

The distribution of *Mauremys* in Asia Minor, and first record of *M. caspica caspica* (GMELIN, 1774) for the internally drained central basin of Anatolia (Testudines: Cryptodira: Bataguridae)

Zur Verbreitung von *Mauremys* in Kleinasien und Erstnachweis von *M. caspica caspica* (GMELIN, 1774) für das oberirdisch abflußlose Zentralbecken Anatoliens
(Testudines: Cryptodira: Bataguridae)

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KURZFASSUNG

Das Verbreitungsmuster von *Mauremys c. caspica* und *M. c. rivulata* in Kleinasien wird analysiert. Bislang konnte noch keine Intergradation zwischen beiden Taxa belegt werden. *M. c. caspica* wird erstmals für das oberirdisch abflußlose Zentralbecken Anatoliens nachgewiesen und es wird auf die zoogeographische Bedeutung dieses Vorkommens hingewiesen.

ABSTRACT

The distribution patterns of *Mauremys c. caspica* and *M. c. rivulata* in Asia Minor are analysed. There is no evidence of intergradation between both taxa. *M. c. caspica* is recorded for the first time for the internally drained central basin of the Anatolian Plateau. The zoogeographic meaning of this record is discussed.

KEYWORDS

Mauremys caspica, *Mauremys caspica caspica*, *Mauremys caspica rivulata*, *Emys orbicularis*; distribution, zoogeography; Asia Minor, Europe

INTRODUCTION

The Anatolian ranges of *Mauremys caspica caspica* (GMELIN, 1774) and *M. c. rivulata* (VALENCIENNES, 1833) were discussed in detail by EISELT & SPITZENBERGER (1967). These authors found out that *M. c. rivulata* inhabits the Marmara region and the Aegean and Mediterranean coasts of Asia Minor. The range of *M. c. caspica* is mainly confined to the drainage systems of the Euphrates and Tigris rivers, and Lake Van. A single population is known for the Araxes river in Turkey. This is an outpost of the occurrence of *M. c. caspica* in the same river in the former USSR (cf. BANNIKOW et al. 1977). In addition, EISELT & SPITZENBERGER (1967) cited a few localities for *M. c. caspica* in the northern Anatolian Plateau. However, the subspecific status of the populations near Ankara and Eskişehir

remains unclear till today (question marks in fig. 1). Most remarkably, near Ankara EISELT & SPITZENBERGER (1967) reported an allegedly sympatric occurrence of *M. c. caspica* and *M. c. rivulata*. In south-eastern Turkey a sharp distributional separation between both taxa was found, formed by the water shed between the Ceyhan and Euphrates rivers (EISELT & SPITZENBERGER, 1967; fig. 1). There is no evidence of any intergradation.

Unfortunately, in their revision of Mediterranean *Mauremys* BUSACK & ERNST (1980) overlooked the important study of EISELT & SPITZENBERGER (1967). Due to this BUSACK & ERNST inaccurately reported the status and range of *M. c. caspica* and *M. c. rivulata*. These mistakes are in urgent need of clarification here.

RESULTS AND DISCUSSION

Obviously, BUSACK & ERNST misinterpreted the distribution map for *M. caspica* in BAŞOĞLU & BARAN (1977) which was reproduced from EISELT & SPITZENBERGER (1967). The symbol indicating a possible sympatric occurrence of *M. c. caspica* and *M. c. rivulata* near Ankara was misunderstood as an intermediate population between both subspecies. Even more important, BUSACK & ERNST (1980) took this erroneous assumption as an important argument for the conspecific status of *M. c. caspica* and *M.*

c. rivulata. Remarkably, the same authors demonstrated a greater morphological distance between *M. c. caspica* and *M. c. rivulata* than between each of these taxa and the Ibero-African *M. leprosa*. A further deficit of the study of BUSACK & ERNST (1980: 259, fig. 3) is found in their own incorrect distribution map. This map indicates two disjunct areas in *M. c. caspica*, corresponding roughly to (1) the Anatolian Plateau plus Eastern Turkey (including the uppermost courses of Euphrates and Tigris), Georgia, and Armenia

Fig. 1 (opposite page): Distribution of *Mauremys caspica* in Turkey and adjacent areas (modified and enlarged with new data after EISELT & SPITZENBERGER 1967).

