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Research article

Two new sawfly species for the Bulgarian fauna (Hymenoptera: Symphyta)

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Abstract: Two sawfly species were established for the first time in Bulgaria: *Gilpinia socia* (Klug) (Hymenoptera: Diprionidae) and *Hemichroa crocea* (Geoffroy) (Hymenoptera: Tenthredinidae). *G. socia* was found on *Pinus sylvestris* in Plovdiv City, and *H. crocea* – on *Alnus glutinosa* in the land of Iskra Village. The late-instar larvae were collected and reared in Petri dishes in laboratory conditions in Forestry Protection Station in Plovdiv. Seven female and one male adult specimens of *G. socia* appeared between 30 July and 23 August 2021.

Keywords: Bulgaria, *Gilpinia socia, Hemichroa crocea,* new records

Introduction

The suborder Symphyta is the largest phytophagous group of Hymenoptera, including 818 genera and 8855 species (Taeger et al., 2018). Some species are known as economically important pests in forests.

Vassilev (1978) summarised data on about 268 known species of the suborder Symphyta in Bulgaria. Later, several new species of the sawfly fauna of the country were also reported (Georgiev, 1990, 1996; Stoyanov & Ljubomirov, 2001; Georgiev et al., 2002; Blank et al., 2013; Doychev, 2015; Liston et al., 2019). However, it is necessary to note that the Bulgarian sawfly fauna is still not well studied.

This note reports two new sawfly species for the fauna of Bulgaria.

Material and methods

The studies were conducted in 2021 in two localities in Bulgaria – Plovdiv City and Iskra Village (Fig. 1). The main characteristics of the studied areas and collection of the biological material are given in Table 1.

The biological material was collected on host plants as late-instar larvae. After collection, the sawfly larvae were transported to the entomological laboratory of Forest Protection Station in Plovdiv.

The larvae were reared in Petri dishes in laboratory conditions at room temperatures (18–22 °C). The samples were observed daily. The emerged adults were identified by the keys of Smith (1974) and Zhelohovtsev et al. (1988). Identification of sawfly larvae was made according to Pschorn-Walcher (1982).

Table 1. Main characteristics of the studied areas.

Locality	Geographical coordinates	Altitude, m a.s.l.	Host plant	Studied biological material
Plovdiv City	42°08'18.09"N, 24°46'10.60"E	160	*Pinus sylvestris* L.	8 larvae and adults
Iskra Village	41°54'27.36"N, 25°07'27.84"E	340	*Alnus glutinosa* (L.) Gaertn.	15 larvae

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Fig. 1. Studied areas in Bulgaria.

The reared adults are deposited in entomological collection of Forest Research Institute in Sofia.

Results and discussion

Gilpinia socia (Klug, 1812)
(Hymenoptera: Diprionidae)

Material examined: gregarious larvae on 8 year-old *Pinus sylvestris* in the park of Forestry Protection Station in Plovdiv – 28 May 2021 (Fig. 2 A); collection of late-instar larvae – 08 June 2021; pupation in laboratory condition – in the period 09–15 June 2021; adult emergence – between 30 June and 23 August 2021 (1 ♂, 7 ♀♀); leg. M. Dobreva & N. Zlatanov; det. G. Georgiev.

The late-instar larvae of *G. socia* reach a length of 20–25 mm. The head is dark brown. The body is dark green, almost black, with a fine white central stripe, white mottled longitudinal stripe laterally and white spots around the stigmae (Fig. 2 B). The pupae are coloured light brown (Fig. 2 C).

In its imaginal stage, the genus *Gilpinia* differs from *Diprion* by the larger cenchri and the smaller metascutellum, and from *Neodiprion* by the much longer petiole of anal cell of hindwing and densely sculptured abdominal terga. Body of the female of *G. socia* is mostly reddish yellow (Fig. 2 D), with black spots – one on the head between the eyes and three on the mesonotum, mesosternum and metanotum. The tip of the scutellum is black, the legs are light brownish red, and the antennae are reddish brown with 19–20 segments. The males of *G. socia* resemble *G. pallida,* but the antennae have 20 double setae (*G. pallida* has 18–19 double setae). Body length of the males and females is 6.0–7.0 mm and 8.0–9.5 mm, respectively.

The genus *Gilpinia* includes a dozen species in Europe, eight of which are trophically associated with pines (Pschorn-Walcher, 1982). The larvae of five species live alone, and only three species (including *G. socia*) feed gregariously.

