

**A NEW JUMPING PLANT LOUSE, *CACOPSYLLA ULMI* FÖRSTER
(HOMOPTERA, PSYLLIDAE), ON ELM IN SERBIA**

D. JERINIĆ-PRODANOVIĆ

Faculty of Agriculture, University of Belgrade, Nemanjina 6, 11080 Zemun, Serbia

ABSTRACT: During investigations of jumping plant lice, *Cacopsylla ulmi* Först was found for the first time in Serbia on the elm *Ulmus effusa* Willd. The main morphological characteristics of the species, its biology and damage caused by it are treated in this paper.

KEYWORDS: Psyllidae, jumping plant louse, *Cacopsylla ulmi*, elm, *Ulmus effusa*

INTRODUCTION

The jumping plant louse *Cacopsylla ulmi* Först belongs to the family Psyllidae, superfamily Psylloidea, which is the least studied group of insects in the order Homoptera. There are over 2000 known species in the world and 250 in Europe (BURCKHARDT, 1987).

The jumping plant lice have also been insufficiently studied in Serbia. Most studies published in the domestic literature focused on some economically important species, such as: the pear suckers *Cacopsylla pyri* Linnaeus, *C. pyricola* Förster, and *C. pyrisuga* Förster (PAVIĆEVIĆ, 1977; INJAC, *et al.*, 1985); the plum sucker *Cacopsylla pruni* Scopoli (BOGAVAC, 1967; SIMOVA-TOŠIĆ and PETANOVIĆ, 1986); and the polyphagous species on vegetable plants *Bactericera tremblayi* Wagner (JERINIĆ, 2000). In recent years, some other species were also found: *Psyllopsis discrepans* Flor on ash (JERINIĆ and SPASIĆ, 1999); *Psylla buxi* L. on box (MILOŠEVIĆ and MIHAJLOVIĆ, 2001); and *Cacopsylla melanoneura* Först. and *C. crataegi* Schr. on hawthorn (JERINIĆ-PRODANOVIĆ and SPASIĆ, 2002.).

The jumping plant lice live on growing organs (bud, leaves, and sprouts) of ligneous plants. They suck juices and cause leaf deformation and problems in growth and development. They also excrete honeydew which is suitable for the development of sooty mold, lowering the plant's capacity for assimilation and transpiration in that way. Some species are vectors of viral, bacterial and

mycoplasmatic diseases of plants, and thus have great economic importance.

According to the foreign literature, different elm species (*Ulmus effusa* Willd, *U. laevis* Pallas, and *U. montana* With) are known to harbor only one jumping plant louse: *Cacopsylla ulmi* Först (DOBREANU AND MANOLACHE, 1962; KLIMACZEWSKI, 1975; LAUTERER, 1991 and OSSIANNILSSON, 1992).

We found the jumping plant louse *C. ulmi* on *Ulmus effusa* since it is here recorded for the first time in Serbia, this paper deals with basic morphological characteristics of the species, its development cycle, and damage caused by it.

MATERIAL AND METHODS

The jumping plant louse *C. ulmi* was collected on elm at several localities in Serbia: Belgrade-Ada Ciganlija (1.05.1998, 19.05.2003, 25.04.2005, 4.05.2005, and 1.11.2005); Sremska Mitrovica-Radenković (30.04.2005); Belgrade-Ušće (26.05.2005; 25.11.2005); Novi Beograd-Blok 45 (17.05.2005); and Bački Breg (7.06.2005). Different stages of larvae were collected with the damaged plant organs, while adults were collected using anexhauster.

Collected larvae were reared in laboratory conditions in Petri dishes until they became adults. Fifth-instar larvae and adults were fixed in 70% ethyl alcohol for further analysis.

Slides of whole samples or their parts (head, legs, wing, abdomen, male and female terminalia) were made in Kieffer's medium, using the lactic acid enlightening method.

Determination of the species was based on the appearance of male and female terminalia, genal cones, forewing veins, and nymphs.

Determination was made using the keys of DOBREANU AND MANOLACHE (1962), KLIMACZEWSKI (1975), and OSSIANNILSSON (1992).

RESULTS AND DISCUSSION

Analysis of morphological characters (head, antennae, male and female terminalia, and forewing veins) of collected and reared individuals showed that they belong to the species *Cacopsylla ulmi* Först.

Cacopsylla ulmi is a widespread species in Europe, and it is now registered for the first time in the Serbian fauna.

