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On the genus *Rhinocyllus* Germar (Coleoptera: Curculionidae: Lixinae) with description of a new subgenus and a new species from Italy

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Abstract

The species belonging to the weevil genus *Rhinocyllus* are studied. A new species, *Rhinocyllus alpinus* **sp. nov.** living on the inflorescences of *Cirsium alsophilum* (Pollini) Soldano (Asteraceae), is described from the central Italian Alps. A new subgenus, *Rhinolarinus* **subgen. nov.**, is created for this new species. The following new synonymy is proposed: *Curculio inquilinus* Gyllenhal, 1827 **syn. nov.** of *Rhinocyllus conicus* (Froelich, 1792). Lectotypes for *Curculio inquilinus* Gyllenhal, 1827, *Rhinocyllus olivieri* Gyllenhal, 1835 and *Rhinocyllus oblongus* Capiomont, 1873 are designated. Due to lack of type specimens and information subsequently to its description, *Rhinocyllus turkestanicus* Desbrochers des Loges, 1900 is considered as species incertae sedis. Keys to the subgenera and to the species of *Rhinocyllus* s. str. are provided and taxonomical differences are illustrated.

Key words: *Rhinocyllus*, *Rhinolarinus*, new subgenus, new species, *Cirsium*, Italy

Introduction

Several years ago the second author of the present paper (LD) collected unusual specimens of a weevil apparently belonging at a preliminary analysis to the genus *Larinus* Dejean, 1821 (Lixinae, Lixini) at San Simone, a sky resort of the high Val Brembana (Lombardy, northern Italy). He asked Carlo Pesarini (at that time curator at the Museo Civico di Storia Naturale di Milano) for a help in its identification and the eminent expert in Curculionidae concluded that they were *Larinus* (*Larinomesius*) *australis* Capiomont 1874. However, when this latter species was recently considered as synonymous with *L. obtusus* Gyllenhal, 1835 (Gültekin 2013b, Alonso-Zarazaga *et al.* 2017), it became clear that the alpine specimens had nothing at all to do with *L. obtusus* and therefore the second and the third authors decided to consult the first author (LG) as well known expert of Lixini especially belonging to *Larinus*.

At the end of a detailed study of many specimens, we concluded that the alpine species is new to science and actually belongs to a new subgenus of the genus *Rhinocyllus*, showing clear intermediate characters between this genus and *Larinus*. The aim of this paper was to examine all the species belonging to *Rhinocyllus*, and to describe a new subgenus and a new species.

Material and methods

The studied type specimens are deposited in the Swedish Museum of Natural History, Stockholm (NHRS) and the Muséum National d'Histoire Naturelle, Paris (MNHN). Lectotype designations were made for taxonomic purposes following Article 74 of the International Code of Zoological Nomenclature (International Commission on Zoological Nomenclature, 1999). Original diagnoses and type localities for each species were copied exactly from the original descriptions made by Gyllenhal (1827, 1835), Capiomont (1873) and Desbrochers des Loges (1900). Morphological terminology in this paper follows that in Morimoto (1962), Thompson (1992), Oberprieler *et al.* (2014), Lyal (2016), and Arzanov & Grebennikov (2017).

Measurements were taken using an ocular micrometer with a stereomicroscope Leica MZ7₅; body length was measured from anterior margin of eye to posterior margin of elytra; rostrum length from apex of rostrum to anterior margin of eye; prothorax length from the latter apical margin to posterior margin of scutellar corner. Comparative measurements were taken at the widest part of related organs.

The dry adult sample was placed in lukewarm clean water overnight, the genitalia then were dissected and left overnight in 10% KOH, cleaned with distilled water and 70% ethanol. Terminalia segments and genitalia were glued on a paper card under the pinned specimen from which they were dissected.

Photographs of morphological characters were taken with a Canon EOS 70D DSLR digital camera attached to a Leica Z16APO macroscope provided with a ring LED light using EOS Utility software. The digital images were then imported into Adobe Photoshop CS 6.0 to stack for labelling and plate composition.

Acronyms

ABBM Atatürk University Biodiversity Science Museum, Erzurum, Turkey

APV coll. Alessandro Paladini, Vicchio, Italy

ECM coll. Enrico Castioni, Milano, Italy

ECR coll. Enzo colonnelli, Roma, Italy

LDC coll. Luciano Diotti, Cinisello Balsamo, Italy

MNHN Muséum National d'Histoire Naturelle, Paris, France

MSNM Museo Civico di Storia Naturale, Milano, Italy

MTM coll. Michele Tedeschi, Milano, Italy

NHRS Naturhistoriska Riksmuseet, Stockholm, Sweden

RCM coll. Roberto Caldara, Milano, Italy

SMM coll. Sergio Monzini, Milano, Italy

Taxonomy

Rhinocyllus Germar, 1817: 341

Type species *Curculio thaumaturgus* Rossi, 1794 (= *Curculio conicus* Froelich, 1792)

Original diagnosis. “*Rhinocyllus nob. Curc. thaumaturgus* Ross. (*conicus* Froel.)”

Redescription. Body length 3.7–6.9 mm. Body oblong, ovate to subrectangular (Figs 1-2); head capsule spherical, interocular area slightly narrower than width of rostrum at base; eyes subtriangular, distinctly narrowed toward lower part, with ventral margin slightly distanced from (Fig. 3 E) or reaching scrobe (Figs 3 A, C). Rostrum rectangular, thick, wider than profemur, shorter than prothorax, weakly constricted after immediate antennal insertion, dorso-lateral margins thickly raised (Figs 3 B, D) or almost flat (Fig. 3 F), in lateral view distinctly curved to almost straight (Figs 3 A, C, E), superiorly to scrobe deeply canaliculated (Figs 3 A, C) or without canaliculation (Fig. 3 E), pregena rather thick. Epifrons flattened to widely concave, central carina on epifrons thin linear in shape or thick raised medially; frons weakly raised, epistome weakly emarginate medially. In ventral view head with visible gular suture, scrobe contiguous superficially at ventral base of rostrum, occipital suture present, postmentum weakly convex apicad, two deep hypostomal punctures located at anterior apex of occipital suture; prementum almost flat, labial palp rather reduced, single segment visible and bearing a seta; ligula rectangular; maxillary palp with three segments, mandible stout. Scrobe rather deep and wide basally, not reaching apex of rostrum, scape warped medially; funicle 7-segmented, antennal club fusiform. Prothorax subquadrate (Figs 2 A-B) to subtrapezoidal (Figs 2 C-D), apical collar reduced to distinct, ocular lobes more or less developed; prosternum without rostral canal, anterior margin roundly emarginate, coxal cavities contiguous, interocular process and prosternellum interlaid between procoxae; hypemeron with two tubercle. Mesoventrite short, intercoxal process trapezoidal with truncated apex, metaventrite somewhat swollen, metepimeron partly concealed by elytra. Mesotergite trapezoidal, sloping down posteriorly, scutellum raised with triangular sharp apex. Longitudinal flange, hemiductus, crux and stalk of metendosternite well sclerotized, anterior tendon connecting points indistinct, sheath transparent. Elytra oblong ovate to subparallel-sided at basal two third. Wings fully developed, basal lobe of vein C thinner than Sc, both connected after immediate base, then slightly separated but rather transparent in this part; R strongly developed and connected to C and Sc in basal quarter of wing, nearly attaining level of second radial sclerite; radial sclerites triangular, rs1 smaller than rs2; radial window lacking,