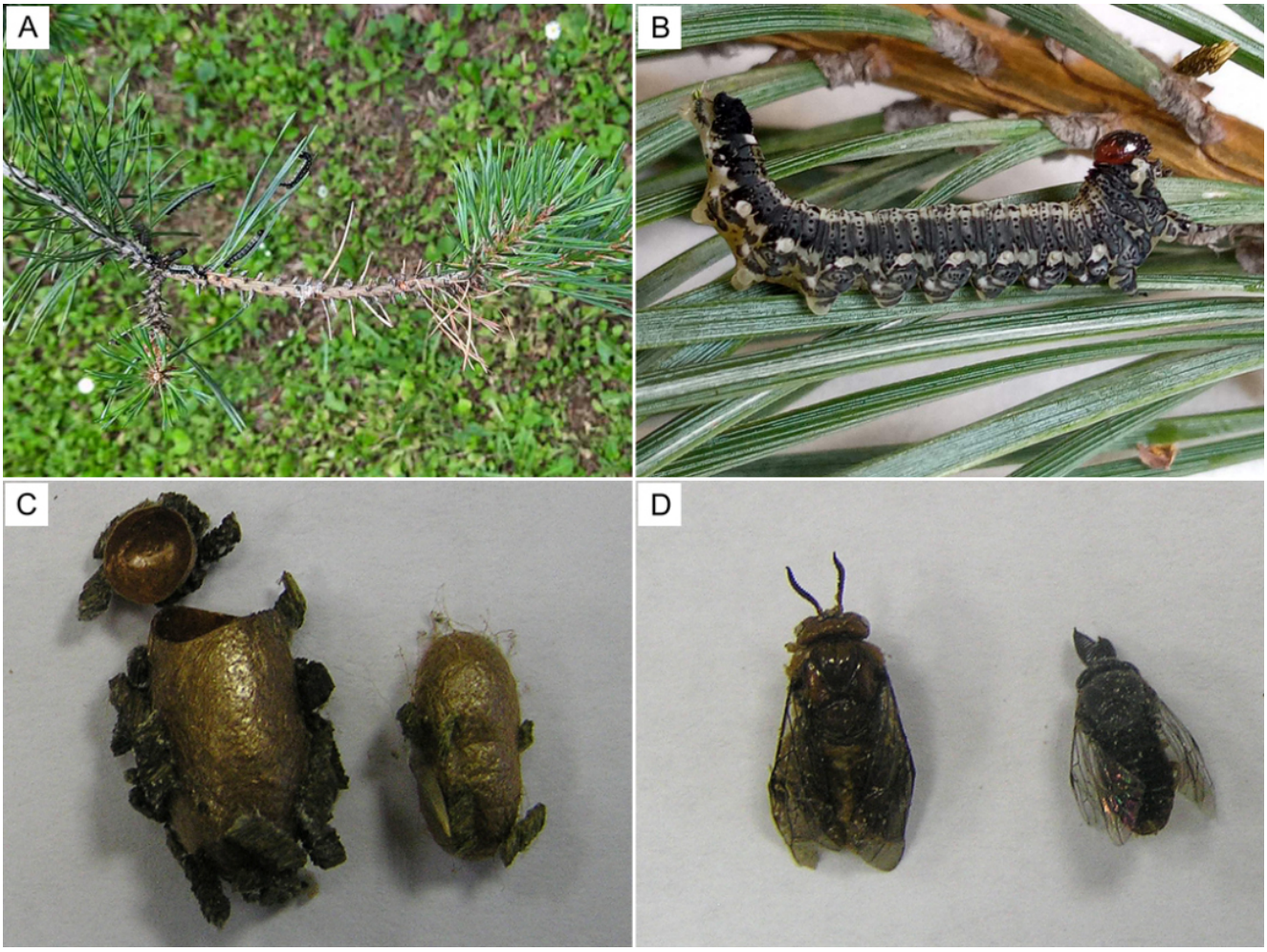

Fig. 2. *Gilpinia socia:* A – gregarious larvae on *Pinus sylvestris;* B – old-instar larva (lateral view); C – pupae; D – female and male specimens.

Gilpinia socia is a boreomontane species, native in Europe, distributed in Austria, Croatia, Czech Republic, Slovakia, European Russia, Estonia, Finland, French, Germany, Greece, Hungary, Italy, Latvia, Poland, Switzerland and Ukraine (Liston, 1995; Kupková et al., 2014). At low altitudes, *G. socia* is bivoltine, but in the mountains it has one generation per year (Pschorn-Walcher, 1982). It is associated with *Pinus sylvestris, P. mugo* Turra and *P. nigra* Arn. (Pschorn-Walcher, 1982; Liston, 1995).

Hemichroa crocea (Geoffroy, 1785)
(Hymenoptera: Tenthredinidae)

Material examined (larvae only): collection of late-instar gregarious larvae on *Alnus glutinosa* along Kayaliika River in the land of Iskra Village (Plovdiv District) – 23 June 2021; shoot defoliation varies between 10 and 40% (Fig. 3 A); leg. M. Dobreva & N. Zlatanov; det. G. Georgiev.

