Koleopterologische Rundschau	84	329–336	Wien, September 2014

Revision of the genus *Acentrus* DESMAREST, 1839 (Coleoptera: Curculionidae)

M. KOŠŤÁL

Abstract

An overview of the valid species of the genus *Acentrus* DESMAREST, 1839 (Coleoptera: Curculionidae: Curculioninae) is given. A lectotype of *Cryptorhynchus histrio* BOHEMAN, 1837 is designated. *Acentrus boroveci* sp.n. from Uzbekistan and *A. zarathustra* sp.n. from Iran are described. *Acentrus rufescens* PIC, 1922 is confirmed to be a junior synonym of *A. histrio* (BOHEMAN, 1837). All valid species of the genus *Acentrus* are keyed and their distribution is given.

Key words: Coleoptera, Curculionidae, Curculioninae, *Acentrus*, taxonomy, new species, Iran, Uzbekistan.

Introduction

The genus *Acentrus* was described by DESMAREST (1839) with the type species referred to as "*A. histrio* Schoënh.". The genus belongs to the monotypic tribe Acentrusini, recently erected by ALONSO-ZARAZAGA (2005), formerly known as Acentrini SEIDLITZ, 1890. The tribe shares characters with the subfamily Curculioninae. From other tribes of this subfamily it is distinguishable by a character cluster showing particular affinity to Styphlini (ALONSO-ZARAZAGA 2005). SEIDLITZ (1890) based his description of the tribe on the type genus *Acentrus* SCHOENHERR, 1845, which is a homonym and synonym of *Acentrus* DESMAREST, 1839. SCHOENHERR (1845) in his redescription used the genus name *Acentrus* and the same type species of the genus and was considered to be author of the genus by many subsequent authors, for example HUSTACHE (1930), WINKLER (1932), HOFFMANN (1958) and TEMPÈRE & PÉRICART (1989). ALONSO-ZARAZAGA (1999) synonymized *Acentrus* SCHOENHERR, 1845 and *Collius* GISTEL, 1848 with *Acentrus* DESMAREST, 1839 designating "*Cryptorhynchus histrio* Schoenherr, 1837" as the type species of the genus.

The genus has been considered monotypic until now, with *A. histrio* var. *rufescens* PIC, 1922 considered a junior synonym of *A. histrio*, the authorship of which has been assigned to Boheman by HUSTACHE (1930), WINKLER (1932), HOFFMANN (1958), and TEMPÈRE & PÉRICART (1989), apparently because of the abbreviation "Bhn." at the end of the description (although "*Cryptorhynchus Histrio* SCHH." is used in the description title). Hence, some authors assigned the authorship to Schoenherr as for instance ALONSO-ZARAZAGA (1999) or CALDARA (2013). As the abbreviation "Bhn." does indicate the author sufficiently enough, the conditions of the ICZN (1999: Art. 50.1.1) are met, and Boheman is here considered as the correct author of the species.

Material and methods

Measurements were made with a stereomicroscope (Intraco Micro NSZ-810) and an ocular micrometer. The body length is interpreted as the distance between the anterior eye margin and the elytral apex. Photos were taken with high resolution camera (Canon EOS 50D) and macro zoom lens (Canon MP-E 65 mm). Male genitalia were dissected and treated for five days in 10 % KOH and photographed in glycerol using the same camera under a laboratory microscope (Intraco Micro LMI T PC). Multilayer pictures were processed with Combine ZP software.

The species are treated in chronological sequence.

Abbreviations: E: elytra, P: pronotum, R: rostrum, l: length, w: width.