O - literature records for *M. caspica* without subspecific determination; ■ - *M. c. caspica*; ● - *M. c. rivulata*; + + + - border line of the internally drained central basin of Anatolia.

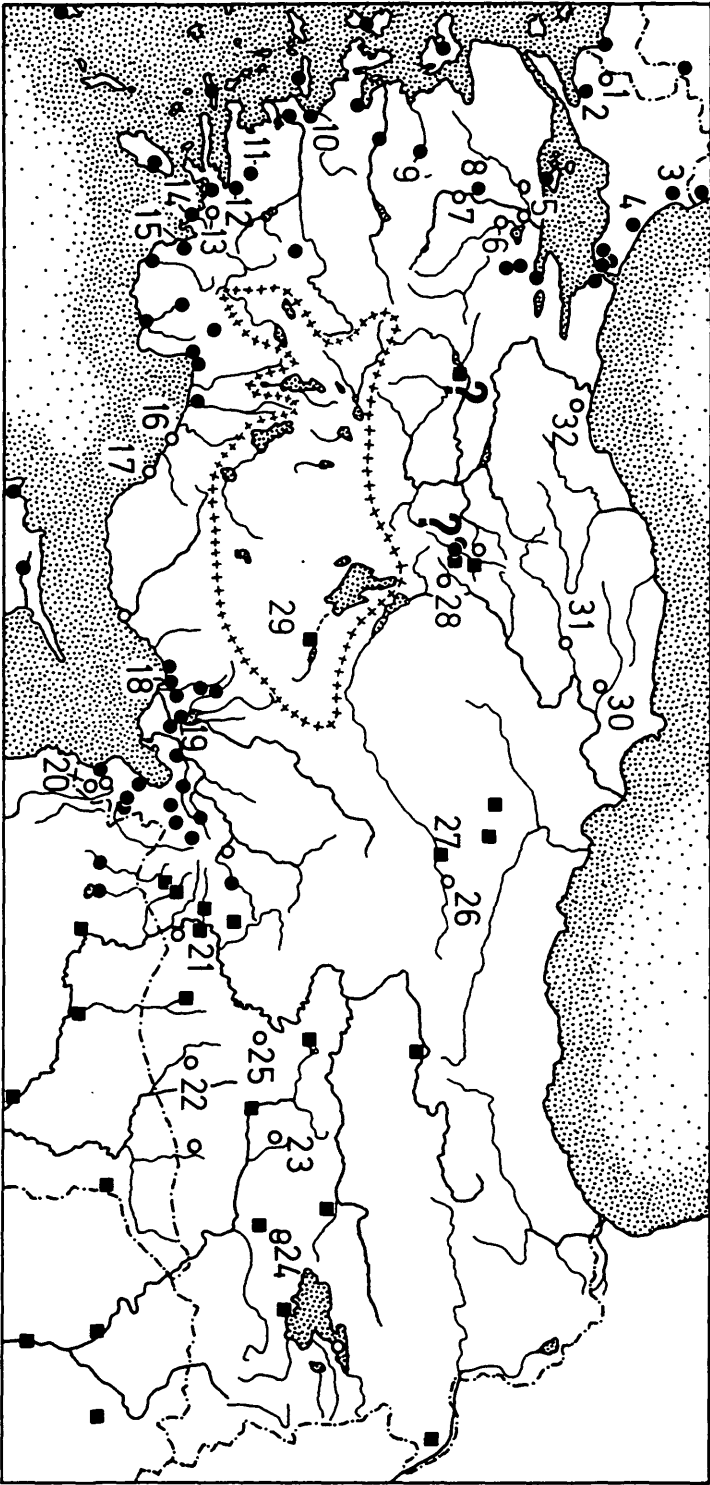
Only localities not plotted in the map in EISELT & SPITZENBERGER (1967) bear numbers. The reference is given following each new locality. For museum acronyms see FRITZ (1993).

