

The Rediscovery of *Natrix tessellata* on Cyprus

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Abstract. We report on the rediscovery of *Natrix tessellata* on Cyprus. Apart from a single specimen found before 1900 and having the locality labeled as “(Nicosia) Cyprus”, there were only two juveniles collected 1960 in Northern Cyprus and recovered in the herpetological collection of the Zoological Department of the Ege University, Izmir. These two specimens were labeled with “Gönyeli Lake”, a reservoir lake near Nicosia. The find of a living subadult specimen at this locality in 2007 documents the persisting presence of a relict *N. tessellata* population in Cyprus. Ventral scale counts of all four preserved specimens are compared with dice snakes from different areas in the eastern Mediterranean. They show intermediate values between those from Egypt in the south and those from north along the southern coast of Turkey. Due to the dice snake’s rarity and continuing habitat changes for agriculture and urbanization on Cyprus, immediate protection measures for this population are urgently needed.

Key words. *Natrix tessellata*, rediscovery, distribution, Cyprus, conservation

Zusammenfassung. Wir berichten über die Wiederentdeckung von *Natrix tessellata* auf Zypern. Außer einem einzigen vor 1900 gefangenen Belegstück mit der bloßen Fundortangabe „(Nicosia) Zypern“ gab es nur zwei Jungtiere, die 1960 in Nordzypern gesammelt worden waren und in der Herpetologischen Sammlung der Ägäischen Universität in Izmir aufbewahrt werden. Diese zwei Tiere waren mit der Fundortangabe „Gönyeli Lake“ bei Nicosia etikettiert. Der erneute Fund einer subadulten, lebenden Würfelnatter an dieser Fundstelle belegt das andauernde Vorkommen einer *N. tessellata*-Reliktpopulation auf Zypern. Bauchschuppen-Werte aller vier Belegstücke wurden mit entsprechenden Werten von Würfelnattern aus dem östlichen Mittelmeerraum verglichen. Die Werte sind intermediär zwischen jenen aus Ägypten im Süden und jenen entlang der Südküste der Türkei im Norden. Wegen ihrer Seltenheit und der andauernden Landschaftsveränderungen für Agrikultur und Urbanisation auf Zypern sind unverzügliche Schutzmaßnahmen dieser Population äußerst dringend.

Introduction

The first report that this semi-aquatic snake (*Natrix tessellata*) occurs on Cyprus originates from a visit by J. SIBTHORP in 1887. According brief accounts summarized in BAIER et al. (2009), SIBTHORP applied the Greek name for the dice snake (νεροφίδι) for one of his observations on the island and incorporated this into an unpublished diary. In 1862, TH. KOTSCHY collected a specimen on Cyprus which F. STEINDACHNER identified as *Tropidonotus hydrus* Pall (synonym of *N. tessellata*). This, at least one individual, was the source for the subsequent inclusion of the dice snake into publications (STEINDACHNER 1863, UNGER & KOTSCHY 1865, BOULENGER 1888). However, BOULENGER (1888) set a question mark on the species list to its occurrence for unknown reasons, but presumably as he has not seen the specimen himself. Ten years later in January of 1899, CECCONI (1899) found two dice snakes near Nicosia. He described those snakes were easily collected underneath larger stones and half buried, as they were probably hibernating and half numb from the seasonal cool temperatures.

Probably due to his previous doubts, BOULENGER removed the dice snake on a later herpetological checklist for Cyprus (BOULENGER 1910), and based on this, *N. tessellata* was omitted in most subsequent publications by

him and others (see refs. in BAIER et al. 2009). Finally, a live specimen was putatively photographed by G.P. OXTOBY (Hengelo/NL) near Larnaca in 1986 (SCHÄTTI & SIGG 1989) but latter authors neither published the photo nor did they explicit validate its identification. OSENEGG (1989) reported that the photographed specimen was probably mistaken with a young *Dolichophis jugularis*, and BÖHME & WIEDL (1994) suggested also a possible misidentification with *N. natrix cypriaca*, which occurs nearby. Further attempts to verify the photographed specimen were not successful (BÖHME & WIEDL 1994). But additional locality information by OXTOBY (in lit.) was received by BAIER et al (2009) and by us recently. OXTOBY described the site as “Dhekalia south road, 400 m from the beach adjacent to a municipal camping. Although, he could not locate the photo anymore, recent communication (January 2011) supported its positive identification by B. SCHÄTTI (in litt.). An additional record for the presence of *N. tessellata* in Cyprus has been revealed by GÖÇMEN & BÖHME (2002) based on the old museum material originated from 1960s.

