


Research article

# New records of the Bulgarian endemic species *Pilemia serriventris* Holzschuh, 1984 (Cerambycidae: Lamiinae)

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**Abstract:** Bulgarian endemic species *Pilemia serriventris* (Holzschuh, 1984) is reported for the first time with exact data from several localities, including its type locality near Harmanli. The species is distributed in SE Bulgaria along river valleys from the Aegean and the Black Sea drainage basins, inhabiting both riverside and roadside habitats. The host plant of the species appears to be *Anchusa procera* Besser, and the earlier reports of host plants are doubtful.

**Keywords:** Balkan Peninsula, distribution, host plants, taxonomy

## Introduction

The genus *Pilemia* Fairmaire, 1864 includes two subgenera – *Pilemia* Fairmaire, 1864 and *Pseudopilemia* Kasatkin, 2018 (Danilevsky, 2020). Two species of subgenus *Pilemia* s. str. are known from Bulgaria – *P. tigrina* (Mulsant, 1851) and *P. serriventris* Holzschuh, 1984 (Danilevsky, 2020). The first species is monophagous on *Anchusa barrelieri* (All.) Vitman (Boraginaceae) (Tóth et al., 2016) and in Bulgaria it has been reported from a number of localities in Western Stara Planina Mts, Sofia Valley and Northern Bulgaria (Gradinarov, 2016; Georgiev 2020; Gradinarov & Petrova, 2019; 2021).

*Pilemia serriventris* (Cerambycidae: Lamiinae) is a Bulgarian endemic species (Migliaccio et al., 2007; Danilevsky, 2020), described by Holzschuh (1984) from Harmanli (type locality: “Charmanli”). There are not many other records of the species after its description. The species was reported from “Harmanli-Ljubimec” (Rejzek et al., 2001), Bistrets Vill. (Strandzha Mts) (Georgiev et al., 2005) and from “Lubimec near Harmanli” (Hoskovec et al., 2023). In all cases of finding the species, no geographic coordinates or data on its habitat have been published.

Two species of family Boraginaceae have been reported as host plants of *P. serriventris* – *Cynoglossum officinale* L. (Rejzek et al., 2001) and *A. barrelieri* (Georgiev et al., 2005, repeated by Migliaccio et al., 2007).

In the present work we report several new localities of the species in SE Bulgaria, as well as a new data on the host plants of the species.

## Methods

The material for the present study was collected by the authors in the period 2018 – 2023 from Eastern Rhodopes Mts, Maritsa River Valley and Strandzha Mts (Fig. 1). Adult beetles were hand collected from the host plants. The pictures were taken by using digital camera Olympus SP-820UZ (Fig. 1C), Canon PowerShot SX420 IS (Fig. 1A, B, D–F, Fig. 2) and a combination of Canon EOS 2000D digital camera, PRO-CA Camera Adapter, and a microscope Olympus SZ61 (Figs 3–6). The collected specimens are preserved in the Zoological Collection of Sofia University, Faculty of Biology (BFUS).



