

First record of the wood boring weevil, *Pentarthrum huttoni*, in Austria (Coleoptera: Curculionidae)

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Abstract The wood boring weevil, *Pentarthrum huttoni* Wollaston, is reported for the first time from Austria. It was recorded from coffins in the crypt of St. Michael's church in the centre of Vienna. Extensive tunnelling of the larvae and surface damage by the adults caused disintegration of the historically significant wooden 18th century coffins. Beetles were also detected in rotten cardboard on the loamy soil of the crypt. Infestation by this Cossonine weevil is promoted by the very damp conditions in the crypt, a consequence of the closure of ventilation funnels in the 1940s.

Keywords *Pentarthrum huttoni* ·
Wood boring weevil · Wooden coffins · Austria

Introduction

The genus *Pentarthrum* Wollaston, 1854 comprises about 70 species of mainly tropical distribution. Only two species are known from the Palearctic region (Folwaczny 1973, 1983): *Pentarthrum angustissimum* Wollaston, 1873 is found in Japan, whereas *Pentarthrum huttoni* Wollaston, 1854 is reported from North America and many European countries from soft and

hardwood (Ireland, Great Britain, France, Belgium, Netherlands, Denmark: Buck 1948; Hoffmann 1954; Folwaczny 1973; Rasmussen 1976; Bruge 1994, Germany, Switzerland, Poland: Dieckmann 1983; C. Besuchet personal communication; Stachowiak and Wanat 2001, Spain, Italy: Folwaczny 1973; Abbazzi and Osella 1992). Records from Russia and Slovakia and the Danish record, however, might trace back to mislabelling or introduction without permanent establishment (Folwaczny 1973; Dieckmann 1983; Lucht 1987; Strejcek 1993). As there is evidence that the range of distribution was largely shaped by anthropogenic transport, the origin of this species is unclear, though some authors (L. Behne personal communication) suggested that it was introduced to Europe from New Zealand. Here we report on its first record for Austria.

Materials and methods

On behalf of the Parish of St. Michael a survey was carried out in April 2005 in order to identify the cause of the disintegration of historically significant 18th century softwood coffins in the crypt of St. Michael's church in the centre of Vienna. Ten of a total of 212 wooden coffins, some of which were already severely damaged by wood boring insects, were selected for further inspection and sampled according to the criteria "presence of fresh bore dust" and "well-preserved general condition". All coffins were carefully inspected for occurrence of adult beetles and larvae. Samples of fresh bore dust were collected from each coffin for microscopic investigation. Adult beetles were also collected from ten infested planks of children's coffins and parts of a decaying cardboard box from the loamy soil

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of the crypt. To obtain further specimens, the latter material was incubated in a photo-elector at 23–25°C and long-day conditions (LD 16:8). Beetles were killed in ethyl acetate vapour, card-mounted, and identified at 10–40× magnification with the keys of Folwaczny (1973, 1983) and by comparison with material from the Natural History Museum Vienna (NMW). Bore dust was analysed on black cardboard at 10–20× magnification. Voucher specimens are held at NMW, Vienna and in the collection of the IFFF, BOKU Vienna.

Results and discussion

All specimens (38 collected in the crypt, 23 extracted with the photo-elector) were identified as *P. huttoni* (Fig. 1), a Cossonine species new to Austria. So far, only one other indoor wood-boring weevil from the Tribus *Pentarthrini*, the morphologically similar *Euophryum confine* Broun, 1880, was known from this country (recorded in timber floor boards of a church in Matrei/East Tyrol and in Carinthia: Folwaczny 1973; Dieckmann 1983). Although fresh bore dust, tunnelling by the larvae, and feeding striations on the wood surface by the adults were observed on all coffins (Fig. 2), adult weevils were found on only two of the ten inspected coffins (15 and 1 specimen). The remaining beetles were collected or extracted from the planks of the children's coffins and from the partly rotten cardboard. Thus, incidence of adult weevils on coffins was generally low, but, if present at all, beetles normally occurred in high numbers—a characteristic trait of wood-boring Cossoninae, according to Folwaczny (1973). Further inspection also revealed signs of occurrence and a few specimens of *P. huttoni* in a cellar (“Kleiner Michaelerkeller”) in the direct vicinity of the crypt.

Bore dust analysis revealed small fecal pellets mingled with fine, sometimes curled shavings, confirming that all the insect-caused damage was due to *P. huttoni*. No signs indicated the involvement of other timber pests such as the Common furniture beetle *Anobium punctatum* De Geer, 1774.

Pentarthrum huttoni infestation of the wooden coffins is promoted by currently high air humidity, which increased up to 100% since the ventilation funnels of the crypt were closed, probably during the Second World War. This assumption is based on the common observation reported in literature that the species attacks only damp timber, preferably infested by a fungus, usually brown rot. According to Folwaczny (1973), *P. huttoni* was found in buildings in damp decaying floorboards, beams and planking, and



Fig. 1 Dorsal view of *Pentarthrum huttoni* (note the five-segmented antennal funicle, which is typical for species in the Tribus *Pentarthrini*)



Fig. 2 Coffin lid showing fresh bore dust, tunnelling by the larvae, and feeding striations on the wood surface by adult *P. huttoni* (inset: detail view)

in wine casks, bushels, and potato crates in cellars. Stables (1972) recorded the weevil in bales of hospital blankets, stored on an infested wooden floor in a dormitory of old incontinent persons. Rasmussen (1976) reported *P. huttoni* from a wet sill in a water-damaged cellar in Copenhagen and supposed an association with timber already rotten by the cellar fungus, *Coniophora puteana* (Schum. ex Fr.) Karst. In the present report, however, no fungal decay was found in conjunction with *P. huttoni* infestation. This indicates that fungal decay and infestation by this Cossonine are coincidental, but decayed wood is not a requirement for successful breeding of *P. huttoni*.

Unlike with other wood destroying Coleopterans such as Anobiidae, synanthropic occurrence of wood boring Cossoninae is rare, probably because these weevils require wood moisture far beyond normal indoor values. Nevertheless, most of the few records of *P. huttoni* in Central Europe come from buildings. Rasmus-

sen (1976) supposes that frost susceptibility prevents this species from outdoor establishment there.

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