

**Review of the genus *Brachycerus* Olivier in Israel
(Coleoptera: Curculionoidea: Brachyceridae: Brachycerinae)**

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ABSTRACT

Ten species of *Brachycerus* are recorded from Israel and keyed, of which *Brachycerus hermoniacus* n. sp., *Brachycerus groneri* n. sp., and *Brachycerus wizeni* n. sp. are described as new. A review of the morphology of Palaearctic *Brachycerus* species and redescrptions of several poorly known East Mediterranean species are provided. Taxonomic problems in several species are resolved: the status of *Brachycerus aegyptiacus* Olivier, *B. cinereus* Olivier, and *B. cribrarius* Olivier is clarified; the name *Brachycerus junix* Lichtenstein is rejected as nomen dubium. A lectotype is designated for *B. orbipennis* Reiche and de Saulcy. A division of the Palaearctic *Brachycerus* species into four groups is suggested.

KEYWORDS: Brachyceridae, *Brachycerus*, Israel, new species, taxonomy, zoogeography

INTRODUCTION

The Brachyceridae (obese weevils, lily weevils) is a small weevil family, distributed in the Afrotropical region and in dry subtropical areas of the Palaearctic region. The genus *Brachycerus* Olivier, 1789, is the largest in the family (comprising about 500 species (Louw, 1990)), distributed across Africa, the southern part of the Arabian Peninsula, Madagascar, the Mediterranean subregion, the Caucasus, and Central Asia (Zumt, 1937a,b; Haaf 1957a,b; Alonso-Zarazaga and Lyal, 1999; Arzanov, 2005). The African species of *Brachycerus* were revised by Haaf (1957a,b; 1958). In the Palaearctic region, *Brachycerus* comprises about 40 described species, most of which are found in the Mediterranean subregion, of which 14 are recorded from the Levant (Bedel, 1874; Baudi, 1894; Alfieri, 1976; Arzanov, 2005); Reiche and de Saulcy, 1857; Bodenheimer, 1937; Zumt, 1937a,b; Georgiou, 1977; Lodos, 1977).

Following is a synopsis of the previous records of *Brachycerus* from Israel:

Reiche and de Saulcy (1857) described four species of *Brachycerus* (*B. argillaceus*, *B. orbipennis*, *B. ornatus*, and *B. nodulosus*) from material collected by F. de Saulcy in Syria, Lebanon, and Israel. Bedel (1874) revised the Mediterranean species of *Brachy-*

cerus, reducing the number of the East Mediterranean species to four: *B. junix* Lichtenstein, *B. cinereus* Olivier, and two newly described: *B. spinicollis* and *B. foveifrons*. Baudi (1894) recorded *B. plicatus* from Jerusalem (=Yerushalayim, Israel).

Bodenheimer (1937) recorded five species from Israel: *B. barbarus*, *B. callosus*, *B. plicatus*, *B. spinicollis*, and two subspecies of *B. junix* (*B. j. junix* and *B. j. aegyptiacus*). The first two species are distributed in the West Mediterranean (Zumpt, 1937a,b) and the use of these names is probably a result of misidentification of the poorly-known East Mediterranean species. *Brachycerus plicatus* is distributed in the West Mediterranean, although also recorded from Turkey (Zumpt, 1937a,b) and Egypt (Alfieri, 1976), but we believe these records are doubtful. Last, Zumpt (1937a,b) mentioned seven species from Israel in his revision of the Palaearctic species of *Brachycerus*: *B. argillaceus*, *B. cinereus*, *B. cribrarius*, *B. junix* (*B. j. junix* and *B. j. aegyptiacus*), *B. foveifrons*, *B. orbipennis*, and *B. spinicollis*.

The biology of *Brachycerus* is closely associated with geophytes. Larval development takes place in the soil or inside the bulbs of plants of the Liliaceae, Amaryllidaceae, Araceae (Hoffmann, 1963), and Orchidaceae (Colonnelli, personal communication). Host Plants are known for only 11 Palaearctic species (Bedel, 1874; Perris, 1874; Laboulbène, 1874; Baron, 1875; Marseul, 1875; Codina, 1914; Hustache, 1926; Peyerimhoff, 1926; Vitale, 1933; Hoffmann, 1963; Arnoldi et al., 1974; Dieckmann, 1980; Hegazi and Moursi, 1981; Germann, 2003; Arzanov, 2005) and for several South African species (Louw, 1990; Kleinjan and Edwards, 2006). A few Palaearctic species (namely, *B. albidentatus*, *B. barbarus*, *B. muricatus*, *B. transversus*, *B. undatus*) are known as agricultural pests, damaging garlic, onion, and cultivated bulb flowers, such as *Amaryllis*, *Gladiolus*, *Hyacinthus*, *Muscari*, *Narcissus*, *Tulipa*, and *Zantedeschia* (calla lily) (Hoffmann, 1963; Arnoldi et al., 1974; Arzanov, 2005). Several South African species are potential biocontrol agents of *Asparagus* weeds (Liliaceae) in Australia (Kleinjan and Edwards, 2006).

MATERIALS AND METHODS

The majority of the studied material is deposited in the National Collection of Insects, Zoological Museum, Tel Aviv University, Israel (TAUI). Therefore, the acronym TAUI is generally omitted, except when indicating the location of type material. Acronyms of institutions and private collections in which the remainder of studied material is deposited and the names of curators or owners are given below:

BAYER—Private Collection of Ch. Bayer, Berlin, Germany

BIAL—Private Collection of P. Z. Białooki, Sopot, Poland

BMNH—Natural History Museum, London, UK (M. Barclay)

BUSS—Bet Ussishkin Regional Museum, Qibbutz Dan, Israel (Y. Lev-Ari, G. Gissis)

COLL—Private Collection of E. Colonnelli, Roma, Italy

GERM—Private Collection of Ch. Germann, Zurich, Switzerland

GIUS—Private Collection of C. Giusto, Rapallo, Italy

JJPL—Private Collection of J.J. Pelletier, Monnaie, France

MNHG—Muséum d'histoire naturelle, Genève, Switzerland, (G. Cuccodoro)

NMBE—Naturhistorisches Museum der Burgermeinde Bern, Switzerland (Ch. Ger-
mann, Ch. Huber)

PMNH—Paris Museum of Natural History, Paris, France (H. Perrin)

WINK—Private collection of H. Winkelmann, Berlin, Germany

ZSMU—Zoologische Staatssammlung, München, Germany (M. Balke)

Drawings and measurements were made with a drawing tube and a stereomicroscope Leica MZ12. Drawings were scanned and processed by Adobe Illustrator 9.0. Total body length was measured along a straight line extending from the base of the rostrum to the tip of the elytra in dorsal view. Genitalia were extracted by soaking the dry specimens in hot water, breaking off the posterior sternites of the abdomen and boiling them in KOH (10%). Extracted genitalia were glued on paper cards and pinned together with the specimens.

