Citrus Flatid Planthopper – *Metcalfa pruinosa* (*Hemiptera: Flatidae*), a New Pest of Ornamental Horticulture in the Czech Republic

PAVEL LAUTERER

Entomological Department – Moravian Museum, Brno-Slatina, Czech Republic

Abstract

LAUTERER P. (2002): **Citrus flatid planthopper –** *Metcalfa pruinosa* (*Hemiptera: Flatidae*), **a new pest of ornamental horticulture in the Czech Republic**. Plant Protect. Sci., **38**: 145–148.

In late August of 2001 a population of *Metcalfa pruinosa* (Say, 1830) consisting of several dozens of adults and larvae was observed in a nursery of ornamentals at Brno-Bystrc. The species occurred mostly on young twigs of cultivars of *Thuja occidentalis* L., *Juniperus communis* L. and *Sorbus aucuparia* L. but also *Lilium* spp. and singly on other various wood and herbal ornamental plants. The damage was rather of an aesthetic kind: young twigs were covered by 5–10 cm long spots of waxy fluff produced by the larvae. The pest is native to North America and was introduced in the late 1970's to Italy, from where it spread to southern France, Slovenia and southern Austria. The Brno population might have been imported, in the egg stage, on ornamental shrubs from Italy. The polyphagous pest is very common in Southern Europe, causing damage especially on fruit trees by the secretion of honeydew that, being colonised by *Capnodiaceae* moulds, inhibits the transpiration. The species could stay permanently in the Czech Republic or could be repeatedly imported again.

Keywords: citrus flatid planthopper; *Metcalfa pruinosa*; ornamental horticulture; first record; Czech Republic

In late August of 2001, Mrs. E. Bártová, phytopathologist, noticed the occurrence of a pest on plants in the nursery of ornamentals "Čtyřlístek" in Brno-Bystrc. The insect, not reported from the Czech Republic before, was determined by the author as *Metcalfa pruinosa* (Say, 1830). In the USA it is known as the "citrus flatid planthopper".

The identification of *M. pruinosa* in the Czech Republic is easy as the species is the only local representative of the family *Flatidae*. Its mouthparts are piercing and suctorial like in other planthoppers. The larvae are agile, soft, their body is covered by a dense white waxy fluff. The waxy filaments are particularly long on the apex of the abdomen. The colour of the larval body after removing the wax layer is white to light green, sometimes with an ochreous tinge. The larvae have five instars, distinguishable by the size of the head capsule and wing pads. The last instar is 5–6 mm long. The larvae, especially when moulting, leave white spots of wax behind that stick to the host plant. The body of adults is mostly light ochreous to white-yellowish, while the vertex, pronotum, scutum, dorsal side of abdomen and forewings except the yellow costal vein are black to blackish brown. The hindwings are transparent with a black-grey shade and black veins. The forewings and the body are covered with a soft white powder, giving them a bluish tone. Several glabrous bulges protrude in the central part of the forewing. The white waxy powder is generally wiped off there, so that the illusorily grey-bluish forewing looks as if there were a few small black spots. Males including wings held close are about 7 mm, females about 8 mm long, although MEAD (1969) reports also smaller, 5.5 mm long specimens from North America. The spread of the forewings is about 17–18 mm. The wings are strikingly broad, ± over 3 mm in width, the hind wings basally up to 4 mm, and they are held close to the body to give an inactive insect a wedge-shaped, laterally compressed appearance. The adults of *M. pruinosa* are able to fly actively, and at first glance their form somewhat reminds of moths from the family *Pyralidae*.

Detailed illustrations of the species, including the species-specific male and female genitalia, have been published by DLABOLA (1981) and DELLA GIUSTINA (1987). A detailed description and differential diagnosis can be found in a paper by MEAD (1969). DEAN and BAILEY (1961) published photos of eggs, larvae of different age as well as adults.

