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THREE NEW SPECIES OF THE GENUS *BYRRHUS* LINNAEUS, 1767 SUBGENUS *ROTUNDOBYRRHUS* FABBRI, 2000

(Insecta Coleoptera Byrrhidae)

Abstract

Three new species of pill beetles from China are described: *Byrrhus* (*Rotundobyrrhus*) *artoprocerus* Fabbri & Zhou, sp. nov. from Hubei Province, *Byrrhus* (*Rotundobyrrhus*) *crispisulcatus* Fabbri, sp. nov. from Shaanxi and Chongqing Provinces and *Byrrhus* (*Rotundobyrrhus*) *breviuncinatus* Fabbri, sp. nov. from Gansu Province. Male and female genitalia of the new species are figured and the principal differences from their closest relatives are reported. A distribution map of the 6 known species of subg. *Rotundobyrrhus* Fabbri is shown.

Key words: Coleoptera Byrrhidae, *Byrrhus*, *Rotundobyrrhus*, new species, China.

Riassunto

[Tre nuove specie del genere *Byrrhus* Linnaeus, 1767 sottogenere *Rotundobyrrhus* Fabbri, 2000]

Nel presente contributo sono descritte tre nuove specie cinesi di coleotteri birridi: *Byrrhus* (*Rotundobyrrhus*) *artoprocerus* Fabbri & Zhou, sp. nov. della provincia di Hubei, *Byrrhus* (*Rotundobyrrhus*) *crispisulcans* Fabbri, sp. nov. delle province del Shaanxi e Chongqing e *Byrrhus* (*Rotundobyrrhus*) *breviuncinatus* Fabbri, sp. nov. della provincia del Gansu. Per ogni specie sono raffigurati gli organi genitali ed è fornita una comparazione con le specie affini. Al termine è presentata una cartina di distribuzione delle sei specie oggi conosciute del subg. *Rotundobyrrhus* Fabbri.

In the following pages three new species of Byrrhidae from China are described, belonging to the genus *Byrrhus* Linnaeus, 1767, subgenus *Rotundobyrrhus* Fabbri, 2000.

Rotundobyrrhus is endemic to China and comprises till now three species: *Byrrhus* (*Rotundobyrrhus*) *gansuensis* Fabbri, 2000 from Gansu, *B. (R.) hubeianus* Fabbri, 2000 from Hubei and *B. (R.) qinlingicus* Fabbri, 2001 from Shaanxi.

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The discrimination of the different species of subgenus *Rotundobyrrhus* is possible mainly by using male and female genitalia characters, so it's superfluous to present a dichotomic key of species.

Authors' comments on the studied material are enclosed in square brackets. Separate labels are indicated by slashes (/). The body length is given as usual excluding head. The acronym CRF means the R. Fabbri collection.

***Byrrhus (Rotundobyrrhus) artoprocerus* Fabbri & Zhou, sp. nov.**

Type locality. China, Hubei, Shengnongjia, Guanmengshan.

Type material. Holotypus ♀, labelled "China, Hubei, Shengnongjia, Guanmengshan, 1400 m, 30.VII-11.VIII.1998, leg. Xiaodong Yu [another label on the same pin shows the equivalent data in Chinese]" / "Holotypus, *Byrrhus (Rotundobyrrhus) artoprocerus* sp. nov., det. R. Fabbri & H.-z. Zhou 2002 [printed red label]" (coll. Institute of Zoology, CAS, Beijing). Paratypi: 1 ♀, "China, Hubei, Shengnongjia, Jiuhuping, 1870 m, 24.VII-8.VIII.1998, leg. Xiaodong Yu [another label bears the same data in Chinese]" / "Paratypus, *Byrrhus (Rotundobyrrhus) artoprocerus* sp. nov., det. R. Fabbri & H.-z. Zhou 2002 [printed red label]" (CRF).

Etymology. Name composed by the combination of two latin adjectives "artus", narrow, and "procerus", long, to emphasize the shape of female gonocoxites.