Depositories:

BC	Collection Roman Borovec, Sloupno, Czech Republic
KO	Collection Michael Košťál, Brno, Czech Republic
MNHN	Muséum national d'Histoire naturelle, Paris, France
MSNM	Museo di Storia Naturale, Milano, Italy
NHRS	Naturhistoriska riksmuseet, Stockholm, Sweden
SDEI	Senckenberg Deutsches Entomologisches Institut, Müncheberg, Germany
UWCP	University of Wrocław, Wrocław, Poland
ZSMC	Zoologische Staatssammlung, München, Germany

Acentrus histrio (BOHEMAN, 1837)

Cryptorhynchus histrio BOHEMAN 1837: 248 (orig. descr.).
Acentrus histrio (SCHOENHERR, 1837): DESMAREST 1839: 61. SCHOENHERR 1845: 58. ALONSO-ZARAZAGA 1999: 73 (cat). ABBAZZI & MAGGINI 2009: 108. CALDARA 2013: 118 (cat.).
Acentrus histrio (BOHEMAN, 1845): HUSTACHE 1930: 139. WINKLER 1932: 1544 (cat.). KLÍMA 1934: 59 (cat.). HOFFMANN 1958: 1418. TEMPÈRE & PÉRICART 1989: 513 (cat.).
Acentrus histrio var. *rufescens* PIC 1922: 23 (orig. descr.). WINKLER 1932: 1544 (cat.). KLÍMA 1934: 60 (cat.). HOFFMANN 1958: 1418.
Acentrus rufescens PIC, 1922: CALDARA 2013: 118 (cat.).

TYPE LOCALITY: Caucasus.

TYPE MATERIAL: **Lectotype** ♀ (NHRS, herewith designated): "Caucasus. Steven.", "LECTOTYPUS Cryptorhynchus histrio Boheman M. Košťál des. 2013". The specimen is completely preserved, 4.20 mm long, pinned, with detached left protibia, before it was remounted and dissected for genitalia. This is the only syntype found in the Schoenherr collection (box 143) (NHRS). A second female in the Schoenherr collection (box 143) (NHRS), labelled: "Nicia. Schüppel." and is not considered to be part of the syntype series because of its locality label, which does not correspond to the original description.

SYNOMYMS: *Acentrus rufescens* PIC, 1922.

TYPE MATERIAL: **Lectotype** ♀ (Rotrou collection, MNHN, herewith designated): "LALLA MARNIA ALGÉRIE", "TYPE [red label]", "Ac. histrio v. rufescens race nouvelle Pic", "Muséum Paris coll. Rotrou".

This specimen is 3.80 mm long, well preserved, with disjointed antennae and missing part of right metatarsus, perfectly corresponding by habitus and labelling to the original description. In the original description, PIC (1922) describes this taxon as "Acentrus histrio race rufescens". Having taken into account ICZN (1999: Art. 45.6.4.) and its somewhat ambiguous interpretations as well as guidelines to interpret this Article (LINGAFELTER & NEARNS 2013) and the fact that the term "race" was and still is commonly used as a synonym of subspecies (see MALLET 2007) and that this term is never quoted in ICZN (1999: Art. 45.6.2.) among the unavailable terms like "aberration" or "morph" (Caldara and Colonnelli, pers. comm.), I decided to treat *Acentrus histrio* var. *rufescens* PIC as an available name. As PIC (1922) does not report the number of specimens in the original description, I decided in accordance with ICZN (1999: Recommendation 73F) to designate this specimen as a lectotype of *Acentrus histrio* var. *rufescens*, and added the label "LECTOTYPUS Acentrus histrio v. rufescens Pic Michael Košťál des. 2014".

ADDITIONAL MATERIAL EXAMINED: 144 specimens from Spain, France (incl. Corsica), Italy, Croatia, Serbia, continental Greece, Crete, Ukraine, southern Russia, Armenia, Turkey, north-western Iran, Israel, Morocco and Tunisia.

DIAGNOSIS: This species is characterized by: two separated dark maculae on the pronotal base, all tarsi with wide bilobed tarsomere 3, antennal club twice as long as wide, funicular segment 2 clearly longer than wide, stout claws and pronotum moderately wider than long.

