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Znanstvena novica

Scientific note

## ***Dasineura gleditchiae* (Osten Sacken, 1866) (Diptera: Cecidomyiidae), honeylocust pod gall midge: a new invasive species in Slovenia**

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### **Abstract**

A strong attack of honeylocust pod gall midge (*Dasineura gleditchiae*) on honeylocust (*Gleditsia triacanthos*) in Ljubljana, its surrounding area and in Maribor was found in May 2010. The insect was found on all surveyed locations but the attack was stronger on "Sunburst" horticulture variety than on seed-grown trees. From the intensity of the infestation and the overall spread of the honeylocust pod gall midge, it is concluded that it was introduced some years before. At the end of May, the midge finished its first reproduction cycle in this year and adults massively emerged from the pods. The characteristics of morphology, life cycle and possibilities of suppression of honeylocust pod gall midge are described. This is the first report of *Dasineura gleditchiae* from Slovenia.

**Key words:** gall midges, zooecidium, new record, fauna, Slovenia

## ***Dasineura gleditchiae* (Osten Sacken, 1866) (Diptera: Cecidomyiidae), gledičevkina listna hrčica: nova invazivna vrsta v Sloveniji**

### **Izyleček**

Ugotovili smo močan napad gledičevkine listne hrčice (*Dasineura gleditchiae*) na trnati gledičevki (*Gleditsia triacanthos*) v Ljubljani, njeni okolici in v Mariboru v maju 2010. Našli smo jo na vseh pregledanih lokacijah, vendar je bil napad močnejši na okrasni obliki »Sunburst« kot na drevesih, vzgojenih iz semena. Zaradi intenzivnosti napada in splošne razširjenosti gledičevkine listne hrčice sklepamo, da je bila vnesena že pred nekaj leti. Ob koncu maja so hrčice zaključile prvi življenjski krog v tem letu in odrasle so množično zapuščale šiške. Opisane so morfološke značilnosti, življenjski krog ter možnosti zatiranja gledičevkine listne hrčice. To je prvo poročilo o pojavu hrčice *Dasineura gleditchiae* v Sloveniji.

**Ključne besede:** hrčice, šiška, nova najdba, favna, Slovenija

## **1 Introduction**

### **1 Uvod**

The honeylocust pod gall midge *Dasineura gleditchiae* (Osten Sacken, 1866) originates from the eastern part of North America where it is monophagous on honeylocust (*Gleditsia triacanthos* L.) leaves. It was introduced to Europe with seedlings imported to Netherlands in 1975 and is now regarded as an invasive species (EPPO 2008). From the Netherlands, it was transported with seedlings of *Gleditsia triacanthos* to other European countries in the last two decades of the 20<sup>th</sup> century. It was found in Italy in 1980 (Toscana, Friuli Venezia-Giulia), in the United Kingdom in 1983, in Switzerland in 1990, in Hungary in 1992, in Serbia in 1993, Poland in 1994–1996, and Slovakia in 1996. In

Austria it was found in the year 2000, in France in 2005 (but the pest was probably present earlier), in Turkey in 2005 and in Denmark in 2006 (FISCHER / PIVOT 1992, SIMOVA-TOŠIČ / SKUHRAVA 1995, LABANOWSKI / SOIKA 1997, DEL ESTAL / SORIA / VIÑUELA 1998, DINI-PAPANASTASI / SKARMOUTSOS 2001, LAMBINON / SCHNEIDER / FEITZ 2001, STEYRER et al. 2002, BAYRAM / SKUHRAVÁ / COBANOGU 2005, LAROUSSE 2005, SKUHRAVÁ / SKUHRAVÝ / JØRGENSEN 2006, HRUBÍK 2007, EPPO 2008, SÁNCHEZ GARCÍA 2008). It was regarded as a common pest of ornamental honeylocust trees in Zagreb, Croatia in 2004 (MATOŠEVIČ 2004). To our knowledge, there is no report of *Dasineura gleditchiae* in Slovenia and it was not listed in the gall midge catalogue of Slovenia (SIMOVA-TOŠIČ / SKUHRAVÁ / SKUHRAVÝ 1996). Since in all

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neighbouring countries the honeylocust pod gall midge is well established, it was also expected to be found in Slovenia.