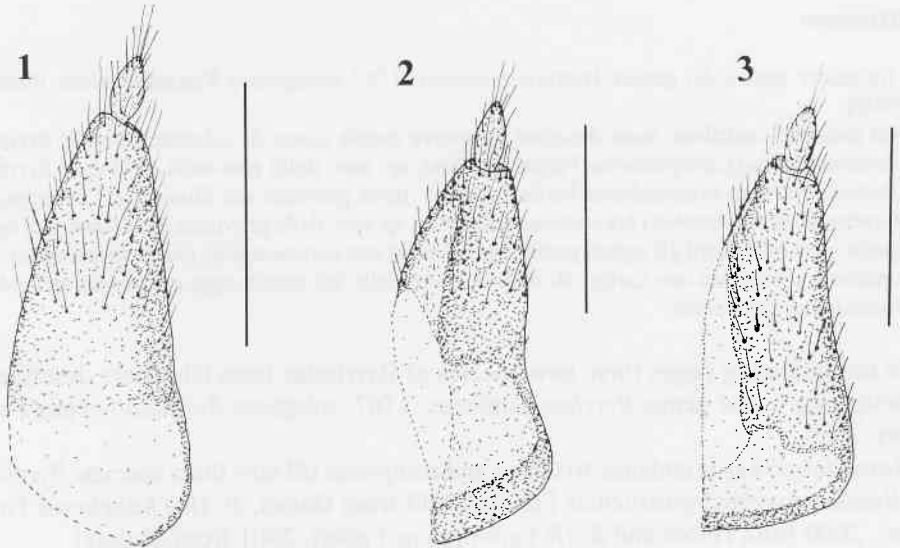


Fig. 1-3 – Left gonocoxite and stylus in dorsal view (scale 0.3 mm): 1. *Byrrhus (Rotundobyrrhus) artoprocerus* Fabbri & Zhou, sp. nov., holotype; 2. *Byrrhus (Rotundobyrrhus) crispisulcans* Fabbri, sp. nov., paratype; 3. *Byrrhus (Rotundobyrrhus) breviuncinatus* Fabbri, sp. nov., paratype.

Description. Size: holotype length 6.7 mm, maximum width at half-length of body 4.5 mm; paratype: length 6.6 mm and width 4.3 mm.

Apterous. Body hemispheric with maximum height at the middle; integuments black, legs and antennae dark-brown. Pronotum 1.97 times as broad as long. Punctures of pronotum very small, spaced about 5 times their diameter and moderately umbilicate; microsculpture strong. Elytra coaptate, with striae deeply engraved, emarginate, sinuate and broadly interrupted; strial elytral intervals flattened and finely punctate, with punctures spaced about 4 times their width; other coarse punctures bigger and umbilicate; elytral transverse microsculpture very strong. Upper part of the body clothed with dense, short, decumbent and brown pubescence, on pronotum and odd elytral strial intervals with bands of longer prominent pubescence, light-brown, chestnut and black; at the middle of elytra a large and evident W-shaped pattern formed by golden hairs. Short, strong, slightly clavate and erect bristles, brown and hazel, scattered on pronotum and elytra, more dense on lateral margins. Prosternum with broad punctures, less spaced than their diameter. Prosternal process about as wide as long and flattened.