moderately sclerotized; R3 visible and not reaching apical margin; M1 distinct, connected with mcu basally and nearly reaching ventral margin of wing; Mr indistinct, Cu well developed, 1A1 missing, 1A2 and 2A individually, not connected with CU basally, starting independently and reached to the ventral margin, 3A strong, lacking cross-vein to 2A, 4A nearly meeting 3A. Legs stout, femora edentate, unci of moderate size, claws connate basally, slightly unequal in length. Abdominal ventrite 1 slightly longer than ventrite 2, posterior margin medially emarginate, ventrite 1 longitudinally depressed medially in male, weakly swollen in female, ventrite 3 and 4 subequal in length, ventrite 5 trapezoidal. Penis tubular (Figs 4 A-C), curved in lateral view (Figs 4E-F), spiculum gastrale stick-shaped, sternite 8 contiguous. Tergite 8 of female trapezoidal in dorsal view (Figs 5A, C, E), latero-basal wall developed and roofed in posterior view (Figs 5 B, D, F). Sternite 8 of female somewhat Y-shaped (Figs 5 G, H, I), styli on gonocoxites projected forward (Figs 6 A-F), spermatheca C-shaped (Figs 6 G-I).

Differential diagnosis. The genus *Rhinocyllus* is similar to *Bangasternus* Gozis, 1882 in the general body shape; however, it is impossible to confuse this genus with *Bangasternus*, the latter having a prosternal canal with raised edge to receive rostrum when the head is rotated down. It is clearly different from *Larinus* by having canaliculation on the lateral surface of the rostrum or at least of the head around the upper border of the eyes, short and warped scape, triangular eyes and well developed dorso-lateral wall of tergite 8 of female roofed posteriorly. Many species of *Larinus* s. str. have two deep foveae on the epifrons at the basal half of the rostrum; there is a wide concave depression on most species of *Rhinocyllus* and *Bangasternus*. Lixini genera with a short rostrum have two deep hypostomal punctures on the ventral surface of the rostrum. This character occurs in *Bangasternus*, *Rhinocyllus* and *Nefis* Gültekin, 2013.

The genus *Rhinocyllus* is here divided in two subgenera: *Rhinocyllus* s. str. and *Rhinolarinus* **subgen. nov.** which can be separated as follows:

Key to the subgenera of *Rhinocyllus* Germar

1. Rostrum distinctly curved in lateral view (Figs 3 A, C); lateral surface of rostrum and head around upper margin of eyes deeply canaliculated (Figs 3 A, C); dorso-lateral margins of rostrum thickly raised (Figs 3 B, D); epifrons widely concave; central carina on epifrons thin, linear in shape; frontal foveola distinct; interocular area narrower than rostrum; ventral margin of eyes reaching scrobe (Figs 3 A, C); ocular lobes strongly developed (Figs 3 C, E); prothorax with reduced apical collar..... *Rhinocyllus* s.str.
- Rostrum slightly curved in lateral view (Fig. 3 E); lateral surface of rostrum without canaliculation, only head with sulcus around upper margin of eyes (Fig. 3 E), dorso-lateral margins of rostrum gently angulated (Fig. 3 F); epifrons flattened; central carina on epifrons thick and raised medially; frontal foveola indistinct; interocular area as wide as rostrum; ventral margin of eyes not reaching scrobe (Fig. 3 E); ocular lobes slightly developed; prothorax with developed apical collar *Rhinolarinus* **subgen. nov.**

Rhinocyllus s. str.

Type species *Curculio thaumaturgus* Rossi, 1794 (= *Curculio conicus* Froelich, 1792)

Remarks: Currently this subgenus is composed of four valid species (Gültekin & Fremuth 2013; Alonso-Zarazaga *et al.* 2017): *R. conicus*, *R. inquilinus* Gyllenhal, 1827, *R. oblongus* Capiomont, 1873 and *R. turkestanicus* Desbrochers des Loges, 1900. We had the opportunity to study the following type specimens which allowed us to confirm or modify the current taxonomic status of some species.

Rhinocyllus olivieri Gyllenhal, 1835 (Figs 1 D-F)

Rhinocyllus olivieri Gyllenhal, 1835: 148.

Original diagnosis: “*Oblongo-ovatus, niger, obscurus, confertissime alutaceus, tomento pallescente variegatus, antennis pedibusque nigris, tarsis piceis, rostro angustiore, parum impresso, vix carinato.*”

Type locality: “*Habitat in Austria, Lusitania. Mus. Schh.*”

Type material: In the Schoenherr collection at NHRS, under the name “*Olivieri* Schh., 3-4, Ghl.” there is a female matching the original description and bearing the handwritten label “Rh. Olivieri, ex Austr. Meg.”, which is here designated as lectotype: “Lectotype, ♀, *Rhinocyllus olivieri* Gyllenhal, 1835, L. Gültekin des. 2019”, printed, “*Rhinocyllus conicus* Frölich, 1792, Gültekin det. 2019”, printed. It is pinned through the right elytron, the right foretarsus is missing. A male matching the description and bearing the handwritten label “C. undulatus, ♂♀, Schneid. Lusitania”, is here labelled as paralectotype: “Paralectotypus, ♂, *Rhinocyllus olivieri* Gyllenhal, 1835, L. Gültekin des. 2019”, printed, “*Rhinocyllus conicus* Frölich, 1792, Gültekin det. 2019”, printed. It is pinned through the right elytron, and the elytra are weakly divaricated.