- 1: İpsala (CLARK & CLARK 1973),
- 2: Bahçeköy, SE of Keşan (EISELT & SPITZENBERGER 1967, addendum),
- 3: İgneada (EISELT & SPITZENBERGER 1967, addendum),
- 4: Karaburun (EISELT & SPITZENBERGER 1967, addendum),
- 5: Karacabey (RAXWORTHY 1988),
- 6: Mustafakemalpaşa (CLARK & CLARK 1973),
- 7: Bigadiç (CLARK & CLARK 1973),
- 8: Kepsut (ANDRÉN & NILSON 1976),
- 9: Soma (ZMB 38222),
- 10: Ephesus (TRUTNAU 1967),
- 11: between Milas and Muğla (LAMBERT 1970),
- 12: Gökova (LAMBERT 1970),
- 13: Alagöl near Kaunos and Dalyan (KASPAREK 1990),
- 14: Kapıkargın (GRAMENTZ 1993a),
- 15: Fethiye (LAMBERT 1970),
- 16: Side (near Manavgat, TEYNIÉ 1991),
- 17: Alanya (CLARK & CLARK 1973),
- 18: between Mersin and Tarsus (MNHG 2423.80),
- 19: Adana (TRUTNAU 1967; SMNS 3680),
- 20: Altınözü (TEYNIÉ 1991),
- 21: Halfeti (GRAMENTZ 1993b),
- 22: Viranşehir (TEYNIÉ 1991),
- 23: Silvan (CLARK & CLARK 1973),
- 24: south of Baykan and 4 km north of Baykan (TEYNIÉ 1991),
- 25: between Çermik and Siverek (TEYNIÉ 1991),
- 26: Hafik (TEYNIÉ 1991),
- 27: Sivas (SMNS 7168),
- 28: between Elmadag and Kırnkale (TEYNIÉ 1991),
- 29: Aksaray (observed and photographed by O. FREYTAG, IX/X 1992),
- 30: Boyabat, Gökırmak valley (SCHMIDTLER 1986),
- 31: Tosya (SCHMIDTLER 1986),
- 32: Kurtköy (SCHULTSCHIK & SCHULTSCHIK 1991).

Abb. 1 (gegenüberliegende Seite): Verbreitung von *Mauremys caspica* in der Türkei und in angrenzenden Gebieten (verändert und erweitert nach EISELT & SPITZENBERGER 1967).

O - Literaturnachweise für *M. caspica* ohne Angabe der Unterart; ■ - *M. c. caspica*; ● - *M. c. rivulata*; + + + - Grenzlinie des oberirdisch abflußlosen Zentralbeckens von Anatolien.

Nur die in der Karte von EISELT & SPITZENBERGER (1967) nicht verzeichneten Fundorte sind durchnummeriert. Nach jedem neuen Fundort ist die Quelle angegeben. Für Museumsakronyme siehe FRITZ (1993).



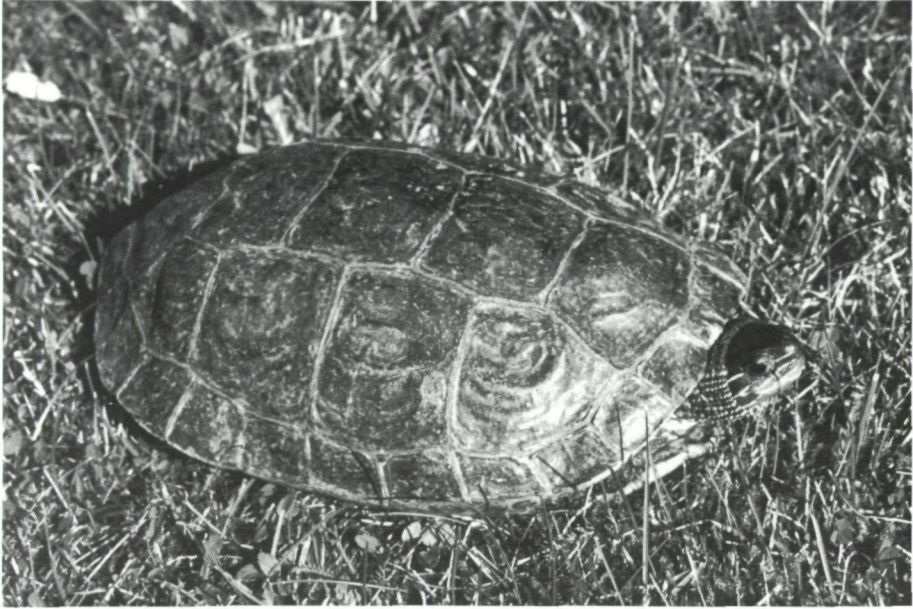


Fig. 2: Female *M. c. caspica* from Aksaray. - Photo: O. FREYTAG, IX/X 1992.
Abb. 2: Weibliche *M. c. caspica* aus Aksaray.