The species has one generation annually in its entire range of distribution. Overwintering takes place in the egg stage. Eggs are laid in the bark of dead twigs of the host plant (MEAD 1969; DELLA GIUSTINA & NAVARRO 1993). In the southern USA first larvae hatched early in March, first adults were taken 69 day after the hatching date. Larvae were observed from April to June, adults from May to October with a peak in June. The adults lived several weeks. In the Niagara peninsula (Ontario, Canada), nymphs were reported from May to late July, adults from late July to September (MEAD 1969). The data known from France are closer to the probable phenology of the species in the Czech Republic. In France, larvae start hatching in late May or early June and then continue to mid-July. Like any other *Auchenorrhyncha*, *M. pruinosa* has five larval instars. First adults emerge around the 15th July. In 1992 numerous young larvae were observed as late as the 11th August. Copulation takes place in September. The last adults die in early November (DELLA GIUSTINA & NAVARRO 1993). In the cold and rainy year 2001 in the Czech Republic in Brno, the development was even slower than indicated above.

Metcalfa pruinosa is polyphagous on many diverse wood species in North America – citrus, grape vine, apple, pear, peach, laurels, conifers, camellias, azaleas, magnolias, hollies, *Viburnum* species and others (MEAD 1969). According to DEAN and BAILEY (1961) it prefers grapefruit to orange as a host. A large population of *M. pruinosa* is even able to destroy the host-plant, as it happened to an ornamental hedge of *Ligustrum amurense* Carr in the USA (MEAD 1969). From France, in addition to the above listed plants, it was reported from ash, plane, poplar, rose, hawthorn and especially grape vine. Among herbs the ruderal species *Chenopodium album* L. and *Amaranthus retroflexus* L. were also found to be host plants (DELLA GIUSTINA & NAVARRO 1993).

The most severe damage on diverse plants by *M. pruinosa* in Europe, especially in southern France, is caused by the secretion of honeydew which is often colonized by sooty moulds from several taxa, especially the family *Capnodiaceae* (DELLA GIUSTINA & NAVARRO 1993). The honeydew and hyphae of microfungi inhibit the transpiration and essentially destroy the aesthetic appearance of the affected plant and the plants below it as well. On the other hand, the cited authors appreciate the honeydew as a rich food for honeybees. In northern Italy and southern France, *M. pruinosa* is nowadays so abundant that its honeydew even seriously soils garden furniture e.g. in restaurants or cars parked below the attacked trees. Initially, no damage by honeydew was detected at Brno since the weather had earlier been rainy for a long time and the honeydew might have been washed away. Later in September, however, adults were discovered in numbers on cultivated *Lilium* spp. and soiled these plants by honeydew, which was colonised by *Capnodiaceae* fungi.

On the 1st September 2001, the author together with a team of phytopathologists carried out a careful exploration of the site at Brno-Bystrc. Several dozens adults and larvae of this planthopper were found on ornamental shrubs. Considering the unfavourable rainy weather, part of the population remained hidden and was later studied by Mr. D. Pokora. The number of larvae present was rather low (five specimens); they were in the 4th and 5th instar. Nearly a third of the adults were weakly sclerotised, obvi-

Fig. 1. *Metcalfa pruinosa* (Say), adult (Photo R. Hrabák)

Fig. 2. *Metcalfa pruinosa* (Say), 5th instar larva (Photo R. Hrabák)

ously the last moulting had occurred a short time earlier (1–2 d). The ovaries of all females (including the better sclerotised ones) were poorly developed, without a trace of eggs. Consequently, the last moulting must have happened not before the 20th August. Copulation was not observed, also not in the box where the specimens were held for taking photos. However, the population was rather numerous and it is possible that the adults that survived the insecticide treatment of the 14th September could lay overwintering eggs although 2001 was extraordinary rainy and cold, and consequently unfavourable for the thermophilous immigrants.

