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Palm thrips, *Parthenothrips dracaenae* (Heeger) (Thysanoptera: Thripidae), in Slovenia: still a pest of minor importance?

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ABSTRACT

Palm thrips, *Parthenothrips dracaenae* (Heeger), is widespread in Europe but it was never found in great number. This thrips lives and feeds on the leaves of different ornamental plants grown in protected places, particularly in domestic environments. In Slovenia up to now the species was recorded on plants from *Dracaena* and *Ficus* genera. Larvae and adults suck sap from the leaves of host plants causing silvering of leaves. Palm thrips belongs to the group of pest thrips species which presents 1 % of world thysanopteran fauna, so it deserves special attention. In this paper description of the species, its systematics, bionomics, distribution in Europe, host plants, and potential economic importance in Slovenia are presented.

Key words: *Parthenothrips dracaenae*, Thysanoptera, Slovenia, presentation of the species, economic importance

IZVLEČEK

Resar *Parthenothrips dracaenae* (Heeger) je v Evropi splošno razširjena vrsta, a se ne pojavlja v velikem obsegu. Žuželka živi in se prehranjuje na listih različnih okrasnih rastlin, najdemo jo zlasti v bivanjskih prostorih. V Sloveniji je bila vrsta doslej ugotovljena na rastlinah iz rodov *Dracaena* in *Ficus*. Resar je svojim gostiteljem škodljiv zaradi sesanja ličink in odraslih osebkov na listih, s čimer prihaja do srebrenja listov. Vrsta *P. dracaenae* spada med 1 % v svetu gospodarsko škodljivih resarjev in si že zato zasluži pozornost. V prispevku je opisana vrsta, njena sistematika in bionomija, razširjenost v Evropi, gostiteljske rastline in njen potencialni gospodarski pomen v Sloveniji.

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Ključne besede: *Parthenothrips dracaenae*, Thysanoptera, Slovenija, predstavitev vrste, gospodarski pomen

1 INTRODUCTION

Palm thrips, *Parthenothrips dracaenae* (Heeger), is one of the previously stated pest Thysanoptera species in protected places in Slovenia (Trdan and Andjus, 2003), but a little attention has been paid to it until now. The most comprehensive knowledge was gathered about the western flower thrips, *Frankliniella occidentalis* (Pergande) (Trdan and Milevoj, 2000; Trdan *et al.*, 2003), due to its wide distribution (Kirk and Terry, 2003), polyphagy and its worldwide economic importance (Karnkowski and Trdan, 2002). A few other thrips species that live on ornamental plants in dwelling places share similar bionomics with *P. dracaenae*. Among them *Hercinothrips femoralis* (Reuter) is known from Slovenia (Trdan, 2002).

The aim of this contribution is a description of palm thrips, declaration of its host plants, and evaluation of its economic importance in Slovenia.

2 MATERIALS AND METHODS

Until now in Slovenia there was no systematic monitoring of thrips species in protected places. Therefore, the records of palm thrips are results of coincidental findings of the first author of this paper or they originate from the samples that were brought to the same author. The species was for the first time found on the leaves of *Dracaena* sp. in June 1998. Adults and larvae were sampled in apartment in Ljubljana. Two other findings originated from the leaves of *Ficus* sp. from nursery school in Ljubljana (April 2000 – both adults and larvae) and from apartment in Žužemberk (February 2005 – adults only).

3 PRESENTATION OF SPECIES

3.1 Systematics

Palm thrips is the only representative of the *Parthenothrips* genus. Present morphological systematics treats it as a member of Panchaetothripinae sub-family, Thripidae family and Terebrantia sub-order. About 115 species and 35 genera are included in this sub-family and all of them are leaf-feeders. Closely related (members of the Panchaetothripinae sub-family) economically important species in Europe are thrips of the *Heliiothrips* and *Hercinothrips* genera. Among them *Heliiothrips haemorrhoidalis* (Bouché) and *Hercinothrips femoralis* (Reuter) were most often treated as pests (Trdan, 2003). Suitability of morphological systematics - when the three mentioned genera were taken into consideration – has been recently confirmed by PCR-RFLP method (Brunner *et al.*, 2002).