Transliterated names of localities in Israel follow the “Israel Touring Map” (1:250,000) and “List of Settlements”, published by the Israel Survey, Ministry of Labour. Where names of localities have changed, the most recent transliterated Hebrew names are given together with the old names cited in brackets; for example: 'En Hemed [Aquabella]. Erroneous spellings are also included in brackets following the corrected spelling. The number and gender of the specimens are usually given, although in cases in which the gender was not available, the acronym “ex.” (=exemplars) is used.

Nomenclature of plants follows Feinbrun-Dothan and Danin (1991).

Names of regions in Israel follow Theodor (1975).

TAXONOMY

Brachyceridae Billberg, 1820

Brachyceridae is an Old World family of weevils that was originally described as a tribe (“Brachycerides”) and raised to family rank by Thompson (1992). Alonso-Zarazaga and Lyal (1999), following Thompson’s (1992) concept, included in it three subfamilies: Brachycerinae Billberg, Ocladiinae Lacordaire, and Microcerinae Lacordaire. However, recent authors (Marvaldi, 1997, Oberprieler, 2004; Morimoto and Kojima, 2006; Oberprieler et al., 2007) excluded the latter two subfamilies, leaving only one subfamily, Brachycerinae.

The subfamily Brachycerinae, with about 1200 species that are associated with monocots (Oberprieler et al., 2007), comprises four tribes: the Brachycerini (6 genera), distributed in Africa, Madagascar, the Mediterranean region, and the Middle East; the Brotheini (3 genera), predominantly found in South Africa; the Byrsopini (2 genera), and the Protomantini (1 genus) (Alonso-Zarazaga and Lyal, 1999).

The Brachycerinae comprise robust, apterous, ground-dwelling, usually coarsely-sculptured weevils, with straight (non-geniculate) antennae, short trochanters, fused

elytra, dorsoventrally flattened mandibles, strongly extending anteriorly, and male genitalia of orthocerous type sensu Thompson (1992). Brachycerinae are associated with monocot geophytes; ovipositing takes place in the soil (not into plant tissue). Oberprieler (2004) and Oberprieler et al. (2007) considers the Brachycerinae as paraphyletic, and a reliable phylogenetic diagnosis requires further study. The Brachycerini include the widely distributed *Brachycerus* Olivier, the Madagascan *Hoffmannista* Richard, and the South African *Euretus* Péringuey, *Progravidius* Haaf, *Theates* Fahraeus, and *Theatomorphus* Haaf (Alonso-Zarazaga and Lyal, 1999).

***Brachycerus* Olivier, 1789**

Brachycerus is the only representative of the Brachyceridae in the Palearctic Region. It is readily recognized among other Israeli weevils by the following combination of characters: antennae straight, non-geniculate, with short scape; short, nearly transverse, robust rostrum; eye orbit partly separate from frons or projecting dorsally to frons; large, stout, globose body, coarsely sculptured; elytra with ridges of prominent tubercles or keels; elytra fused, rear wings absent; head and legs covered by erect black bristles.

Several species of weevils of similar habitus might be confused with *Brachycerus*: *Koenigius palestinus* Heyden (Curculionidae: Lixinae) has a strongly projecting dorsal part of the eye orbit and a massive rostrum, but its body is more elongate. *Borborocoetes* spp. (Curculionidae: Cyclominae) have a stout body, projecting tubercles on the elytra, and short, robust legs with bristles, but are of much smaller size; *Ocladius* spp. (Curculionidae: Ocladiinae) have a globose body, fused elytra, and short massive legs, but they have a long rostrum that can be hidden in a sternal canal. All these taxa differ readily from *Brachycerus* by having distinctly geniculated antennae.

Morphology

Large (6.5–18.0 mm), massive, apterous, ground-dwelling weevils, resembling darkling-beetles. Body, appendages, and elytra black, often appearing brown or gray from being covered by strongly attached particles of soil and dust, which can be washed away. Vestiture variously comprises small, round scales; yellowish, whitish-brown, or black, thick bristles; oblong tufts of shorter black bristles; and rounded tufts of whitish or yellowish bristles, depending on the species and specimen. Many specimens appear bare, but traces of the broken bristles or scales can be found using strong magnification. Erosion of the vestiture is positively correlated with age. Body surface comprises coarse punctures and/or wrinkles.

Rostrum (Figs. 3–14) not sexually dimorphic; short, 1.2–1.7 as long as wide, shorter than pronotum, stout, slightly bent; dilated apically; dorsally flattened, usually expanded laterally into more or less huge carinae or obtuse projection over antennal pit; separated from frons by dorsolateral groove, in some species, posteriolaterally extended into rounded, protruding lobe (*argillaceus*, *groneri*, *wizeni*,) sometimes touching eye orbit (*wizeni*), posteriomediaally extended into 1–2 longitudinal ridges, narrow and sharp or wide and rounded, extended by longitudinal frontal ridge. Antennal scrobe lateral or lat-

eroventral, deep. Mandible slightly convex dorsoventrally, with 2–3 rounded denticles at anterior margin, rounded at apex. Epistome well-defined, rounded, cordate, or semi-circular, often extended posteriorly into short ridge at anterior fourth of rostrum.

Antenna short and stout, not geniculated, comprised of 9 segments; scape at most twice as long as wide, segments 2–8 wider than long or subequal, club ovate, not subdivided, with oblong apicolateral setose groove.

