

***Attagenus* Latreille, 1802 (Coleoptera: Dermestidae: Attageninae) in Turkey with a description of a new species**

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A new species of the large genus *Attagenus* Latreille, 1802, *A. hadesi* sp. n. from Turkey is described and illustrated. Morphological characteristics useful for identification are provided. A list of species of *Attagenus* from Turkey is also given.

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1. Introduction

The genus *Attagenus* Latreille, 1802 of Attageninae is the most speciose in the family Dermestidae, and currently includes nearly 200 valid species, most of them found in Palaearctic, Ethiopian and Nearctic regions. The genus, as shown in the study of larval characteristics (Kiselyova & McHugh 2006), is closely related to the Nearctic genus *Novelsis* Casey, 1900. Of the two currently accepted subgenera, *Aethriostoma* Motschulsky 1858a includes only 6 species, while nearly 190 have been so far described in *Attagenus* s. str. (Háva 2003a, 2013).

The wide variability within the genus is manifested in size, colouration, shape of antennae, and male and female genitalia. Some species are very similar and difficult to identify, whereas distinct and characteristic morphology makes others easier. Adults of *Attagenus* can be distinguished from all other genera by the first segment of metatarsi at most half as long as the second, free mouthparts, 3-jointed antennal club and lack of

distinct antennal cavity on hypomeron. The most characteristic feature of larvae is the extremely long caudal brush and the elongated, cylindrical, strongly sclerotized body (Peacock 1993).

As mentioned above, the genus *Attagenus* is one of the most speciose genera of Dermestidae. Few of the species have been classified as pests of stored products. The genus is known from all biogeographical regions, but includes no more than few cosmopolitan species. 25 species of *Attagenus* have been described in Turkey so far and a new species found in Turkey is described in this paper.

2. Material and methods

Morphological structures of body were boiled for 3–10 minutes in 10% KOH, and placed in distilled water for c. 1 hour to clean and soften the cuticle. All structures were placed on glycerin mounts. Morphological structures were examined with a Nikon Eclipse E 600[®] (Tokyo, Japan)

phase contrast microscope with a drawing tube, and a Nikon SMZ-800[®] (Tokyo, Japan) binocular microscope. Photographs were taken with a Canon 500D[®] (Taiwan) and a Nikon D5100[®] (Tokyo, Japan) camera under a Nikon Eclipse 80i[®] (Tokyo, Japan) and/or a Nikon SMZ-800[®] (Tokyo, Japan). Image stacks were processed using Combine ZM[®] (Hadley 2010).

The terminology used in this paper follows Lawrence and Ślipiński (2010). Separate labels are indicated by a slash (/). Author's remarks are in square brackets [].

The following abbreviations are used in this study:

- MKC – Collection of Marcin Kadej, Department of Evolutionary Biology and Ecology, Division of Invertebrates Biology, Evolution and Conservation collection, University of Wrocław, Poland.
- JHAC – Private Entomological Laboratory & Collection, Únětice u Prahy, Prague-west, Czech Republic.

The type specimens were labeled with a red printed label bearing the text as follows: “HOLOTYPE or PARATYPE *Attagenus hadesi* sp. nov. J. HÁVA & M. KADEJ det. 2012”.

3. Description of *Attagenus* (*Attagenus*) *hadesi* sp. n. (Fig. 1)

Type locality. Turkey, Mersin, N Gülnar, N 36°30'22.5"; E 33°07'43.3" Köseçobanlı/Tesdüstü.

Material examined. Holotype ♂: Labeled: Turkey, Mersin, 40 km N Gülnar N 36°30'22,5; E 33°07'43,3 Köseçobanlı/Tesdüstü W-trap 3 Hollow Quercus 2006-08-26 Nicklass Jansson/Mustafa Avcı [terminalia placed in plastic vial with glycerin], MKC. Paratype ♀: Labeled: Turkey, vil. Icel (Mersin), Göktepe Dagi, Aslanlı env., 10.–12.6.1998, Bezděk lgt., JHAC.