REDESCRIPTION: Integument (Figs. 9–10): Blackish to dark brown, tarsi and antennae except darkened clubs brown. Prothorax, elytra, femora and tibiae, venter and anterior part of rostrum before antennal insertion covered with multicoloured, unevenly round, large, overlapping, recumbent scales. Scales on interstria 1 mostly creamy brown. Whitish to yellowish scales cover pronotum except dark squamose basal maculae, and venter except darkened maculae on ventrites

3–5. Legs except dark transverse patches on femora and in the middle of tibiae covered with the same scales, which form an elytral transverse band and scattered patches on the elytra. Head, rostrum, separated maculae on pronotal base, and the rest of the elytra covered with brown to black brown scales. Apart from round scales, the entire rostrum, pronotum and elytra in uniseriate rows on interstriae covered with elongated (l/w = 5–7) recumbent seta-like scales of the same colour as the surrounding rounded scales. Elongated scales on femora and tibiae suberect. Tarsi and antennae covered with long (l/w = 6–10) suberect seta-like scales. Patches of scales and seta-like scales at the end of scapus sparse, inconspicuous.

Head: Eyes flat. Frons of the same width as rostrum at base. Rostrum moderately robust, longer than pronotum (Rl/Pl = 1.10–1.19 ♂♂; 1.14–1.26 ♀♀), in dorsal view in the basal part before antennal insertion parallel-sided, after insertion in males very slightly narrowed, in females first slightly narrowed, then broadened to apex, in lateral view evenly curved; in dorsal view densely irregularly punctured from base to apex. Interspaces between punctures narrow, sometimes confluent into thin longitudinal ribs. Antennae slender, inserted in apical half of rostrum between 6/10 and 7/10 of the rostrum length, in males more distally than in females. Antennal funicle with seven segments, segment 1 markedly thicker but only slightly longer than segment 2, twice as long as wide; segment 2 1.5 times as long as wide. Antennal club spindle-shaped, twice as long as wide (Fig. 3).

Prothorax: Slightly wider than long (Pl/Pw = 0.85–0.99), with nearly parallel sides, of about the same width from base to 2/3 of its length, broadly constricted before anterior margin, in lateral view moderately convex at disc.

Elytra: Elongate (El/Ew = 1.60–1.75), with parallel sides until shortly after 1/2 of their length, flat on disc except shallow impression in the anterior third.

Legs: Tarsomere 3 bilobed, wider than long, markedly broader than tarsomere 2, onychium of about the same length as tarsomeres 2 and 3 combined (Fig. 1), claws stouter, of about the same length as the width of onychium at apex, toothed.

Penis as in *A. zarathustra* (Fig. 6). Distance of paramere bases on ring of tegmen on average smaller than width of paramere at base (Fig. 7), parameres often coalescent at base.