In May 2010, we surveyed honeylocust trees in Ljubljana and the surrounding area (about one hundred trees were inspected on 12 locations) and discovered the presence of honeylocust pod gall midge throughout the area. Thornless and yellowish trees of *Gleditsia triacanthos* "Sunburst" horticultural variety were heavily attacked; seed-grown trees were less affected. Some trees had leaves with most of the leaflets galled but, in general, we could find some galls on every surveyed honeylocust tree. On 18<sup>th</sup> of May 2010, the majority of the galls contained pupae and numerous adults emerged after keeping the galls for one day in eclector (Fig. 1-6). Besides, numerous galled leaves on old, seed-grown honeylocust trees were found in the centre of the town Maribor on 27<sup>th</sup> May 2010. Compared to the infestation in Ljubljana, the trees in Maribor bear more galls, indicating older infestation or better ecological conditions for the development of honeylocust pod gall midge.

## 2 Biology

### 2 Biologija

*Dasineura gleditschiae* is host specific for *Gleditsia triacanthos* and its larvae cause galling of young, unexpanded leaflets. As the pest matures, the galls turn brown and abscise, leaving naked branches and reducing the aesthetic value of the attacked trees. Adult midges deposit eggs on new foliage along the rachis or on the edges of developing leaf buds in early spring. The eggs usually hatch in two days; the young larvae crawl along the leaf and begin feeding. Only one larva is required to initiate galling of the leaf, but the gall can contain up to five larvae. Leaf galls (zoocecidia) may be folded, partially podded, or the entire leaf may form a pod. The leaf gall dies and drops once the larvae pupate and emerge. Pupation occurs within the galls and lasts approximately four to six days in summer. Generation time ranges from 21–30 days with several overlapping generations per year. Adults probably do not feed. Localized die-back of young branches is often associated with high infestation levels on susceptible horticultural varieties of honeylocust (THOMPSON *et al.* 1998).

## 3 Description

### 3 Opis

The eggs are elongated, ovoid and opaque-white, and unsculptured. The first instar larvae are cylindrical, white, second and third instars are elongated and dorso-ventrally

flattened with a pebbled integument. The colour varies from white to orange; the head is small and retractable. Before pupation, the larvae are about 2.4 mm long. Pupae are approximately 2.43 mm long, firstly white but progressing to light orange or red at eclosion. Adult males are 1.8–2.1 mm long, and females 2.2–2.5 mm. Adults have moniliform antennae with 12 flagellar segments, compound eyes of the holoptic type and no ocelli. The mouth parts are reduced (THOMPSON *et al.* 1998).

## 3 Suppression

### 3 Zatiranje

Because of the use of honeylocust in urban environments and the high toxicity of the effective insecticides, suppression is not advised. In nurseries or in other controlled environments, pest presence can be established by the use of sticky traps and spraying should be performed when the gall midge is present. The insecticides currently being used in the USA and also registered in Slovenia for control of the midge are as follows: imidacloprid (Confidor 200 SL, produced by Bayer; Kohinor SL 200, produced by Makhtesim-Agan), dimetoate (Perfekthion, produced by BASF), lambda-cyhalothrin (Karate zeon 5 CS, produced by Syngenta) (ROSETTA / BELL / COLLINS 2010). The discovery of female-produced sex pheromones offers an effective lure for the use in combination with sticky traps for monitoring and suppression of the midge (MOLNÁR *et al.* 2009).

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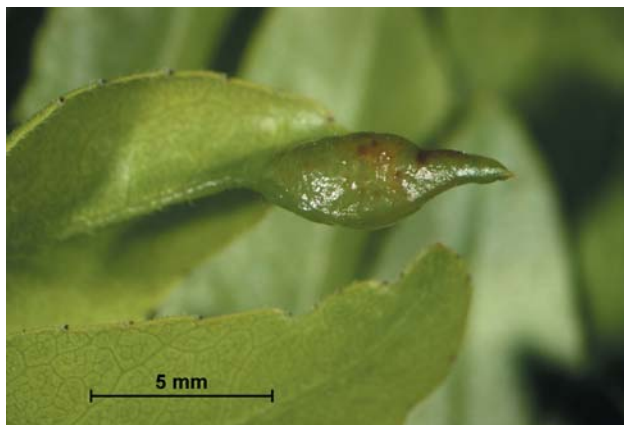


Figure 1. Partially podded leaf of *Gleditsia triacanthos* attacked by *Dasineura gleditchiae*

Slika 1. Z *Dasineura gleditchiae* napaden list *Gleditsia triacanthos* je delno spremenjen v šiško



Figure 2. Galls are dying in the time of adults emergence (two pupae exuviae are visible)

Slika 2. Šiške odmirajo v času izleganja adultov (opazni sta dve bubini ovojnici)



Figure 3. White, flattened larva before pupation

Slika 3. Bela, sploščena ličinka pred zabubljenjem



Figure 4. Pupa is red before eclosion

Slika 4. Buba je rdeča pred izleganjem



Figure 5. Adult female

Slika 5. Odrasla samica



Figure 6. Adult male

Slika 6. Odrasel samec

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