0.33
HR	4	1.70	1.36	2.14	0.33	0.16
LF	4	5.06	3.62	6.06	1.07	0.53
WF	4	3.41	2.40	4.22	0.78	0.39

Although the vertical distribution of this species was reported up to a maximum elevation of 1700 m (BASOGLU & BARAN, 1977), our specimens were caught at elevations of 25–1850 m between the hours of 09:00 and 15:00. The specimen from Çiglikara was caught at 1850 m, which clearly shows that this species can live at higher altitudes. The biotopes of the specimens include tree species such as *Juniperus* sp and *Cedrus libani* in particular.

The species, known as *Coluber najadum* until recently, was renamed *Platyceps najadum* by SCHÄTTI & UTIGER (2001). Our specimens are in agreement with the definitions provided by BARAN & ATATÜR (1998) and SCHÄTTI *et al*. (2001).

These were the first materials collected from all the localities except for Elmali within the known range of distribution for this species.

Platyceps collaris (Muller, 1878)

Specimen: 1 semi-adult: 310/1996, 1 sem-ad., Finike, 07.03.1996, Leg. M. Öz.

In the specimen, which displayed typical morphological characteristics of its species, the only difference was observed in the number of dorsal scales. Although it was given as 19 in studies on the same species (BASOGLU & BARAN, 1977; SCHÄTTI *et al*., 2001), the same value was found to be 17 in our specimen.

The only specimen from Finike was caught under a stone in bushy vegetation at an elevation of 75 m at 10:00 in the morning when the temperature was 19 °C.

This species, previously known as *Coluber rubriceps* (OBST, 1981; REHAK, 1985, 1986; TEYNIE, 1987; AMR *et al*., 1997; BARAN & ATATÜR, 1998), was renamed *Coluber collaris* by SCHÄTTI *et al*. (2001). Finally, the name of the species was changed to *Platyceps collaris* by SCHÄTTI & UTIGER (2001).

There was no record of the species in SCHÄTTI *et al*. (2001) from Finike. So ours is the first material collected from this locality.

Elaphe quatuorlineata (Lacepede, 1789)

Specimen: 2 (1 ♂, 1 ♀): 309/1996, 1 ♂, Çiglikara-Elmali, 17.06.1996, Leg. M. Öz, Y. Kumlutas; 202/1999, 1♀, Çamkuyu-Elmali, 14.07.1999, Leg. M. Öz.

Both of our specimens display characteristic features of the species with respect to pholidosis and colour-pattern specifications.

Some body plate counts and size measurement values are as follows: The number of ventrals and subcaudals were 212–213 and 76–67, respectively. The head widths were 15.72–13.76 mm; head lengths 33.16–30.60 mm; head+body lengths 126–114.30 mm; and total body lengths 154.06–139 mm.

The specimen from Çiglikara was caught at an elevation of about 1500 m, around 9:30 in the morning when the temperature was 24 °C, and the other specimen at 1400 m at a temperature of 28 °C in an area populated by small bushy vegetation as well as *Cedrus libani* and *Juniperus* sp. trees.

This specimen is represented by the *E. q. sauromates* (PALLAS, 1814) subspecies in Turkey. The most south-easterly distribution of this species on the Mediterranean coast is Antalya (ZINNER, 1972; BASOGLU & BARAN, 1980). Indeed, the two specimens we found were from Elmali, which is a biotope near Antalya.

Tab. 4. The results of descriptive statistics on some of the characteristics of *Natrix natrix*.

Characters	N	Mean	Min	Max	SD	SE
HW	4	8.78	6.98	10.14	1.59	0.79
HL	4	18.65	14.52	23.34	3.68	1.84
SVL	4	562.25	438.00	668.00	111.08	55.54
TL	4	704.96	556.72	832.46	133.58	66.79
(HW / HL) X 100	4	47.32	43.29	52.67	4.05	2.02
(Tail L / TL) X 100	4	20.33	19.75	21.32	0.72	0.36
WR	4	4.83	3.82	6.40	1.14	0.57
HR	4	3.07	2.06	4.12	1.05	0.52
LF	4	6.62	5.38	8.14	1.22	0.61
WF	4	4.60	3.56	5.66	1.00	0.50

Elaphe situla (Linnaeus, 1758)

Specimen: 1 ♂: 256/1997, 1 ♂, Karaveliler Village-Antalya, 23.04.1997, Leg. Y. Kumlutas.