At Brno, *M. pruinosa* occurred mainly on young (at most three years old) twigs of cultivated ornamental shrubs of *Thuja occidentalis* L., *Juniperus communis* L. and *Sorbus aucuparia* L., exceptionally also on some other woody species or herbs in their vicinity. The planthopper's sucking did not cause any serious damage to the plants. Only some of the twigs and where the larvae had sucked more intensively were slightly deformed laterally and curved, compared to the normal direction of growth. Aesthetic damage prevailed: at the sites of larval sucking the twigs were irregularly covered by spots 5–10 cm long of waxy filaments, produced by the wax glands of the larvae. From this, buyers may suppose that the plants are affected by a more serious pest, like coccids, and would refuse to buy the suspiciously looking shrub.

In the USA, the main natural enemy of planthoppers of the family *Flatidae* is *Neodryinus typhlocybae* (Ashmead) (*Hymenoptera, Dryinidae*). This species was introduced in 1994 in Italy (GUGLIELMINO & OLMI 1997). In southern Europe, this pest is controlled by the introduced *N. typhlocybae* and chemically. As *M. pruinosa* is polyphagous, widely distributed also in natural habitats and its capacity of migration is high, chemical control is not too effective. At Brno, 0.1% Sumithion was successfully applied to affected plants. Under the climate of the Czech Republic, the probability of egg maturation before the adults die in autumn is low, but new introductions are possible through importation of plants with eggs from southern Europe.

In the area of its origin, North America, *M. pruinosa* occurs in two subspecies. The typical form is widespread, ranging from Florida, Texas, New Mexico, Arizona, California and Mexico northwards to Canada (Ontario), leaving out the Rocky Mountains. The subspecies *M. pruinosa cubana* (Metcalf & Bruner, 1948) is listed for Cuba.

The introduction of *M. pruinosa* was documented in Europe for the first time in 1979. From the province Veneto in Italy it was reported by ZANGHERI and DONADINI (1980) and simultaneously on the basis of their material by DLABOLA (1981). Later records for Italy came from other authors. With no natural enemies present, it has reproduced to become a very common pest today. Soon it spread to southern France, was first reported by DELLA GIUSTINA (1987), but now occurs at many sites, and later its bionomics, economic importance and distribution in France were described in detail by DELLA GIUSTINA and NAVARRO (1993). The species spread to Slovenia as well (SIVIC 1991), and a single accidental record of one specimen from Graz in Austria was published by HOLZINGER *et al.* (1996).

The species tends to spread to Central Europe mostly in a passive way through eggs laid into the bark of plants imported from an infested area. The Brno record on plants imported from Italy is such a case. Ornamental horticulture is particularly affected by a passive introduction of pests. In the same nursery and on the same occasion we discovered another species probably introduced from Italy: the psyllid *Lauritrioza alacris* (Flor, 1861). Also *Stictocephala bisonia* Kopp & Yonke, 1977, a North American membracid and already widespread in Moravia, occurred there.

Acknowledgements: The author wishes to thank Prof. Dr. RUDOLF HRABÁK, CSc., for taking documentary photos, Mrs. EVA BÁRTOVÁ, phytopathologist, for drawing his attention to the occurrence of a strange species and help with the field work, and Mr. DRAHOŠ POKORA for additional field observations.

References

DEAN H.A., BAILEY J.C. (1961): A flatid planthopper, *Metcalfa pruinosa*. J. Econ. Entomol., **54**: 1104–1106.

DELLA GIUSTINA W. (1987): *Metcalfa pruinosa* (Say 1830), nouveauté pour la Faune de France (Hom.: Flatidae). Bull. Soc. Ent. Fr., **91**: 89–92.

DELLA GIUSTINA W., NAVARRO E. (1993): *Metcalfa pruinosa*, un nouvel envahisseur? Phytoma – La défense des végetaux, **451**: 30–32.