Adults are 3.6-4.3 mm long. The head is 1-1.01 mm wide, with a vertex which is 0.5 mm wide and 0.24-0.28 mm long. The genal cones are laterally somewhat concave, and 0.25 mm long (Fig. 1). Antennae are 1.89-2.0 mm. Forewings are 3.5 mm long and 1.4 mm wide. From the wing base, the R+M+Cu vein extends down the middle and divides into two branches: radial R and combined medial and cubital M+Cu, which also divide (Fig. 2).

Male terminalia. The proctiger is slightly bent in back. Situated on its apex is the anal pore, which is surrounded by wax glands (Fig. 3). Parameres are long and slightly bent with an apical tooth which is bent to the front. The apex of the aedeagus is round somewhat beak-like, and

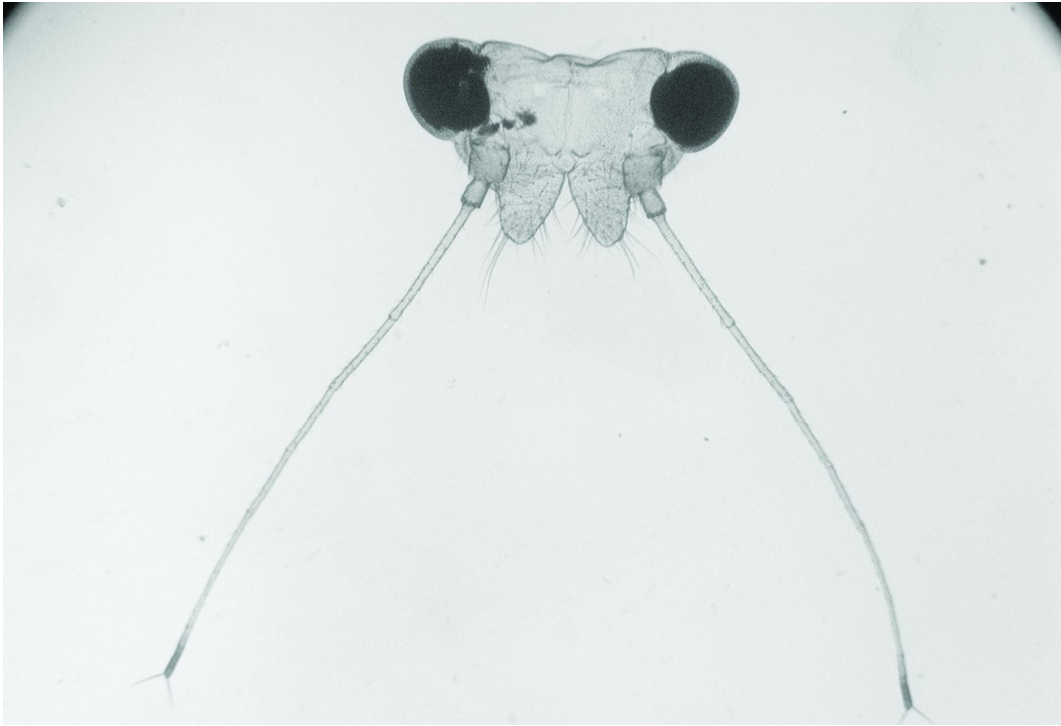


Fig. 1. Head *C. ulmi* (Orig.)



Fig. 2. Forewing *C. ulmi* (Orig.)