Frons usually more or less concave, not or indistinctly puctured, in *spinicollis* flat or slightly convex, coarsely punctured; medially with longitudinal ridge of various shape and convexity, extending continuously from base of rostrum to vertex or only reaching 0.3–0.5 of frons. Eye surrounded by eye orbit, dorsally separated from frons from at least a third (*aegyptiacus*) to more than two-thirds (*orbipennis*, *spinicollis*); eye orbit rounded or dorsally flattened (*spinicollis*), projecting or not, dorsal to frons (lateral view).

Pronotum (Figs. 15–25) transverse, laterally extended into tapered projection (lateral lobe), usually wide, blunt, and rounded, but in *spinicollis* slender and pointed. Anterior margin of pronotum straight or slightly prominent, rounded, extending over vertex. Pronotal disc with pair of median and pair of lateromedian longitudinal ridges, often covered by scales and bristles and often more coarsely punctured than lower part of surface, more or less pointed posteriorly, in *argillaceus*, *groneri*, and *wizeni* projecting beyond posterior margin of pronotum; median ridges of all Israeli species, apart from *cribrarius*, *cinereus*, and *spinicollis*, connected at, or after the middle, interrupting longitudinal median groove.

Elytra fused; globular (*orbipennis*, *hermoniacus*, *foveifrons*), oval, more or less rounded (*aegyptiacus*), slightly flattened dorso-ventrally, nearly parallel-sided, angled at humeri (*argillaceus*, *groneri*, *wizeni*) or wide, obovate (*cinereus*, *cribrarius*, *spinicollis*). Interstriae strongly convex, arranged in longitudinal ridges, sequential or subdivided into more or less prominent tubercles. Interstriae 1–5 are well seen in dorsal view, provide important characters, and are named here: 1—sutural ridge, 2—subsutural ridge, 3—median ridge, 4—sublateral ridge, 5—lateral ridge (Figs. 1, 2), while interpunctural spaces 6–9 at epipleuron are evenly tuberculated or wrinkled and provide no important characters.

Based on our study, elytra of Palaearctic *Brachycerus* can be subdivided into seven types:

- 1) *aegyptiacus*-type (Fig. 1)—oval, more or less rounded laterally, all or most elytral ridges distinct, **sutural**, **subsutural**, and **sublateral** ridges sequential, at least at basal half, entire or subdivided into strongly-projected round tubercles, bare or bearing tufts of bristles, **median** ridge more prominent and more often subdivided into round tubercles, bare or bearing tufts of bristles, **lateral** ridge subdivided into tubercles, small and low at basal fourth, becoming larger towards apex, rounded, blunt, in some of species at apical third bearing scales or bristles (*aegyptiacus* Olivier (= *junix* Lichtenstein), *armeniaceus* Arzanov, *balearicus* Bedel, *freyi* Zumpt, *kubanicus* Arzanov, *lutulentus* Gyllenhal, *mlokosevitschi* Arzanov, *persicus* Zumpt, *rufipes* Zumpt, *quadrisulcatus* Fischer von Waldheim, *sinuatus* Olivier, *turkmenicus* Arzanov);

- 2) *argillaceus*-type (Fig. 2)—subquadrate, isodiametrical, or slightly transverse, slightly flattened latero-ventrally, nearly parallel-sided, angled at humeri, **sutural** ridge subdivided into distinct oblong, triangular, or nearly rounded tubercles, bearing transverse tufts of black bristles, surrounded by whitish-yellow shorter bristles, **sub-sutural** and **sublateral** ridges nearly obsolete or low, subdivided into small tubercles, bare or bearing single, thick, black bristles, **median** ridge most prominent, nearly sequential, at least at basal half of elytron, comprised of more or less transverse tubercles, bearing tufts of black bristles surrounded by whitish-yellow bristles, **lateral** ridge comprised of strongly projecting sharp tubercles, more or less even from humeral area to apex, often densely covered by scales and/or bristles. Striae rough, coarsely textured by wrinkles or small tubercles (*argillaceus* Reiche and de Saulcy, *cinereus* Olivier, *cylindripes* Bedel, *groneri* n. sp., *hustachei* Zumpt, *kabylianus* Desbrochers, *lutosus graecus* Zumpt, *lutosus lutosus* Gyllenhal, *muricatus* Olivier, *perlatus* F. Solari, *plicatus* Gyllenhal, *pradierii* Fairmaire, *schatzmayri* Zumpt, *scutellaris* Lucas, *similaris* Zumpt, *wizeni* n. sp.);
- 3) *cribrarius*-type (Figs. 69, 70, 74)—rounded laterally, elytral ridges, and interpunctural spaces indistinct, sculpture of elytra comprises net-like or loop-like pattern with numerous uneven, shallow cavities (*cribrarius* Olivier);
- 4) *orbipennis*-type (Figs. 66, 67)—rounded laterally, globose, with interpunctural spaces even, ridges nearly indistinguishable (except for rarely, more strongly prominent tubercles at basal fourth of **median** ridge), tubercles rounded and blunt (*hermoniacus* n. sp., *foveicollis* Gyllenhal, *foveifrons* Bedel, *normandi* Desbrochers, *orbipennis* Reiche and de Saulcy, and *rotundicollis* Escalera);
- 5) *spinicollis*-type—obovate, strongly rounded laterally and sub-basally, but acutely tapered apically, elytral ridges flattened, slender, not raised, forming tubercles, but extended laterally into slender branches, forming a net pattern, except for **lateral** ridge, extended into sharp tubercles, bearing occasionally isolated whitish bristles (*spinicollis* Bedel);
- 6) *riguus*-type—oval, globose, elytral ridges reduced to obsolete lines between interpunctural spaces, interpunctural spaces transversely wrinkled (*riguus* Erichson);
- 7) *undatus*-type—oblong, 1.2–1.4 as long as wide, laterally subparallel, slightly concave to slightly convex; elytral ridges straight or slightly sinuous, (wavy, undulating), not or nearly not subdivided into tubercles, **sutural**, **subsutural**, and **sublateral** ridges indistinct or low, not subdivided into tubercles, at most slightly sinuous; **median** ridge sequential, straight, or sinuous, rarely indistinctly subdivided into low, transverse, connate tubercles; **lateral** ridge finely tuberculated at basal 3/4, and strongly tuberculated at apical third; striae flat, not wrinkled or tuberculated, or with fine transverse wrinkles; often devoid of scales and/or bristles (*albidentatus* Gyllenhal, *barbarus barbarus* Linnaeus, *barbarus lateralis* Gyllenhal, *callosus* Schoenherr, *crispatus* Fabricius, *schatzmayri* Zumpt, *transversus* Olivier, *undatus* Fabricius).

