

***BAGOUS VALIDUS* ROSENHAUER, 1847 – A NEW
WEEVIL (CURCULIONIDAE) IN
Kragujevac VALLEY**

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The Kragujevac valley takes the central position in Serbia.

The climate is moderately continental, with distinctive four seasons. According to the meteorological measures the continentalization and xerothemization processes continues intensively during the past decades. The year 2000 was one extremely dry year.

It is a paradox that exactly in 2000 summer, one hygrophilous weevil species, *Bagous validus* Ros., was registered for the first time for the territory of Serbia. The finding place was the old plum orchard in the The Botanical Garden in Šumarice, memorial park placed on the northwest edge of the town of Kragujevac.

This monophagous species, connected biologically with *Butomus umbelatus*, was again collected later, during the collecting of adult weevils on June 7th 2003 in early morning hours, near the artificial lake in Šumarice.

KEY WORDS: *Bagous validus*, new for the fauna of Serbia, Kragujevac, hygrophilous species

INTRODUCTION

The Kragujevac valley is placed in the heart of Serbia. It represents one of bigger valleys in the region called Šumadija, extending in a north-south direction following the Lepenica river. By the height above sea level, the lowlands (alluvial

flat surfaces and hilly terrains up to 500m above sea level) occupy 93.2% of the valley. (STEPANOVIĆ, 1974) (Fig. 1).

The climate is moderately continental, with distinctive four seasons.

However, weather conditions are changing in the continentalization and xerothemization directions, as VELJOVIĆ registered half of century ago (1967).

As the comparative survey represents, this tendency continues. The conclusion is drawn on the basis of meteorological measures during the past periods, shown through relationship between average monthly air temperatures and rain-falls (Fig. 2). During the period 1986-1995 the average year air temperature (11,33°C) was higher than in the periods 1925-1940 (11,05°C) and 1951-1970

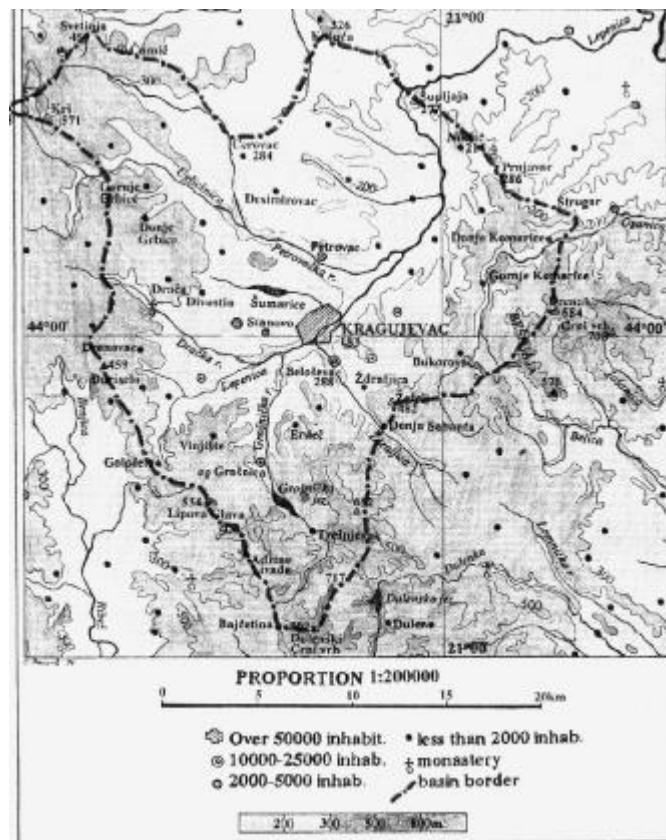


Fig. 1. The Kragujevac valley

(11,08°C) (PEŠIĆ, 1997; STEPANOVIĆ, MILANOVIĆ, 1965); the average year precipitation (545mm) was much lower (676 and 629mm); the maximal year precipitation during the 1986-1995 decade, registered in 1989, was 686mm, which is con-

