

**Short scientific note**Submitted: August 18<sup>th</sup>, 2019 - Accepted: October 18<sup>th</sup>, 2019 - Published: November 15<sup>th</sup>, 2019**First records of *Attagenus smirnovi* Zhantiev, 1973 from Italy in South Tyrol (Coleoptera: Dermestidae)**Elia GUARIENTO<sup>1,\*</sup>, Filippo COLLA<sup>1</sup>, Michael STEINWANDTER<sup>1</sup>, Jiří HÁVA<sup>2,3</sup>, Julia SEEBER<sup>1</sup><sup>1</sup> Institute for Alpine Environment, Eurac Research - Drususallee 1, 39100 Bozen/Bolzano, Italy<sup>2</sup> Daugavpils University, Institute of Life Sciences and Technology, Department of Biosystematics - Vienības Str. 13, Daugavpils - LV-5401, Latvia - elia.guariento@eurac.edu; filippo.colla@eurac.edu; michael.steinwandter@eurac.edu; julia.seeber@eurac.edu<sup>3</sup> Private Entomological Laboratory and Collection - Rýznerova 37, CZ-252 62 Únětice u Prahy, Praha-západ, Czech Republic - Jh.dermestidae@volny.cz

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**Abstract**

The Dermestidae species *Attagenus smirnovi* Zhantiev, 1973 was discovered in two household in South Tyrol, making it the first official records for this species in Italy. The larvae feeds upon dried organic materials, making this species a common pest in museum collections and households in Central and Northern Europe. The spread of *A. smirnovi* in Italy was expected but has not yet been recorded. Further, developments of its distribution need to be monitored to prevent damaging infestations, especially to museum collections.

**Key words:** Introduced species, Pest species, Carpet beetle, New national record, Introduced species.**Introduction**

The Dermestidae *Attagenus smirnovi* Zhantiev, 1973, also called the “vodka beetle”, develops on different kinds of organic matter containing animal proteins and starch, such as hairs, wool, skin and feathers (Hansen et al. 2012). Because of this peculiarity, the species can reach pest status in households but especially in museums where collections might be damaged (Querner et al. 2013; Pinnering 2013). Adults of this species are 2–5 mm long and 2–2.5 mm wide, with an easily recognizable male, which has an elongated 11<sup>th</sup> segment of the antennae, thus being four times longer than the previous two segments together (Fig 1; Museumspests.org).

The “vodka beetle” is supposed to originate from Africa (Zhantiev 1973) but was introduced to Moscow (first observed in the 1960) where it was first described by Zhantiev (1973). From there, the species started a slow but steady conquest of Northern and Central Europe (Hansen et al. 2012). First, it spread throughout Northern Europe (records from Russia 1961, Fenno-Scandinavia 1962–1983) and then also in Central Europe (Switzerland 1975, Czech Republic 1984, Germany 1985, France 2004; Hansen et al. 2011) and was found more recently also in Austria (Háva 2007). The only record of the species in a Mediterranean country is from Slovenia [2009] (Háva & Hermann 2019). In Berlin, the species is nowadays considered the most common beetle in households (Büche B., personal communication [2019]). *Attagenus smirnovi* is nowadays

also found in many African and Asian countries (Háva & Hermann 2019). For Italy 20 species of the genus *Attagenus* are present, but no record for *A. smirnovi* was yet available (Nardi & Háva 2013).

In Europe, *A. smirnovi* mainly occurs in heated buildings (such as households and museums), because it is not winter resistant. However, a few outdoor sightings and its good flying ability indicate that the species does disperse in warmer months also outside buildings. The good flying ability also allows the beetle the spread from house to house on its own (Kiener 1995).

**Results**

**Italy:** South Tyrol (Südtirol/Alto Adige), Meran/Merano, 46.6737N, 11.1526E, 325 m, 25 Mar–12 Jun 2019, household, Guariento E., 2 ♂♂ & 5 ♀♀, Museum of Nature South Tyrol, Bozen/Bolzano.

**Italy:** South Tyrol (Südtirol/Alto Adige), Bozen/Bolzano, 46.4981° N, 11.3441° E, 262 m, 21 Jun 2019, household, Colla F., 1 ♂, Museum of Nature South Tyrol, Bozen/Bolzano.

On 18 Feb 2019 one unconfirmed male was found by chance in an apartment in the city of Meran/Merano. This finding suggested the presence of the species and it was actively searched within the same apartment in the following weeks until two further male individuals were found

on 25 Mar 2019. A female was then discovered on 10 Apr 2019; two further females were found on 12 Jun 2019. Finally, one female was found on 21 Jun 2019 and a further female on the 23 Jun 2019 always in the same apartment. On the 21 Jun 2019 a female was found in a second apartment in the city of Bozen/Bolzano, about 30 km from the first record, resulting in the second independent occurrence.