In older specimens, differences between types of elytra are difficult to define due to the scales and bristles having been swept away, the tubercles and ridges eroded, and frequently, specimens covered by a layer of dust.

Hind wings and scutellum absent.

Legs covered by long, single, erect bristles; femora not dentated; tibiae dilated distally, bearing mucro and uncus and short, longitudinal brush of brown bristles between them, rounded or flattened, with posterior margin extended into sharp, longitudinal ridge (*spinicollis*, *foveifrons*, *cribrarius*), tarsal segments subcylindrical, ventrally with pair of bristle tufts; onychium as long as or slightly shorter than all tarsal segments; claws widely separated at base, not toothed.

Venter coarsely punctured, often, but not always, slightly more concave in males and slightly more convex in females, last ventrite of male usually straight apically and of female rounded apically (in *spinicollis*, this difference is not obvious).

Male genitalia of orthocerous type (Thompson, 1992). Aedeagus (Figs. 26–32) flat, strongly sclerotized laterally and apically; laterally rounded or parallel-sided; apex truncated, rounded, or slightly tapered; temones as long as tube or slightly longer; endophallus lacking special characters. The form of the aedeagus is greatly variable both inter- and intra-specifically, and its variation does not match the variation of the external characters, on which my classification is based. Tegmen oblong, flat, laterally slightly enveloping, wide at base, tapered apically, parameroid lobes more or less separated, bearing long macrochetæ; prostegium fused to strongly sclerotized metasternal ring; often lateral, basal, or median areas more or less sclerotized; manubrium straight, as thick as long or slightly longer than tegminal plate. Spiculum gastrale with more or less membranous arms and slender, bent apodeme.

Female genitalia: Spiculum ventrale sclerotized, with long manubrium and wide apical plate. Spermatheca (Figs. 33–42) strongly sclerotized, **duct-lobe** (collum, nodulus) short, **gland-lobe** (ramus) short or indistinct, **tail** (cornu) elongated or globose, spermathecal gland globular, oblong, or without distinct form, diffuse or more or less sclerotized.

KEY TO THE *BRACHYCERUS* SPECIES IN ISRAEL

1. Lateral lobes of pronotum long, slender, and pointed (Fig. 25); tibiae flattened; eye orbit protruding dorsal to frons in lateral view, eye flattened dorsoventrally, nearly twice as long as high (Fig. 14); elytral ridges entire, with lateral branches forming net pattern; in sandy areas *spinicollis*
- . Lateral lobes of pronotum short, wide, and blunt (Figs. 15–24); tibiae flattened or cylindrical; eye orbit protruding or not, dorsal to frons in lateral view, eye round, obovate, or only slightly flattened; elytral sculpture different; not associated with sands **2**
2. Elytral sculpture even, comprised of subequal concavities or tubercles, not arranged in distinct ridges **3**
- . Elytral sculpture uneven, comprised of unequal tubercles, part of them arranged in distinct ridges **6**
3. Elytral sculpture comprised of shallow concavities (Figs. 69, 70, 74); at least foretibia flattened *cribrarius*
- . Elytral sculpture comprised of more or less prominent, rounded tubercles; usually all tibia rounded **4**
4. Median ridges of pronotum expanded, flattened, smooth, puncturation minute to obsolete, me-

- dian groove shallow (Fig. 17); eye orbit not distinctly separated from head posteriorly (Fig. 5); at base of rostrum U-shaped groove interrupting frontal ridge *foveifrons*
- . Median ridges of pronotum not expanded, not flattened, more or less protruding, not smooth, puncturation coarse, comprised of deep, round punctures, median groove deep; eye orbit distinctly separated from head posteriorly (Figs. 12, 13); frontal ridge not interrupted **5**
5. Frons flat, eye orbit not protruding dorsal to frons (Fig. 12); anterior margin of pronotum not extended (Fig. 23); body length 7–12 mm; in Israel, only from Har Hermon *hermoniacus* **n. sp.**
- . Frons concave, eye orbit protruding dorsal to frons in lateral view (Fig. 13); anterior margin of pronotum extended (Fig. 24); body length 8–16 mm (usually 12–14 mm); in Israel only in the Negev Desert (south of Be'er Sheva') and Judean Desert..... *orbipennis*
6. Median groove of pronotum with longitudinal carina (Fig. 21); eye transverse, eye orbit projecting strongly dorsal to frons (Fig. 6) *cinereus*
- . Median groove of pronotum without longitudinal carina (Figs. 15, 18–20); eye round or obovoid, eye orbit not or slightly projecting dorsal to frons (Figs. 3, 7, 9, 10)..... **7**
7. Median ridge of pronotum blunt posteriorly, not projecting beyond posterior margin of pronotum (Fig. 15) *aegyptiacus*
- . Median ridge of pronotum pointed posteriorly, projecting beyond posterior margin of pronotum (Figs. 18–20) **8**
8. Eye slightly convex (Fig. 8); spermatheca slender (Fig. 36a,b); sublateral elytral ridge distinct, comprised of more or less prominent tubercles, more or less separated; northern and central parts of Israel, including Northern Negev *argillaceus*
- . Eye strongly convex (Fig. 11) or flat; spermatheca stout (Figs. 37, 38); sublateral elytral ridge not distinct, comprised of irregular, separate, prominent tubercles..... **9**
9. Eye strongly convex (Fig. 11); tubercles strongly prominent, often covered by tufts of scales at apex; spermathecal gland oblong, not or weakly sclerotized (Fig. 37); Central Coastal Plain, not sandy soils *wizeni* **n. sp.**
- . Eye flat; tubercles slightly prominent; spermathecal gland obovoid, strongly sclerotized (Fig. 38); Central Negev *groneri* **n. sp.**