Our single specimen, which is within the variation borders of its species with respect to pholidosis and colour-pattern characters, had 220 ventrals and 75 subcaudals. The head width was 12.62 mm, head length 17.46 mm, head+body length 600.10 mm and the total body length 724.48 mm.

The specimen was caught under a stone at an elevation of 650 m at 25 °C in bushy vegetation around 10:00 in the morning.

The most recent record of this species, which is mainly distributed in Northern and Western Anatolia, was from Köycegiz by BARAN *et al*. (1994). With the record of the locality in Karaveliler Village (Antalya), the area of distribution for this species has extended towards the east.

Natrix natrix (Linnaeus, 1758)

Specimen: 6 (2 ♂♂, 2 ♀♀, 2 Juv.): 167/1994, 1 ♂, Denizyaka Village-Manavgat, 10.04.1994, Leg. M. Öz; 168/1994, 1 ♂, Bogazak Village-Serik, 06.08.1994, Leg. M. R. Tunç; 144/1995, 1 Juv., Kuyucak Village-Akseki, 05.08.1995, Leg. M. Öz; 308/1996, 1 ♀, Kepez-Antalya, 15.03.1996, Leg. A. Dinç; 258/1997, 1♀, Beyobasi-Gazipasa, 25.06. 1997, Leg. Y. Kumlutas; 117/1998, 1 Juv., Asagigökdere Village-Egirdir, 08.06.1998, Leg. M. Öz.

The number of ventrals is 171 and 179 in males, 165 and 163 in females, and 176 and 180 in juveniles. The number of subcaudals is 66 and 75 in males, 64 and 67 in females, and 69 and 70 in juveniles. Body measurement values of the two juvenile specimens are as follows: The head widths are 4.66 and 4.92 mm, head lengths 10.16 and 10.98 mm, head+body lengths 187 and 200 mm, and total body length 240.26 and 248.02 mm. Body measurements and indices related to the other adult specimens are shown in Tab. 4.

The specimens were collected from heights ranging from 25 to 1550 m between 10:00 and 15:00 at 25–38 °C close to bodies of water. Data related to our specimens agree with descriptions provided for the *Natrix natrix persa* subspecies by BASOGLU & BARAN (1980).

Denizyaka, Bogazak, Kuyucak and Beyobasi are new localities within the known area of distribution for the species.

Natrix tessellata (Laurenti, 1768)

Specimen: 8 (1 ♂, 1 ♀, 6 Juv.): 257/1997, 6 Juv., Korkuteli Dam, 24.05.1997, Leg. Y. Kumlutas, O. Türkozan, S. Düsen; 166/1998, 1 ♂, Asagigökdere Village-Egirdir, 08.06.1998. Leg. M. Öz; 203/1999, 1 ♀, Taskesigi-Korkuteli, 19.05.1999, Leg. M. Öz.

Some plate counts and body measurement indices belonging to one adult male and one adult female, whose pholidosis and colour-pattern characters are in agreement with those given by BASOGLU & BARAN (1977), are as follows: Ventrals, 175–169; subcaudals, 78–68; head widths, 5.96–5.66 mm; head lengths, 16.52–14.36 mm; head+body lengths 551.20–387.10 mm; and total length, 674.88–500.04 mm. Body measurements and indices related to other 6 juvenile specimens are presented in Tab. 5.

The specimens were caught from elevations ranging between 1200 and 1800 m around 10:00–11:00 in the morning at 20–28 °C close to bodies of water.

According to data available at present (BARAN & ATATÜR, 1998), the *N. tessellata* species is distributed in Turkey. Our specimens too, display characteristic features of this species.