Remarks: Since many years this species was already considered as synonym of *Rhinocyllus conicus* (Frölich, 1792) as indicated by Csiki (1934) and subsequently followed by Gültekin & Fremuth (2013) and Alonso-Zarazaga *et al.* (2017). The examination of the lectotype confirms that the name was correctly placed under *R. conicus*.



Figure 1. Lectotype of two *Rhinocyllus* Germar species. A-C, *Curculio inquilinus* Gyllenhal, 1827; D-E, *Rhinocyllus olivieri* Gyllenhal, 1835.

***Rhinocyllus inquilinus* (Gyllenhal, 1827) (Figs 1 A-C)**

Curculio inquilinus Gyllenhal, 1827: 608.

Original diagnosis: “*Oblongus, niger, villositate flavescens cinerea, in elytris fasciatim condensata, tectus; antennarum scapo brevissimo, rostro brevi, arcuato, perspicue carinato.*”

Type locality: “*Habitat in Finlandia, rarissime. Dom. Prof. Sahlberg. Mus. Dom. Schönherr.*”

Type material: In the Schoenherr collection at NHRS, under the name “*inquilin* Schh., 5-6, Bhn.” there is a male matching the original description and bearing the handwritten label “Finlandia, Sahlberg”, which is here designated as lectotype: “Lectotype, ♂, *Curculio inquilinus* Gyllenhal, 1827, L. Gültekin des. 2019”, printed, “*Rhinocyllus conicus* Frölich, 1792, Gültekin det. 2019”, printed. It is pinned through the right elytron, the left foretarsus is missing.

Remarks: The lectotype is small in body size (length 4.10 mm), but it is undoubtedly conspecific with *Rhinocyllus conicus* (Frölich, 1792) and thus the following new synonym is here proposed: *Rhinocyllus inquilinus* (Gyllenhal, 1827) **syn. nov.** of *Rhinocyllus conicus* (Frölich, 1792).

***Rhinocyllus oblongus* Capiomont, 1873**

Rhinocyllus oblongus Capiomont, 1873: 290

Original diagnosis: “*Oblongus, piceus, subtiliter confertissime alutaceus, fulvo subaurato, pubescens, tomento pallido variegatus, pulvere fulvo-aurantiaco indutus; antennis piceis vel rufo-piceis; rostro supra planato, vix carinato, lateribus subparallelis; prothorace transverso, subconico, supra vix convexo, antice constricto, basi bisinuato, pone oculos lobato, sat crebre profundeque punctato, lateribus, linea intra marginali arcuata medio interrupta, attaque media saepius abbreviata, albido-tomentosis. Elytris oblongis, thoracis basi latioribus, antice profunde, medio anguste striato punctatis; interstitiis subtiliter alutaceis, piceis, fulvo subaurato pilosis, tomento albido inaequaliter variegatis; pedibus piceis, tarsis piceo-rufis.*”

Type locality: “*Graecia, Turcia, Oriens.*”

Type material: In the Capiomont collection at MNHN, under the name “*oblongus* Cap.” there is a female matching the original description and bearing the handwritten label “oblongus”, which is here designated as lectotype: “Lectotypus, ♀, *Rhinocyllus oblongus* Cap., L. Gültekin des. 2010”, partly printed. It is pinned through the right elytron, the elytra are weakly divaricated, the anterior legs are missing after the trochanters. Another female matching the description and bearing the handwritten labels “a”, “Cap.”, is here labelled as paralectotype: “Paralectotypus, ♀, *Rhinocyllus oblongus* Cap., L. Gültekin des. 2010”, partly printed. It is pinned through the right elytron and the elytra are weakly divaricated. A male also matching the description and bearing the handwritten label, “Cap.”, is here labelled as paralectotype: “Paralectotypus, ♂, *Rhinocyllus oblongus* Cap., L. Gültekin des. 2010”, partly printed. It is pinned through the right elytron and the elytra are broadly divaricated.

Remarks: We can confirm that this is a valid species as commonly understood (Gültekin & Fremuth 2013; Alonso-Zarazaga *et al.* 2017) and closely related with *Rhinocyllus conicus* (Frölich, 1792). Comparative morphological diagnosis and illustrations for both species are presented below.

***Rhinocyllus turkestanicus* Desbrochers des Loges, 1900**

Rhinocyllus turkestanicus Desbrochers des Loges, 1900: 4

Original diagnosis: “*Lg. 5; Lt. 2,2 m. Oblongus, breviusculus, niger, griseo-pubescens, albido-variegatus, antennis tarsisque obscure rufis. Rostrum latitudine longius, postice non constrictus. Antennae funiculi articulo 2° crassiore, exteris primis brevioribus, clava oblonga. Prothorax parum transversus, vix conicus, angulis posticis subacutis, laxe foveolatus, a latere late albido-squamosus. Elytra a latere subparallela, basi separatim elevato-rotundata, striis dorsalibus anguste punctato-striatis, interstitiis planis, fasciis obliquis, albido-squamosis, ornata. Pedes validi, non ciliati, tibiis latioribus, anticis apice valde mucronatis, tarsis dilatatis.*”

Type locality: “*Turkestan russe*”

Type material: No syntypes were found in the Desbrochers des Loges collection at MNHN (H. Perrin, pers. comm.).

Remarks: Desbrochers des Loges (1900) reported that his taxon is similar to *R. orientalis* (currently *Bangasternus*) and to *R. latirostris* (currently synonym of *R. conicus*). According to the author, *R. turkestanicus* differs from both species by the lack of raised vestiture on the pronotum. Moreover, it differs from *R. orientalis* by the longer pronotum and the longer and differently shaped rostrum. Unfortunately, due to the lack of adequate information in the original description, it is impossible to understand to which genus among *Larinus*, *Bangasternus* and *Rhinocyllus* this species actually belongs and it is unclear which taxa were identified by the author as *orientalis* or *latirostris*. Subsequently, nobody published data about this species, including Ter-Minasian (1967) in her revision of the Russian Lixini. Therefore, we temporarily place *Rhinocyllus turkestanicus* Desbrochers des Loges, 1900 in *Rhinocyllus* incertae sedis.

According to our study, the species considered as distinct and belonging to the subgenus *Rhinocyllus* s. str. are presently only two and can be separated as follows:

Key to the species of *Rhinocyllus* s. str.

