A new record of *Testudo graeca ibera* PALLAS, 1814, in southern Serbia

Until the beginning of the 21st century, the known distribution of the Spur-thighed Tortoise *Testudo graeca ibera* PALLAS, 1814, in the Balkan Peninsula was restricted to FYR of Macedonia, Greece, the European part of Turkey, Bulgaria and Romania (GASC et al. 1997); insufficient information was available on its occurrence in southeast Albania (HAXHIU 1998). Contemporary information points to the species' presence in a larger region of the southeastern Balkan Peninsula (VAN DIJK et al. 2004) from where its range extends across Asia Minor into the Levantine and Caucasus area as far as Iran (BUSKIRK et al. 2001; SINDACO & JEREMČENKO 2008).

There is, however, lack of knowledge about the distribution of *T. graeca ibera* in Serbia, in that only two records from the area in question were published thus far. The first dates back in 1943 and refers to three specimens from Kosovska Mitrovica, deposited in Zoologische Staatssammlung, München (ZSM 1-3/2000) (BUSKIRK et al. 2001); the second comes from the village of Čivčije in the Pčinja River Valley, close to the border to FYR of Macedonia (TOMOVIĆ et al. 2004).

During the period May 9-13, 2011, a Serbian/Bulgarian research team (Bird Protection and Study Society of Serbia, HabiProt and Balkani Wildlife Society) explored the extreme southeast and south of Serbia, i.e, the mountains of Rudina, Dukat, Besna Kobila, Kozjak and Rujan (range of maximum altitudes 968-1923 m a.s.l.), including the valleys of Pčinja and Preševo (minimum altitudes about 400 and 390 m a.s.l., respectively), by mapping habitats and species of importance in the framework of the Natura 2000 network. The Preševo Valley is situated in the west of the Pčinja River Valley; both are morphologically separated by the Rujan Mt. (968 m) and, as an anthropogenic barrier, highway E75 that connects north and south Serbia. The habitats mainly consist of fragmented oak forests (*Quercus pubescens*), dry, rocky pastures, and large acreages of agricultural land, employing a low level of mechanization.

A single male specimen of *T. graeca ibera* (Fig. 1), about 19 cm in straight carapace length, was found on May 13, 2011, in the Preševo Valley, one km northwest of the village of Miratovac, at approximately 550 m altitude (42°16'19.70"N; 21°39'8.77"E; National Grid Reference UTM 10 km x 10 km EM58). The locality represents a small fragment of oak forest surrounded by shrubs, meadows and agricultural land, close to a tiny creek at the foothills of the Latinska Mt. Since the specimen was retrieved by a West Siberian Laika dog, deployed for locating tortoises, there is some uncertainty as to the exact spot where the tortoise was found within a radius of up to 100 meters. Six *Testudo hermanni* GMELIN, 1789, were spotted in the surrounding area. Other recorded species of the batracho- and herpetofauna in place, included larvae of the *Triturus cristatus* (LAURENTI, 1768) complex, *Bombina variegata* (LINNAEUS, 1758), *Lacerta viridis* (LAURENTI, 1768), *Podarcis muralis* (LAURENTI, 1768), *P. tauricus* (PALLAS, 1814) and *Vipera ammodytes* (LINNAEUS, 1758). Earlier records confirmed the presence of *Lissotriton vulgaris* (LINNAEUS, 1758), *Pelophylax ridibundus* (PALLAS, 1771), *Natrix natrix* (LINNAEUS, 1758), *N. tessellata* (LAURENTI, 1768) and *Dolichophis caspius* (GMELIN, 1789) in the Preševo Valley (CRNOBRNJA-ISAILOVIĆ, unpublished data). Except *T. graeca*, no reptile species typical and exclusive to the Mediterranean biogeographical provinces (MATVEJEV 1961) were recorded in the Preševo area thus far. For comparison, the insect fauna showed clear signs of Mediterranean elements: e.g., the Orthopteroidea *Bradyporus dasypus* and *Ameles decolor*, as well as the Lepidoptera *Anthocharis gruneri*, *Leptidea duponcheli*, *Spialia phlomidis* and *Iolana iolas* (POPOVIĆ & MILENKOVIĆ 2012; authors, pers. obs.).

Information on the Serbian distribution of Mediterranean herpetofaunal elements is fragmentary (TOMOVIĆ et al. 2004; RISTIĆ et al. 2006). The known sites are restricted to the western and eastern corners of southernmost Serbia, and surrounded by mountains. The Preševo Valley in the mid-