Diagnosis. The new species closely resembles *Attagenus* (*s. str.*) *pantherinus*, *A.* (*s. str.*) *quadricolor*, *A.* (*s. str.*) *incognitus* and *A.* (*s. str.*) *maculatus*. It can be distinguished from them by the characteristics given in Table 1.

Description. Male (holotype). Body: Ovate,

convex and slightly elongated; dorsal and ventral pubescent recumbent, white, light brown or light golden (Figs 1a–c); length from anterior margin of pronotum to apex of elytron 3.65 mm, median length of pronotum 0.9 mm, maximum width of pronotum 1.75 mm, length of elytron 2.7 mm, maximum width across elytra 2.0 mm. Ratio of width (across humeri) to length (of pronotum and elytra combined) 1.0:1.82.

Head: Visible from above; integument of head dark brown; densely but sparsely and finely punctured. Eyes iridescent, with dark brown edge, large, convex, with slight emargination at midlength of inner margin. Median ocellus distinct. Front and clypeus covered with light brown pubescence. Anterior part of clypeus light brown, posterior (basal) part dark brown. Antenna with 11 antennomeres. Antennal club elongated, 3-jointed (Fig. 1c); antennomeres I–VIII light brown, IX–XI brown (generally darker, only basal part of IX can be slightly lighter). Antennal club has almost the same length as flagellum; with relative length of terminal joint to length of penultimate joints nearly 0.9:1.0 (terminal joint almost as long as the two preceding joints combined). Ratio of width to length of terminal antennomeres: 1.0:1 (IX and X) and 0.53:1 (XI).

Pro-, meso- and metasternum (Fig. 1b): Dark brown (almost black), sparsely and finely punctured, densely covered with fine recumbent light golden setae. Prosternal process thin but distinct and reaching midlength of mesosternum. Its apex slightly sharpened. Mesosternum deeply incised for prosternal process.

Pronotum, hypomeron and elytron (Figs 1a–b): Integument mainly covered with light brown (only near angles white) pubescence. Hypomeron covered with light brown pubescence. Pronotum covered with lateral carina continued around anterolateral angle (invisible from above); basal part of pronotum rounded. Antennal fossa densely and shallowly punctured. Elytra (Fig. 1a) with white and light brown pubescence. Small spots (discontinuous bands) of white setae situated as follows: two near humeri, two under humeri (visible in lateral aspect only), two near suture in midlength of elytra, other two at the same level but closer to lateral margins, and the last pair near apex of elytra. Scutellum small, dark brown (almost black) and triangular.

Table 1. Comparison of species closely resembling *Attagenus* (s. str.) *hadesi* sp. n.

	<i>A. (s. str.) pantherinus</i>	<i>A. (s. str.) quadricolor</i>	<i>A. (s. str.) incognitus</i>
Antennae			
no. of segments	11	10	11
antennomere I	Dark brown	Light brown to brown	Dark brown
antennomeres II–VIII	Light brown	Light brown to brown	Dark brown
antennomeres IX–X	Blackish-brown	Light brown to brown	Dark brown
antennomere XI	Blackish-brown	–	Dark brown
Labial palpi			
terminal segment	Dark brown	Light brown	Light brown
	Short	Very long	Short
Pronotal pubescens			
laterally (near angles)	Distinctly white	Intermixed yellow and white	Whitish
dically	Yellow	Light brown	Black
Pygidium	Dark brown with brown setae	Brown with white setae	Brown with black setae
Parameres of phallus	Broad with apices slightly curved inward	Narrow with apices slightly curved inward	Broad with apices slightly curved inward
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	<i>A. (s. str.) maculatus</i>	<i>A. (s. str.) hadesi</i> sp. n.	
Antennae			
no. of segments	11	11	
antennomere I	Yellowish-red	Light brown	
antennomeres II–VIII	Yellowish-red	Light brown	
antennomeres IX–X	Dark brown	Brown	
antennomere XI	Dark brown	Brown	
Labial palpi			
terminal segment	Dark brown	Light brown	
	Short	Short	
Pronotal pubescens			
laterally (near angles)	Black with small isolated white spots (near angles) and two near scutellum	Whitish	
dically	Black	Light brown	
Pygidium	Black with black setae	Brown with golden light setae	
Parameres of phallus	Narrow with apices slightly curved inward	Narrow with apices distinctly curved inward (Fig. 1e)	