The larvae of *H. crocea* are brightly coloured, yellowish and greenish, with black longitudinal stripes (Fig. 3 B, C), unlike the uniform green larvae of *H. australis* (Serville, 1823) (Pschorn-Walcher, 1982). *H. crocea* larvae feed gregariously on the margin of the leaves of *Alnus* spp., *Betula* spp., *Corylus* spp. and *Salix* spp., in contrast to the larvae of *H. australis,* which live alone on *Betula* spp. and *Alnus* spp. (Sundukov, 2017). In Bulgaria, *H. australis* was reported under the synonymous name *Hemichroa alni* (Linnaeus, 1758) (Vassilev, 1978). At present, only the above mentioned two species of the genus are known in Europe. In Ukraine, a third species (*Hemichroa*

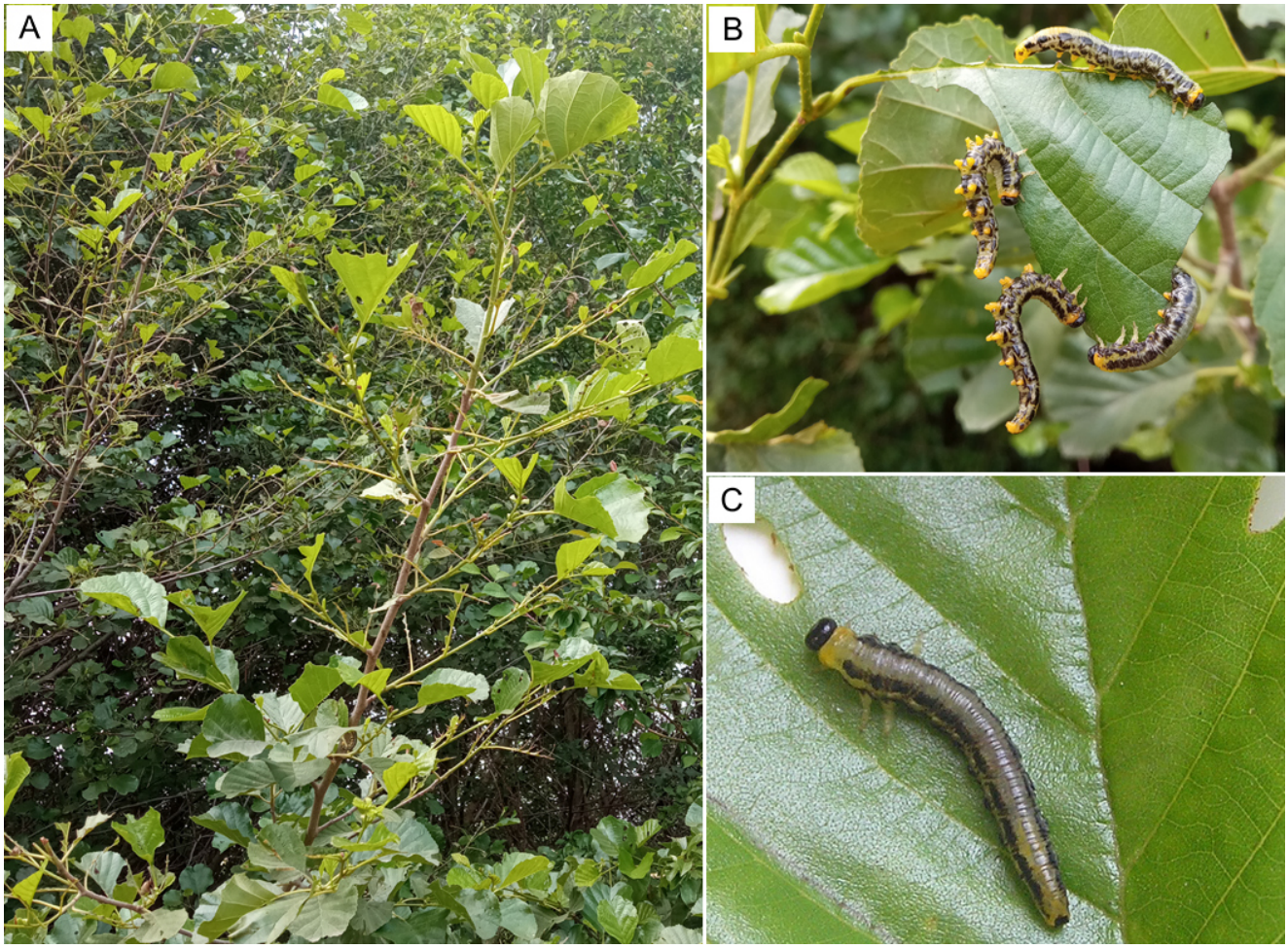

Fig. 3. *Hemichroa crocea:* A – defoliation of shoots of *Alnus glutinosa;* B – gregariously feeding of the larvae; C – old-instar larva (dorsal view).

monticola Ermolenko, 1960) was also described, but it was recently synonymised with *H. australis* by Prous et al. (2019).

Hemichroa crocea is a Holarctic species, widely distributed from the British Isles, through central and northern Europe, to the Russian Far East, Japan, northern India, reaching into the Oriental Region in China, and transcontinental in North America (Prous et al., 2019). At lower altitudes, the species usually develops two overlapping generations per year (the larvae feed in June–July and August–September), but in the mountains it is mainly univoltine (egg-laying is usually observed in late July–mid-August, and feeding the larvae until the end of September) (Pschorn-Walcher, 1982).

In conclusion, it could be noted that the new records increase the species composition of the Bulgarian sawfly fauna.

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