1. Body subovate (Fig. 2 A); interocular pit small and superficial; pronotum weakly convex; apex of ventral plate of penis with blunt projected tip; posterior margin of tergite 8 of female almost straight with weak emargination medially; stylus of gonocoxite subcylindrical with truncated apex; collum of spermatheca indistinct (Fig. 6 G) *conicus* (Froelich)
- Body oblong, subrectangular (Fig 2 B); interocular pit large and deep; pronotum flattened; apex of ventral plate of penis with sharp projected tip; posterior margin of tergite 8 of female roundly and medially prolonged; stylus of gonocoxite subcylindrical with somewhat swollen apex; collum of spermatheca distinct (Fig. 6 H)..... *oblongus* Capiomont

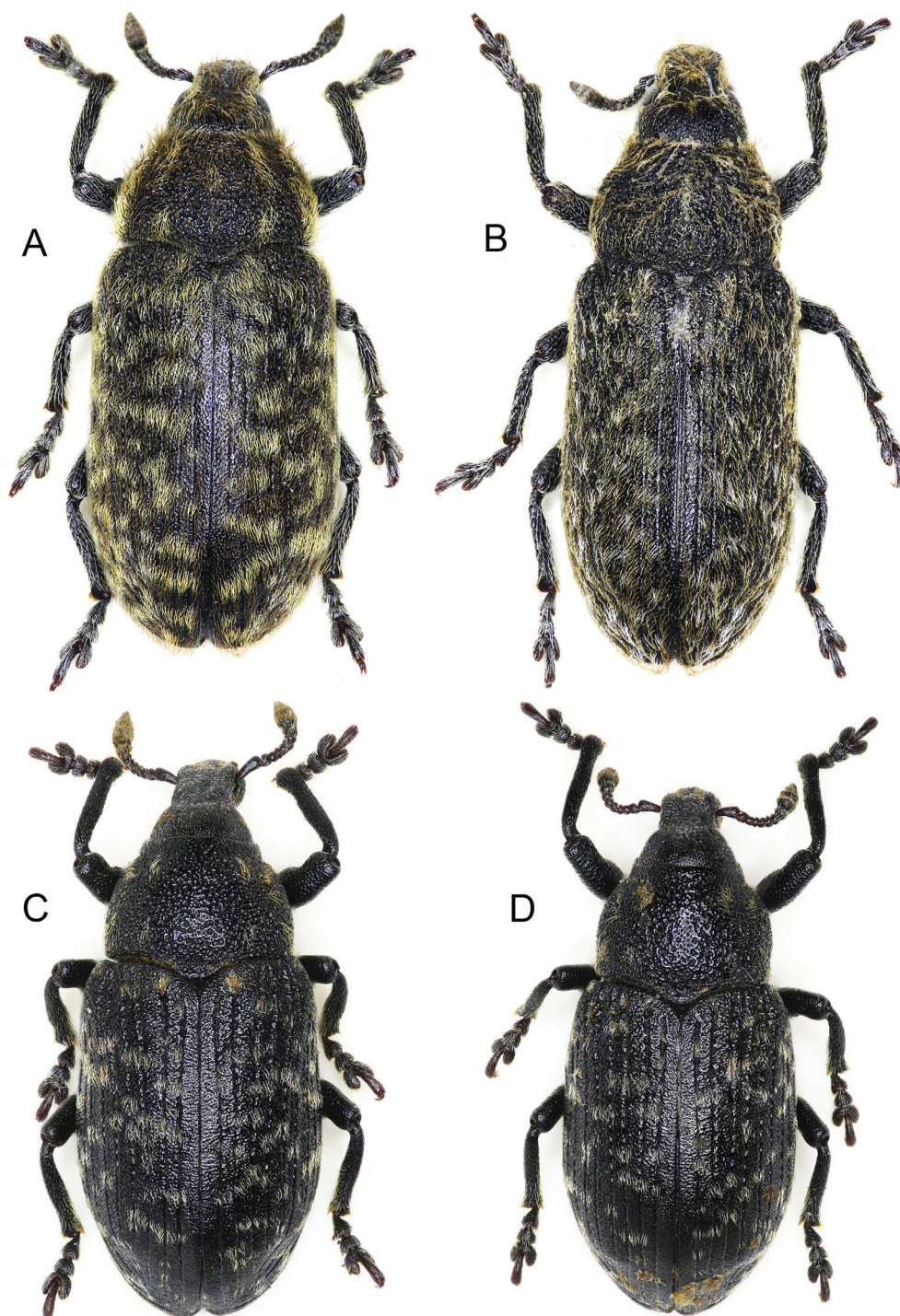


Figure 2. *Rhinocyllus* Germar species. **A**, *Rhinocyllus conicus* (Froelich), female; **B**, *Rhinocyllus oblongus* Capiomont, female; **C-D**, *Rhinocyllus alpinus* sp. nov. (C, male; D, female)

***Rhinolarinus* subgen. nov.**

<http://zoobank.org/urn:lsid:zoobank.org:act:27B7BA33-8C5B-48EC-AE8E-D98B107B3BBF>

Type species *Rhinocyllus alpinus* sp. nov., by present designation.

Etymology. The name of the new subgenus “*Rhinolarinus*” originates by the combination of *Rhinocyllus* and *Larinus* and wants to emphasize its intermediate morphological position between both genera.

Diagnosis. The new subgenus differs from *Rhinocyllus* s. str. by the combination of characters listed in the key above reported. It is monobasic and composed of the following new species:

