

Short scientific note**First record of *Dinoderus (Dinoderastes) japonicus* in Italy (Coleoptera: Bostrichidae)**Gianluca NARDI^{1,2,*}, Davide BADANO^{1,3}, Bruno DE CINTI³¹ MiPAAF, Corpo Forestale dello Stato, Centro Nazionale per lo Studio e la Conservazione della Biodiversità Forestale "Bosco Fontana" - Strada Mantova 29 I-46045 Marmirolo (Mantova), Italia - l_nardi@hotmail.com; davide.badano@gmail.com² Università degli Studi di Roma "Sapienza", Dipartimento di Biologia e Biotecnologie "Charles Darwin" - Via Alfonso Borelli 50, I-00161 Roma, Italia³ Istituto di Biologia Agroambientale e Forestale, Consiglio Nazionale delle Ricerche (IBAF-CNR) - Via Salaria km 29,300, I-00015 Monterotondo Scalo (Roma), Italia - bruno.decinti@ibaf.cnr.it

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Abstract

Dinoderus (Dinoderastes) japonicus, a species native of the Eastern Palaearctic, is reported for the first time from Italy on the basis of a female specimen collected in a beech forest (Veneto Region, Treviso Province, Foresta del Cansiglio). The possible establishment of this alien species in Italy is briefly discussed.

Key words: Coleoptera, Bostrichidae, *Dinoderus (Dinoderastes) japonicus*, Italy, Veneto, Bostrichidae, *Fagus sylvatica*, alien species, Sites of Community Importance, Natura 2000 Network.

Introduction

A recent capture of *Dinoderus (Dinoderastes) japonicus* Lesne, 1895 in Italy, is discussed herein. This represents an alien species which is being recorded for the first time in Italy.

The examined material is part of the beetles caught in seven Italian forests during the European LIFE project (LIFE09 ENV/IT/000078) ManFor C.BD. (Managing forests for multiple purposes: carbon, biodiversity and socio-economic wellbeing), which focused on Carbon (stock and sequestration) and biodiversity. This project aimed to demonstrate, in relation to wood production and ecosystem services, the effectiveness of the proposed innovative silvicultural treatments in order to provide guidance indicators and best-practices suggestions (www.manfor.eu).

Material and methods

The collecting site of *Dinoderus (Dinoderastes) japonicus* is located in Foresta del Cansiglio (Veneto Region, Treviso Province), a site managed by the Italian National Forest Service. The locality is included in Natura 2000 (code IT232077), a network of protected sites across the EU (Buffa & Lasen 2010). The area is a forest of beech (*Fagus sylvatica*) with a partial reforestation of Norway

spruce (*Picea abies*) (Palmieri & Zanoni 2009). In the study area, 18 window flight traps and 6 Malaise traps (3 window and 1 Malaise traps per 6 plots) were used. Both types of traps were placed on the forest floor and the trapping period spanned from 29 April 2013 to 16 September 2013. The window flight traps (cf. Bardiani 2011: 21) were sustained by metallic supports at a height of about 1.5 m. All collected specimens of beetles were sorted to family level. The material is preserved in 70° ethanol or dry-mounted in the insect collection of CNBFVR: Centro Nazionale per lo Studio e la Conservazione della Biodiversità Forestale "Bosco Fontana" (Marmirolo, Mantova, Italy).

The Bostrichidae were identified by G. Nardi, referring to Lesne (1897, 1901, 1924), Fisher (1950), Vrydagh (1955), Cymorek (1969), Spilman (1982), Liu et al. (2006), Bahillo de la Puebla et al. (2007), Borowski & Węgrzynowicz (2012), and Brustel & Aberlenc (2014). Species nomenclature follows Borowski & Węgrzynowicz (2007).

Photograph of the specimen was taken with a digital camera Canon® EOS 600D equipped with Canon® macro lens MP-E 65 mm.

Results

Material examined. Italy: Veneto (Treviso Province), Fregona, Foresta del Cansiglio, 1340 m, 46.02.508N,

012.22.529E, 23 Jul – 5 Aug 2013, window trap W22, F. Bona & R. Saviane leg., 1 ♀.

