doi: 10.17221/171/2016-PPS

Occurrence of Oriental Chestnut Gall Wasp *Dryocosmus kuriphilus* in Slovakia – Short Communication

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Abstract

Pástor M., Juhásová G., Juhás D., Bakay L., Kollár J., Benčať T. (2017): Occurrence of oriental chestnut gall wasp *Dryocosmus kuriphilus* in Slovakia – short communication. Plant Protect. Sci., 53: 243–246.

During 2014–2016, damage by the oriental chestnut gall wasp *Dryocosmus kuriphilus* Yasumatsu (Hymenoptera, Cynipidae) was found on sweet chestnut trees at 4 localities in Slovakia. *Dryocosmus kuriphilus* is a specific plant pest on *Castanea* spp. In Europe it is considered as the most harmful insect pest on *Castanea sativa*. It is the first report of the oriental chestnut gall wasp occurrence on chestnut trees in Slovakia.

Keywords: invasive pest; *Castanea sativa*; insect pest; infestation

The sweet chestnut (*Castanea sativa* Miller) tree is widely cultivated in southern and warmer parts of central Europe for its wood and edible nuts. Besides its rural economic importance, chestnut has an important agro-ecological role resulting in interest in chestnut cultivation and conservation of genetic resources (Vettraino *et al*. 2005). However, in the last centuries, the sweet chestnut has been affected by major diseases, such as ink disease (*Phytophthora* spp.) and chestnut blight (*Cryphonectria parasitica*) that have heavily changed its cultivation, production and economics (Arnaud *et al.* 1997; Conedera *et al.* 2001). In Slovakia sweet chestnut belongs to underutilised tree species with low economic value considering timber and nuts. The stands and extensive orchards with sweet chestnut in Slovakia are 100–400 years old and are located in 5 growing districts represented by Bratislava, Nitra, Modrý Kameň, Slovenské rudohorie and East Slovakia (Benčať 1960; Juhásová 1999). *Dryocosmus kuriphilus* Yasumatsu (Hymenoptera, Cynipidae) is the most impactful alien pest of sweet chestnut currently reported from many countries of southern half and western Europe after its accidental introduction into Piemonte (northwestern Italy), where it was found for the first time in 2002 (Sartor *et al*. 2015). Japan, being the first country to face the invasion of this alien species in 1941, was the first in starting breeding programs (Pereira-Lorenzo *et al*. 2010). Oho and Shimura (1970) cited a report from 1948 by Shirakami recounting that some cultivars belonging to *Castanea crenata* (Akanaka, Shikatsume, Kishine) were found without damage following the gall wasp infestation. In 1974, *D. kuriphilus* was recorded on a Chinese chestnut in the USA (Payne *et al.* 1975). In Europe, it has been experimentally shown that the invasion of the

Supported by the Institutional Project Agency of the Technical University in Zvolen, Project No. IPA TUZVO 01/2016.

doi: 10.17221/171/2016-PPS

chestnut gall wasp might have been favoured by the chestnut endophytic fungus, the nut rot agent *Gnomoniopsis castaneae* (Lione *et al*. 2016). The infestation rarely causes the plant death, but can favour it when some pathogens are present (Payne *et al*. 1975). *D. kuriphilus* was reported from Austria (EPPO 2014), Bosnia and Herzegovina (Delalic 2016), Croatia, France, Germany (EPPO 2014), Greece (Michaelakis *et al*. 2016), Hungary (Csóka *et al*. 2009), the Netherlands, Portugal, Slovenia, Spain, Switzerland (EPPO 2014), Turkey (Çetgdot *et al*. 2014), and in the UK (Malumphy 2015).

MATERIAL AND METHODS

Inspected localities were chosen according to publications of Benčať (1960) and Juhásová *et al*. (2012), who identified 204 localities with the sweet chestnut presence in Slovakia. The following localities were chosen for verification of the presence of *Dryocosmus kuriphilus:* Bratislava-Koliba, Suchá nad Parnou, Svätý Jur, Košolná, Nitra, Jelenec, Stredné and Dolné Plachtince, Príbelce, Čebovce, Kosihovce, Veľký Krtíš, Zvolen, Krupina, and Vieska nad Žitavou (Mlyňany Arboretum). According to Lapin *et al*. (2002), the following localities belong to four different climatic subregions. Localities Svätý Jur and Vieska nad Žitavou (Mlyňany Arboretum) belong to the climatic subregion T2 (warm, dry with mild winter). Localities Bratislava-Koliba, Suchá nad Parnou, Nitra, Stredné and Dolné Plachtince, Príbelce, Čebovce, Kosihovce, Veľký Krtíš, and Krupina belong to the climatic subregion T4 (warm, moderately dry with mild winter). The Jelenec locality belongs to the climatic subregion T6 (warm, moderately humid with mild winter) and the Zvolen locality to the climatic subregion T7 (warm, moderately humid with cool winter). Inspected sweet chestnut stands and orchards were investigated in the vegetation period during the years 2014–2016 and the occurrence of *D. kuriphilus* was determined visually by the presence of galls.