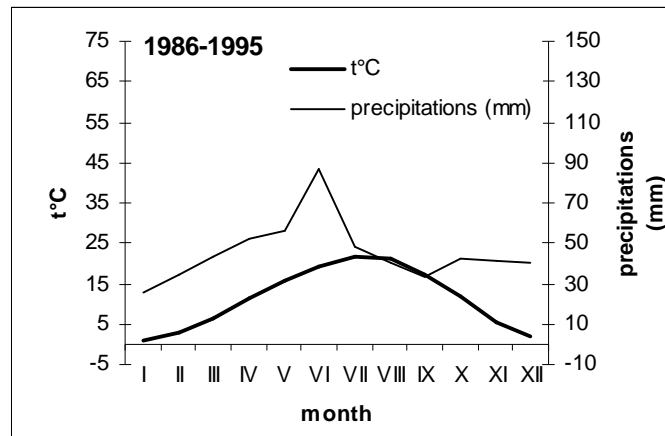


Fig. 2. Oscillations of average monthly air temperature and precipitations in Kragujevac during the period 1986 – 1995 (according to data of local meteorological station in Kragujevac) (PEŠIĆ, 1997)

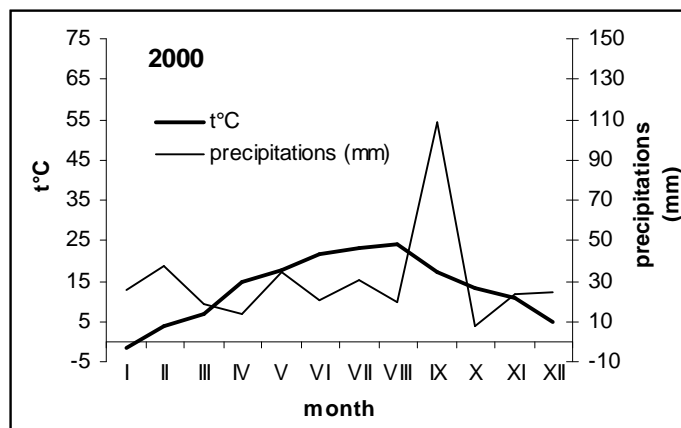


Fig. 3. Oscillations of average monthly air temperature and precipitations in Kragujevac for 2000 year (according to data of local meteorological station in Kragujevac) (KRSTIĆ, 2002; RADOJEVIĆ, 2002)

siderably less than maximal precipitation in 1954 (the year with the heaviest rain-falls in period 1954-1963) 809,9mm; even the minimum of year precipitations is lower (413,1mm in 1990, but 516,4mm in 1961).

The meteorological data from 2000 was even more drastic. The average monthly air temperature was 13,15°C (practically 2°C higher than fifty years ago!), and total sum of precipitations during this year was only 361,2mm. This illustrates that the year 2000 was one extremely dry year (Fig. 3).

The town of Kragujevac is the biggest inhabited place in the valley (approximately 175.000 inhabitants). It is placed in the center of the valley, on the river-banks of the Lepenica river, 183m above sea level. Its geographical coordinates are 44°02' of north latitude and 20°50' of east longitude.

Šumarice is placed on the northwest edge of the town, on the plateau located between the Sušički and Erdoglijski brooks, on altitude 220-270m. Its surface covers 365 hectares. Šumarice is a memorial park, consecrated to 7.000 innocent vic-