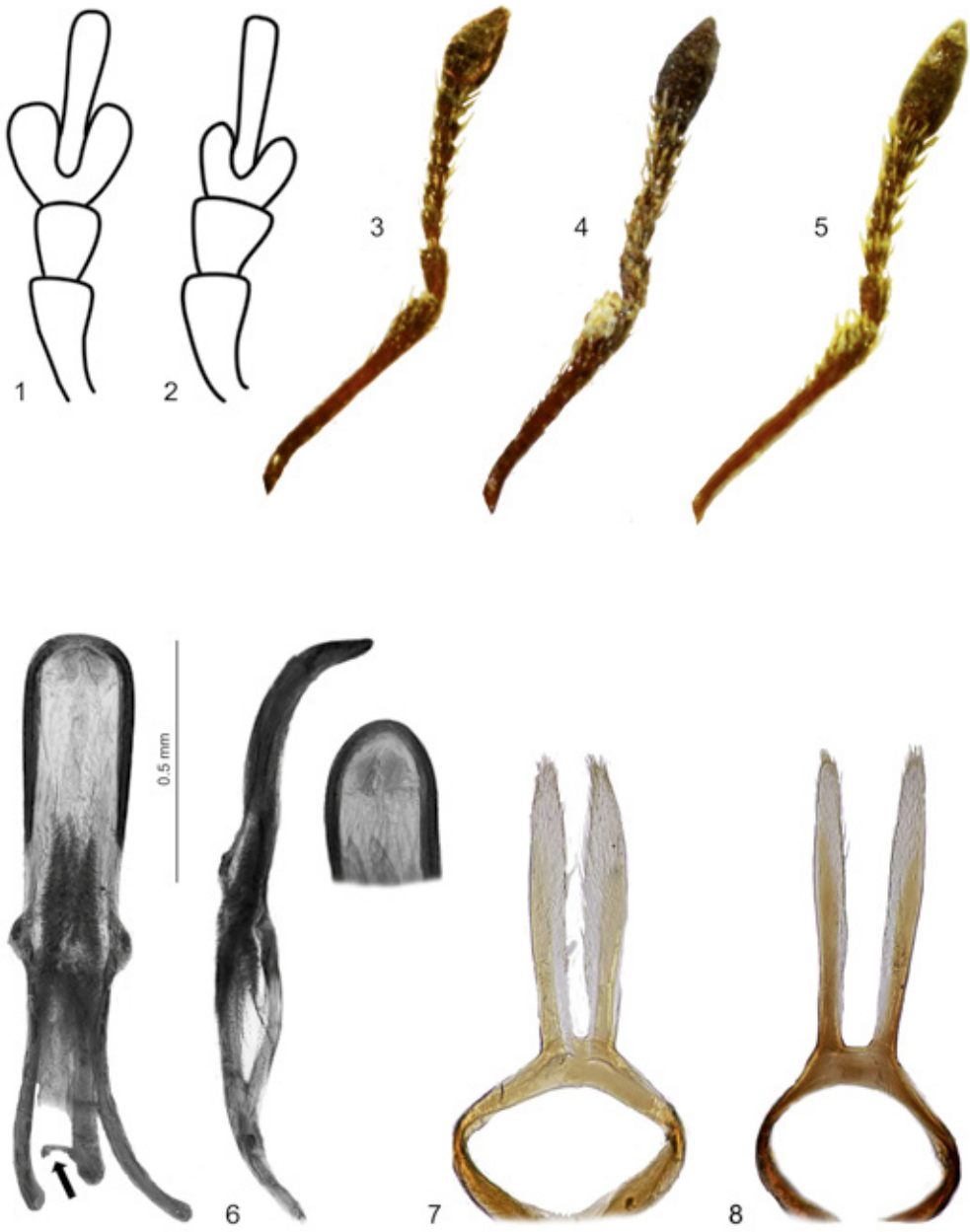
VARIABILITY: Body length: ♂♂ 3.0–4.7 mm, ♀♀ 3.1–4.7 mm, Rl/Pl: ♂♂ 1.13–1.26, ♀♀ 1.20–1.38, Pl/Pw: ♂♂ 0.85–0.99, ♀♀ 0.85–0.93, El/Ew: ♂♂ 1.64–1.75, ♀♀ 1.65–1.81. The colouration varies considerably: Ground colour of specimens from Spain, North Africa and the Middle East reddish-yellow; dark scales on pronotum and elytra less distinct (originally described as var. *rufescens*) (Fig. 10), basal pronotal maculae sometimes confluent in a very narrow area on the pronotal base; elytral pattern somewhat variable. In some specimens from the south-eastern part of the distribution area tarsomere 3 may be visibly narrower than in the lectotype, but always clearly bilobed and markedly wider than tarsomere 2.

DISTRIBUTION: Southern and eastern Europe, Caucasus, Transcaucasus, Middle East and North Africa.

BIONOMICS: HUSTACHE (1930) reports the species to develop in the roots of *Glaucium flavum* CRANTZ. HOFFMANN (1958) confirms its development in the roots and stalk base of *G. flavum* and *G. corniculatum* (L.) RUDOLPH, without producing galls.

Acentrus boroveci sp.n.

Holotype ♀ (BC): "USSR Uzbekistan or. Tian-Shan Mts. Chatkal valley R. Borovec lgt.", "80 km NE Tashkent 18.-19.5.1985 1 500 m. n. m.", "Acentrus histrio Boh. Dieckmann det. 1986".



Figs. 1–2: Protarsus of 1) *Acentrus histrio* and 2) *A. zarathustra* sp.n.

Figs. 3–4: Right antenna of 3) *Acentrus histrio*, 4) *A. zarathustra* sp.n. and 5) *A. boroveci* sp.n.

Fig. 6: Penis of *Acentrus zarathustra* sp.n. in a) ventral, b) lateral, and c) dorsal view (apex only). The arrow indicates an arch-shaped sclerite.

Figs. 7–8: Ring of tegmen and parameres of 7) *Acentrus histrio*, and 8) *A. zarathustra* sp.n.