3.2 Description

Most members of the sub-family have the body surface (at least of the legs) strongly reticulate, and the forewing vein is fused to the costal vein (Wilson, 1975). Adults of the palm thrips are golden brown and have reticulations on the whole body surface

(Fig. 1). Femora are darker than tibiae. There are two visible black spots on the wings (Fig. 2) and antennae are 7-segmented. The first five segments are pale yellowish-brown, the sixth and the seventh are dark brown (Fig. 3). The first two segments are shorter and broader than others (Fig. 1). The last antennal segment is filamentous. There are simple sense cones on the third and the fourth antennal segments. The broad, reticulate wings, which lack fringe cilia on the anterior margin, are highly distinctive. The posterior fringe cilia are wavy (Fig. 4), and tarsi are 1-segmented (Schliephake and Klimt, 1979; Palmer et al., 1989; Mound and Kibby, 1998; zur Strassen, 2003).

3.3 Bionomics

Parthenothrips dracaenae lives in the open in tropic and subtropic regions. In the conditions of temperate climate it could be found on ornamental plants in protected places, particularly in domestic environment. Mentioned thrips is the first described tramp species. With an unknown original distribution, this species is now one of the most widespread thrips species, due to its polyphagy and adaptation to dry and dusty domestic environments (Vierbergen, 1995).

Palm thrips is the first species from the Thysanoptera order that was found to be capable for parthenogenetic reproduction. This characteristic is contained in the latin name of the genus. Populations are almost completely composed of females at the temperatures from 25 to 28°C, while a few males can be found at the lower temperatures (18-20°C) (Lewis, 1973). It seems that interaction between photoperiod and feeding induces deuterotokous parthenogenesis (Tommasini and Maini, 1995).

The second instar larvae of *Parthenothrips dracaenae* are smaller than the first instar larvae (similar as in the case of *Frankliniella occidentalis*). Development from the egg to adult lasts one month at temperatures from 18 to 20 °C. Females lay eggs on the leaves. Hatched larvae live in groups (gregarious) (Bournier, 1983). *Parthenothrips dracaenae* is less tolerant to low temperatures than *H. haemorrhoidalis* (Tommasini and Maini, 1995).

3.4. Distribution and host plants in Europe

zur Strassen (pers. comm., 2005) reports that *Parthenothrips dracaenae* was found in many European countries. In Poland, the insect was recorded already in 1902 in botanical garden in Krakow. Later Polish findings originated from *Ficus elastica* Roxb. Ex Hornem., *Hibiscus* sp., *Hedera helix* L., *Phalenopsis* sp. and some other plants (Kucharczyk, pers. comm., 2005). In Sweden, palm thrips was found for the first time in 1895 on *Caladium* sp. After that the thrips was recorded on *Hedera helix*, *Aralia* sp., *Ficus elastica*, *Chrysanthemum* sp., on cultivated apple (*Malus domestica* Borkh.) and cucumbers (*Cucumis sativus* L.). Although winter finding of this species under the bark of Norway spruce (*Picea abies* [L.] Karsten) may indicate that *Parthenothrips dracaenae* could overwinter in the open (Kobro, pers. comm., 2005), this is nevertheless disputable.

In Hungary, palm thrips was first found on *Dracaena* sp. in 1893. Later it was found also on *Phoenix dactylifera* L. and *Ficus elastica* (Jenser, pers. comm., 2005). In

Serbia, this thrips was detected on *Callisia repens* in the greenhouse of the Botanical Garden in Belgrade (Kazakov, 1927). In Holland, palm thrips was collected together with *Heliothrips haemorrhoidalis* already in 1900. Both species were the first insects from the Thysanoptera order reported from this country. The most frequently mentioned host plants of palm thrips are from the *Amaranthus*, *Croton*, *Aralia*, *Ficus*, *Hedera*, *Fatshedera*, *Begonia*, *Dracaena*, *Schefflera*, *Beaucarnea*, *Nerin* and *Philodendron* genera, *Oreopanax capitatus* and *Cinnamomum camphorum* and some other species (Vierbergen, pers. comm., 2005). Parlour palm (*Chamaedorea* spp.) is also one of the most important hosts for this species (Palmer et al., 1989; Mound and Kibby, 1998).