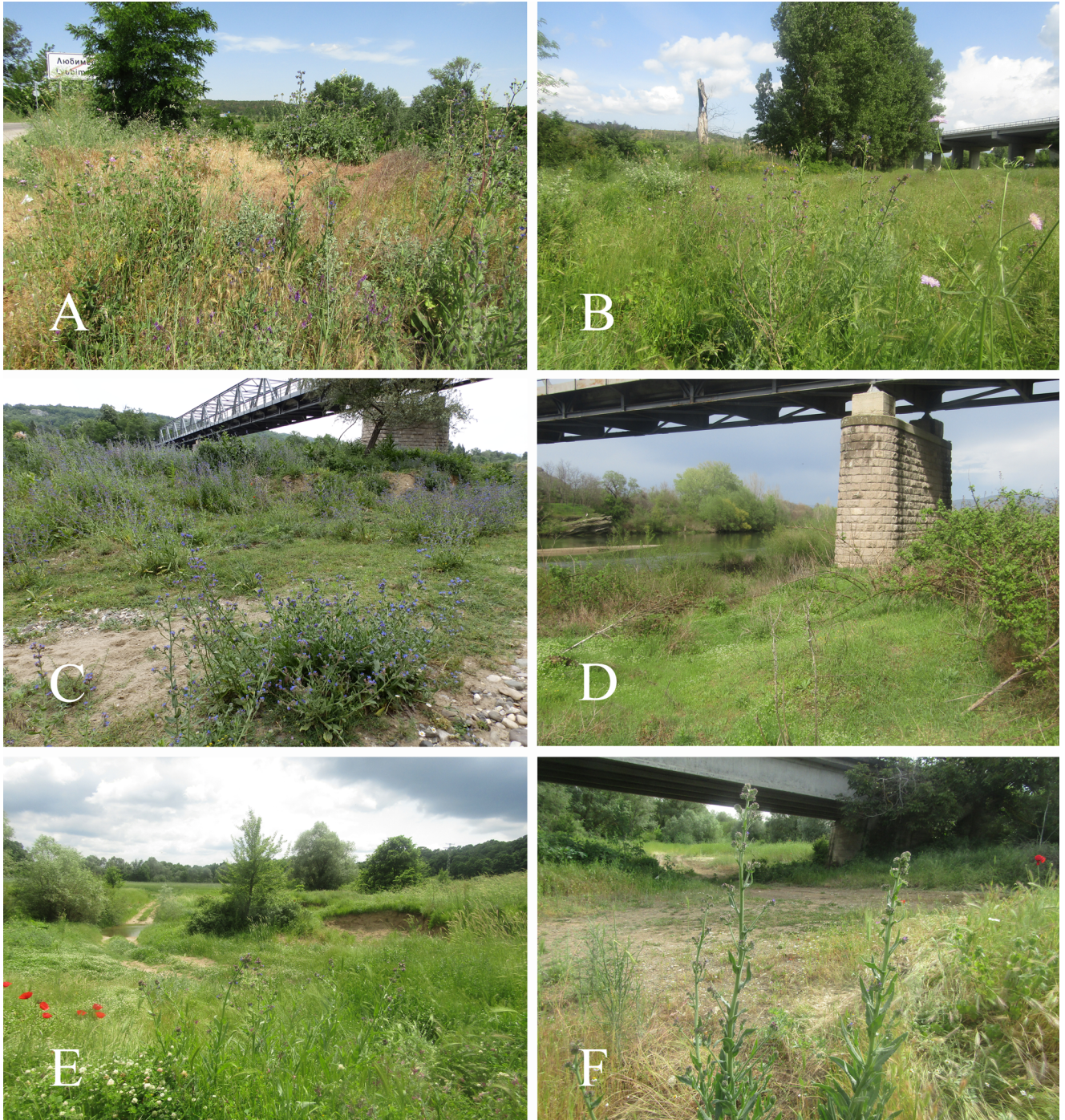


Fig. 1. Habitats of *Pilemia serriventris* in Bulgaria – (A) Lyubimets locality, 24.v.2021, (B) Harmanly locality, 28.v.2023, (C) Kotlari locality, 27.v.2018 (D) Kotlari locality, 16.iv.2023, (E) Slavyanovo locality, 26.v.2023, (F) Prohod locality, 25.v.2023.

