

# First Recent Record of *Macronychus quadrituberculatus* Müller, 1806 (Elmidae: Coleoptera) in Serbia

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## Abstract

During the Regular Water Quality Monitoring Program in Serbia conducted in 2013 by the Serbian Environmental Protection Agency (SEPA), an adult specimen of freshwater riffle beetle *Macronychus quadrituberculatus* Müller, 1806 (Elmidae: Coleoptera) was sampled on September 27th, 2013 in the town of Svilajnac at the Resava River (Central Serbia; N 44° 13' 40.527", E 21° 11' 52.097"). This is the first record of the species in Serbia in recent years.

**Keywords:** *Macronychus quadrituberculatus*, first recent record, Resava River, Serbia.

## Riffle Beetle *Macronychus quadrituberculatus* Müller, 1806 (Figure 1)

*Macronychus quadrituberculatus* Müller, 1806 is a western European species reaching as far as Morocco, the Central Russian steppe and Hungary, absent in Denmark, Norway and Sweden, but found in Finland and the Baltic States (Foster, 2010). Considering its habitat preference and ecology, *M. quadrituberculatus* is a lowland species, usually found clinging to submerged tree trunks in deep, permanent water in rivers. The larva is wireworm-like and burrows into wet wood where it pupates (IBIDEM). Because of the elmid method of plastron respiration, the major perceived threat to elmids is the reduction in dissolved oxygen associated with pollution. This problem must be particularly acute in species living in deep, permanent water, but *M. quadrituberculatus* adults can be found on timber in oxygen-poor backwaters (IBIDEM).

The larvae and adults feed on algae and/or decaying wood, and the larvae pupate in the wood underwater. Although adults can be collected at light (Kovacs et al, 1999) many specimens have strongly reduced wings and can not be attracted to the light as they can not fly (Jaskula et al, 2011). It is often found in somewhat polluted streams (Jaskula et al, 2005).

Boukal et al (2007) mentioned that *M. quadrituberculatus* known in the Czech Republic

only from more or less isolated populations in epirhithral to epipotamal parts of streams and rivers, so far with four recent localities in Bohemia and eight in southern Moravia, including data from the Jihlava River published by Nemcova (2001). It can be abundant under favourable conditions, and we expect to increase the number of localities in Serbia when more sampling is undertaken. Lokaj (1869) and Fleischer (1927-30) reported it even in the Vltava River in Praha. A xylobiont species, found only on submerged decaying wood of deciduous trees, sometimes in the same localities as *Potamophilus acuminatus* and/or *Elmis obscura* (Boukal et al, 2007).

In Poland, the species recent findings originated from seven localities in 2003 (Jaskula et al, 2005). These records suggest that it can also tolerate alpha-mesosaprobic and even polysaprobic waters (IBIDEM). *M. quadrituberculatus* was also recorded at many localities in Hungary (Kovacs et al, 1999; Csabai and Mora, 2003). In the opposite, there are only two records from Greece (Jaskula et al, 2011).

Jach et al. (2006) mentioned that *M. quadrituberculatus* is present in the Federal Republic of Yugoslavia, but without data on its findings and localities. In 2012 the species is recorded in the Sava River in Croatia (Ćuk et al, 2014).

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specimen of freshwater riffle beetle *Macronychus quadrituberculatus* Müller, 1806 (Elmidae: Coleoptera) was sampled on September 27th, 2013 in the town of Svilajnac at the Resava River (Central Serbia; the Velika Morava River Lower Basin; UTM EP 19; N 44° 13' 40.527", E 21° 11' 52.097"; at 91 meters a.s.l.). This is the first record of the species in recent years in Serbia. In the same sample, an adult specimen of the dryopid beetle *Pomatinus substriatus* was found as well.



Figure 1: *Macronychus quadrituberculatus* Müller, 1806 – an adult specimen from the Resava River (photo by G. Mesaroš)

The Resava Region divides into two regions: the Upper Resava (eastern) and the Lower Resava (western).

The Eastern Resava is located around the southern and western slopes of the Beljanica Mountain. The area is partially karst, made of limestone, and as a result of a porous terrain, many caves are formed. The Western Resava represents the extension of the peripannonic area of the southern Pannonian Plain. It comprises the Resava Coal Mines, with the small towns of Resavica, Despotovac and Svilajnac. Apart from mining, the area is mostly agricultural.

The Resava River belongs to the Black Sea drainage basin which drains an area of 685 km<sup>2</sup> and is not navigable. It is the right tributary of the Velika Morava River. The total length of the Resava River is 72.57 km, and the water body RES\_1 is 37.05 km long (the code for the water body in which the species was collected according to the national regulation (Official Gazette of the RS, 96/2010) is marked as RES\_1 - the Resava River from its confluence with the Velika Morava to the upstream bridge in Despotovac, comprised of a total of four water bodies along the river.