***Rhinocyllus alpinus* sp. nov. (Figs 2 C-D; 3 E-F; 4 C, F; 5 E, F, I; 6 E, F, I)**

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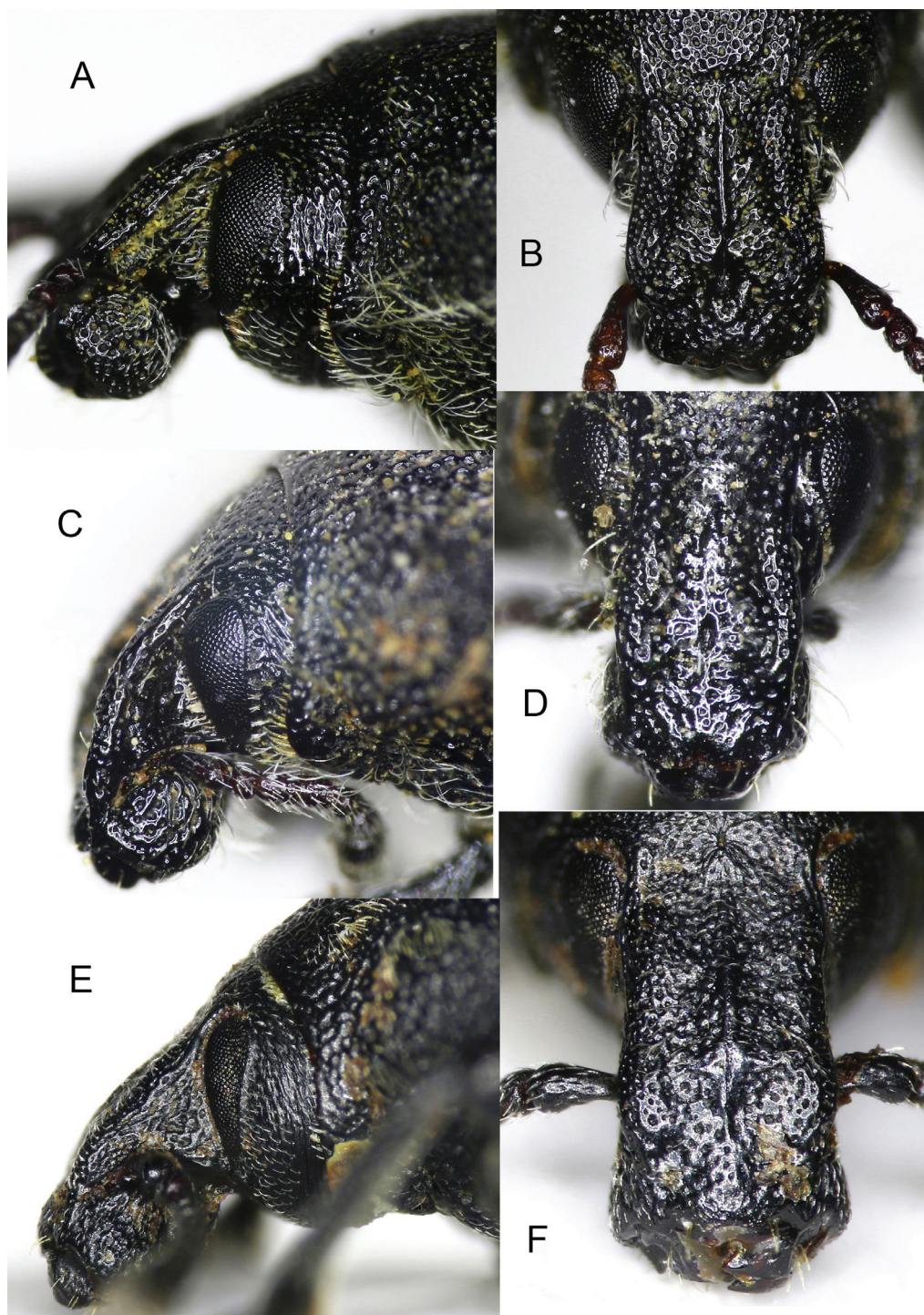


Figure 3. Rostrum of *Rhinocyllus* Germar species. **A-B**, *Rhinocyllus conicus*; **C-D**, *Rhinocyllus oblongus*; **E-F**, *Rhinocyllus alpinus* sp. nov.

Description

Measurements. Body length: 5.8–6.7 mm. Holotype: body length 6.4 mm; rostrum: length 1.2 mm, width 0.8 mm; prothorax: length 1.5 mm, width 2.3 mm; elytra: length 4.6 mm, width 2.9 mm.

Color and vestiture. Integument black, solely fifth tarsomere and tarsal claws dark brown. Body with very sparse hair-like grayish pubescence arranged in scattered patches on pronotum and elytra, with two distinct grey patches on anterior part of pronotum.

Structure. Body oblong ovate, ratio of length to maximum width across elytra less than 2.25 times (Fig. 2 C, D). Head spherical, vertex partly visible, forehead slightly convex, interocular area subequal in width to rostrum base, interocular fovea rather small, with thin sulcus at dorsal margin of eyes. Eyes narrow, subelliptical, but distinctly triangularly narrowed toward ventral side and not reaching scrobe, almost flat. Rostrum rectangular, subparallel-sided, widened after antennal insertion to apex in dorsal view, slightly curved in lateral view, $0.80\times$ as long as prothorax length, $1.35\times$ as wide as profemur width in widest part. Epifrons nearly flat with a longitudinal raised carina medially, frons concave. Dorso-lateral margins of rostrum very obtusely raised, slightly bulging externally toward end around antennal insertion. Lateral surface of rostrum nearly flat without canaliculation or sulcus. Surface of rostrum minutely and densely punctured. Ventral margin of scrobes almost invisible dorsally. Antenna inserted at about 0.4 from apex of rostrum. Scape rather short, $0.45\times$ as long as funicle, thin and curved in middle part, from this part to apex gradually widened, wider than first funicle segment. Funicle segment 1 $1.50\times$ as long as segment 2, segments 2–7 transverse and gradually widened distad, segment 7 being widest. Club fusiform, $1.50\times$ as long as wide, with sharp apex.

Prothorax subtrapezoidal, transverse, $1.50\times$ as wide as long, $0.80\times$ as wide as elytra, at base slightly bisinuate and slightly produced posteriorly at middle. Lateral margins of pronotum subparallel-sided at basal half, converging roundly and gradually from middle to apical constriction, more abruptly converging to collar sulcus, which is very thin and shallow; apical collar developed, anterior margin almost straight, very weakly emarginate dorso-medially, evenly curved ventrally, postocular lobes slightly developed, anterior margin of prosternum moderately emarginate. Pronotum convex, sloping down anteriorly at apical third, punctuation dense, punctures small, rounded. Scutellum concealed.

Elytra subparallel-sided in basal two third, very slightly emarginate at basal third, then gradually widened, widest in apical third, gradually and roundly narrowed toward apex, $1.50\times$ as long as wide in widest part; humeral callus small, weakly developed, located at base of intervals 7–9; preapical callus superficial, at end of intervals 4–6 small, a depression present lower behind. Interstriae flat, subequal in width and about $4\times$ as wide as striae on disc, interstria 3 slightly wider than others at basal third; striae formed by subrounded, medium sized, moderately deep, merged and/or separate punctures, punctures gradually becoming smaller posteriad.

Femora stout, swollen in middle part, profemora slightly larger than mid- and hind femora. Tibiae almost straight, constricted at apical third, emarginate at inner margin, unci of moderate size; anterior apical comb of setae very tiny on protibia, somewhat longer on mid- and hind tibiae. Tarsi wide, tarsomere 1 subtriangular and longer than tarsomere 2, tarsomere 2 trapezoidal, tarsomere 3 bilobed and $1.50\times$ as wide as tarsomere 2. Claw segment cylindrical, curved, gradually widened from base to apex, $0.65\times$ as long as tarsomeres 1–3 combined; claws of moderate size, connate at base, slightly divergent at apex and unequal in length.