Dinoderus (Dinoderastes) japonicus Lesne, 1895 (Fig. 1) is native of the Eastern Palaearctic Region (China, Japan and Taiwan), but introduced in Australia, USA and Europe (Nardi 2004; Liu et al. 2006; Borowski 2007; Borowski & Węgrzynowicz 2007, 2012). In Europe, this species is reported from: Austria (Borowski 2007), France (Brustel & Aberlenc 2014), Germany (cf. Horion 1961; Cymorek 1969; Köhler & Klausnitzer 1998; Borowski 2007; Borowski & Węgrzynowicz 2012), Great Britain (Borowski & Węgrzynowicz 2012), Sweden (cf. Horion 1961; Cymorek 1969; Geis 2002; Borowski 2007), Switzerland (Borowski & Węgrzynowicz 2012) and the Netherlands (cf. Horion 1961; Cymorek 1969; Geis 2002; Borowski 2007; Borowski & Węgrzynowicz 2012). A doubtful record from Belgium (Nardi 2004) is erroneous, since it actually refers to Benelux (Lucht 1987), where the species is only known for the Netherlands (see above).

Adults and larvae of this species, as those of other congeners, bore into harvested bamboo, both culms and finished products (e.g. wickers, baskets, curtains) (cf. Wang et al. 1996; Borowski & Węgrzynowicz 2012). Moreover, this Bostrichid can also attack hard Chinese medicinal materials (lanceolata, ginseng and gastrodia), besides occasionally damage stored grain, paddy and maize (Yan et al. 2010). This species is often accidentally introduced outside its native range through bamboo products, especially in harbor areas (cf. Spilman 1962; Geis 2002).

In Europe, this species seems naturalized (sensu Zapparoli 2008) only (cf. Borowski & Węgrzynowicz, 2012) in mainland France, where it was also collected with traps in small reforestations on the Pyrenees (Brustel & Aber-

lenc 2014). In temperate Asia, *Dinoderus (Dinoderastes) japonicus* is usually characterized by an annual life cycle, passing the winter as adult. However some adults emerge in July producing a second, but incomplete, generation with overwintering larvae (cf. Chang et al. 1979; Liu et al. 2008).

The examined specimen was collected with a window flight trap located in the beech forest undergrowth. A female specimen of *Scobicia chevrieri* (A. Villa & J.B. Villa, 1835) is the sole other collected species of Bostrichidae in this Reserve: 27 May – 10 Jun 2013, window trap W26, F. Bona & R. Saviane leg. The scarcity of Bostrichid beetles is probably due to the lack of dead wood in the area.

Discussion

The introduction and spreading of exotic and invasive species is well known, and it is a major threat to biodiversity loss and economic damage (cf. Zapparoli 2008; Roques et al. 2009; Walther et al. 2009; Kenis & Branco 2010; Roques 2010; Jucker & Lupi 2011; Inghilesi et al. 2013). The exact time of arrival of *D. (Dinoderastes) japonicus* in Italy and the modality of its introduction are unknown. The collecting site is far from harbors and airports, thus it appears possible that this species could have become established. Further samplings appear necessary to evaluate the presence of this Bostrichid in the area and the extent of its distribution.

Five species of *Dinoderus* were already known from Italy: *D. (Dinoderus) bifoveolatus* (Wollaston, 1858), *D. (D.) distinctus* Lesne, 1897, *D. (D.) minutus* (Fabricius, 1775), *D. (D.) ocellaris* Stephens, 1830 and *D. (D.) porcellus* Lesne, 1923 (cf. Audisio et al. 1995; Kahlen & Hell-



Fig. 1 – *Dinoderus (Dinoderastes) japonicus* Lesne, 1895: habitus in lateral view of a female from Foresta del Cansiglio (photo by D. Badano). Scale bar: 1 mm.

rigl 1996; Nardi 2004; Ratti 2004, 2007; Borowski 2007; Borowski & Węgrzynowicz 2012). All are alien species (cf. Borowski 2007; Borowski & Węgrzynowicz 2007, 2012). However, in Italy, only *D. (D.) minutus* is naturalized, while the others were only intercepted (cf. Audisio et al. 1995; Pollini 1998; Ratti 2007; Denux & Zagatti 2010).

Borowski & Węgrzynowicz (2012) provided an identification key of the species of *Dinoderus* Stephens, 1830. *D. (Dinoderastes) japonicus* can be easily distinguished from the above mentioned congeners also for the tarsal structure (cf. Liu et al. 2006; Borowski & Węgrzynowicz 2011, 2012, 2013). Finally, the antennae of this species are 11-segmented (cf. Lesne 1901; Fisher 1950; Cymorek 1969; Spilman 1982; Liu et al. 2006; Borowski & Węgrzynowicz 2011, 2012), and not 10-segmented, as stated by some authors (Lesne 1897; Bahillo de la Puebla et al. 2006).

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