3.5 Damage

Many species from Panchaethripinae sub-family are found on the mature leaves of shrubby plants and trees, where their feeding damage is accompanied by soiling due to sooty moulds (Wilson, 1975) that grow on the honeydew secreted by some homopteran insects. Palm thrips causes typical direct damages on leaves of host plants – silver areas that violate aesthetic appearance of ornamental plants. The extent of damage, caused by feeding of larvae and adults of *Parthenothrips dracaenae*, is significantly lesser, compared to the western flower thrips.

4 EVALUATION OF ECONOMIC IMPORTANCE OF *Parthenothrips dracaenae* IN SLOVENIA WITH CONCLUSIONS

Parthenothrips dracaenae is a less important pest species than some other thrips, generally or regionally widespread in Slovenia. Until now, there was no need for use of insecticides in controlling of this species. The greater economical importance have *Frankliniella occidentalis*, *Thrips tabaci* Lindeman, *Hercinothrips femoralis*, *Dendrothrips ornatus* (Jablonowski), *Taeniothrips inconsequens* (Uzel), *Thrips simplex* (Morison), facultative predator *Aeolothrips intermedius* and some other species (Trdan, 2003).

Palm thrips is similarly to *Heliothrips haemorrhoidalis* a less dominant species - both leave their space on host plant to more aggressive species very quickly. Such relations between *Frankliniella occidentalis* and mentioned species are known from the literature (Mound, 1997).

Therefore, there is no reason to expect increase of economical importance of the palm thrips in future. However, this species belongs to the group of about 50 harmful thrips species in the world that represent only 1% of all described Thysanoptera species (Teulon and Mound, 1995). That is the reason for our special attention.

Consequently, the answer to question in the title is - yes, *P. dracaenae* is still the pest of minor importance in Slovenia. We presume that such situation will not be changed in the near future.

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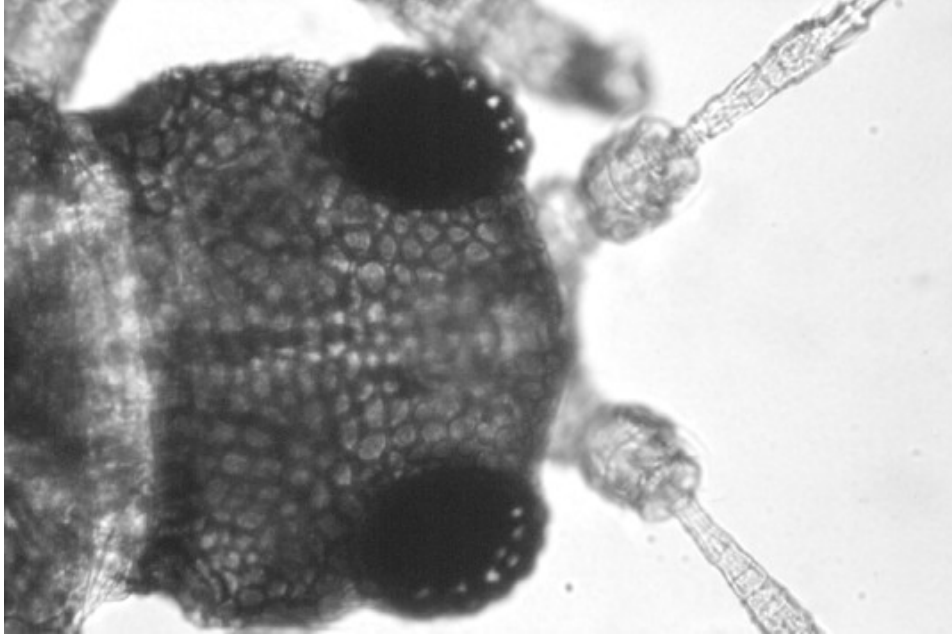