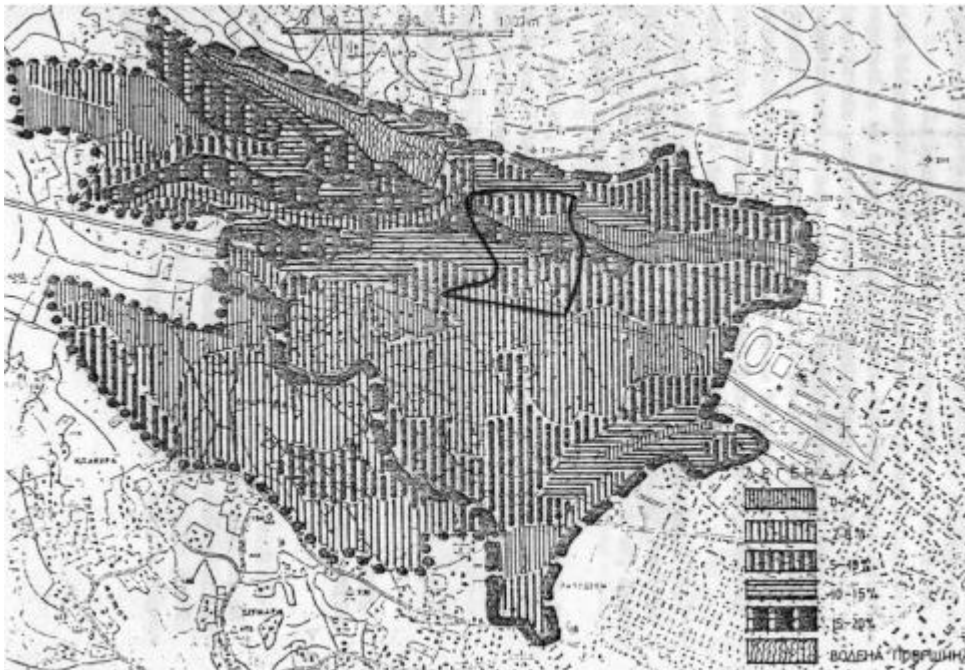


Fig. 4. The Botanical Garden in Memorial park "Kragujevac October" in Šumarice (ŽIKIĆ, 2000)

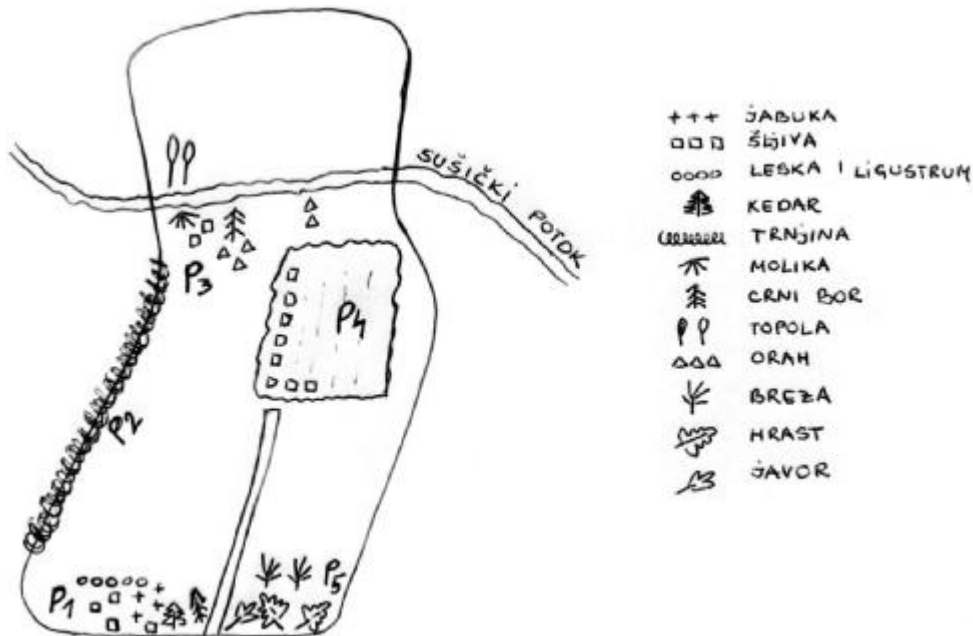


Fig. 5. Actual view of The Botanical Garden (KRSTIĆ, 2002)

tims, executed at the beginning of the Second World War. In 1993 The Parliament of Kragujevac allotted 18.6 hectares of former Saračevića estate to The Faculty of Science with the purpose to be The University Botanical Garden (ŽIKIĆ, 2000). (Fig. 4).