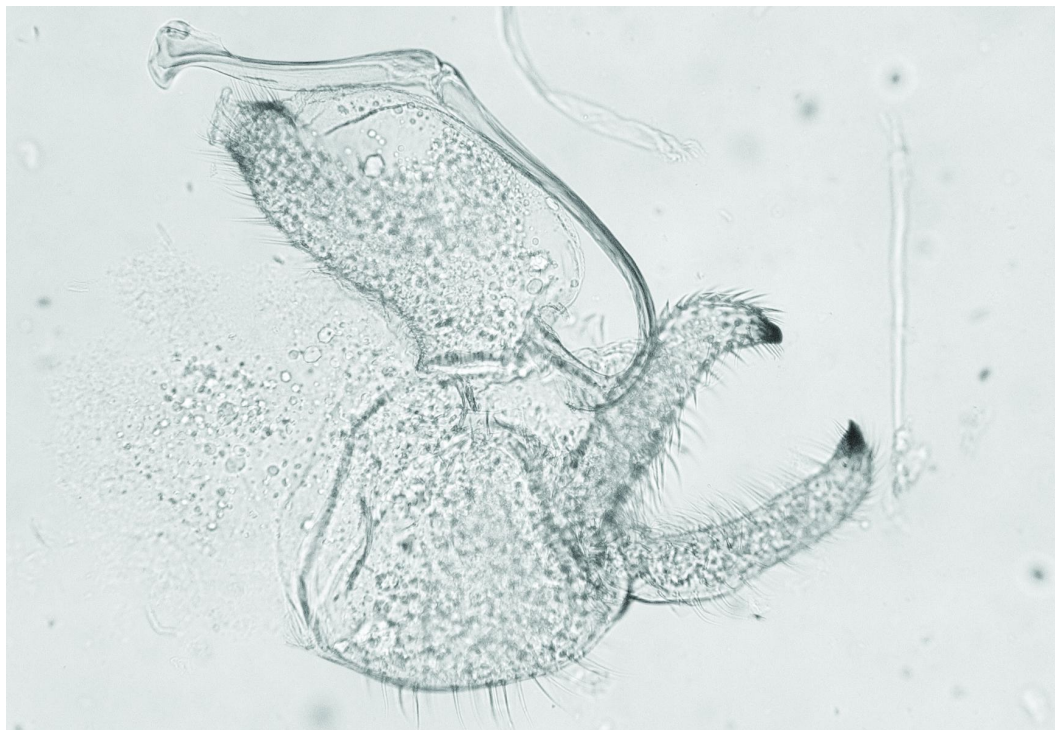


Fig. 3. Male terminalia *C. ulmi* (Orig.)

widened on one side.

Female terminalia. The proctiger is cuneiform, concave at the apex and with the anal pore in the base. The anal pore is surrounded by a two-layered ring of wax glands, which make an irregular ellipse. The subgenital plate is pointed and shorter than the proctiger. The valves are pointed and bent to the ventral side (Fig. 4).

Immediately after eclosion, adults are light green. Several days later, a yellow color is visible on the vertex and thorax. Antennae are yellow, and wings are transparent with visible whitish veins. As they grow older, adults become darker.

Adults of different sexes collected in autumn differ in color. Females have a dark-brown head and thorax, while the abdomen is dark-brown with pronounced orange pleurae; wing veins are dark-brown. The male's head and thorax are light-brown, the abdomen is green with dark-green to black tergites, and the wing veins are light-brown. Both sexes have light brown antennae whose two last joints are black.

Young larvae are yellow, but during growth they become yellow-green with darker sclerites and wing-pads. The last stage of the larva is dark-brown.

Cacopsylla ulmi has one generation per year. It overwinters in the egg stage. Females lay their eggs at the end of October or early in November on the bases of leaf buds (Fig. 5). Larvae

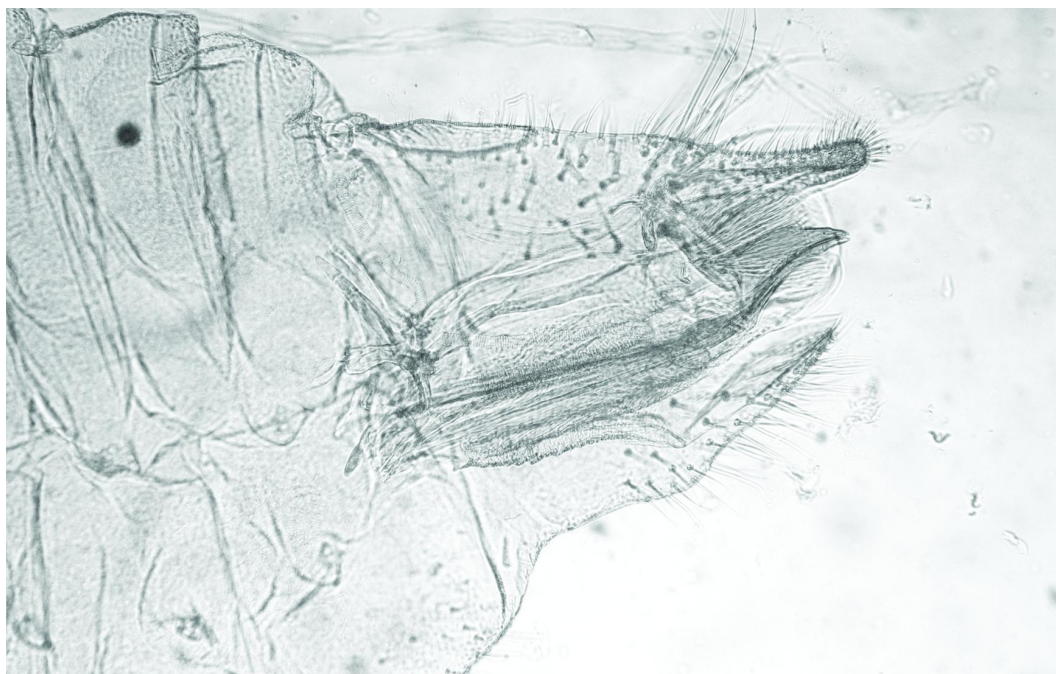


Fig. 4. Female terminalia *C. ulmi* (Orig.)

hatch in early spring, when the buds are opening and elms become covered with leaves. Larvae live on the underface of leaves, where they suck juices.