## Results and discussion

*Pilemia serriventris* (Holzschuh, 1984)

Material: Maritsa Riv. Valley, Lyubimets, right bank of Maritsa Riv. (Fig. 1A), 41°51.245'N, 26°05.113'E,

60 m a.s.l., 24.v.2021, roadside verges, 1 ♂, 1 ♀ (copulating pair), D. Gradinarov & Y. Petrova leg.; the same locality, 26.v.2023, 1 ♀, D. Gradinarov & Y. Petrova leg.; Maritsa Riv. Valley, E of Harmanly, right bank of Maritsa Riv. (Fig. 1B), 41°55.564'N, 25°56.000'E, 76 m a.s.l., 28.v.2023, riverine



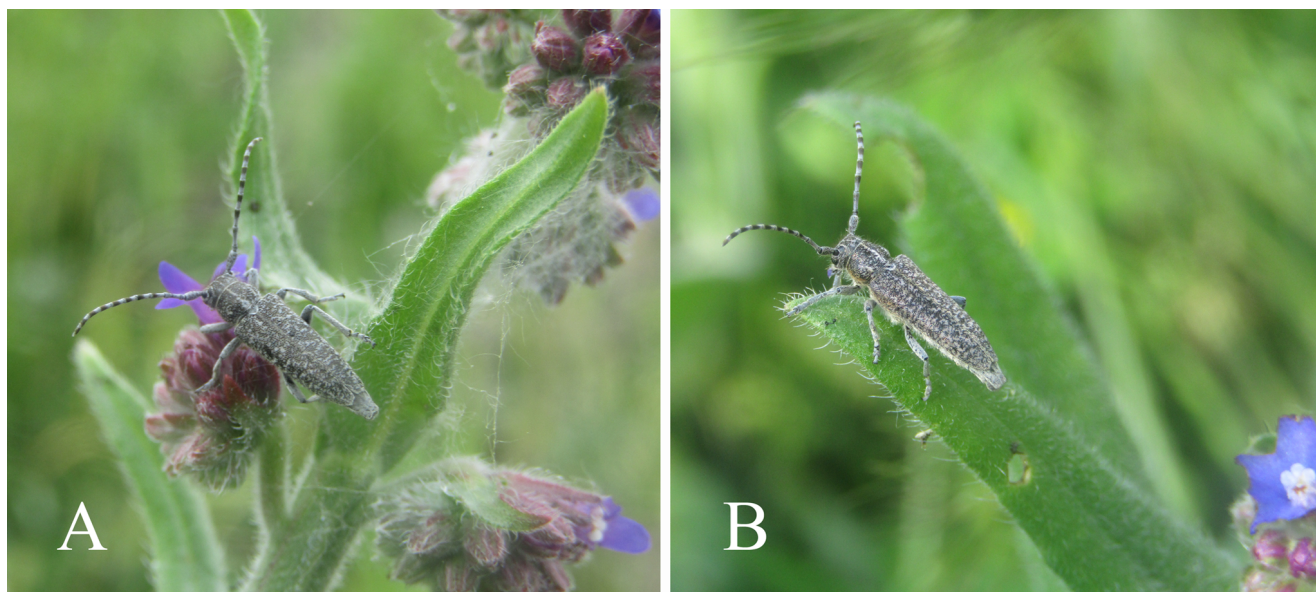


Fig. 2. Males of *Pilemia serriventris* on host plants – A) Prohod Vill., 25.v.2023; B) Kotlari Vill., 27.v.2023.

vegetation, 1 ♂, 1 ♀ (copulating pair), D. Gradinarov & Y. Petrova leg.; Eastern Rhodopes Mts, 1,5 km SW Kotlari Vill., right bank of Arda Riv. (Fig. 1C, D), 41°36.914'N, 25°43.647'E, 160 m a.s.l., 27.v.2018, riverine vegetation, 2 ♂♂, 1 ♀ (copulating pair including), D. Gradinarov & Y. Petrova leg.; the same locality, 05.vi.2020, 1 ♂, 2 ♀♀, D. Gradinarov & Y. Petrova leg.; the same locality, 27.v.2023, 7 ♂♂, 7 ♀♀, D. Gradinarov & Y. Petrova leg.; Eastern Rhodopes Mts, 1 km W of Slavyanovo Vill., left bank of Biserska Reka Riv. (Fig. 1E), 41°48.433'N, 25°45.064'E, 172 m a.s.l., 27.v.2023, riverine vegetation, 1 ♂, D. Gradinarov & Y. Petrova leg.; Strandzha Mts, NW of Prohod Vill., left bank of Sredetska Reka Riv. (Fig. 1F), 42°19.978'N, 27°03.398'E, 49 m a.s.l., riverine vegetation and roadside verges, 25.v.2023, 3 ♂♂, 1 ♀, D. Gradinarov & Y. Petrova leg.