According to data of the City Direction for Urbanizm from 1966, the Botanical Garden lies in the area of natural autohtonous forest associations of Hungary and European Turkey oaks (*Quercetum confertae-cerris* Rud.) and willow and poplar (*Salietoi-Populetum* Raj.) near the Sušički brook. However, since The Botanical Garden has belonged to the park complex for decades, and was previously a part of the farm, the mentioned forest associations exist merely in form of fragments. (Fig. 5)

MATERIAL AND METHODS

The project of The Botanical Garden development anticipates a series of stages. Since the changes will be mostly in the composition of plant cover, and

weevils are phitophagous, we shall try to follow succession in their settlement. As a part of that study, adult weevil appearance on ground floor vegetation was registered in 2000 and 2001. They were captured by using surface buried traps and handi-collecting. The research was organized on many meadows and between the trees in more than 50 years old plum orchard (Fig. 5, P4).

RESULTS AND DISCUSSION

One female of *Bagous validus* Rosenhauer, 1847. was collected exactly in the plum orchard, on July 15th 2000. It was caught by surface buried trap containing 5% formaldehyde as an attractant. It was the first finding of this species in Kragujevac valley. (RADOJEVIĆ, 2002).

Bagous validus Rosenhauer, 1847. belongs to family Curculionidae Latreille, 1802, subfamily Bagoinae C.G. Thomson, 1859, genus *Bagous* Germar, 1817. According to the earlier classification it belonged to subgenus *Abagous* Sharp, 1916, because the third tarsal segment is wider than the second one, but it is not longer than its width. In the latest weevil classification genus *Bagus* has not got subgenera, and term *Abagous* is synonymous with *Bagous*. (ALONSO-ZARAZAGA & LYAL, 1999).

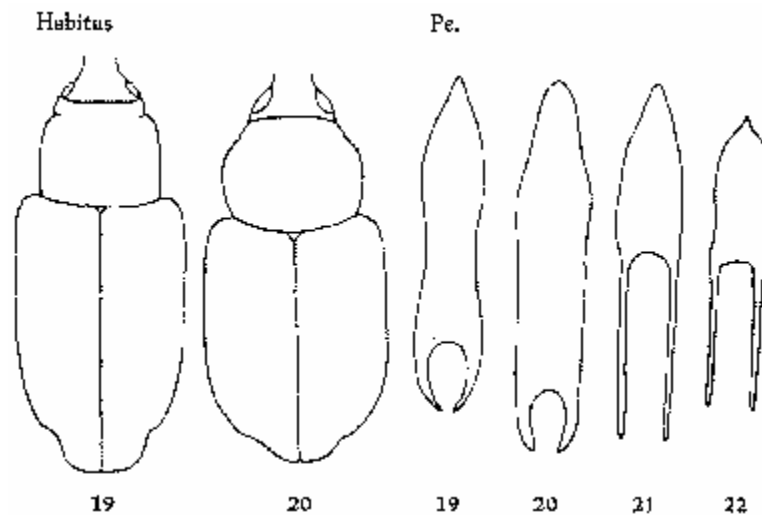


Fig. 6. Habitus and eedeagus look of a few *Bagous* species: 19 *lutosus* Gyll., 20 *validus* Rosh., 21 *puncticollis* Bohem. and 22 *lutulentus* Gyll. (from FREUDE *et al.*, 1983)

The most data about morphology, biology and distribution of this species are given by DIECKMANN (1983).

Body size is 4-6mm. Prothorax is only a little narrower than elytrae, outstandingly wider than long, with significantly narrower front end (as the collar) than the back (Fig. 6). The snout of male is a little shorter than the prothorax. Females have snout equal to the length of prothorax. The snout carries antennae – males on the first third, females on the middle. Elytrae sides are parallel, and their front edge is bended. The yellow-gray scales cover dorsal side, except one dark spot. Tibiae and femurs are brown, tarsuses and antennae (except red-brown flagellum) are blackish.

There is no data about development in the natural conditions. Exemplars kept in the test tube laid just one egg on the wall of the tube.

According to the ecological categorization of weevil living forms this species is phanerognathic, horthobiont. (PEŠIĆ, 1997).

