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New Xylophagous Beetles (Insecta: Coleoptera) on Poplars in Bulgaria

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Abstract: During the period 2006-2009, nine xylophagous insect species from five coleopteran families were established on white and hybrid euramerican poplars (*Populus alba* and *P.* x euramericana) in Struma and Maritsa river valleys in Bulgaria: *Oryctes nasicornis* (Linnaeus) (Dynastidae), *Dicerca aenea* (Linnaeus), *Trachypteris picta* (Pallas) (Buprestidae), *Mycetochara axillaris* (Paykull) (Tenebrionidae), *Aegosoma scabricorne* (Scopoli), *Aegomorphus clavipes* (Schrank), *Rhaesus serricollis* (Motschulsky), *Rhamnusium bicolor* (Schrank) (Cerambycidae) and *Trypophloeus tremulae* Stark (Scolytidae). Five species (*M. axillaris*, *A. scabricorne*, *A. clavipes*, *R. serricollis* and *O. nasicornis*) were found for first time on poplars in the country, and the remaining ones – in new localities.

Key words: Coleoptera, xylophagous beetles, *Populus*, new records, Bulgaria

Introduction

Poplars (*Populus* spp.) are trophycal plants for about 650-700 insects (Grechkin, Vorontsov 1962; Delplanque 1998, cited in Rotah 2004). Until now, 291 phytophagous insect species have been established on white, black and hybrid poplars in Bulgaria (Georgiev 2005, 2006a, 2006b). Among them, 57 species from the orders Coleoptera (45 species), Lepidoptera (8), Hymenoptera (2) and Diptera (2) develop internally in bark, phloem and xylem of the hosts (Georgiev 2005).

This note reports new xylophagous coleopteran insects connected with poplars in Bulgaria.

Material and Methods

The study was conducted during the period 2006-2009 in Struma (Slatino village, 400 m a.s.l.) and Maritsa (towns of Lyubimets, 60 m a.s.l., Dimitrovgrad, 100 m and Skobelevo village, 110 m) river valleys, as continuation of investigations on insect complex associated with poplars in Bulgaria.

Stems, branches and twigs of damaged, dead or fallen poplar trees were checked for xylophagous insects. Collected larvae and pupae were reared in laboratory conditions within wood sections in order to obtain adults. Cerambycid larvae were identified by the keys of Švácha, Danilevsky (1986, 1988).

Results

Nine xylophagous insect species from 5 coleopteran families were found on poplars in Bulgaria: *Oryctes nasicornis* (Linnaeus, 1758) (Dynastidae), *Dicerca aenea* (Linnaeus, 1766), *Trachypteris picta* (Pallas, 1773) (Buprestidae), *Mycetochara axillaris* (Paykull, 1799) (Tenebrionidae), *Aegosoma scabri-*

corne (Scopoli, 1763), *Aegomorphus clavipes* (Schrank, 1781), *Rhaesus serricollis* (Motschulsky, 1838), *Rhamnusium bicolor* (Schrank, 1781) (Cerambycidae) and *Trypophloeus tremulae* Stark, 1952 (Scolytidae) (Table 1). *O. nasicornis* and *R. serricollis* were connected with white poplars, *Populus alba* L., and the remaining species – with hybrid euramerican poplars, *Populus* x euramericana Dode (Guinier).

Five species (*M. axillaris*, *A. scabricorne*, *A. clavipes*, *R. serricollis* and *O. nasicornis*) were established as new phytophages on poplars in the country (Fig. 1). New localities of *D. aenea*, *T. picta*, *R. bicolor* and *T. tremulae* were found in this study.

Three species (*D. aenea*, *T. picta* and *A. clavipes*) were observed to cause damages on dying but still living trees in poplar plantations along Maritsa river. The tree withering was due to strong drainage of the habitats. Adult insects were collected in pupal cells in damaged trees or during attempts to infest new hosts.

A. scabricorne and *R. bicolor* larvae were established within cut down trees. They developed in dead wood in contact with living tissues. *R. serricollis* and *O. nasicornis* were found in staying dead trees. *R. serricollis* was collected as larvae, pupa and adults in pupal cells in wood immediately under bark, and *O. nasicornis* – as an adult in decaying wood. *M. axillaris* was established as a larva in rotten wood of dead part of tree stem. The adults of *T. tremulae* were collected under bark during infestation of hybrid poplar branches.

It is interesting to note that body length of *R. serricollis* male adults without mandibles varied between 46.5 mm and 63.0 mm and with mandibles – between 49.0 and 68.0 mm. Body length of female specimens without and with mandibles varied between 35.0 and 62.5 mm and between 37.0 and 65.5 mm, respectively.

Discussion

Oryctes nasicornis is widely distributed in Bulgaria. In larval stage, it feeds on decaying plant and dung materials, rotten stumps and dry or hollow trees stems (Medvedev 1960). In some cases the larvae feed on roots of grapevine, rose and citrus causing drying of attacked plants.

The jewel beetles *D. aenea* and *T. picta* have been reported as xylophages of *Populus* spp. in Bulgaria (Georgiev 2005). They are widely distributed in the country. In Maritsa river valley *D. aenea* is known from the regions of Plovdiv, Sadovo and Harmanli, and *T. picta* – from Pazardzhik and Plovdiv

Fig. 1. Localities of the species in Bulgaria.