All specimens were collected from the host plant *Anchusa procera* Besser (Fig. 2). On the same plant species, the process of copulation, as well as feeding on flower petals, were observed. The records of *C. officinale* and *A. barrelieri* as host plants of *P. serriventris*, by Rejzek et al. (2001) and Georgiev et al. (2005) respectively, are rather doubtful. In the localities near Kotlari and Slavyanovo, *A. procera* Besser coexist with other species of genus *Cynoglossum* – *C. hungaricum* Simonk., but we did not observe individuals of *P. serriventris* on this plant species. *Anchusa barrelieri*, which was reported as a host plant of *P. ser-*

*riventris* from Bistrets (Georgiev et al., 2005) was not found in the vicinity of this village during the present study, as well as nowhere else in the areas visited.

According Holzschuh (1984) and Bense (1995), the longitudinal rows of ocher (yellowish-brown) hairs on the elytra in both sexes, median tooth-like processes on the abdominal sternites 1 and 2 in males as well as the regularly sharpened apex of penis are among the main diagnostic features of *P. serriventris* (Figs 3, 4, 5A, 6A). In some examined specimens of *P. serriventris*, however, the longitudinal rows on the elytra are less pronounced to almost invisible. On the other hand, such rows are well developed in some of the *P. tigrina* specimens in the populations of the Western Stara Planina Mts (Gradinarov, 2016; Gradinarov & Petrova, 2019), as well as in populations of *P. tigrina* in Romania (Crişan et al., 2017). Among the males of *P. tigrina* from the locality of the species in the region of Beledie han (Gradinarov & Petrova, 2021) specimens with well-developed processes on the abdominal sternites 1 and 2 can also be found (Fig. 5B). Thus, the shape of the apex of penis is the most useful character for distinguishing *P. serriventris* (Fig. 6A, B) and *P. tigrina* (Fig. 6C, D). The pygidium in males of *P. serriventris* is significantly wider distally than in *P. tigrina*, which can also be used in distinguishing the two species (Holzschuh, 1984).

Roots of *A. procera* with live Cerambycidae larvae were collected on 9 September 2021, and April

