Introduction

The genus *Agrilus* is remarkable in the insect world, representing one of the most successful groups, which is projected into enormous species diversity, likely the highest in the Animal Kingdom. To date, more than 3,000 *Agrilus* species or subspecies are recognized but the real amount can be a multiple of this number because the rate of new species descriptions is still not reaching the culmination point. Hundreds of new, unnamed species pending descriptions are available in collections and further hundreds still need to be discovered and collected in nature.

Many *Agrilus* have been considered for a long time as plant pests, but it was the recent outbreak of *Agrilus planipennis* in North America causing the death of millions of ash trees, which has made *Agrilus planipennis* one of the most frequently cited pests in the entomological literature and catapulted the genus *Agrilus* into the ranks of the most damaging pests in the world.

Insect – host plant associations include important biological, ecological, evolutionary and biogeographic aspects determining the role of insects in the ecosystem. Reliable trophic data are indispensable for proper assessment of ecological amplitude, biogeographic requirements or invasive potential, serving for timely and effective pest control measures.

This review aims to provide a critical overview on published worldwide *Agrilus* – host plant associations. The word critical means that this study doesn't provide just meaningless data compilation with all mistakes and confusions gathered from the past, but it rather offers personally checked and carefully evaluated records based on a methodology distinguishing between original observation and subsequent repetition, as well as larval and adult records. Critically evaluated data are for the first time summarized, analyzed and illustrated.

The work aims to contribute to a better understanding of the biology of worldwide *Agrilus* by providing a coherent, comprehensive and critical review on all published host plant associations. The main impact of this study is seen in entomology, phytopathology, forestry, agriculture, ecology and control.