Male genitalia. Penis stout, elongate, curved in lateral view (Fig. 4 F), pedon strongly sclerotized, tectum membranous, in dorsal view (Fig. 4 C) gradually narrowed toward apical $1/5$, in this part buckled backwards, then becoming more distinctly narrow and subparallel-sided toward base of ventral plate, and obtusely angled at apex.

Female terminalia segments and genitalia. Tergite 8 trapezoidal in dorsal view (Fig. 5 E), posterior margin prolonged forward medially, in posterior view lateral wall developed and becoming roof-shaped (Fig. 5 F); apodeme of sternite 8 (*spiculum ventrale*) subequal in length to lamella (*hemisternite* 8), internal angle separated, blades of lamella not jointed (Fig. 5 I), Gonocoxites with hemisternite suboval (Fig. 6 E), proximally to distally gradually narrowed; stylus subconical (Fig. 6 F), truncated with beveled edge with a series of erect setaceous hairs on dorsal surface. Ramus and nodulus of spermatheca swollen, collum indistinct, apex of cornu prolonged and thin (Fig. 6 I).

Type material. **Holotype**, ♂, [ITALY] “I - LOMBARDIA (BG) alta Valle Brembana SAN SIMONE 1660 m 29 - VI - 2018 L. DIOTTI” (MSNM). **Paratypes**: same data as holotype (50, LDC, RCM); “Val Brembana (BG) SAN SIMONE 15 - VI - 1985 L. Diotti” (4, LDC); “Val Brembana (BG) SAN SIMONE 8 - VI - 1998 L. Diotti” (4, LDC); “Valle Brembana (BG) SAN SIMONE 11 - VII - 2001 L. Diotti” (40, ABBM, APV, ECR, LDC, MTM, RCM); “Val Brembana (BG) SAN SIMONE 1 - IX - 2009 L. Diotti” (20, LDC); “Val Brembana (BG) SAN SIMONE 29 - VII - 2015 L. Diotti” (8, LDC); “Val Brembana (BG) SAN SIMONE - 15.VI.2002, S. Monzini” (6, SMM); idem except “1.IX.2009” (9, SMM); idem except “29 - VI - 2018” (6, SMM); “29/06/2018 SAN SIMONE (BG) LOMBARDIA Leg. CASTIONI” (21, ECM); “I (Lombardia) - Foppolo Rifugio Montebello m 2100 1 VII 2017 E. Colonnelli” (3, ECR); “Moggio (Lecco) CULMINE SAN PIETRO 27 - VI - 2002 L. Diotti” (1, LDC).

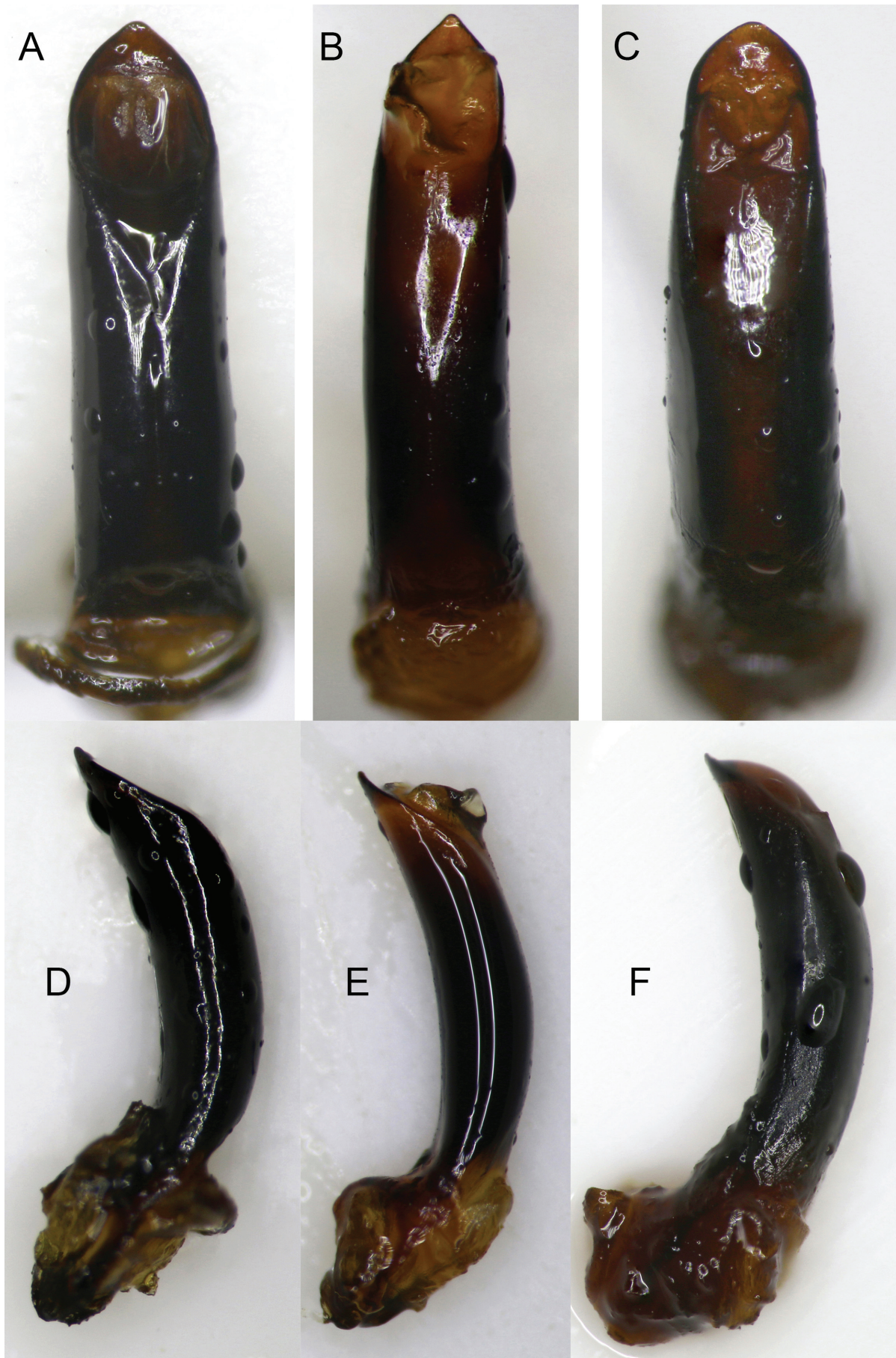


Figure 4. Penis of *Rhinocyllus* Germar species. **A,D**, *Rhinocyllus conicus*; **B,E**, *Rhinocyllus oblongus*; **C,F**, *Rhinocyllus alpinus* sp. nov.