Legs: Dorsal surface covered with light golden pubescence. Trochanters, coxae and femora dark brown; tibiae, tarsi and claws light brown. Tibiae spinose on lateral margin, with distinct, short but thick, brown setae. Tarsus with two slightly curved claws.

Ventrites I–V (Fig. 1d): Integument dark brown with golden-brown pubescence. Sides of first visible sternite without striae. Pygidium: Brown, with light golden, semi erect setae.

Phallus: As in Fig 1e. Parameres deeply u-shaped, covered with few, rather short setae on the lateral margins as well as in the central and inner areas; longer setae present only on apex of parameres. Distal parts of parameres distinctly curved inward. Penis in lateral view straight, with distal end pointing up; wider posteriorly (in fron-

tal aspect), with narrow apodemes occupying 1/3 of penis length (Fig. 1e).

IX abdominal ventrite: Rhomboidal, more pigmented laterally and basally, apex slightly rounded, setae present on the apical and lateral margins (Fig. 1f).

Female (paratype). Externally similar to male, but differs by structure of antennae. Antennal club short as in male, terminal antennomere shorter and oval. Body length from anterior margin of pronotum to apex of elytron 4.03 mm, median length of pronotum 0.95 mm, maximum width of pronotum 2.03 mm, length of elytron 3.20 mm, maximum width across elytra 2.22 mm.

Distribution. Turkey.

Etymology. The epithet comes from the name of Hades (son of Kronos and Rhea and brother of

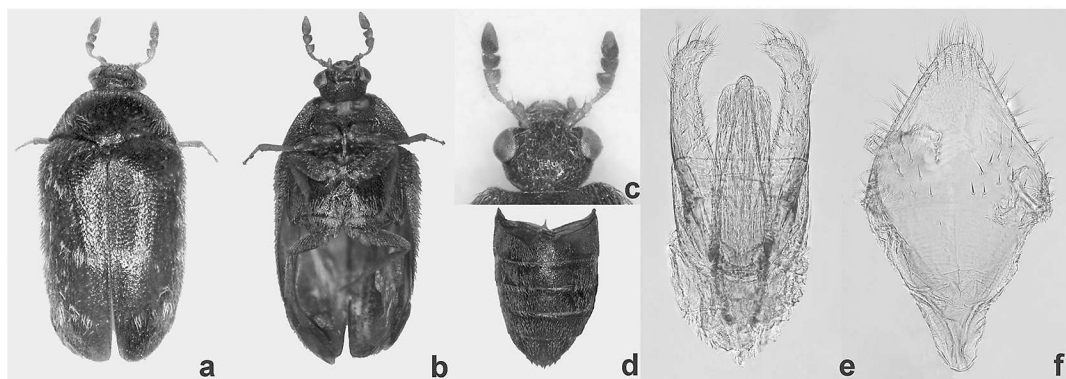


Fig. 1. *Attagenus hadesi* sp. n., holotype male. – a. Habitus, dorsal aspect. – b. Habitus, ventral aspect. – c. Head with antennae, dorsal aspect. – d. Visible ventrites I–V. – e. Genitalia. – f. IX abdominal ventrite.

Zeus and Poseidon). In Greek mythology he is the god of the underworld and death.