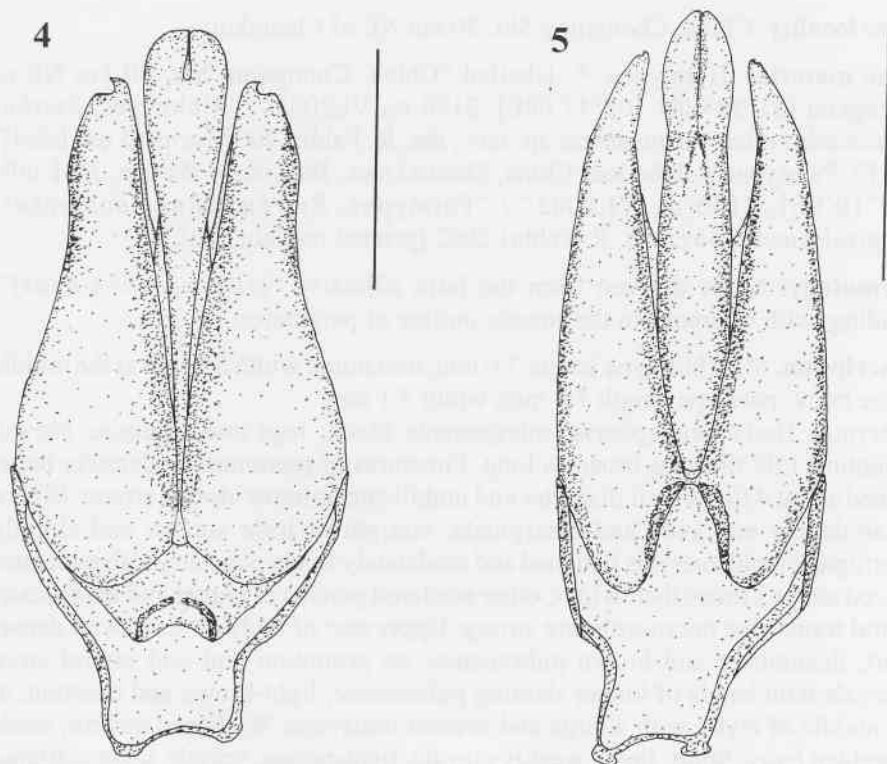


Fig. 4-5 – Aedeagus in frontal view (scale 1.0 mm): 4. *Byrrhus (Rotundobyrrhus) crispisulcans* Fabbri, sp. nov., holotype; 5. *Byrrhus (Rotundobyrrhus) breviuncinatus* Fabbri, sp. nov., holotype.

Epipleurae as broad as metaepisternites. Metasternum flat, emarginate in front, with a transverse depression at one third of its length, and strongly punctate. Abdominal sternites with weakly granulated punctures and very strong transverse microsculpture, moderately shining, with coarse, short, flattened and broad setae; in the last abdominal sternite the setae are much longer and less flattened, becoming almost filiform towards the posterior margin. Gonocoxites and styli in dorsal view as in fig. 1. Gonocoxites very slight, without lateral indentation at the inner margin and provided with long hairs before the middle. Styli big, 2.3 times as long as broad, fusiform, with long hairs.

Discussion. *B. (R.) artoprocerus* n. sp. is the smallest species of the subgenus. It differs from *B. (R.) hubeianus*, the geographically nearest species (Fig. 6), for smaller size, upper part of the body more adorned, longer and more coloured pubescence, narrower and haired gonocoxites and bigger styli.

Byrrhus (Rotundobyrrhus) crispisulcans Fabbri, sp. nov.

Type locality. China, Chongqing Shi, 30 km NE of Chengkou.

Type material. Holotypus ♂, labelled "China, Chongqing Shi, 30 km NE of Chengkou [31°58'00N 108°47'60E], 2150 m, VI.2002" / "Holotypus, *Byrrhus (Rotundobyrrhus) crispisulcans* sp. nov., det. R. Fabbri 2002 [printed red label]" (CRF). Paratypus ♀, labelled "China, Shaanxi mer., Ba Xian [= Baxian, 32°1'60N 109°10'0E], 2150 m, VI.2002" / "Paratypus, *Byrrhus (Rotundobyrrhus) crispisulcans* sp. nov., det. R. Fabbri 2002 [printed red label]" (CRF).

Etymology. Name derived from the latin adjective "*crispisulcans (-antis)*", winding, with reference to the sinuate outline of parameres.

Description. Size: holotype length 7.6 mm, maximum width 5.1 mm at the middle of the body; paratype length 7.4 mm, width 5.1 mm.

Apterous. Body hemispheric; integuments black; legs and antennae brown. Pronotum 1.98 times as broad as long. Punctures of pronotum moderately large, spaced about 4 times their diameter and umbilicate; microsculpture strong. Elytral striae deeply engraved and emarginate, straight or little sinuate and slightly interrupted; stria intervals flattened and moderately finely punctate, with punctures spaced about 3 times their width; other scattered punctures bigger and umbilicate; elytral transverse microsculpture strong. Upper part of body covered with dense, short, decumbent and brown pubescence, on pronotum and odd elytral stria intervals with bands of longer slanting pubescence, light-brown and chestnut, at the middle of elytra with a large and evident transverse W-shaped pattern, made by golden hairs. Short, thick, weakly clavate, light-brown, upright setae scattered on pronotum and elytra, denser at sides.

Prosternum with broad and deep punctures, their distance lower than their diameter.

Prosternal process about as wide as long and flattened. Metasternum flat, emarginate in front and provided with very large punctures. Abdominal sternites with rough granulated punctures, strong transverse microsculpture and short, flat and broad setae.

Aedeagus (Fig. 4) with asymmetrical basal piece; median lobe with broad, flat and rounded apex; parameres large with outer margin sinuate and hook-shaped at apex.