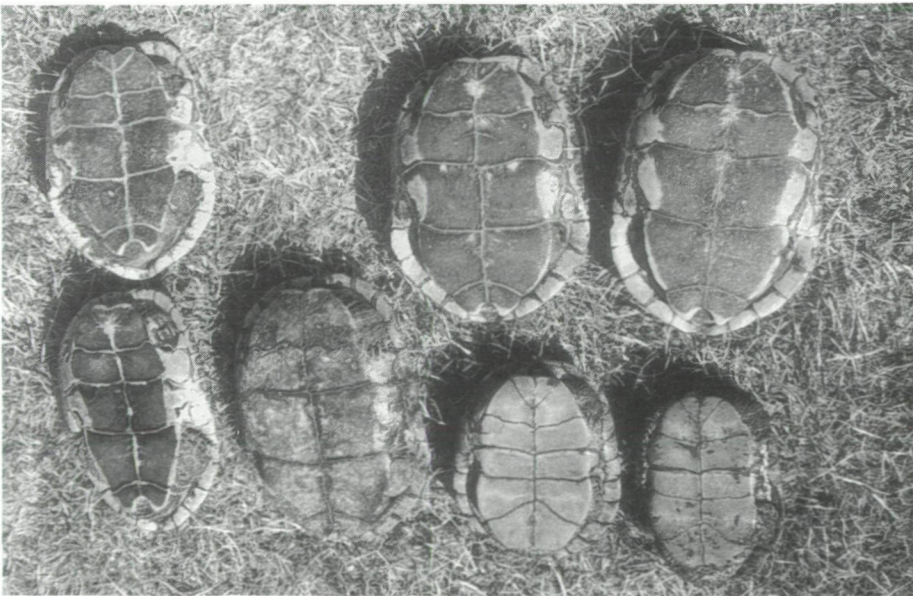


Fig. 3: Ventral view of a series of five *M. c. caspica* (specimens in the first row and the two left specimens in the second row) and two *E. orbicularis* aff. *luteofusca* from Aksaray. - Photo: O. FREYTAG, IX/X 1992.
Abb. 3: Ventralansicht einer Serie von fünf *M. c. caspica* (Exemplare in der oberen Reihe und die beiden linken Stücke in der unteren Reihe) und von zwei *E. orbicularis* aff. *luteofusca* aus Aksaray.

and (2) the central and lower parts of the Euphrates-Tigris system. Both are interrupted by a narrow strip of occurrence of *M. c. rivulata* running across the upper Euphrates and Tigris. Despite the fact that this distribution pattern neither fits to the model of conspecificity of both taxa nor to natural landscapes, it ignores totally the most important distributional data from EISELT & SPITZENBERGER (1967). Seemingly the disjunct areas of *M. c. caspica* were hypothesized from BUSACK & ERNST (1980) through two voucher specimens from Diyarbakır in the collection of the Muséum National d'Histoire Naturelle, Paris (MNHN 5837-5837a, two adult females, leg. E. CHANTRE 1881). Due to the kindness of R. BOUR we had the opportunity to check both specimens. One is a misidentified *M. c. caspica*, but the other one is indeed a *M. c. rivulata*. However, for this specimen a locality confusion cannot be excluded (R. BOUR, pers. comm.). Hence it should not be used to draw any distributional or systematic conclusions.

A further correction which has to be mentioned in this context is that *M. c. caspica* does not occur in the Georgian Colchis region as shown both in the maps from BUSACK & ERNST (1980) and EISELT & SPITZENBERGER (1967, one locality plotted near Batumi, Georgia). The range of *M. c. caspica* in eastern Georgia terminates in the Kura valley in the region of the town Gori, as in several other eastern steppe elements (BANNIKOW et al. 1977). Most probably there is no contact between the populations of *M. c. caspica* in the Euphrates-Tigris and in the Kura-Araxes drainage systems. The latter one communicates with the populations on the south coast of the Caspian Sea.

As it is obvious from this short literature review, the taxonomic status of *M. c. caspica* and *M. c. rivulata* is still open for debate and the treatment of both taxa as subspecies is merely the use of a conservative nomenclature, as it is done here.