Eirenis modestus (Martin, 1838)

Specimen: 25 (15 ♂♂, 7 ♀♀, 3 Juv.): 170/1994, 1 ♂, Kisalar Village-Manavgat, 24.04.1994, Leg. M.R. Tunç; 171/1994, 2 ♂♂, Bereket Village-Manavgat, 29.05.1994, Leg. M. Öz; 240/1996, 1 ♂, Bayatbademlisi-Korkuteli, 06.05.1996, Leg. M. Öz; 301/1996,

Tab. 5. The results of descriptive statistics on some of the characteristics for juveniles of *Natrix tessellata*

Characters	N	Mean	Min	Max	SD	SE
HW	6	4.08	3.60	4.74	0.42	0.17
HL	6	9.79	9.22	10.56	0.53	0.21
SVL	6	193.03	175.00	208.10	14.36	5.86
TL	6	246.14	219.44	262.44	19.10	7.80
(HW / HL) X 100	6	41.70	37.38	47.26	3.75	1.53
(Tail L / TL) X 100	6	21.55	19.50	23.03	1.37	0.56
WR	6	1.85	1.34	2.42	0.42	0.17
HR	6	1.03	0.60	1.36	0.36	0.14
LF	6	3.55	3.32	4.02	0.24	0.10
WF	6	2.00	1.80	2.22	0.17	0.00

1 ♂, 2 juv., Between Korkuteli and Antalya, 06.05.1996, Leg. M.R. Tunç; 302/1996, 1 ♂ Akseki-Gündogmus junction, 11.05.1996, Leg. M. Öz; 303/1996, 1♀, Karaisali Village-Gündogmus, 12.05.1996, Leg M. Öz; 304/1996, 2 ♂♂, 1 jüv., Dagbag Village-Kas, 15.06.1996, Leg. Y. Kumlutas- H. Durmus; 262/1997, 1 ♀, Tünektepe-Antalya, 08.03. 1997, Leg. M. R. Tunç; 263/1997, 1 ♂, Belbasi plateau-Gazipasa, 24.06.1997, Leg. Y. Kumlutas-H. Durmus; 264/1997, 3 ♂♂, 3 ♀♀, Sögüt plateau-Alanya, 25.06.1997, Leg Y. Kumlutas-H. Durmus-M. R. Tunç; 265/1997, 1 ♂, Olympos Milli Parki-Antalya, 28.06.1997, Leg. Y. Kumlutas-H. Durmus; 119/1998, 1 ♂, 2 ♀♀, Tasavur-Gündogmus, 25.06.1998, Leg. Y. Kumlutas-H. Durmus; 120/1998, 1 ♂, Sadiklar Village-Akseki, 26.06.1998, Leg. M. Öz-Y. Kumlutas.

The number of preocular plates and frenals is one, postoculars 2 and supralabials 7 on each side of all of our specimens. The number of temporals is mainly 1+2 (96%), but 1+3 in only one specimen (4%). The mean number of supralabials is 7.92 with a minimum of 6 and a maximum of 10. The number of dorsal scales is mostly 17 (88%) and rarely 19 (12%). The number of ventrals is 157–182 in males, 168–179 in females and 157–169 in juveniles. The numbers of subcaudals range between 63–74 in males, 61–69 in females and 63–73 in juveniles. Body measurement indices related to our material are given in Tab. 6.

There are blackish spots on the heads and necks of the specimens, paler in adult individuals. The dorsum is yellowish brown in colour and spotless. Dark spots are present on the anterior of the body in 5 specimens. The venter is spotless and has a yellowish white colour.

The specimens, collected from various localities, were more frequently seen at temperatures varying between 25 and 34 °C. The specimens, usually active between 10:00–12:00 and 14:00–17:00 hours, were found at elevations up to 1875 m. The dominant plant species in the biotopes where the specimens were collected were scrubs such as *Quercus coccifera*, *Olea europea*, *Arbutus andrachne*, *Cerotonia siliqua* and *Laurus nobilis*, and trees such as *Juniperus* sp., *Pinus brutia*, *Pinus nigra* and *Cedrus libani*.