Figs. 9–12: Habitus (female) of 9) *Acentrus histrio* (Corsica), 10) *A. histrio* (Morocco), 11) *A. boroveci* sp.n., and 12) *A. zarathustra* sp.n.

DIAGNOSIS: This species is characterized as follows: one confluent dark basal macula on the pronotal base, elongated antennal club 2.5 times as long as wide, all tarsi with moderately bilobed tarsomere 3, claws long and thin. These clearly distinctive characters are considered sufficient evidence to describe this new species based solely on one female.

DESCRIPTION: Holotype: completely preserved specimen, 4.1 mm long. Integument (Fig. 11), head, prothorax, elytra and legs as in *A. histrio* except: Yellowish scales cover pronotum except a large dark squamose basal macula with two incisions on its antero-lateral margin. Tarsi covered by elongate (l/w = 3–5) scales, antennae with long (l/w = 5–8) suberect seta-like scales. At the end of the antennal scapus there is an accumulation of seta-like scales.

Head: Eyes, frons and rostrum base as in *A. histrio*. Rostrum moderately robust, longer than pronotum (Rl/Pl = 1.25), in dorsal view in the basal part before antennal insertion very slightly narrowed, after insertion first slightly narrowed then broadened to apex, in lateral view evenly curved; in the apical part very densely irregularly punctured, in basal part sculpture invisible due to dense recumbent scales. Antennae slender, inserted in apical half of rostrum in 0.66 of rostrum length. Antennal club elliptically elongated, 2.5 times as long as wide (Fig. 5).

Prothorax: Slightly wider than long (Pl/Pw = 0.94), with subparallel sides, of the same shape as in *A. histrio.*

Elytra: Elongate (El/Ew = 1.71), of the same shape as in *A. histrio.*

Legs: Tarsomere 3 moderately bilobed, slightly wider than long, clearly broader than tarsomere 2, onychium of about the same length as tarsomeres 2 and 3 combined, claws slender and long, about twice as long as the width of onychium at apex, gently toothed.

DISTRIBUTION: Uzbekistan.

BIONOMICS: Unknown.

ETYMOLOGY: I dedicate this species to its collector, an eminent weevil specialist and my friend for many years, Roman Borovec, who first observed that this species might be new for science.

Acentrus zarathustra sp.n.

Holotype ♂ (KO): "IRAN mer. FARS Kuhha-ye-Zagros Mts. Michael Košťál leg.", "Khaneh Zenyan pr. Shiraz 2000 m N 29°36.7' E 52°16.3' 3.v.2008". **Paratypes**: 3 ♂♂, 5 ♀♀ (KO), 1 ♀ (BC): same data; 1 ♀ (KO): "IRAN mer. FARS Kuhha-ye-Zagros Mts. Michael Košťál leg.", "Shul pr. Shiraz 2100 m N 29°58.6' E 52°10.7' 7.v.2008".

DIAGNOSIS: This species is characterized by two separate dark basal maculae on the pronotal base, very weakly bilobed tarsomeres 3 only slightly wider than tarsomere 2, antennal club twice as long as wide, funicular segment 2 only slightly longer than wide, and pronotum with rounded to subparallel sides, clearly wider than long.

DESCRIPTION: Holotype: completely preserved specimen, 4.1 mm long. Integument (Fig. 12), head, prothorax, elytra and legs as in *A. histrio* except: blackish, tarsi except reddish brown onychium and antennae except darkened club and reddish brown scapus blackish brown. Scales on pronotum snow white, dark squamose maculae on pronotum base very striking. Tarsi and antennae covered with long (l/w = 6–10) suberect seta-like scales, tarsi densely and antennal funicle sparsely covered with oval (l/w = 4–6) scales. Patches of scales at the end of scapus dense, conspicuous.

Head: Eyes, frons and rostrum base similar to *A. histrio*. Rostrum moderately robust, longer than pronotum (Rl/Pl = 1.09), in dorsal view parallel-sided, in lateral view moderately evenly curved; in the apical part very densely irregularly punctured, in basal part sculpture invisible due to

dense recumbent scales. Interspaces between punctures narrow, in visible parts not confluent into ribs. Antennae stouter, inserted in apical half of rostrum in 0.67 of rostrum length. Funicular segment 1 markedly thicker and longer than segment 2, twice as long as wide; segment 2 only slightly longer than wide. Antennal club spindle-shaped, twice as long as wide (Fig. 4).