During our investigations, larvae were found on elm in April and adults until the second half of May. During the summer, *C. ulmi* was not found on this plant. At the end of October and beginning of November, adults were found on elm again, and after mating females laid their eggs.

In the foreign literature, we find different information about the life of adults during the summer. In the Czech Republic, for example, adults migrate during the summer to other ligneous plants (LAUTERER, 1991), returning to elm in September and October, while in Denmark, Sweden, and Finland they spend the whole summer on elms (OSSIANNILSSON, 1992).

Because of larval feeding, leaves of elm are drained and fall off (Fig. 6). Also, a great amount of honeydew, which is suitable for sooty mold development, lowers leaf assimilation and transpiration.

Data in the foreign literature indicate that in high numbers the jumping plant louse can drain the whole plant (KLIMASZEWSKI, 1975; LAUTERER, 1991).

On damaged parts of elm, we also collected natural enemies of *C. ulmi*. We found larvae of predator species from the families Coccinellidae, Lathridae, and Syrphidae, as well as adults of Forficulidae. From the order Hymenoptera, we reared some parasitoid species which are yet to be determined.

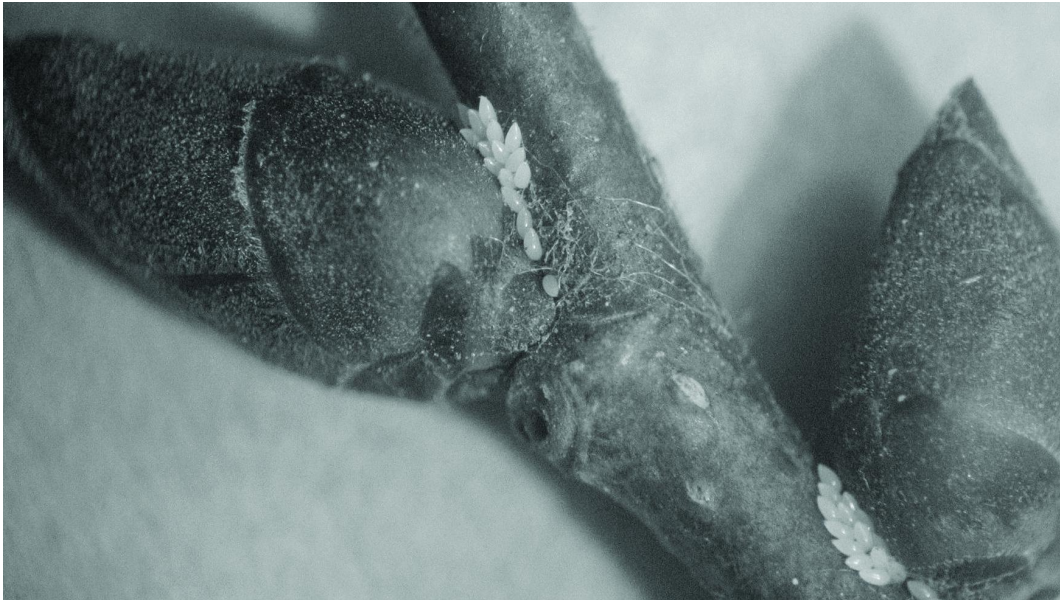


Fig. 5. Laid eggs *C. ulmi* (Orig.)



Fig. 6. Damages of *C. ulmi* (Orig.)

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**НОВА ВРСТА ЛИСНЕ БУВЕ *CACOPSYLLA ULMI* FÖRSTER
(НОМОПТЕРА, PSYLLIDAE) НА БРЕСТУ У СРБИЈИ**

Душанка Јеринић-Продановић

Пољопривредни факултет, Универзитет у Београду, Немањина 6, 11080 Земун, Србија

Током истраживања фауне лисних бува Србије, у више локалитета је на бресту (*Ulmus effusa* L.) први пут утврђено присуство врсте *Cacopsylla ulmi* Först., што представља нови податак за фауну наше земље. У раду су описане основне морфолошке карактеристике врсте и указано је на њену биологију и симптоме оштећења.

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