Bagous validus is monophagous species, connected biologically with *Butomus umbelatus* L., the only plant from the family Butomaceae. Adult eats pulp parenhim of narrow triple edged leaf of the host plant. It starts from the edge and digs a deeper and deeper hole. Adults are present in nature from March to July. (DIECKMANN, 1983).

As other related species from this genus, *Bagous validus* is hygrophilous. Its host plant inhabits moister terrains. The finding place of our exemplar is close to the neglected well.

It is a paradox that exactly in 2000, which was extremely dry, we registered this hygrophilous species for the first time.

Later, during the collecting of adult weevils on June 7th 2003 in early morning hours, near the artificial lake in Šumarice (a few hundred meters from the Botanical garden), just in blossom of the host plant, to be precise in the aspect of her domination of the bank, two more exemplars (male and female) were collected by the sweeping of vegetation. Earlier species identification (made by keys DIECKMANN, 1983; FREUDE *et al.*, 1983; SMRECZYŃSKI, 1972) was confirmed by isolation of male genitalia (Fig. 6 – 20.)

Geographical distribution of *Bagous validus* includes southeast of Middle Europe, East Europe, Southeast Europe, Asia Minor and south Russia. (DIECKMANN, 1983; FREUDE *et al.*, 1983).

The above-mentioned three findings of *Bagous validus* in Kragujevac are for now the first registration of this species in Serbia. This fact represents one more confirmation of the need for more intensive research of freshwater ecosystems, because they are endangered, from one side by changes in climate and from the other by human activities.

ACKNOWLEDGEMENTS

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BAGOUS VALIDUS ROSENHAUER, 1847 – НОВИ СУРЛАШ (CURCULIONIDAE) У КРАГУЈЕВАЧКОЈ КОТЛИНИ

С. ПЕШИЋ

И з в о д

Крагујевачка котлина има централну позицију у Србији и представља веће шумадијске котлине. Према висинској разградњи рељефа 93,2% припада низији. Клима је умерено-континентална.

Град Крагујевац представља највеће насељено место у котлини. Смештен је на обалама Лепенице, на надморској висини 183m. На северозападном ободу града је меморијални парк Шумарице. 1993. године је Природно-математичком факултету додељено 18,6 хектара у оквиру Спомен-парка «Крагујевачки октобар» у Шумарицама да се формира Ботаничка башта.

Пројектом развоја Баште предвиђено је више етапа. Пошто су највеће промене предвиђене у сатаву биљног покривача, а сурлаши (*Curculionoidea*) јесу фитофаги организми, покушава се праћење сукцесије њихових насеља. Тако је током 2000. и 2001. године праћено присуство адулата на зељастој вегетацији. Рађено је на више ливада и у шљивару. Управо је међу старим стаблима шљиве 15. јула 2000. године сакупљена једна женка *Bagous validus* Rosenhauer, 1847. Уловљена је помоћу површинске укопане клопке, која је као атрактант садржала 5% формалин.

Био је то први налаз ове врсте у Крагујевачкој котлини. У питању је фанерогната, монофага врста сурлаша, биологијом везана за биљку-домаћина, *Butomus umbelatus*. Овај инсект припада фамилији Curculionidae, подфамилији Vagoinae.

Парадоксално је да је ова врста нађена први пут баш 2000-те године, која је била изузетно сушна, јер је она хигрофил, као и остали припадници рода *Bagous*.

Седмог јуна 2003. године, рано ујутру су, уз обалу језера у Шумарицама (на неколико стотина метара од Ботаничке баште) «кошењем» са уцветалог домаћина сакупљене још две јединке (мужјак и женка). Изолацијом гениталија мужјака је потврђена ранија идентификација врсте.

Три споменута налаза *Bagous validus* у Крагујевцу су за сада први и у Србији. Они потврђују неопходност појачаног истраживања и праћења водених и околводених станишта у Србији, јер су она, судећи по тенденцијама у мењању климе, све угроженија, а ни људске активности их не штеде.

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