RESULTS AND DISCUSSION

D. kuriphilus occurred for the first time at the Bratislava locality in July 2014 on a young 15-years-old specimen of sweet chestnut in the garden of the elementary school Za kasárňami (faunistic square No. 7868b). In 2015 *D. kuriphilus* was discovered also in the Jesenius St. and in the Nové Mesto district (faunistic square No. 7868b). During the monitoring in April 2016 we found infestation on 49 specimens at the age of 80–200 years. In all cases, phytosanitary measures were taken and infested parts of trees were pruned and burned.

In 2016 we detected infestation on 19 specimens of sweet chestnut in Svätý Jur (faunistic square No. 7769c). At the Suchá nad Parnou locality (faunistic square No. 7571c) we found one infested specimen of sweet chestnut in May 2015. Massive infestation was discovered in August 2016 in two private orchards which were established from purchased seedlings. 22% of the total 215 examined trees revealed infestation by *Dryocosmus kuriphilus*. Sweet chestnut orchards were established 10–14 years ago. In May 2016 we found one infested specimen of sweet chestnut in a young orchard in the Kosihy nad Ipľom cadastre (faunistic square No. 7981a), which is situated in the Modrý Kameň region. The age of sweet chestnut trees is 10–12 years.

Currently, *D. kuriphilus* has no natural enemies in Slovakia. Therefore, it is necessary to provide an

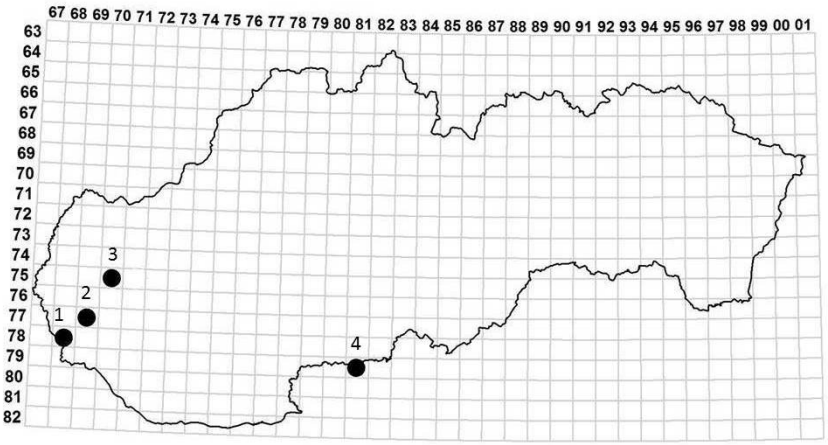


Figure 1. Current records of *Dryocosmus kuriphilus* in Slovakia (1 – Bratislava, 2 – Svätý Jur, 3 – Suchá nad Parnou, 4 – Kosihy nad Ipľom)

doi: 10.17221/171/2016-PPS



Figure 2. Simple gall of *Dryocosmus kuriphilus* (Photo: Michal Pástor)

efficient method of controlling its present populations. The most effective method of controlling its populations and damage is the biological control with its introduced parasitoid *Torymus sinensis*. This organism is a univoltine, host specific parasitoid, phenologically synchronised and morphologically adapted to *D. kuriphilus*. It has a good dispersal ability, it builds up populations quickly and it effectively controls the pest already a few years after the release (Matošević *et al*. 2016). The effectiveness of this biological control strategy was confirmed in many countries where the parasitoid introduced was.

Eight years after the release of *T. sinensis* a drastic reduction in gall wasp infestation in the sites was observed. The parasitism rate reached 75%, which emphasises the success of biological control by *T. sinensis* in Italy (Quacchia *et al*. 2014). Similar results were obtained in Croatia, Slovenia and Hungary (Matošević *et al*. 2014, 2016).

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Received: 2016–12–24
Accepted after corrections: 2017–04–05
Published online: 2017–06–05