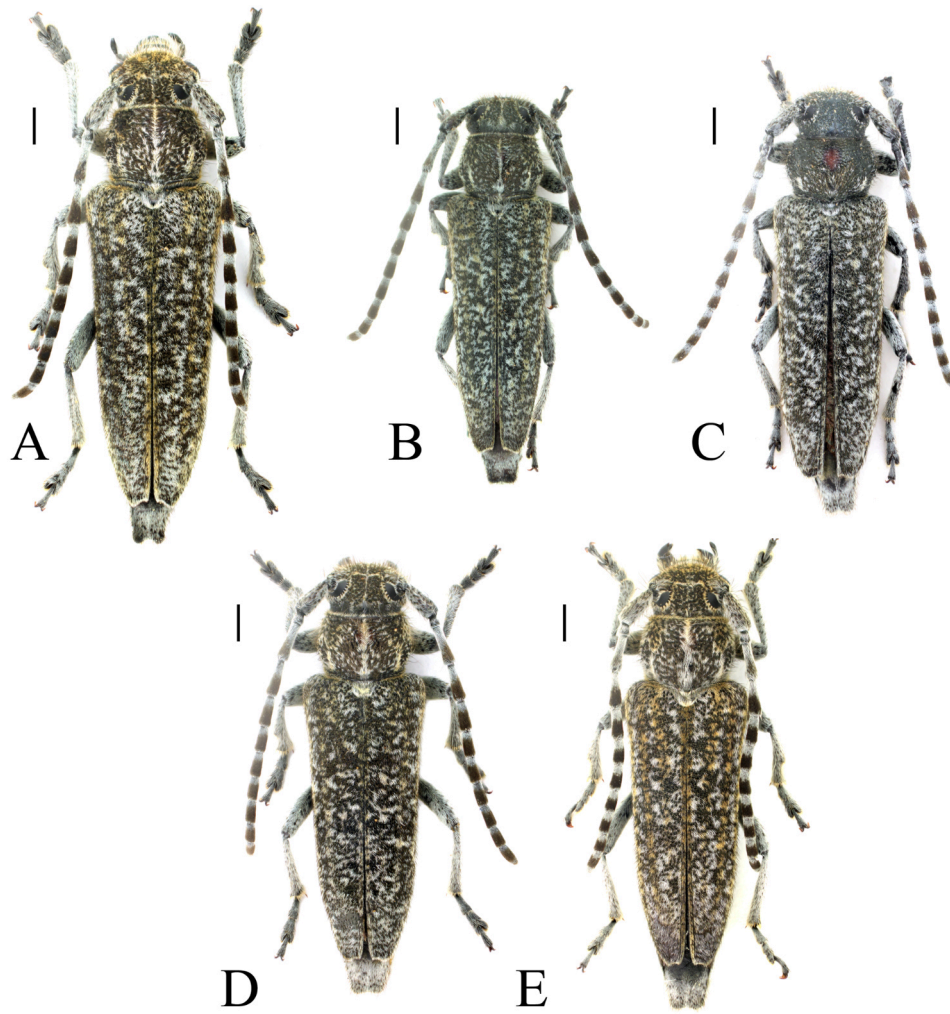


Fig. 3. Males of *Pilemia serriventris* from Bulgaria. A) Harmanli, 28.v.2023; B) Lyubimets, 24.v.2021; C) Kotlari Vill., 27.v.2018; D) Slavyanovo Vill., 27.v.2023; E) Prohod Vill., 25.v.2023. Scale bars: 1 mm.

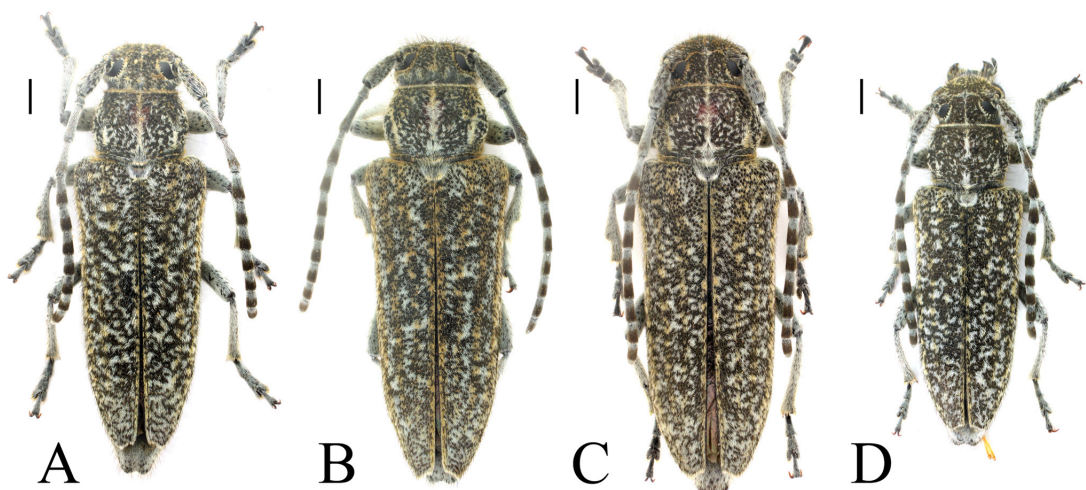


Fig. 4. Females of *Pilemia serriventris* from Bulgaria. A) Harmanli, 28.v.2023; B) Lyubimets, 24.v.2021; C) Kotlari Vill., 05.vi.2020; D) Prohod Vill., 25.v.2023. Scale bars: 1 mm.