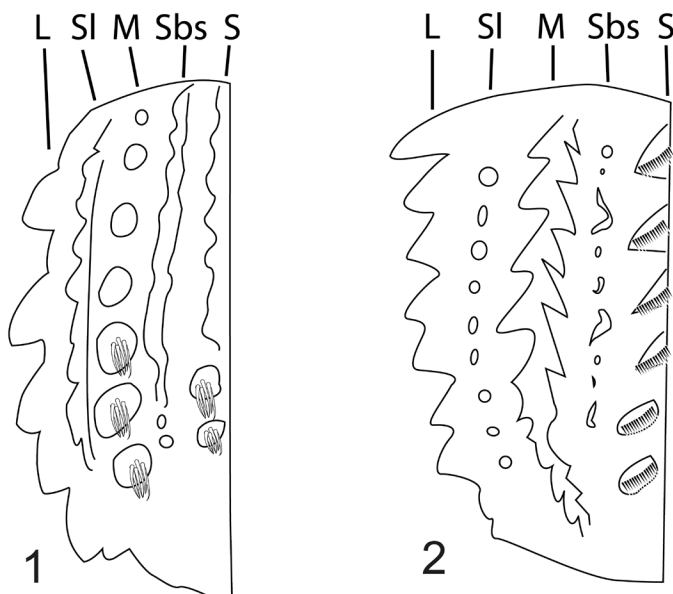
SPECIES TREATMENT

Brachycerus aegyptiacus Olivier, 1807

(Figs. 1, 3, 15, 26, 33, 43–62, 85)

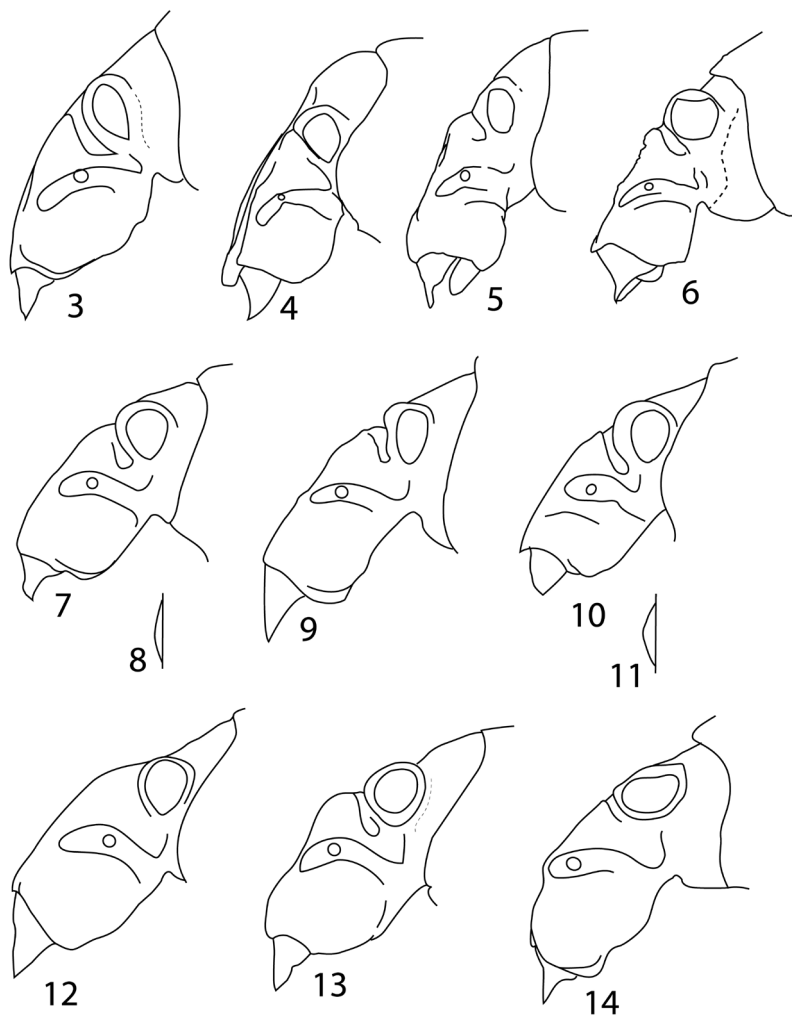
Redescription

Body length 9–20 mm. Small, oblong, yellowish scales cover head, pronotum, elytra, and legs, or body parts completely bare; legs covered by black bristles. Head (Fig. 3): rostrum with round punctures of variable size and density, extending posteromedially into longitudinal ridge of variable width and convexity, usually reaching occiput; frons concave, not punctured; eye flat, obovate; eye orbit rounded, not or slightly thickened dorsally in lateral view, not projecting dorsally to frons, often not clearly separated from head at posterior third. Pronotum (Fig. 15) with projecting, wide, blunt lateral lobes; anterior margin of pronotum straight; median and lateromedian ridges distinct, median ridge of pronotum swollen in median third, its posterior end not projecting beyond poste-



Figs. 1–2. Left elytron of *Brachycerus* spp., dorsal view, schematic: 1. *Brachycerus aegyptiacus*. 2. *Brachycerus argillaceus*. S, sutural ridge, Sbs, subsutural ridge, M, median ridge, SI, sublateral ridge, L, lateral ridge.

rior margin of pronotum, with sparse, minute punctures; median groove entire, strongly concave anteriorly. Elytra (Figs. 1, 43–62) oval, more or less rounded laterally, sutural, subsutural, and sublateral ridges intact at basal 0.5–0.6, low, bearing single bristles or bare, subdivided apically into strongly-projected round tubercles, bare or with tufts of thick, whitish or yellow bristles. Median ridge subdivided into round tubercles, bare or with tufts of bristles. Lateral ridge subdivided into tubercles, small and low at basal fourth, gradually larger towards apex, rounded, blunt, with more bristles at apical third, black bristles appear only singly. Tufts of scales present only in some specimens from Israel, Lebanon, and Syria. The type specimen and 3 additional specimens from Egypt, all specimens from Sicily, Greece and the Ionic Islands, Turkey, Cyprus, and Jordan, and some specimens from Syria, Israel, and Lebanon lack tufts. Several specimens from Greece and Turkey have a tiny tuft of scales on subapical tubercles. Elytral tubercles prominent to obsolete, merged (some specimens from Greece, Cyprus, Israel, and Jordan) to separate (Italy, Syria, Israel, Turkey); several specimens from Greece and Syria have extremely prominent subapical tubercles. Tubercles generally more prominent in males, but sometimes also in females. Tibiae cylindrical. Aedeagus varies widely in form of apex, from rounded to nearly-truncated, and laterally convex to nearly parallel-sided (Fig. 26). Spermatheca with duct-lobe slightly swollen, base of spermathecal duct sclerotized, gland-lobe nearly indistinct, tail (cornu) elongate, tapered terminally, spermathecal gland oblong, weakly sclerotized (Fig. 33).