4. List of species of *Attagenus* from Turkey

Attagenus aurantiacus Reitter, 1900
Attagenus bifasciatus (Olivier, 1790)
 Syn.: *Attagenus wachanrui* Mulsant & Rey, 1868
Attagenus brunneus Faldermann, 1835
 Syn.: *Attagenus sordidus* Heer, 1841
Attagenus dalmatinus Küster, 1847
Attagenus marginicollis Handschuch in Küster, 1847
Attagenus longicornis Pic, 1894
Attagenus picipennis Pic, 1894
Attagenus elongatulus Casey, 1900
Attagenus extricatus Casey, 1900
Attagenus bicolor Casey, 1900
Attagenus elongatus Casey, 1916
Attagenus cyphonoides Reitter, 1881
 Syn.: *Attagenus alfieri* Pic, 1910
Telopes senegalensis Pic, 1915
Attagenus dispar (Redtenbacher, 1843)
 Syn.: *Attagenus redtenbacheri* Peyron, 1857
Attagenus doricus Zhantiev, 2007
Attagenus fasciatus (Thunberg, 1795)
 Syn.: *Anthrenus gloriosae* Fabricius, 1798
Attagenus ionicus Zhantiev, 2005
Attagenus jelineki Háva, 2004
Attagenus lobatus Rosenhauer, 1856
 Syn.: *Attagenus byturoides* Solsky, 1876
Attagenus lynx (Mulsant & Rey, 1868)
Attagenus obtusus (Gyllenhal in Schönherr, 1808)

Attagenus orientalis Reitter in Schneider et Leder, 1878

Attagenus pantherinus (Ahrens, 1814)

Attagenus pellio (Linnaeus, 1758)

Syn.: *Dermestes bipunctatus* DeGeer, 1774

Dermestes macellarius Fabricius, 1781

Dermestes cylindricornis Schrank, 1785

Attagenus quadricolor (Sumakov, 1907)

Attagenus quadrimaculatus Kraatz, 1858

Syn.: *Attagenus bivittatus* Mulsant & Rey, 1868

Attagenus seniculus (Solsky, 1876)

Attagenus sieversi Reitter, 1896

Attagenus silvaticus Zhantiev, 1976

Attagenus simplex Reitter, 1881

Attagenus smirnovi Zhantiev, 1973

Attagenus tessellatus (Reitter, 1887)

Attagenus unicolor unicolor (Brahm, 1790)

Syn.: *Dermestes piceus* Olivier, 1790

Dermestes megatoma Fabricius, 1798

Attagenus cylindricornis Say, 1825

Dermestes macellarius Duftschmid, 1825

Attagenus stygialis Mulsant & Rey, 1868

Attagenus fulvipes Mulsant & Rey, 1868

Attagenus cylindricornis Casey, 1900

Attagenus unicolor japonicus Reitter, 1877

Syn.: *Attagenus nankineus* Pic, 1916

Attagenus canadensis Casey, 1916

Attagenus amurensis Pic, 1942

5. Discussion

Genus *Attagenus* is divided into two subgenera – *Aethriostoma* Motschulsky, 1858 and *Attagenus* s. str. The greatest number of taxa is in the nomi-

native subgenus, with more than 190 described species, of which 26 (including the new one described herein) are known from Turkey. The detailed studies of materials of unidentified insects (including Dermestidae) from a range of entomological collections showed that Turkey still represents new challenges to researchers and taxonomists (Háva 2000a, b, 2002, 2003b, 2004, 2006; Háva & Tezcan 2004; Avgin *et al.* 2012). It is certain that new taxa of Dermestidae will be recorded from this region in the near future.

Turkish species of *Attagenus* present a variety of morphologies, expressed by size but also by dorsal patterns. Some of the species are unicolor, while others have different dorsal spots or bands of setae. Some of the species, for example the black carpet beetle *A. unicolor unicolor* (Brahm), the fur beetle *A. pellio* (Linnaeus) or the brown carpet beetle *A. smirnovi* Zhantiev are the most common and most destructive within the subgenus *Attagenus s. str.* over all. Due to the similarities in morphological characteristics (structure of antennae, male genitalia and form of prosternum), *A. hadesi* sp. n. resembles some Nearctic and Neotropical species [e.g. *Attagenus aequalis* (Sharp), *A. varicolor* (Jayne) or *A. bitaeniatus* (Steinheil)] rather than other Palearctic representatives of the genus. This interesting similarity should be explored in a further study.

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