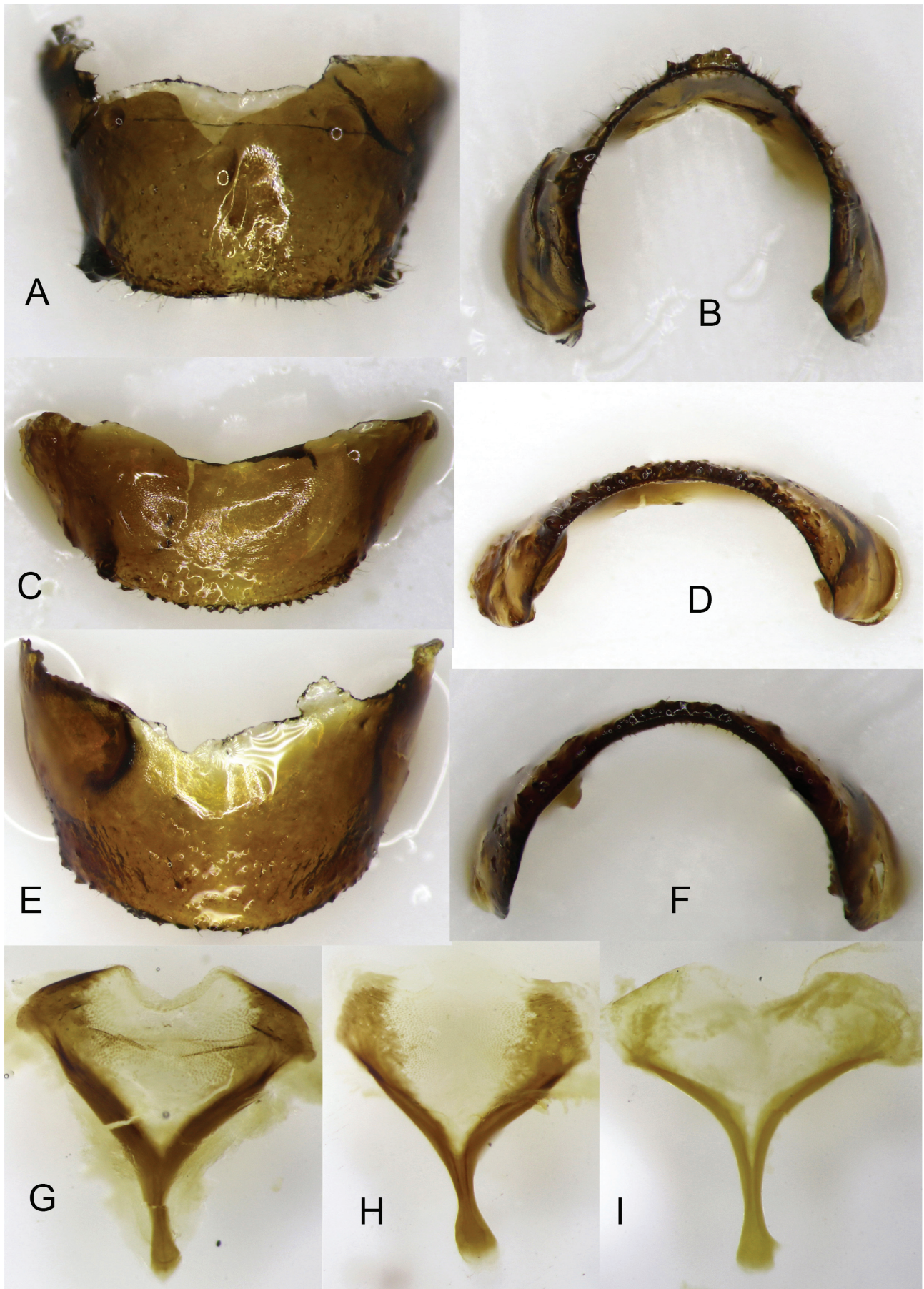


Figure 5. Female terminalia of *Rhinocyllus* Germar species (A-F: tergite 8; G-I: sternite 8). A-B, *R. conicus*; C-D, *R. oblongus*; E-F, *R. alpinus* sp. nov.; G, *R. conicus*; H, *R. oblongus*; I, *R. alpinus* sp. nov.