Based on the national typology of watercourses (IBIDEM), the Resava River belongs to the river Type 3 - small to medium streams, at elevations up to 500 m, with domination of large fractions of substrate. At the species sampling site, the banks of the river are partially modified and the dominant substrate is silt with scarce cobbles (Figure 2). It is worth mentioning that the place where the species was found is situated within the town of Svilajnac.

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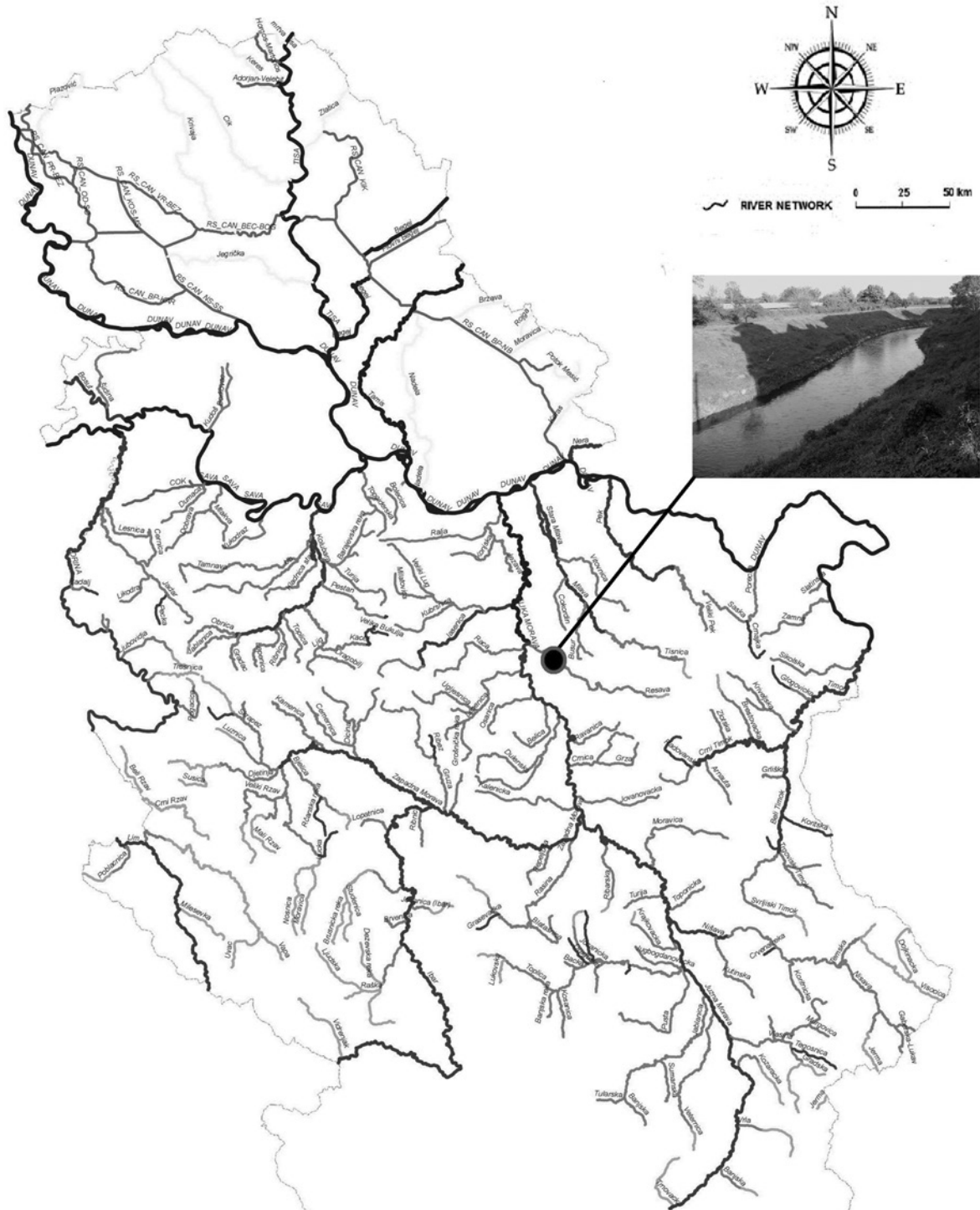


Figure 2: Svilajnac at the Resava River, a sampling site of *Macronychus quadrituberculatus* Müller, 1806