Table 1. Xylophagous insects found on poplars in Bulgaria

Family,	**Locality**	**Host plant**	**Sample**	**Material**	**Adult emergence,**
species			collection, date	collected	date
Dynastidae					
**Oryctes nasicornis*	Lyubimets	*Populus alba*	11-12.07.2009	Imago (1 ♂)	-
Buprestidae					
Dicerca aenea	Skobelevo	*Populus* x euramericana	03.06.2009	Imago (1 ♂)	-
Trachypteris picta	Dimitrovgrad, Skobelevo	*Populus* x euramericana	03.06.2009	Imago (5 ♂♂, 3 ♀♀)	-
Tenebrionidae					
**Mycetochara axillaris*	Slatino	*Populus* x euramericana	31.03.2006	Larva (1 ex.)	29.04.2006 (1 ♀)
Cerambycidae					
**Aegomorphus clavipes*	Dimitrovgrad, Skobelevo	*Populus* x euramericana	03.06.2009	Imago (2 ♂♂, 2 ♀♀)	-
**Aegosoma scabricorne*	Slatino	*Populus* x euramericana	15.07.2008	Larvae (4 exx.)	24.07.2009 (1 ♂)
**Rhaesus serricollis*	Lyubimets	*Populus alba*	11-12.07.2009	Larvae (2 exx.), pupae (1 ex.), imago (3 ♂♂, 5 ♀♀)	August 2009 (1 ♀)
Rhamnusium bicolor	Slatino	*Populus* x euramericana	15.07.2008	Larvae (2 exx.)	-
Scolytidae					
Trypophloeus tremulae	Lyubimets	*Populus* x euramericana	11-12.08.2007	Imago (6 ♂♂, 18 ♀♀)	-

* – A new xylophage of poplars in Bulgaria

(Sakalian 2003). Both species are mainly connected with decaying trees, but *T. picta* is also considered dangerous poplar pest in Bulgaria. Strong damages caused by the insect have been observed on 80-90% of poplar samplings and trees in some nurseries and plantations (Keremidchiev, Vatov 1963).

The tenebrionid *M. axillaries* is distributed in Europe and Northern Russia (Novak, Pettersson 2008). According to the authors, on Balkan Peninsula the species is found in Bulgaria and Greece but no specified localities have been pointed. It is well known that the larvae of *Mycetochara* species are obligatory associated with necrotic, humid wood of deciduous tree species from *Quercus*, *Fagus*, *Acer*, *Betula* and *Populus* genera (Burakowski *et al.* 1987, cited in Gosik 2007). Some of them can be regarded as rare and endangered, because their occurrence is connected with primeval forests and old parks (Gosik 2007).

The prionid *R. serricollis* is relatively rare in Bulgaria. It was reported mainly from Black seacoast – Varna, Longoza near Staro Oryahovo (Kantardjiewa-Minkova 1932), Kiten (Minkova 1957), Primorsko (Ganev 1985), outfall of Ropotamo river (Kovacs *et al.* 1998-99; Rapuzzi, Georgiev 2007) and some other localities in South Bulgaria: Kresna gorge, Svilengrad, Tremoshtitsa river in Pirin Mt. (Ganev 1986) and Krumovgrad (Rapuzzi, Georgiev 2007). It is connected with deciduous trees (Plavilstshikov 1936; Hoskovec, Rejzek 2010). According to Nikitskii (2010), *Fagus* and *Populus* are one of the preferred host plants of this rare species which decreases in number. It is endangered, because its larvae develop in old trees. It must be noted, that *R. serricollis* is the biggest longhorn beetle in Bulgaria. In this study most probably the largest body length (68.0 mm) of the species was observed. Entomological sources provide data about smaller body size of the cerambycid: 33-61 mm (Plavilstshikov 1936), 38-54 mm (Pesarini, Sabbadini 1994), 30-60 mm (Hoskovec, Rejzek 2010).

The other three longhorn beetles, *A. scabricorne*, *R. bicolor* and *A. clavipes* are characterized with local distribution in Bulgaria (Migliaccio *et al.* 2007). From them, only *R. bicolor* was established previously to feed on poplars in the country (Doychev, Georgiev 2004). The larvae of *A. scabricorne* and *A. clavipes* are well known to develop on deciduous trees including poplars (Sama 2002).

Until the present studies, the scolytid *T. tremulae* has been reported only two times – from Varna (Karaman 1971) and unspecified locality in Eastern Bulgaria (Pfeffer 1994). Therefore, Lyubimets is the second specified locality of the species in the country.

As a conclusion it is necessary to note that new records enlarge knowledge on insect complex of poplars in Bulgaria and increase the number of phytophages up to 296 species.

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Нови бръмбари-ксилофаги (Insecta: Coleoptera) по тополи в България

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(Резюме)

През периода 2006-2009 г. в долините на реките Струма и Марица в България са установени 9 вида насекоми-ксилофаги от 5 колеоптерни семейства по бели и хибридни евроамерикански тополи (*Populus alba* и *P.* x euramericana): *Oryctes nasicornis* (Linnaeus) (Dynastidae), *Dicerca aenea* (Linnaeus), *Trachypteris picta* (Pallas) (Buprestidae), *Mycetochara axillaris* (Paykull) (Tenebrionidae), *Aegosoma scabricorne* (Scopoli), *Aegomorphus clavipes* (Schrank), *Rhaesus serricollis* (Motschulsky), *Rhamnusium bicolor* (Schrank) (Cerambycidae) и *Trypophloeus tremulae* Stark (Scolytidae). Пет вида (*M. axillaris*, *A. scabricorne*, *A. clavipes*, *R. serricollis* и *O. nasicornis*) са намерени за първи път по тополи в страната, а останалите – в нови находища.