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### First record of the Asian ambrosia beetle, *Xylosandrus crassiusculus* (Motschulsky) (Coleoptera: Curculionidae, Scolytinae), in Slovenia

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*Xylosandrus crassiusculus* (Coleoptera: Curculionidae, Scolytinae), with the common name the Asian ambrosia beetle or the granulate ambrosia beetle, originates in tropical and subtropical regions of eastern Asia. It is one of the most widespread wood-boring beetles and among these one of the most successful invaders (IPPC 2017). Outside its native habitat, the species is present in Africa (Wood & Bright 1992, Atkinson *et al.* 2000), in Australia (IPPC 2017), on the Pacific Islands (Beaver 1976), in the Americas (Atkinson 1988, Rabaglia *et al.* 2006, Flechtmann & Atkinson 2016, Landi *et al.* 2017) and in Europe (Pennacchio *et al.* 2003, Nageleisen *et al.* 2015, Gallego *et al.* 2016, Francardi *et al.* 2017).

In Europe, *X. crassiusculus* was recorded for the first time in 2003 in Italy (Pennacchio *et al.* 2003). A decade later, in 2014, the first report of the Asian ambrosia beetle came from France. It had presumably naturally dispersed here from NW Italy (Nageleisen *et al.* 2015). In 2016, this bark beetle was recorded for the first time in Spain (Gallego *et al.* 2016).

In Slovenia, *X. crassiusculus* was first found in traps during a survey for early detection of the walnut twig beetle, *Pityophthorus juglandis* Blackman. In this survey, we used five black bark beetle slit traps for dry trapping (Witasek, Germany), with GLV Plus (Witasek, Germany), which is a universal attractant for pest insects on deciduous woody plants. We set the traps in forested areas in five locations in W Slovenia, where the probability for the first occurrence of this bark beetle is the highest: Ilirska Bistrica (45° 32' 44" N, 14° 14' 9" E), Dutovlje (45° 45' 55" N, 13° 49' 37" E), Prvačina (45° 53' 57" N, 13° 42' 50" E), Renče (45° 52' 51" N, 13° 37' 42" E) and Podsabotin (45° 59' 26" N, 13° 36' 6" E) (Figure 1). A variety of broad-leaved trees and shrubs are present in these locations (*Acer* spp., *Alnus* spp., *Carpinus betulus*, *Castanea sativa*, *Fraxinus* spp., *Juglans* spp., *Populus tremula*, *Quercus* spp., *Robinia pseudoacacia*, *Tilia* spp.), with individual trees of conifers (*Picea abies*, *Pinus* spp.). In Prvačina and Podsabotin, forested areas are interrupted by orchards (*Ficus carica*, *Malus domestica*, *Prunus* spp.) and vineyards (*Vitis vinifera*). We set the traps on 18 July 2017 and collected the catches on 1 August and 10 August. GLV Plus was not replaced during the trapping period. All organisms collected from the capture container of each trap on a specific date presented one sample. Each sample was stored in a 100 ml plastic container with 96% denaturated ethanol, appropriately labelled, transferred to the Laboratory for Forest Protection at the Slovenian Forestry Institute within 24 hours, and stored at 4°C until analysis.

Upon collecting samples on 1 August 2017, 117 reddish-brown beetles morphologically distinct from bark beetles that are generally caught in traps were found in a trap in Podsabotin. We identified the beetles by their morphological characteristics as *X. crassiusculus* (Motschulsky) (Pennacchio *et al.* 2003, Rabaglia *et al.* 2006, Nageleisen *et al.* 2015, Gallego *et al.* 2017). In the subsequent sampling, another four beetles were found in this trap and two beetles were found also in the sample collected from Prvačina. The identity of the beetles was confirmed by Miloš Knížek (Forestry and Game Management Research Institute, Prague, Czech Republic) and Davide Rassati (University of Padova, Padova, Italy). Voucher specimens were deposited in the entomological collection of the Department for Forest Protection at the Slovenian Forestry Institute.

The first finding led to a targeted monitoring of the species in the two locations where it had been found. In both locations we carried out visual inspections, i.e. searching for symptoms of damage caused by this bark beetle, in a radius of 300 m from the traps where the beetles had been found. In Podsabotin, where the number of caught females was highest, trapping was also carried out. We used five black cross-vane panel traps (Witasek, Germany). As an attractant we used 96% ethanol, which is a standard attractant for monitoring ambrosia beetles (Ranger *et al.* 2016). Ethanol was used also as the killing agent and preservative in the capture container. The traps were set on 18 August 2017 at different distances from the location of the trap where *X. crassiusculus* was first found (70–1300 m). We collected the samples on 23 August and 14 September.



**FIGURE 1.** Locations of traps for early detection of *P. juglandis* in Slovenia in 2017. Locations where *X. crassiusculus* was recorded are marked red.

By finding *X. crassiusculus* in traps in a wider area in Podsabotin we confirmed the presence of the Asian ambrosia beetle in this location. Females were found in two of five samples from 23 August, and in all five samples from 14 September. The number of individuals caught ranged from one to 19. However, no signs of *X. crassiusculus* were found during visual inspections.

The results demonstrate that the Asian ambrosia beetle is present in the Slovenian territory, at least locally. Slovenia is the fourth European country with *X. crassiusculus*. Its occurrence in western Slovenia is most probably the result of dispersal from Italy, where it is established and is spreading (Nageleisen *et al.* 2015, Gallego *et al.* 2016, Francardi *et al.* 2017; pers. comm., Iris Bernardinelli, Regional agency for rural development ERSA, Friuli Venezia Giulia, Italy). We believe that *X. crassiusculus* will continue to disperse from Italy to Slovenia and other neighbouring regions, and this process cannot be contained. Therefore, the new species is expected to persist in Slovenia. Moreover, *X. crassiusculus* is likely to establish and spread in the new area due to favourable ecological conditions (Kavčič & de Groot 2017).

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