Figs. 3–14. *Brachycerus* spp. 3. *B. aegyptiacus*, head, lateral view. 4. *B. cribrarius*, head, lateral view. 5. *B. foveifrons*, head, lateral view. 6. *B. cinereus*, head, lateral view. 7. *B. argillaceus*, head, lateral view. 8. *B. argillaceus*, eye. 9. *B. groneri* n. sp., head, lateral view. 10. *B. wizeni* n. sp., head, lateral view. 11. *B. wizeni* n. sp., eye. 12. *B. hermoniacus* n. sp., head, lateral view. 13. *B. orbipennis*, head, lateral view. 14. *B. spinicollis*, head, lateral view.

Material Examined

TYPE MATERIAL: Egypte, ?Scio ?Seio, Olivier (1♀; Holotype, PMNH);

ISRAEL: [Palestine], E. Reitter (1♀), Ch. Bytinski-Salz (1♀); [MJ], vii.1924, F.S. Bodenheimer (1♀); vii.1947, F.S. Bodenheimer (1♀); **Hermon**: Mezudat Nim-

rod, 16.iv.1979, Y. Lev-Ari (1♂; BUSS); **Golan Heights:** Petroleum Road, 2.i.1979, Y. Lev-Ari (1♂; BUSS); Har Shifon, 18.vi.1993, V. Chikatunov (1♂); **Upper Galilee:** Metula [Galilee Metulah], xii.1924, O. Theodor (1♂, 1♀); Dan, 30.iii.1954 (1♂; BUSS), 20.ii.1960 (1♂; BUSS), 2.ii.1968 (1♂; BUSS), 15.v.1976 (1♀; BUSS), 10.iii.1978, Aya (1♀; BUSS), 28.ii.1980, Aya (1♂; BUSS); Qiryat Shemona, 2.i.1960 (1♂; BUSS); Har Manara, 12.i.1956 (1♀; BUSS); Manara, 5.i.1997, A. Keinan (1♂); Hanita [Chanita], 17.x.1946, Ch. Bytinski-Salz (1♂); Elon, 11.iv.19??, Ch. Bytinski-Salz (1♀); Elon, Nahal Bezet, 22.iv.1982, Cl. Besuchet, I. Löbl (2♀; MNHG); Monfort, 1.v.1973, D. Furth (1♀), 19.iv.1982, Cl. Besuchet, I. Löbl (1♀; MNHG); Nahal Keziv [N. Kziv], 1.i.1999, M. Finkel (1♀), 6.iii.1999, M. Finkel (1♀), 27.iii.1999, M. Finkel (1♀), 18.iii.2000, M. Finkel (1♀), 15.iv.2000, M. Finkel (1♀); Nahal Koren, W. Galilee, 1.iv.1958, J. Halperin (1♀); Galil, Khurva Ga'aton, 100 m, 4.iv.1995, E. Colonnelli (2 exx.; COLL); 'En Ya'aqov, 14.i.2007, I. Shtirberg (1♂), 8.ii.2007, I. Shtirberg (1♂, 1♀); Har Betah, near Ma'alot [Har Betach], 25.xii.1976, Y. Hadar (1♀); Sasa, 15.iii.1959, J. Halperin (1♀); Har Meron [Jermaq], 16.iv.1963, M. Pener (1♂, 1♀); Har Meron, 6.v.2007, N. Angel, pitfall trap (1♂); Nahal 'Ammud, 3.iii.1984, E. Shney-Dor (1♀); 'Alma Cave, 33°02.294'N, 35°30.553'E, 29.iv.2006, T. Assmann (1♀); Dalton, 9.iv.1998, T. Pavlíček (1♀); **Lower Galilee:** Segev, 25.x.1994, M. Warburg (1♀); Ya'ar Segev, 13.vii.1985, M. Warburg (2♂), 11.x.1985, M. Warburg (1♂), 24.x.1985 (1♂); Maghar [Mrar], 1.v.1982, A. Freidberg (1♀); Zippori, 6.xii.1986, E. Orbach (1♀); **Carmel Ridge:** Haifa, CheckPost, 2.iii.1997, T. Pavlíček (1♀); Haifa, 15.v.1929 (1♀), 4.vii.1945, Ch. Bytinski-Salz (1♀); Haifa, Carmel, 15.iv.1927, O. Theodor (1♂, 1♀); Carmel, 15.iv.1981, K. Yefenof (1♂, 1♀); Nahal Oren, 1.iii.1980, M. Ilan (1♀), 23.iii.1981, G. Shaul (1♀), 4.ii.1981, D. Furth (1♀), 27.i.1993, T. Pavlíček (1♀), 28.i.1997, V. Chikatunov (1♀), 11.ii.1997, V. Chikatunov (1♀), 11.iii.1997, V. Chikatunov (1♂), 12.iii.1997, V. Chikatunov (1♂), 25.iii.1997, V. Chikatunov (1♂); Haifa prov., Nahal Oren near Oren junction, 5.iv.1995, E. Colonnelli (1 ex.; COLL); Ramat haNadiv, 2005, R. Kirschenbaum (1♀); **Yizre'el Valley:** Qiryat Tiv'on [Kiriya Tivon], 10.iii.1995, E. Orbach (1♀); Kfar haHoresh [Kfar-Hachoreh], 16.iii.1990, E. Orbach (1♀); **Samaria:** Samaria, ex Piochard de la Brûlerie // MUSÉUM PARIS 1935 coll. Sédillot (1♀; PMNH); Har Gilboa', 13.iii.1997, R. Hoffman (1♀); **Foothills of Judea:** Ben Shemen Forest, 14.i.1978, D. Furth (1♂); Ben Shemen, 4.ii.1984, E. Shney-Dor (1♂); Ben Shemen, 18.i.1981 (3♀); **Judean Hills:** 'Emeq Refa'im, 4 km W Yerushalayim, 19.iii.2005, A. Orlov (1♀); Yerushalayim [Jerusalem], ex Piochard de la Brûlerie // MUSÉUM PARIS 1935 coll. Sédillot (3♂, 3♀; PMNH); Yerushalayim [Jerusal.], ex Piochard de la Brûlerie // MUSÉUM PARIS 1935 coll. Sédillot (1♂; PMNH) (handwritten determination label by Reiche "v. aegyptiacus Ol."); Yerushalayim [Jerusalem], ii.1935, F.S. Bodenheimer (1♀), 2.i.1954 (1♀), 25.i.1955, J. Halperin (1♀), 21.ii.1955, B. Richer (1♂), 5.ii.1957 (1♀); Yerushalayim, Qiryat 'Anavim [Kiryat Anavim], 7.ix.1953, E. Swirski (1♂); Yerushalayim, Bet Zayt, 800 m, 1.iv.1995, E. Colonnelli (1 ex.; COLL); Zur Hadassa, 31.iii.2001, Y. Mandelik (1♂), 21.iv.2001, Y. Mandelik (1♂, 2♀); Matta', 24.iii.2006, I. Shtirberg (1♂, 1♀); Sedot Mikha, 22.iii.2002, Y. Mandelik, V. Chikatunov (1♂); Zekharya, 16.xi.2001, Y. Mandelik (1♂, 1♀), 18.i.2002, Y. Mandelik (1♂), 22.iii.2002, Y. Mandelik, V. Chikatunov (1♂,