Results and Discussion

One of the specimens sampled by CECCONI (1899) was for an extended period the only voucher for Cyprus (MCSNT 18024), stored in the Natural History Muse-

um of Torino, Italy (ELTER 1981 and Fig. 1). It was verified by the late E. KRAMER (SCHÄTTI & SIGG 1989) and subsequently also examined by the second author (KM). The whereabouts of the second specimen remains unknown. BÖHME & WIEDL (1994) shared the opinion that the Torino (Turin) specimen might be introduced to the island by someone. That specimen had 166 ventrals and



Fig. 1. Ventral and dorsal view of the juvenile dice snake from near Nicosia, Northern Cyprus. Stored as MCSNT 18024 in the Natural History Museum of Torino, Italy.

70 subcaudals (SCHÄTTI & SIGG 1989, and confirmed by KM). This ventral scale count is intermediate between the mean value of male dice snakes from Egypt (ventrals = 164.8, $n = 6$) and those from Israel (ventrals = 166.2, $n = 42$, WERNER & SHAPIRA 2011), and is substantially lower than in dice snakes from the nearest mainland, the Turkish southern coastal area between Antalya to Antakya (mean ventrals of males = 177.2, $n = 19$, MEBERT 1993). The low ventral scale values, the rather small dorsal spots, and the prominent black nuchal angle are typical, but not exclusive, for *N. tessellata* from Egypt to the Levant (E. KRAMER in litt, and pers. unpubl. data), supporting the suspicion, that this specimen was introduced from the south. Since naval traffic is common between Cyprus and the nearby mainland in the surrounding mainland, all inhabited by *N. tessellata*, the possibility of an introduction could not have been dismissed at that moment.

In 2002, GÖÇMEN & BÖHME (see also GÖÇMEN et al. 2009) published the finding of two preserved *N. tessellata* in the Zoological Collection of the Aegean University at Bornova-Izmir, Turkey GÖÇMEN & BÖHME 2002, GÖÇMEN et al. 2009 (Fig. 2a, b). The two juveniles were sampled in 1960 at Gönyeli Lake, Nicosia, northern Cyprus (Fig. 3). They challenged the view that the Torino voucher specimen from Cyprus could have wrong locality data or was introduced to the island by man. Gönyeli Lake is a site inland, rendering the undeliberate introduction via ships rather unlikely.

Finally, on a field excursion to the Gönyeli area in 2007, a first live *N. tessellata* was sampled at Gönyeli Lake by the senior author (GÖÇMEN et al. 2008). It is a young female (Fig. 4), whose morphological data together with those from the other preserved specimens are listed in Table 1. The four preserved specimens allow



Fig. 2. Juvenile dice snakes sampled in 1960 from Gönyeli Lake, Nicosia, Northern Cyprus. Preserved at the Zoological Department, Ege University, Izmir, Turkey (ZDEU 114/1960-1 and 2): female (A), male (B).



Fig. 3. Google image of the Gönyeli Lake, Nicosia, Northern Cyprus, with the new finding indicated in the yellow circle.

Tab. 1. Morphological data of four preserved dice snakes.

Characters	ZDEU 253/2007-♀	ZDEU 114/1960-1 ♂*	ZDEU 114/1960-2 ♀*	MCSNT 18024 ♂
	Gönyeli Lakelet, Nicosia/ N. Cyprus	Gönyeli Lakelet, Nicosia/ N. Cyprus	Gönyeli Lakelet, Nicosia/ N. Cyprus	Nicosia/ N. Cyprus
Head Length(HL)	15.14	11.2	11.1	
Head width (HW)	9.28	4.0	3.9	
Snout-vent Length	415	261	238	
Tail Length (TL)	112	66.0	56.0	
Frontal Length (FL)	4.78	3.5	3.4	
Rostral Height (RH)	1.75	1.5	1.4	
Rostral Width (RW)	3	2.4	2.2	
Preoculars (PreO)	3//3 (R//L)	2//2	3//3	2/2
Postoculars (PostO)	4//4	4//4	4//4	4//3
Supralabials (SpL)	8//8	8//8	8//8	8//8
Sublabials (SbL)	9//10	10//10	10//10	10//10
Temporal (T)	1//1	1//1	1//1	1//1
Posttemporals (PostT)	2//2	2//2	2//2	
Ventrals (V)	168	175	177	166
Subcaudals (SubC)	70	72	62	70
Supraoculars (SpO)	1//1	1//1	1//1	1//1
Frenals (F)	1//1	1//1	1//1	1//1
Nasal (N)	1//1	1//1 (semidivided)	1//1	1//1
Gulars (G)	4	4	4	4
Anal (A)	1/1	1//1	1//1	1//1
Dorsals (D)	19	19	19	