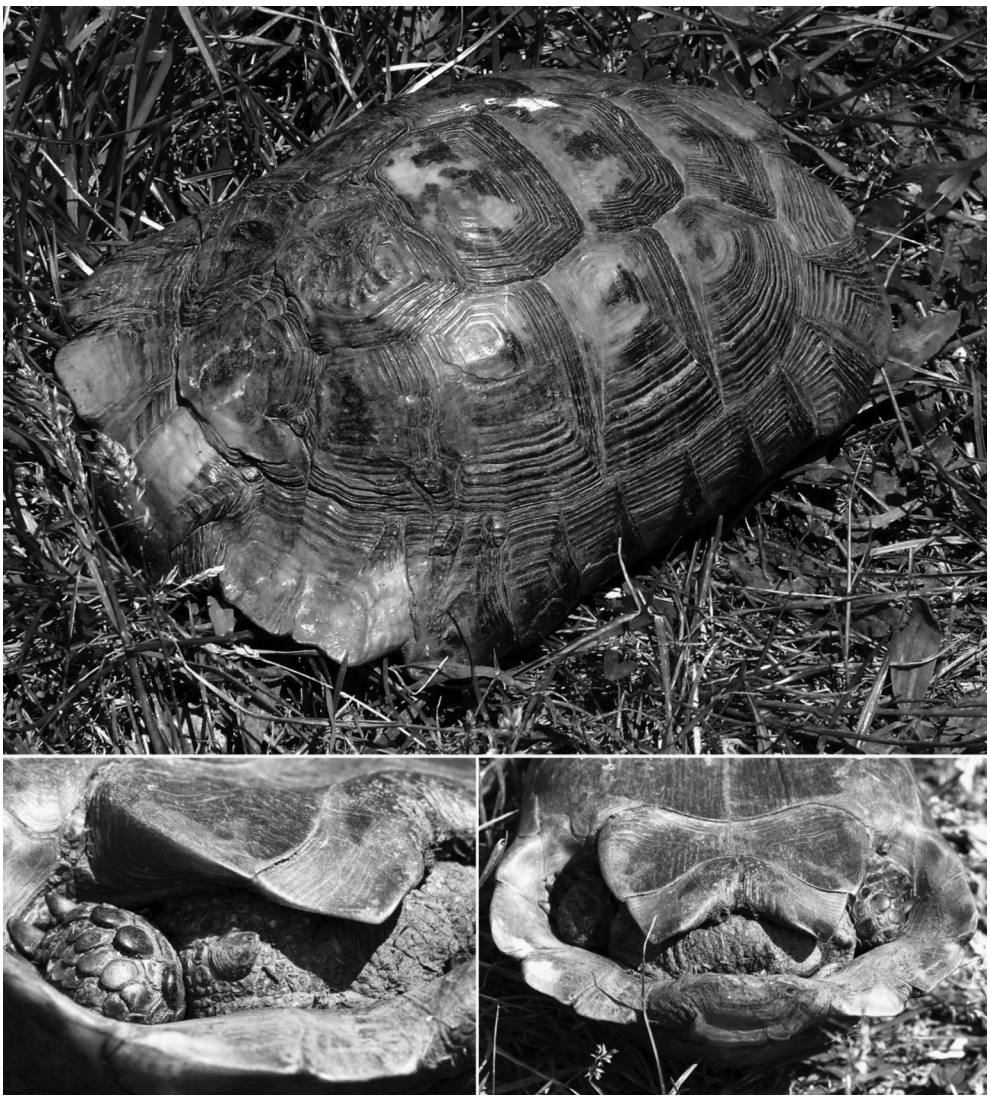

Fig. 1: Male specimen of *Testudo graeca ibera* PALLAS, 1814, from Preševo Valley, south Serbia.

dle of south Serbia, is more exposed to various climatic oscillations and perhaps less hospitable to strictly thermophilic reptile species.

The species' refugia during the last glacial period were western Asia Minor, the southeastern Balkans, and western and central Caucasus region, from where it started its Holocene return northward (FRITZ et al. 2007). Its present range was certainly shaped by climatic and orographic criteria, both in a historical and ecological context.

It was presumed earlier that the distribution area of *T. graeca* in Serbia is strictly bound to habitats dominated by the Medi-

terranean climate (TOMOVIĆ et al. 2004; RISTIĆ et al. 2006). However, in continental southeastern Europe, this species occurs in a wider range of habitats including altitudes up to 1500 m (ARNOLD & OVENDEN 2002; VAN DIJK et al. 2004). Thus, field herpetologists are encouraged to search for this tortoise beyond the margins of its known range.

The Spur-thighed Tortoise is listed in Annexes II and IV of the Habitats Directive (92/43/EEC), in Appendix II of the Berne Convention and in Appendix II of the CITES Convention. It is currently recognized as 'Vulnerable' in the IUCN Red List (VANDIJK et al. 2004) and assigned as 'Strictly Protected' by Serbian law (ANONYMOUS 2010a, 2010b). As already suggested by TOMOVIĆ et al. (2004), Serbian populations of *T. graeca ibera* are marginal and thus, fragile in terms of viability. The new record extends the known distribution area of this species in Serbia 18 kilometers to the west and to the other side of the highway separating it from the population in the Pčinja River Valley. Effective protection of fragmented populations requires the establishment of appropriate connectivity between isolates either through migration corridors or by active transport. A first step could be the inclusion of the Preševo Valley in conservation areas of the 'Emerald' and 'Natura 2000' networks, as well as in 'Important Herpetological Areas of Serbia'. This would accelerate the implementation of suitable management strategies including sustainable agriculture techniques essential for tortoise migrations and population viability.

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