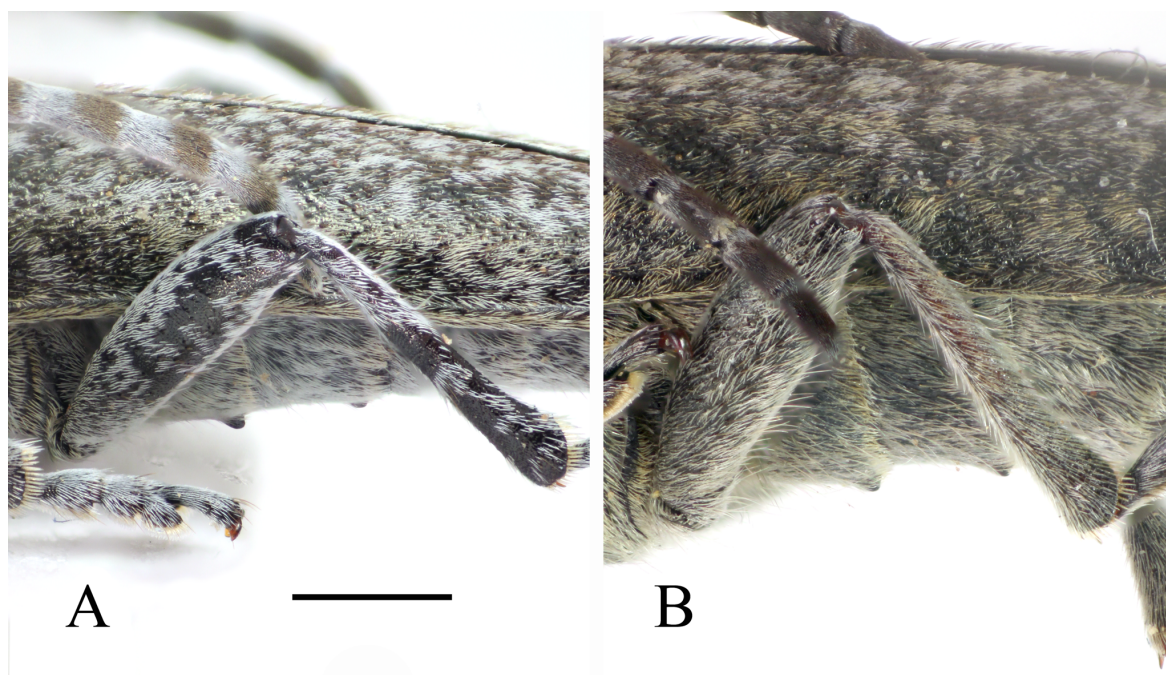


Fig. 5. Abdominal sternites in males of *Pilemia* spp. from Bulgaria. A – *P. serriventris*, Kotlari Vill., 27.v.2018; B – *P. tigrina*, Beledie Han Settlement, 20.v.2020. Scale bar: 1 mm.