*published data in GÖÇMEN & BÖHME, 2002-ZME

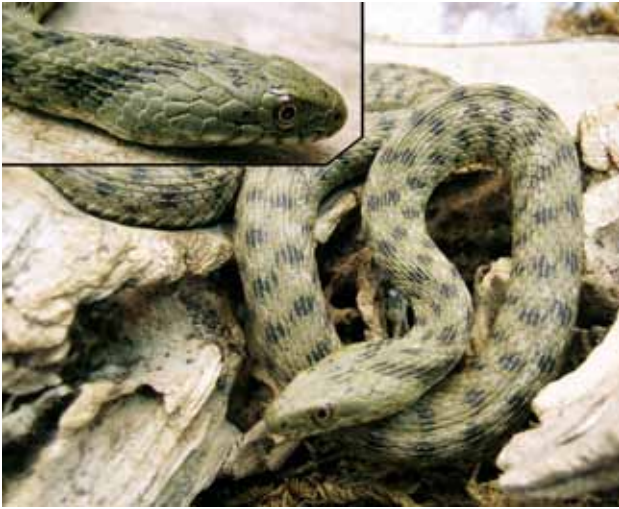


Fig. 4. A young female dice snake from Gönyeli Lake, Nicosia, Northern Cyprus, sampled in 2007. Preserved at the Zoological Department, Ege University, Izmir, Turkey as ZDEU 253/2007.

an update and a brief comparison to other dice snakes in the eastern Mediterranean arc. Although the number of individuals per sex is too small for reasonably calculating the means of ventrals, the substantially higher ventral counts of the Gönyeli specimens compared to the Torino specimen result in a reduced phenetic affinity between Cypriot and Egyptian-Levant dice snakes. The mean ventral count of the three Gönyeli-specimens exhibits a more intermediary state between specimens from the Turkish southern coast and Egypt. Finally, the Cytochrome b sequence of the new specimen shows affinity to individuals from the Turkish coast (Z.T. NAGY, in litt.). Ultimately, only the finding of more Cypriot specimens and particularly the sampling of tissues for a larger genetic analysis will be able to solve the origin of Cypriot dice snakes, whether they are native or introduced, or may represent a combination of both.

The life dice snake was discovered in a temporary pool (180 m a.s.l.) within a dry stream bed (Fig. 5) that drains into Gönyeli Lake, less than 1 km north of it. Apparently, the population at that lake has survived the last approximately 50 years since the collection of the two juveniles in 1960. It indicates that the dice snake is able to survive in semi-arid areas, as long there is at



Fig. 5. Site of the life find of a dice snake – a temporary pool in a stream bed north of Gönyeli Lake, Nicosia, Northern Cyprus.

least temporary water providing some fish or frogs for food. Comparably, MEBERT (2011) included various reports on dice snakes from semi-arid areas, from Jordan to Iran and to China. The new find also generates additional hope, that more dice snake populations on Cyprus might be located in the future. Dice snakes possibly survive on low population sizes over extended periods and remain unnoticed for decades. Various recent discoveries of new or reemerging populations of this species in even well explored areas (e.g. northern Czech Republic), and populated cities such as Prague and Bucharest, show that this species was frequently overlooked, that it is a rapid colonizer, or that its population size can increase dramatically once conditions become suitable (see corresponding reports in MEBERT 2011). Four separately introduced and initially rapidly growing populations in Switzerland also show exemplary the colonizing potential of this species (cf. MEBERT 2011). The apparent rarity of the dice snake on Cyprus and the continuing habitat changes for agriculture and urbanization requires immediate action to protect this population. If conditions for the dice snake on Cyprus are correspondingly improved and managed, it may have a chance to survive and expand from this population to other sites, to finally establish healthy and stable populations on a wider scale on Cyprus.

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