Since the study of EISELT & SPITZENBERGER (1967) some new locality records for *M. caspica* in Asia Mi-

nor have been published. All locations lie more or less within the ranges of the two subspecies as already outlined by EISELT & SPITZENBERGER. These new literature records as well as some hitherto unpublished museum records are summarized in fig. 1. The most remarkable ones were published by SCHMIDTLER (1986; localities 30-31 in fig. 1). They are located in the Pontic range near tributaries of the river Kızılırmak, outside of the Anatolian Plateau. Unfortunately SCHMIDTLER (1986) did not give a subspecific determination of the turtles observed.

Up to now, records for *M. caspica* were lacking for the internally drained central basin in the Anatolian Plateau. KASPAREK (1985) even emphasized the absence of *M. caspica* for the Sultan Swamps near Yeşilhisar. However, during a trip to Turkey in September and October 1992 Otto FREYTAG discovered the occurrence of *M. c. caspica* near Aksaray (locality 29 in fig. 1; fig. 2). There, *M. c. caspica* by far outnumbered the syntopic *Emys orbicularis* (fig. 3).

The zoogeographic importance of the internally drained central basin for freshwater fishes has been pointed out by KOSSWIG & BATTALGİL (1942) and KOSSWIG (1955, 1964). The basin conserved a pure and endemic Central Anatolian freshwater fish fauna of late tertiary origin. The same fauna once inhabited the more northern parts of the Anatolian Plateau. With the plio-pleistocene weakening of the former water shed between the Central Anatolian lake system and West Anatolia (West Anatolian mountain barrier) a faunal exchange between both areas started. Today, in the areas of the Anatolian Plateau hydrographically connected to the Aegean or Black Sea drainage systems, a mixed fauna of old Central Anatolian elements and western immigrants occur (cf. KOSSWIG & BATTALGİL 1942; KOSSWIG 1955, 1964, 1973). Recently a similar situation has been described for different subspecies of the pond turtle, *E. orbicularis* (FRITZ 1993). The occurrence of *M. c. caspica* in the relictual situation of the internally drained central basin of Anatolia shows that this subspecies is

together with the endemic fish species and *E. orbicularis luteofusca* an old faunal element of Central Anatolia. However, with the record of *M. c. caspica* in the central basin the question arises whether this population is indeed subspecifically identical with the two other, geographically quite well separated populations which are classified as *M. c. caspica* (Euphrates-Tigris system versus Kura-Araxes system plus south coast of the Caspian Sea).

On the other side of the West Anatolian mountains a well differentiated fish fauna with European affinities originally existed. It inhabited the drainage system of the so-called river Aegeopotamos which ran on the mainland once connecting Greece and western Anatolia (cf. KOSSWIG 1955, 1964, 1973). *M. c. rivulata* and *E. o. hellenica* may be regarded as additional typical representatives of the Aegeopotamos fauna. After the breakdown of the Anatolian mountain barrier these

western elements immigrated to the Anatolian Plateau (cf. FRITZ 1993). However, it seems that *M. c. rivulata* is more confined to a relatively warm mediterranean climate than *E. o. hellenica* because most records for *M. c. rivulata* are concentrated along the Anatolian coasts (cf. fig. 1). This coincides with the general distribution patterns of both taxa. On the Adriatic coast *E. o. hellenica* ranges distinctly further north than *M. c. rivulata*. *E. o. hellenica* reaches Istria and most probably the shore line of the Italian Po Plain whereas the northernmost populations of *M. c. rivulata* occur in southern Dalmatia. Here it has to be pointed out that the localities for *M. c. rivulata* north of the Dinarides in the distribution map of IVERSON (1992) are in error (valleys of the rivers Sava, Morava, Drina, and two localities probably attributable to the Vrbas and Una rivers).