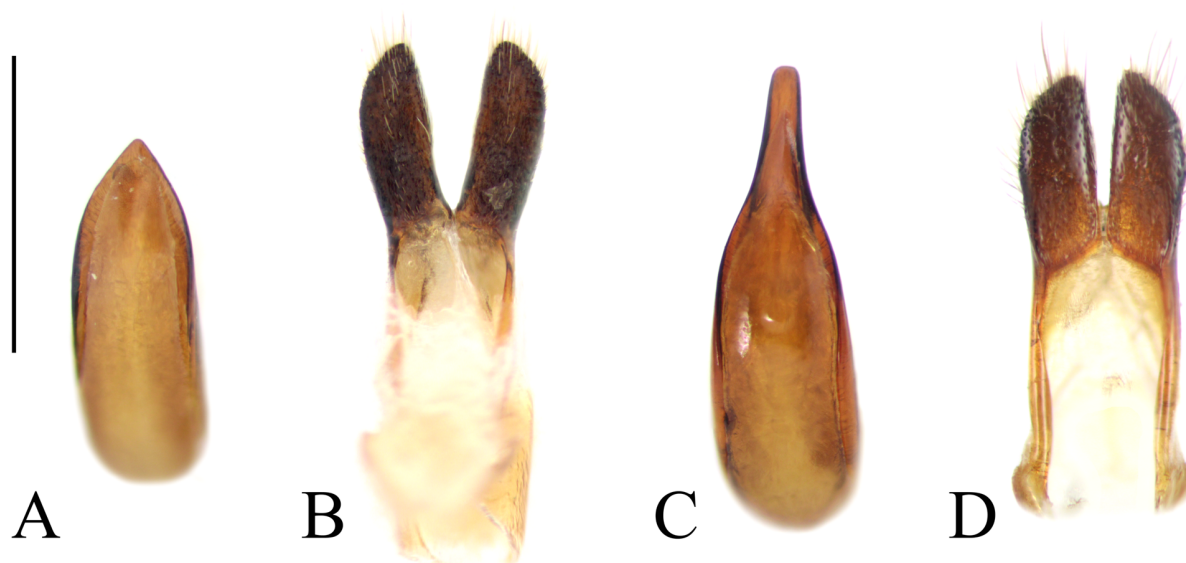


Fig. 6. Male genitalia of *Pilemia* spp. from Bulgaria. A, B – apex of penis and parameres of *P. serriventris*, Kotlari Vill., 27.v.2018; C, D – apex of penis and parameres of *P. tigrina*, Beledie Han Settlement, 20.v.2020. Scale bar: 1 mm.

16, 2023, from the locality near Lyubimets and that near Kotlari Vill., respectively. In both cases, single specimens of *Phytoecia* (*Opsilia*) *coerulescens* (Scopoli, 1763) (Cerambycidae: Lamiinae) have emerged from the roots after laboratory rearing. The last species is polyphagous mostly in Boraginaceae (Sama, 2002) and has been reported together with *P.*

*tigrina* on *A. barrelieri* by earlier authors (Kovács, 2005; Crişan et al., 2017).

In our study, adults of *P. serriventris* were found on the host plants in the period of the second half of May to the beginning of June. Our data is consistent with the known period of activity of the adults of this species (Holzschuh, 1984; Georgiev et al., 2005,

Hoskovec et al., 2023). Adults of *P. serriventris* appear to become active later in spring than those of *P. tigrina*, which in Bulgaria can be found on food plants already in April (Gradinarov 2016; Gradinarov & Petrova, 2019; 2021). The late appearance of the adults of *P. serriventris* is probably related with the late flowering of the host plant *A. procera*, in comparison to *A. barrelieri*.

During the survey we found the species at an altitude of about 50 to 170 m. a.s.l., on alluvial banks of rivers from the Aegean drainage basin (Maritsa Riv., Arda Riv., Biserska Reka Riv.) and from the Black Sea drainage basin (Sredetska Reka Riv.). Near Lyubimets and near the Prohod Vill., it was also found among roadside vegetation at a greater distance (up to about 120 m) from the river. Both habitat types belong to the linear habitats (with linear strips of vegetation) sensu Bennett (2003). The second species of the subgenus *Pilemia* in Bulgaria – *P. tigrina*, has been recorded from linear habitats as well (Gradinarov & Petrova, 2021). In such habitats natural vegetation may have remained intact and they can serve as corridors for the dispersal of plant and animal species (Bennett, 2003). The presence of *P. serriventris* along the rivers Arda and Maritsa is also possible in the neighboring areas of Greece and the European part of Türkiye.

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