Prothorax: Wider than long (Pl/Pw = 0.87), with subparallel to slightly rounded sides, broadest in the middle, broadly constricted before anterior margin, in lateral view convex at disc.

Elytra: Elongate (El/Ew = 1.62), of similar shape as in *A. histrio.*

Legs: Tarsomere 3 narrow, shallowly bilobed, as long as wide, very slightly wider than tarsomere 2, onychium slightly longer than tarsomeres 2 and 3 combined (Fig. 2), claws stouter, of about the same length as the width of onychium at apex, toothed.

Penis (Fig. 6, 8): Distance of parameres on ring of tegmen on average larger than the width of one paramere at base (Fig. 8); ring of tegmen and parameres thin.

VARIABILITY: Body length: ♂♂ 4.1–4.7 mm, ♀♀ 4.2–4.6 mm, Rl/Pl: ♂♂ 1.06–1.14, ♀♀ 1.11–1.20, Pl/Pw: ♂♂ 0.84–0.88, ♀♀ 0.82–0.89, El/Ew: ♂♂ 1.62–1.73, ♀♀ 1.67–1.83. Prothorax with subparallel to clearly rounded sides. The type series of 11 specimens shows no significant variability in the colour or pattern of the vestiture.

DISTRIBUTION: Southern Iran (Fars).

BIONOMICS: In Khaneh Zenyan, I collected this species by sweeping flowering *Glaucium grandiflorum* BOISSIER & A. HUET.

ETYMOLOGY: The species is named after Zarathustra, founder of an ancient religion, who lived and worked in southern Iran, where this species was collected.

Key to the species of *Acentrus*

1 Antennal club oval, about twice as long as wide (Figs. 3–4). Dark spots on pronotal base clearly separated or at most touching each other in a narrow area near scutellum (Figs. 9–10, 12). Claws about as long as width of onychium at apex..... 2

– Antennal club elongate, about 2.5 times as long as wide (Fig. 5). Black spots on pronotum base fused, forming one large dark spot extending one-half of the pronotal length (Fig. 11). Claws about twice as long as the width of onychium at apex ..... *boroveci* sp.n.

2 Tarsomere 3 wide, markedly bilobed and distinctly wider than tarsomere 2, onychium of about the same length as tarsomeres 2 and 3 combined (Fig. 1). Pronotum with parallel sides, slightly wider than long (Pl/Pw = 0.85–0.99). Rostrum longer than pronotum (Rl/Pl = ♂♂ 1.13–1.26, ♀♀ 1.20–1.38)..... *histrio*

– Tarsomere 3 narrow, shallowly bilobed and only very slightly wider than tarsomere 2, onychium longer than tarsomeres 2 and 3 combined (Fig. 2). Pronotum with rounded to subparallel sides, wider than long (Pl/Pw = 0.82–0.89). Rostrum shorter than pronotum (Rl/Pl = ♂♂ 1.06–1.14, ♀♀ 1.11–1.20) ..... *zarathustra* sp.n.

Acknowledgements

I wish to express my thanks to M. Balke and K. Neven (ZSMC), L. Behne (SDEI), J. Bergsten, N. Jonsson and B. Viklund (NHRS), R. Borovec (Sloupno), J. Krátký (Hradec Králové), H. Perrin (MNHN), C. Pesarini and F. Rigato (MSNM), M. Wanat (UWCP), H. Winkelmann (Berlin) for providing material. Special thanks to M.V.L. Barclay (London) for linguistic revision of my manuscript and nomenclatural comments, R. Caldara (Milano), S.W. Lingafelter (Washington) and A. Solodovnikov (Copenhagen) for worthy nomenclatural comments and I. Mehregan (Tehran) for identification of *Glaucium* species.

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Dr. Michael KOŠŤÁL
Kotlanova 1A, CZ – 628 00 Brno, Czech Republic (michael.kostal@iol.cz)