New species have been identified in the distribution range of this species, which is distributed in most parts of Turkey (SCHMIDTLER, 1988; SCHMIDTLER & LANZA, 1990;

Tab. 6. The results of descriptive statistics on some of the characteristics of *Eirenis modestus*.

Characters	N	Mean	Min	Max	SD	SE
HW	22	7.04	4.76	8.76	1.23	0.26
HL	22	12.07	9.18	14.44	1.46	0.31
SVL	22	353.72	218.00	552.00	76.88	16.39
TL	20	458.79	283.00	669.00	98.61	22.05
(HW / HL) X 100	22	58.03	43.82	69.32	6.98	1.49
(Tail L / TL) X 100	20	23.81	17.48	27.98	2.12	0.47
WR	22	2.93	2.06	3.68	0.48	0.10
HR	22	2.02	1.34	2.72	0.39	0.00
LF	22	4.01	3.42	4.90	0.47	0.10
WF	22	2.56	1.78	3.64	0.47	0.10

Tab. 7. The results of descriptive statistics on some of the characteristics of *Telescopus fallax*.

Characters	N	Mean	Min	Max	SD	SE
HW	6	7.69	5.46	9.76	1.59	0.65
HL	6	14.81	11.88	18.82	2.96	1.20
SVL	6	128.88	98.40	178.00	32.55	13.29
TL	6	761.11	578.40	1041.00	182.02	74.30
(HW / HL) X 100	6	51.91	46.00	55.81	3.92	1.60
(Tail L / TL) X 100	6	83.09	82.49	83.58	0.41	0.17
WR	6	3.88	3.04	4.92	0.77	0.31
HR	6	2.10	1.46	2.58	0.39	0.15
LF	6	5.19	4.26	6.56	0.90	0.36
WF	6	4.60	3.70	5.62	0.82	0.33

SCHMIDTLER & EISELT, 1991). However, these new species are found in the far eastern section of our study area. Consequently, we believe that our specimens do not differ from *Eirenis modestus* species. Dagbag, Belbasi, Sögüt and Tasavur are localities where materials belonging to this species have been collected for the first time.

Telescopus fallax (Fleischmann, 1831)

Specimen: 6 (3 ♂♂, 3 ♀♀): 161/1994, 1 ♀, Facuty of Science Campus, Topçular-Antalya, 07.08.1994, Leg. M. R. Tunç; 141/1995, 1 ♀, Kizilot-Manavgat, 16.04.1995, Leg. N. Turan; 246/1997, 2 ♂♂, Perge-Aksu, 12.05.1997, Leg. M. R. Tunç; 247/1997, 1 ♀, Büyükalan Village-Akseki, 03.06.1997, Leg. M. Öz; 248/1997, 1 ♂, Dizlerçami-Antalya, 14.10.1997, Leg. A. Dinç.

The body measurement indices related to our 6 adult specimens are presented in Tab. 7. The number of ventrals is 214–225 in males, 217–222 in females, and that of subcaudals 71–73 in males and 66–73 in females. The other features related to colour-pattern were within the variation range of the species.

The specimens were collected at elevations varying between 500–1500 m and mainly under small bushes. The temperatures were between 26–34 °C at 11:00–15:00 hours when the specimens were caught. Kizilot and Büyükalan villages are new localities where first materials were collected by our team.

According to BASOGLU & BARAN (1980), this particular species has three subspecies in Turkey (*T. f. fallax*; *T. f. iberus*; *T. f. syriacus*). Our material, found within the distribution range of the species, displays similarities to the subspecies having a single anal plate and the number of their ventrals varies between 214 and 225. This value was given as 186–224 by BASOGLU & BARAN (1980).

Malpolon monspessulanus (Hermann, 1804)

Specimen: 2 (1 ♀, 1 Juv.): 162/1994. 1 Juv., Bereket Village-Manavgat, 20.03.1994, Leg. M. Öz; 249/1997, 1 ♀, Kizilot-Manavgat, 16.06.1997, Leg. O. Türkozan.

