

Italian crested newt – *Triturus carnifex* Laurenti, 1768 (Amphibia, Caudata, Salamandridae, Pleurodelinae) in the batrachofauna of Bosnia and Herzegovina

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Bosnia and Herzegovina (B&H) has a high biogeographic importance for Balkan batrachofauna biodiversity with 12 amphibian chorotypes (JABLONSKI et al., 2012) and 20 amphibian species (LELO & VESNIĆ, 2011; ĆURIĆ & ZIMIĆ, 2014; FROST, 2015). Hereby we present the first official record of the 21st species known for the B&H batrachofauna: *Triturus carnifex* LAURENTI, 1768.

During a long amphibian research period in B&H (from: MÖELLENDORFF, 1873 – till present), *T. carnifex* has actually never been officially listed in the B&H fauna for two main reasons: (a) although it has been known that the species occurs in the northwestern tip of the country (e.g. GASC et al., 1997; ROMANO et al. 2009), it was never actually registered; (b) dynamic revisions of species taxonomy which created confusions in systematization: In older literature current representatives of *Triturus cristatus* complex have been treated as subspecies of *T. cristatus* and afterwards

finally elevated to the species level (ARNTZEN et al., 2007; FROST, 2015). Old literature data (e.g. BOLKAY, 1929) mentioning *T. carnifex* in B&H should be treated as findings of *Triturus macedonicus* (Figure 1). Morphologically the three species belonging to the genus *Triturus* [*T. dobrogicus* (KIRITZESCU, 1903), *T. carnifex* (LAURENTI, 1768) and *T. macedonicus* (KARAMAN, 1922)] can be distinguished by coloration and spotting pattern, Wolterstorff index – WI and Number of Rib-Bearing Vertebrae – NRBV (WIELSTRA & ARNTZEN, 2011; ARNTZEN et al., 2015).

From May 25 – 27. 2015, three females and one male of *T. carnifex* were caught by hand in the city of Bihać in B&H (N 44.806°, E 15.864°, 227 m a.s.l.). Individuals were restricted to a small part of a transect (only 10 m) in a narrow shallow channel (cca 700m long) near a walking trail in the south-east part of the city (Figure 1).

Table 1. Morphological characteristics of *T. carnifex* individuals and Wolterstorff Index (WI)

N _o	Total length (mm)	Inter limbs distance (mm)	Fore limb distance (mm)	*WI (mm)
1♀	125,90	41,66	23,60	56,84
2♀	134,91	41,47	22,87	55,15
3♂	124,28	36,49	24,94	68,37
4♀	183,15	49,36	30,09	60,96

*forelimb length/interlimb length x 100

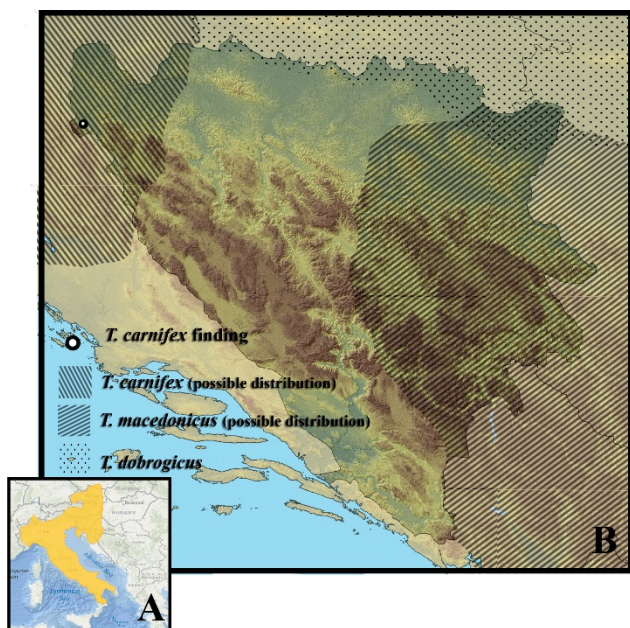


Figure 1. A – Global distribution of *T. carnifex* (ROMANO, 2009 ; IUCN - 2014) and B – Distribution of genus *Triturus* in B&H (according to: CRNOBRNJA & KALEZIĆ, 1990; LELO, 2010; VÖROS & ARNTZEN, 2010).



Figure 2. Ventral view pictures of captured individuals; numbers correspond to the numbers in the table above (photo: Zimić, A.)

The possibility that the discovered populations belong to *T. macedonicus* or *T. dobrogicus*, which are morphologically similar species, is rejected due to:

(a) Wolterstorff index results (Table 1) which is used for differentiation of *Triturus* species among each other (ARNTZEN & WALLIS, 1999).

(b) All surrounding area (in Croatia) in relation to this location is occupied by pure *T. carnifex* populations (Fig 1., JELIĆ et al., 2012).

(c) Analysis of morphological characteristics of captured individuals, showed the presence of large black spots on ventral part of the body. Although variable, *T. carnifex* has large rounded dark spots (Figure 2), little or no white stippling on sides in contrast to *T. macedonicus* which is characterized by a dense pattern of small, irregular spots, and with densely white-stippled sides (ARNTZEN, 2003). On the other hand *T. dobrogicus* has sharp roundish black spots which may fuse to form longitudinal bands (EDGAR & BIRD, 2006).

The record presented represents one of the easternmost points of global *T. carnifex* distribution, and B&H seems to be the south-easternmost point of *T. carnifex* range in the Balkans (Figure 1a), since we strongly believe that *T. carnifex* populations follow the course of river Una (Figure 1b). New data is needed in order to: determine the exact distribution of *T. carnifex* in B&H and its limits; determine possible hybridization zones with *T. dobrogicus* and *T. macedonicus*; define: threats for population survivorship; and local conservation status for this species. Due to lack of data for all *Triturus* species in B&H, they should be considered as DD (data deficient) on local scale.

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