DLABOLA J. (1981): *Metcalfa pruinosa* (Say, 1830), eine schädliche nordamerikanische Flatide als Erstfund in der Palearktis. Faun. Abhandl. Staatl. Mus. Tierkunde Dresden, **8** (9): 91–94.

GUGLIELMINO A., OLMI M. (1997): A host-parasite catalog of world *Dryinidae* (Hymenoptera: Chrysidoidea). Contrib. Entomol. Int., **2**: 164–298.

HOLZINGER W.E., JANTSCHER E., REMANE R. (1996): Erstnachweise von Zikaden aus Österreich mit Bemerkungen zu weiteren Arten (Ins.: Homoptera, Auchenorrhyncha). Linzer Biol. Beitr., **28**: 1149–1152.

MEAD F.W. (1969): Citrus flatid planthopper, *Metcalfa pruinosa* (Say). Homoptera: Flatidae. Entomol. Circular, Florida D.A., **85**: 1–2.

SIVIC F. (1991): Medeci skrzat ze v Slovenii. Moj Mali Svet, 23 (10): 24–25.

ZANGHERI S., DONADINI P. (1980): Comparsa nel Veneto di un Omottero nearctico *Metcalfa pruinosa* Say (Homoptera, Flatidae). Redia, **63**: 301–305.

Received for publication February 20, 2002
Accepted after corrections October 14, 2002

Souhrn

LAUTERER P. (2002): *Metcalfa pruinosa* (*Hemiptera: Flatidae*) – **nový škůdce okrasných rostlin v České republice**. Plant Protect. Sci., **38**: 145–148.

Koncem srpna 2001 byla v okrasném zahradnictví v Brně-Bystrci pozorována početná populace (několik desítek imag i larev) křísa *Metcalfa pruinosa* (Say, 1830). Druh se vyskytoval především na mladých větvičkách *Thuja occidentalis* L., *Juniperus communis* L., *Sorbus aucuparia* L. a *Lilium* spp., ale ojediněle i na jiných nejrůznějších dřevinných i bylinných okrasných rostlinách. Sáním nepůsobil podstatné škody – byly spíše estetického rázu (obalení mladých větviček v délce 5–10 cm bohatým bílým voskovým chmýřím produkovaným larvami). Škůdce pochází ze Severní Ameriky, odkud byl zavlečen do Itálie, kde byl poprvé zjištěn v roce 1980, rozšířil se do jižní Francie a Slovinska a jednou byl nalezen v omezeném počtu v Rakousku. Populace zjištěná v Brně pochází zřejmě z vajíček nakladených v Itálii na okrasné keře, které byly v roce 2001 importované do Brna. Polyfágní škůdce je v jižní Evropě hojný, hlavní škody působí produkcí medovice a na ní rostoucí černi (*Capnodiaceae*), bránícími transpiraci, především na ovocných dřevinách. Přezimuje ve stadiu vajíček kladených jednotlivě do trhlin v kůře na převážně tříletých větvích stromů a keřů bez preference jednotlivých rostlin. Larvy mají pět instarů, jsou až 5–6 mm velké, bělavě nazelenalé až nažloutlé, s dlouhým bílým voskovým chmýřím. Dospělci jsou až 8 mm dlouzí, se strmě střechovitě složenými, širokými tmavohnědými křídly, pokrytými bělavou vrstvičkou voskových exkretů. Druh má zřejmě schopnost usadit se v klimatických podmínkách České republiky trvale, případně být častěji zavlékán. Navrhuji tomuto škůdci české jméno voskovka zavlečená.

Klíčová slova: voskovka zavlečená (*Metcalfa pruinosa*); okrasné rostliny; první nález; Česká republika

Corresponding author:

RNDr. PAVEL LAUTERER, Entomologické oddělení, Moravské zemské muzeum, Hviezdoslavova 29a, 627 00 Brno-Slatina, Česká republika
tel.: + 420 545 218 277, e-mail: ento.kub@volny.cz