Dvoriashina (1988) describes the lifespan of *A. smirnovi* under optimal conditions with a maximum of 20 days, so the present findings on the first location (spanning over a period of over four months) suggest that there was a prolonged infestation and maybe even a local reproduction. The substrate on which the animals developed could not be identified, but specimens of two other Dermestidae species, *Anthrenus verbasci* L. 1767 (in Mar and Apr 2019), and *Trogoderma glabrum* Herbst 1783 (in Jun 2019), were found concomitantly with the here described findings.

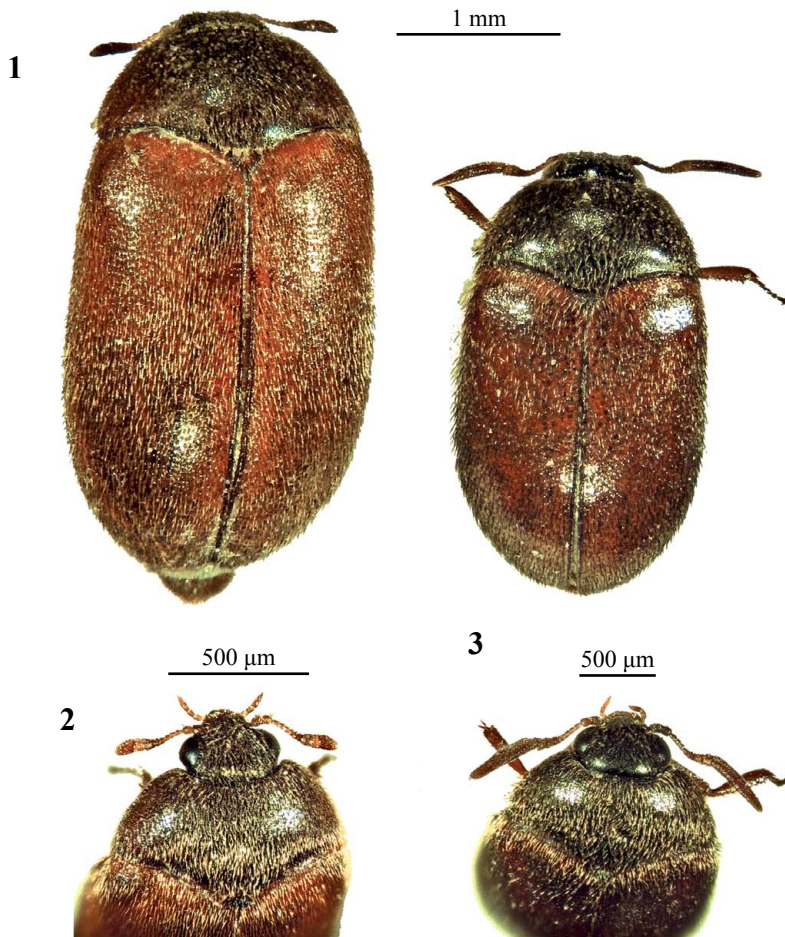
The collected individuals were identified to species level by Guariento E. and Colla F. (following the key of Peacock 1993) and further confirmed by Háva J. The first unconfirmed sightings identification was suggested by

Büche B. on the online citizen science network iNaturalist.org (observation link: <https://www.inaturalist.org/observations/20456846>).

The status of these new records for Italy was determined after checking multiple sources, such as the list of alien Coleoptera in Italy (Ratti 2007), the checklist on Italian Dermestidae (Nardi & Háva 2013), the most recent distribution map of *A. smirnovi* (Hansen et al. 2012), the GBIF data base (GBIF.org 2019), and the yearly updated lists of Dermestidae distribution in the world (multiple publications by Háva et al. 2013, 2014; Háva & Hermann 2014, 2019).

### Discussion

The colonization of Italy by *A. smirnovi* was a matter of time, since this species is extending its range in Europe since the 1960s. Potentially this species occurred already in Italy before (found in two separate locations after checking for its occurrence), but was probably overlooked due to the small size and hidden life form. The nearest known



**Figs 1-3** – *Attagenus smirnovi* Zhantiev, 1973. **1**, dorsal view of ♂ (right) and ♀ (left); **2**, head and antennae of ♀; **3**, head and antennae of ♂. Note the characteristic long 11<sup>th</sup> male antennomere. Pictures from specimens found on the first location listed above.

occurrence is in Innsbruck (Austria; Kahlen 2011), about 150 km away from Meran/Merano and 120 km from Bozen/Bolzano.

Considering the past and present spread of this species, a further colonization of Mediterranean countries seems very likely (although since now no official records from the Mediterranean region exist, except for Slovenia; Háva & Herrmann 2019), especially since the climate becomes more favorable.

However, it may be noted that recent occurrence of this species in other Italian regions (i.e., Lazio and Lombardia) was unofficially reported in an Italian site of amateur naturalists and entomologists ([https://www.natura-mediterraneo.com/forum/topic.asp?TOPIC\\_ID=230788](https://www.natura-mediterraneo.com/forum/topic.asp?TOPIC_ID=230788)). Higher temperatures were found to increase the quantity of consumed materials, thus increasing the overall damage caused by this species (Hansen et al. 2012). Because of the potential pest status (especially for museums and collections), it is important to note its presence and further spreading in S Europe.

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