3♀); 'Adullam [Adullam], 18.i.2002, Y. Mandelik (3♂, 4♀), 22.iii.2002, Y. Mandelik (10♂, 13♀), 3.iv.2003, T. Levanony, U. Columbus (15♂, 10♀), 15.i.2004, T. Levanony, U. Columbus (3♂, 3♀), 10.iii.2008, O. Skutelsky (1♀); Nahal Sansan, 22.iii.2002, Y. Mandelik, V. Chikatunov (4♂, 9♀); Ramat Avishur [Ramot Avishov], 18.i.2002, Y. Mandelik (2♂), 22.iii.2002, Y. Mandelik, V. Chikatunov (5♂, 5♀); **Judean Desert:** Nahal Perat [Wadi El Kelt], 7.v.1934, F.S. Bodenheimer (1♂); Nahal Perat [Wadi Kelt], 7.ix.1934, F.S. Bodenheimer (1♀); **Central Coastal Plain:** Zikhron Ya'aqov [Zykhron-Yaaqhov], 22.iii.1950 (1♀); Zikhron Ya'aqov [Zykhron], 3.ix.1980, Ch. Lewinsohn (1♀); Giv'at 'Ada [Givat Ada], 1.iii.1997, R. Hoffman (1♀); Giv'at 'Ada, 20.i.2005, G. Wizen (1♀); Ra'anana, 11.iv.1941, Ch. Bytinski-Salz (1♀); Ra'anana [Raananah], 17.iii.1942, Ch. Bytinski-Salz (1♂); Ramat haSharon, 17.ii.1946, Ch. Bytinski-Salz (2♀); Hod haSharon, 7.iii.1998, A. Traub (1♀), 18.iv.1998, A. Traub (1♀); Yafo [Jaffa], de Saulcy MUSEUM PARIS // Coll. L. Bedel 1922; handwritten determination label: F. Zumpt det. 1937, *Brachycerus junix aegyptiacus* Oliv. (2♀; PMNH); **Southern Coastal Plain:** Giv'at Koah [Givat Koach], 29.i.1981, (1♀); Rehovot [Rehobot], 21.xi.1947, Ch. Bytinski-Salz (1♀), I. Aharoni (1♀); Gedera [Gedera], 1.xi.1996, O. Rittner (1♀); Gat, 26.ii.1945, Ch. Bytinski-Salz (5♀), 26.ii.1947, Ch. Bytinski-Salz (5♀); **Northern Negev:** Beror Hayil [Brer], 27.ii.1945, Ch. Bytinski-Salz (1♀); Beror Hayil [Brer], 28.ii.1945, Ch. Bytinski-Salz (1♀); Dorot, 30.i.1948, Ch. Bytinski-Salz (1♂, 1♀); Urim, 15.iii.1959, Chernov (1♀); Nahal Besor, 25.xii.2007, O. Rittner (1♀); Ofaqim, 11.ii.1997, L. Friedman (2♀); Tel Shoqet, 9.vi.1972, M. Tintpulver (1♀); Be'er Sheva', 17.iii.2000, A. Tsairi (1♀); Hazerim, 11.xii.1982, E. Orbach (1♀), 16.xi.1989, E. Orbach (1♀); Negev, 2.iii.1955 (1♀); Negev, 18.ii.1955, (1♀); **Central Negev:** Tel Yeroham [Tel Yerucham], 25.i.1958, A. Shulov (1♀); Nahal Hazaz, iv.2006, E. Groner (1♂); 'Avedat [Avdat], 2.iii.1975, A. Freidberg (1♀).

ITALY: [Italie], Cn. Tournier (1♀; MNHG); Spongano, prov. Lecce, 16–31.iii.1933, S.G. Loudon (1♂; MNHG); Sicile, Germar (1♂; MNHG); Sicilien (1♂, 1♀; NMBE); Sizilien, Palermo, iv.[19]58, E. Bezzel (1♀; ZSMU); Sicilia, Taormina, 1.iv.1922 (1♀; MNHG), iv.[19]53, K.E. Hüdepohl (1♀; ZSMU); Sicilia (TP), Selinunte scavi, 5.i.1995, G. Gardini (1♀; GIUS); Syrakus, 15.iv.1905, Dr. R. Schütt, Stud. W. Oberdörffer (1♂; MNHG); Syrakus, 4.iv.1922 (1♂; MNHG), iii.1930, G. Frey (1♂; MNHG); Sicilia, Pachino, 13–17.v.1906, A. Dodero (1 ex.). GREECE: Northern Greece, Thassos, 8.vii.1976, H. Fery (2♀); Larissa (Connos), 19.v.1969, A. Senglet (2♀; MNHG); Kefalonia, Argostolion, 1.iv.1971, B. Hauser (1♀; MNHG); Chalkis, Euboea, iii.1926, Holtz (1♂; MNHG); Argostoli [Argosdoli], 3.v.04 (determination label by Zumpt: "*Br. junix junix*") (1♀; MNHG); Zakynthos, Katastarion, 23.iii.1971, I. Löbl (1♂; MNHG); Mount Parnassus [Parnass] (1♂; NMBE); Argos, 31.iii.1966, H. Freude (1♂; ZSMU); Piraeus (1♂; BMNH); Mystras [Mistras], 4.iv.1966, H. Freude (1♀; ZSMU); Peloponnes, Voidokilla-Bucht, summer 2005, K. Germann (1♀; GERM); Rhodos, Profitis Ilias, 660 m, 36°16'22"N 27°56'49"E, 1.iv.2007, Bahr, Bayer, Brunner, Winkelmann (FO2) (1♂; BAYER); Rhodos, Panagia, Tsambika, 300 m, 36°14'08"N 28°09'09"E, 3.iv.2007, Bahr, Bayer, Brunner, Winkelmann (FO7) (2♂, 1♀; BAYER; 1♀; WINK; 1♂, 2♀; TAU); Rhodos, Akramites Mt., 500–800 m, 36°09'06" N 27°46'11" E, 1.iv.2007,