Although the morphological features of both of our specimens agree with the characteristic features of this species, the number of frenal plates was given as 2 and that of temporals as 2+3 by BASOGLU & BARAN (1977). In our study, however, these values were found to be 1 and 3+3, respectively. The numbers of ventrals and subcaudals are 170 and 69 in female; 169 and 87 in juvenile specimen, respectively.

Some body measurement indices related to one female and one juvenile specimen are as follows: The head widths are 12.44 and 6.72 mm, head lengths 26.56 and 12.72 mm, total lengths 1216.50 and 361.26 mm.

Both specimens were caught under stones among *Nerium oleander* plants near the seaside between 11:00 and 14:00 hours. The temperatures when the specimens were collected were between 20 and 26 °C.

Dorsal scales at mid-body are 17 in both specimens. The presence of yellowish lines at the edges of dark spots on the heads of juveniles in particular (BOULENGER, 1913; HELMICH, 1956) clearly indicates that they resemble *M. m. insignitus* subspecies. Bereket Village and Kizilot are located within the distribution range of this species and first specimens were collected from these localities by our team.

Vipera xanthina (Gray, 1849)

Specimen: 3 (2 ♂♂, 1 ♀): 250/1997, 1 ♂, Toka plataeu-Manavgat, 06.06.1997, Leg. M. Öz, M. R. Tunç; 251/1997, 1 ♀, Belbasi plataeu-Gazipasa, 24.06.1997, Leg. M. R. Tunç-Y. Kumlutas; 200/1999, 1 ♂, Çamkuyu-Elmali, 25.07.1999, Leg. M. Öz.

The number of apicals is 2 in one specimen, and 3 in the other two. There are two rows of scales between the supralabial plates and the eyes. The number of scales is 12 around the eyes except for the supraocular plate. The number of scales between supraocular plates is 2, and there are always 23 dorsal scales. The number of ventrals is 150 in one male specimen, and 156 in the other two. The number of subcaudals is 29 and 30 in males, and 28 in the female specimen. The total length of the longest male specimen is 712 mm, the head+body length being 655 mm and the tail 57 mm. The shortest female specimen is 424 mm long with a head+body length of 391 mm and tail length of 33 mm.

The top of the head and the dorsum of all three specimens are grey-brown. There are two blotches on the head connected to the single spot on the neck in one of the specimens. There are black temporal bands in all of the specimens. The big roundish spots on the dorsum sometimes form a zigzag pattern and continue straight towards the tail. A stripe made up of black spots extends on the flanks, touching the ventrals. The venter is yellowish-white with small black spots in the abdominal parts.

The specimens were caught at elevations ranging from 1000 to 1600 m during morning hours of the day (8:30–10:30) when the temperature was 24–34 °C. Toka and Belbasi plateaus were mainly covered with *Pinus nigra* forests. Morphological characters and colour-pattern features of our specimens were in agreement with the descriptions given for *V. xanthina* (EISELT & BARAN, 1970; SCHÄTTI *et al.*, 1991; BARAN & ATATÜR, 1998). Toka and Belbasi plateaus are new localities where materials belonging to this species were collected for the firs time.

CONCLUSION

In this study, a series of field excursions were made into the western Taurus Range between the years 1994 and 1999, during which a total of 85 specimens belonging to 14 snake species were caught and then evaluated. Twenty-five new localities containing 10 snake species were established in the study area, which clearly shows that snake species also live in some places within their area of distribution where no material had been collected before. Moreover, with the record of *Elaphe situla* from Karaveliler village (Antalya), the distribution area of this species has been extended to its southernmost border. Thus, missing information related to the distribution of the snake species in the study area was largely able to be supplied. Detailed studies were conducted on the morphological characteristics of the specimens collected and the data obtained were compared with the literature. Although comparisons revealed small differences in the morphology of certain species (*H. jugularis, H. caspius, H. nummifer, E. quatuorlineata, M. monspessulanus*), these were not believed to be significant enough to create a change at existing species or subspecies level. Furthermore, topographical observations in the areas where the specimens were caught were also included in this study in an effort to supply the missing information in this field.

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