Fig. 1: Head surface with strong reticulation and the first three antennal segments

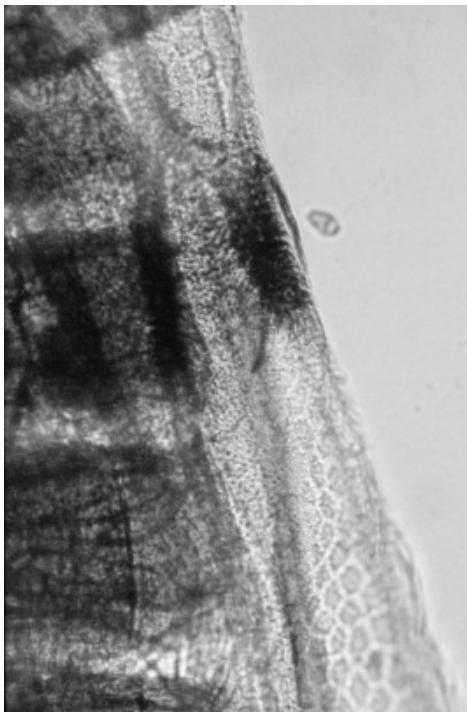


Fig. 2: Two visible black spots on the wing



Fig. 3: Antennal segments III-VII

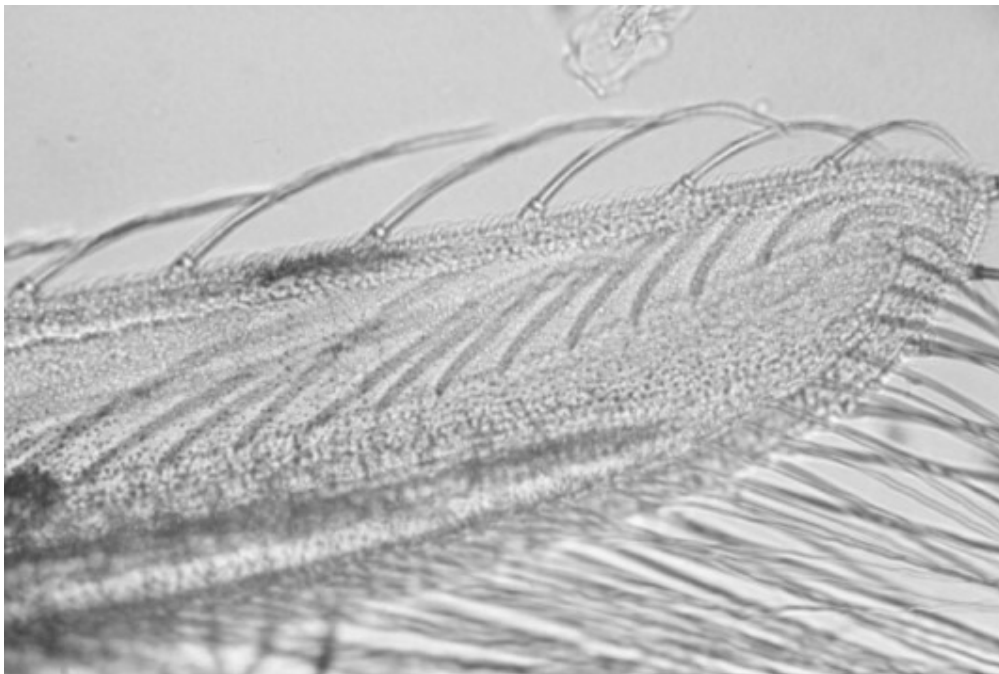


Fig. 4: Wings: the lack of fringe cilia on the anterior margin, and wavy posterior fringe cilia