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LITERATURE

- ANDRÉN, C. & NILSON, G. (1976): Observations on the herpetofauna of Turkey in 1968-1973.- Brit. J. Herp., London; 5 (7): 575-584.
- BANNIKOW, A. G., DAREWSKI, I. S., IŠČENKO, W. G., RUSTAMOW, A. K. & ŠCERBAK, N. N. (1977): Opredelitel' zemnowodnyh i presmykajuščichsja fauny SSSR.- Moskau (Prosvetšenijskaja), 414 pp.
- BAŞOĞLU, M. & BARAN, I. (1977): Türkiye Sürüngenleri. Kısım I. Kaplumbağa ve Kertenkeleler. (The Reptiles of Turkey. Part I. The Turtles and Lizards).- Bornova-Izmir (Ilker Matbaası), 272 pp.
- BUSACK, S. D. & ERNST, C. H. (1980): Variation in mediterranean populations of *Maurymys* Gray 1869 (Reptilia, Testudines, Emydidae).- Ann. Carnegie Mus., Pittsburgh; 49: 251-264.
- CLARK, R. J. & CLARK, E. D. (1973): Report on a collection of amphibians and reptiles from Turkey.- Occ. Pap. Calif. Acad. Sci., Los Angeles; 104: 1-62.
- EISELT, J. & SPITZENBERGER, F. (1967): Ergebnisse zoologischer Sammelreisen in der Türkei. Testudines.- Ann. Naturhist. Mus. Wien; 70: 357-378, 1 pl.
- FRITZ, U. (1993): Weitere Mitteilung zur innerartlichen Variabilität, Chorologie und Zoogeographie von *Emys orbicularis* (LINNAEUS, 1758) in Kleinasien (Testudines: Cryptodira: Emydidae).- Herpetozoa, Wien; 6 (1/2): 37-55.
- GRAMENTZ, D. (1993a): Neuer Fundort von *Emys orbicularis* (LINNAEUS, 1758) im Südwesten der Türkei.- Herpetofauna, Weinstadt; 15 (82): 6-8.
- GRAMENTZ, D. (1993b): Vernichtung einer Population von *Rafetus euphraticus* am Oberlauf des Euphrat.- Salamandra, Bonn; 29 (1): 86-89.
- IVERSON, J. B. (1992): A revised checklist with distribution maps of the turtles of the World.- Richmond (privately printed), xiii + 363 pp.
- KASPAREK, M. (1985): Die Sultansümpfe. Naturgeschichte eines Vogelparadieses in Anatolien.- Heidelberg (Kasperek), 154 pp.
- KASPAREK, M. (1990): Zur Herpetofauna des Beckens von Köyegiz, Türkei (Dalyan-Region).- Salamandra, Bonn; 26 (2/3): 155-164.
- KOSSWIG, C. (1955): Zoogeography of the Near East.- Syst. Zool., Washington; 4: 49-73.
- KOSSWIG, C. (1964): Bemerkungen zur Geschichte und zur Ökologie der Ichthyofauna Kleinasien, besonders seines abflußlosen Zentralbeckens.- Zool. Anz., Jena; 172 (1): 1-15.
- KOSSWIG, C. (1973): Über die Ausbreitungswege sogenannter perimediterraner Süßwasserfische.- Bonner zool. Beitr.; 24 (3): 165-177.
- KOSSWIG, C. & BATTALGİL, F. (1942): Zoogeographie der türkischen Süßwasserfische.- Istanbul Univ. Fen Fakül. Mecmuası; 7 (3): 145-165.
- LAMBERT, M. R. K. (1970): Notes on a collection and observations of amphibians and reptiles from S. W. Turkey.- Brit. J. Herp., London; 4 (6): 129-134.
- RAXWORTHY, C. J. (1988): A description and study of a new dwarf sub-species of smooth newt, *Triturus vulgaris*, from western Anatolia, Turkey.- J. Zool., London; 215: 753-763.

SCHMIDTLER, J. F. (1986): Orientalische Smaragdeidechsen: 2. Über Systematik und Synökologie von *Lacerta trilineata*, *L. media* und *L. pamphylica*.- *Salamandra*, Bonn; 22 (2/3): 126-146.

SCHULTSCHIK, B. & SCHULTSCHIK, G. (1991): Ergebnisse einer urodelenkundlichen Exkursion in die NW-Türkei und Angaben zu morphologischen Unterscheidungsmerkmalen dreier Teichmolchformen (*Triturus v. vulgaris*, *T. v. kosswigi*, *T.*

v. schmidlerorum).- *Herpetozoa*, Wien; 4 (3/4): 177-184.

TEYNIÉ, A. (1991): Observations herpétologiques en Turquie, 2ème Partie.- *Bull. Soc. herp. France*, Paris; 58: 21-30.

TRUTNAU, L. (1967): Herpetologische Reiseskizzen aus der Türkei.- *Aquar. Terrar. Z.* (DATZ), Stuttgart; 20: 339-342, 376-378.

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