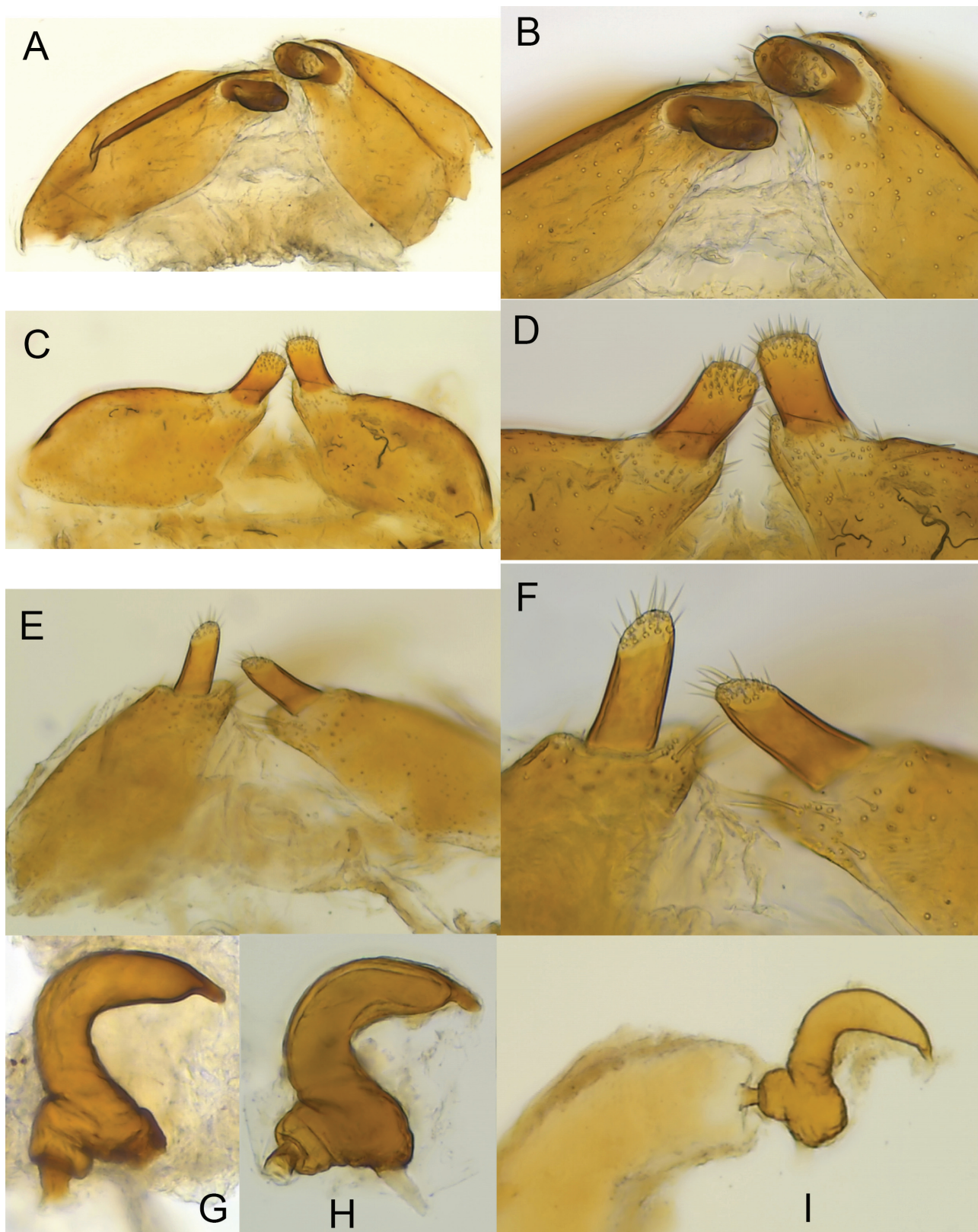


Figure 6. Gonocoxites, styli and spermatheca of *Rhinocyllus* Germar species (A-F: gonocoxites and styli; G-I: spermatheca). **A-B**, *R. conicus*; **C-D**, *R. oblongus*; **E-F**, *R. alpinus* sp. nov.; **G**, *R. conicus*; **H**, *R. oblongus*; **I**, *R. alpinus* sp. nov.

Etymology. The name “*alpinus*” wants to emphasize that this is a mountain species from the Alps.

Remarks. Apart from the reported differences which allow to separate the two subgenera, in *R. alpinus* the pronotum is more convex than in *R. conicus* and *R. oblongus*, the elytra are less parallel-sided, and widest at their posterior third instead of anterior third. With regard to the genitalia, in the male the apex of the ventral plate of the body of the penis is

obtuse without projected tip similarly to that of *R. conicus*. In the female the posterior margin of tergite 8 is roundly and medially prolonged like in *R. oblongus*, whereas in contrast to both species the stylus of the gonocoxite is subconically truncated with beveled edge, and the collum of the spermatheca is indistinct.

Biological data. *Rhinocyllus alpinus* feeds on *Cirsium alsophilum* (Pollini) Soldano, which is known from the whole Alpine region and belongs to the subfamily Carduoideae of the Asteraceae (The Angiosperm Phylogeny Group. 2016), a family of plants on which the majority of Lixini live. Likewise other *Rhinocyllus*, *Bangasternus*, and many *Larinus*, larvae and pupae were collected in large number in the inflorescence of the host plant.

Distribution. Northern Italy. Lombardia (Val Brembana, Valsassina) in mountains at elevations above 1,200 m a.s.l.



Figure 7. *Cirsium alsophilum* (Pollini) Soldano, host plant of *Rhinocyllus alpinus* sp. nov. (San Simone, Juin 2018).

Discussion

Currently the genus *Rhinocyllus* has a controversial taxonomical placement in the Lixinae. It was considered as forming a distinct tribe, the Rhinocyllini, together with *Microlarinus* Hochhuth, 1847 by Lacordaire (1863) on the basis of the following characters: “rostrum at the most as long as the head, angulate, dorsally flat. Scrobes anteriorly complete”. This opinion was accepted by Capiomont (1873), Petri (1914) and Csiki (1934), who included the genus *Bangasternus* in this tribe deleting vice versa *Microlarinus*, which was newly placed in Lixini together with *Larinus*. Subsequently, this opinion was followed by Pesarini (1977), Alonso-Zarazaga & Lyal (1999), Meregalli (2014), and Arzanov & Grebennikov (2017). On the contrary *Rhinocyllus* and *Bangasternus* were assembled in Lixini by Reitter (1913, 1916), Hustache (1932), Hoffmann (1955), Ter-Minasian (1967) and very recently by Colonnelli (2003), who declared that “there are no clear morphological or ecological boundaries between Lixini and Rhinocyllini, especially between small species of *Larinus* of the subgenus *Larinomesius* [i.e. *L. obtusus*] and *Rhinocyllus*, which are hardly distinguishable each other”. Colonnelli’s opinion was subsequently supported by Gültekin (2013a) and Gültekin & Fremuth (2013).

We think that the discovery of *Rhinocyllus alpinus* strengthens even more Colonnelli’s opinion and opens very interesting taxonomical questions. This species lacks some characters previously considered important in the definition of the genus *Rhinocyllus* and allowing to separate this genus from *Larinus* somewhat easily, making it questionable to establish which is the right taxonomical position of this new species. This regards important characters of the rostrum, like the presence of deep lateral sulci and distinct ridges on dorsum laterally. They are completely missing in *R. alpinus*, although the rostrum at its sides is still angulated and not beveled and a short moderately deep sulcus is visible on the head around the upper margin of the eyes. The differences between this species and *Larinus*, e.g. *L.*

obtusus, are surely less evident than for the other species of *Rhinocyllus*. However, we think that the present placement of *R. alpinus* in a new subgenus of *Rhinocyllus* is the more reasonable and logical solution and that the differences from *Larinus* are still consistent. Apart from the angulated sides of the rostrum and the short sulcus around the upper part of the eyes, a character useful to separate these two genera remains the shape of tergite VIII in the female. This structure was investigated for the first time by Gültekin (2013a) and revealed that it is likely to be of very significant value for classification. A subcrescentic female tergite VIII with deeply emarginated apex is unique in *Bangasternus*, a crescentic female tergite VIII with subrounded apical margin is apparently peculiar for *Rhinocyllus* and a semicircular female tergite VIII is commonly seen in *Larinus*. This character is considered evolutionarily very important due to its possible role during the oviposition process and therefore less susceptible to homoplasy (Gültekin 2013a).

Acknowledgements

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