Gonocoxites in frontal view (Fig. 2) moderately slender, with a small depression on inner margin, well sclerified only for 2/3 of their width, beginning from the inner margin, provided with long hairs from half their length on. Styli large, 2.13 times as long as broad, fusiform, with long hairs.

Discussion. *B. (R.) crispisulcans* is similar to *B. (R.) gansuensis*, from which it differs in having slender parameres and different rotation of the asymmetrical basal piece of aedeagus. The geographically nearest species is *B. (R.) hubeianus*,



Fig. 6 – Distribution map of the species of *Byrrhus* Linnaeus, 1767 subg. *Rotundobyrrhus* Fabbri, 2000: a. *Byrrhus (R.) artoprocerus* Fabbri & Zhou, sp. nov.; b. *Byrrhus (R.) breviuncinatus* Fabbri, sp. nov.; c. *Byrrhus (R.) crispisulcans* Fabbri, sp. nov.; g. *Byrrhus (R.) gansuensis* Fabbri, 2000; h. *Byrrhus (R.) hubeianus* Fabbri, 2000; q. *Byrrhus (R.) qinlingicus* Fabbri, 2001.

from which it can be distinguished by broader parameres, apically slender median lobe of the aedeagus, and narrower and less sclerified gonocoxites.

Byrrhus (Rotundobyrrhus) breviuncinatus Fabbri, sp. nov.

Type locality. China, S Gansu, SSW Minxian, W Qilian Shan, 9 km W of Kunda.

Type material. Holotypus ♂, labelled "China, S Gansu, SSW Minxian, W Qilian Shan, 9 km W of Kunda, 34°09'N 103°46'E, 3300-3900 m, 8.VII.2002" / "Holotypus, *Byrrhus (Rotundobyrrhus) breviuncinatus* sp. nov., det. R. Fabbri 2003 [printed red label]" (CRF). Paratypes: 1 ♀, same data of holotype / "Paratypus, *Byrrhus (Rotundobyrrhus) breviuncinatus* sp. nov., det. R. Fabbri 2003 [printed red label]" (CRF); 1 ♂, "China, S Gansu, SSW Minxian, NE of Luoda, NE Jiabu, alpine zone, 3500-3800 m, 15.VII.2002" / "Paratypus, *Byrrhus (Rotundobyrrhus) breviuncinatus* sp. nov., det. R. Fabbri 2003 [printed red label]" (CRF).

Etymology. The name of the new species derives from the combination of two latin adjectives, "*brevis*", short, and "*uncinatus*", hooked, with reference to the edge of parameres.

Description. Size: holotype length 7.4 mm, maximum width 4.6 mm at the middle of the body; paratypes length 7.7-8.1 mm, width 4.95-5.15 mm.

Apterous. Body hemispheric; integuments piceous; legs and antennae brown. Pronotum 1.92 times as broad as long. Punctures of pronotum large, spaced about twice their diameter and umbilicate; microsculpture strong. Elytral striae deeply engraved and emarginate, straight or little sinuate and barely interrupted; stria intervals flattened or slightly convex and punctate, with punctures spaced about twice their width; other sparse punctures bigger and umbilicate; elytral transverse microsculpture very strong. Upper part of the body clothed with scattered, short, decumbent and brown pubescence, on pronotum and odd elytral stria intervals with narrow bands of longer, prominent, brown and hazel pubescence; at the middle of elytra a faint transverse W-shaped pattern of golden hairs. Short, strong and erect brown bristles, scattered on pronotum and elytra, more copious at sides.

Prosternum with broad and very dense punctures, less spaced than their diameter. Prosternal process about as wide as long, flattened and rounded at apex. Metasternum flat, slightly emarginate in front, with very large and dense punctures. Abdominal sternites with rough, strongly granulated punctures, dense transverse microsculpture and short piliform setae.

Aedeagus (Fig. 5) with asymmetrical basal piece; median lobe flat, scarcely broadened and blunt at apex, bent over 2/3 of the length; slender parameres with pointed apex, weakly hooked and bent inwards.

Gonocoxites in dorsal view (Fig. 3) little large, with straight inner margin and long hairs on all their length, well sclerified for 3/4 of the width, beginning from the inner side. Styli big, 2.29 times as long as broad, fusiform, with extended hairs.

Discussion. *B. (R.) breviuncinatus* can be separated from the geographically nearest taxon, *B. (R.) gansuensis*, for the slender, bent and less hooked parameres and the narrower and curved median lobe of the aedeagus.

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