Bahr, Bayer, Brunner, Winkelmann (FO16); Crete, Kissos, 12.iv.1993, H. Winkelmann (1♂; WINK); Crete, Plakias, 2–16.iv.1993, H. Winkelmann (3♂; WINK); Crete, South to Plakias, 2–16.iv.1993, Winkelmann-Klöck (1♀; WINK); Crete, Rhetymnon S, Plakias, 50 m, 24.v.2004, Ch. Bayer (1♀; BAYER); Crete, Rethymnon, Armeni, Kastellos, 13.v.2009, Ch. Germann (1♂, 2♀; GERM); SW Crete, Selinou, Palaichorio, 25.iv.1938, R.E. Gathorne-Hardy (1♂; BMNH); Südost-Kreta, vic. Lithini, 1.v.1987, S. Wellschmied (1 ex.; SZMU). TURKEY: Asia Minor (2♀; NMBE); Asia Minor, Voy. Boissier (2♀; MNHG); Troja, [18]83, Sammlung Dr. K. Daniel (handwritten determination labels: *aegyptiacus*, det. Bedel, *Br. junix junix* Licht., det. Zumpt 1937) (1♂, 1♀; ZSMU); Izmir [Smyrna], 24.iii.1886, Sammlung K. Daniel (determination label by Bedel “*aegyptiacus*”, determination label by Zumpt “*B. junix junix*”) (1♀; MNHG); Izmir, Bornova, 21.vi.1974, T. Jaccoud (1♂, 1♀; MNHG); Antalya villayet, In Dağ Mts., Kılık env., 500–800 m, 2–4.vi.2003, I. Smatana (1♀; WINK); S. Aspendos, 5 km E Antalya, 24.iii.1997, K.H. Kielhorn (1♂; WINK); CS Turkey, Aidynlar env., NW Erdemli, 28.v.2001, P. Bialooki (16♂, 12♀; BIAL); Adana (3♂, 2♀; NMBE); [SYRIA] Akbes, Delagrangé, (handwritten determination label: F. Zumpt det. 1937, *Brachycerus argillaceus*) (1 ?♀; PMNH). CYPRUS: Baths of Aphrodite, 8.iv.1981, Cl. Besuchet (1♂, 3♀; MNHG); Karavas, landstrasse, 15.iii.1973, Schumann (1♀; WINK); Rt. E709, 2 km N Pegeia, 380 m, 34°53.9'N 32°22.3'E, 9.iv.2008, L. Friedman, on *Urginea maritima* (1♂); Evdhimou, 20.viii.1950, J. Wahrman (1♀); Limassol, 18.v.1931, Mavromoustakis (1♂); Karpas Peninsula, Turtle-beach env., 11.iv.1996, Preiss (1♂, 1♀); SYRIA: Syria, Sammlung v. Sedlitz, (*Br. junix aegyptiacus* Oliv., det. Zumpt 1937) (2♂, 2♀; ZSMU); Syrie (1♂; MNHG); Syrie, (?leg.) Coupur, (?coll.) Bedel (1♂; MNHG); Syrien, sammlung Rätzer (2♂; NMBE); Aleppo, MUSEUM PARIS // Coll. L. Bedel 1922; handwritten determination label: F. Zumpt det. 1937, *Brachycerus junix junix* Licht. (1♀; PMNH); Kbachin, 4.iv.2003, P. Weill (1♂; JJPL); Slinfah, 1130 m, 35°36'N 36°11'E, G. Sabatinielli (1♂); Hader, 12.iii.1974, Z. Feler (1♀). LEBANON: Lebanon, Comt de Meryon (1♂; BMNH); Liban, ex Piochard de la Brûlerie // MUSÉUM PARIS 1935 coll. Sédillot (2♂, 1♀; PMNH); Tripoli, 0 m, xii.2005, A. Kairouz (1♂; 3♀); Beirut [Beyrou] [leg.] Peyron, ex Piochard de la Brûlerie // MUSÉUM PARIS 1935 coll. Sédillot (1♂, 1♀; PMNH), [Syrien, Beirut], Sammlung Stöcklen, (*Br. junix aegyptiacus* Oliv., det. Zumpt 1937) (1♂; ZSMU), [Syrien, Berüt] (determination label by Zumpt “*Br. junix junix*”) (1♀; MNHG); Beirouth, Beirouth env., 17.v.2001, S. Ziani (1♂); Sidon [Syria, Saida], 1884, Durighello (3♂; 3♀; PMNH); M. Lebanon, Qartaba mt., 1400 m, 14.iv.2001, S. Ziani (1♂; 3♀). JORDAN: 'Ammān, Mount Nebo, 700 m, 6.iv.2002, S. Ziani (1♀). EGYPT: Aegyptus (2♂, 1♀; ZSMU); Egypt, ex. Mus. Murray, Fry coll.1905.100 (1♂; BMNH).

Distribution

Italy, Croatia (Dalmatia), Greece, Turkey, Cyprus, Syria, Lebanon, Israel, Jordan, Egypt, (Zumpt, 1937a,b; Alfieri, 1976; Georghiou, 1977). The occurrence of *B. aegyptiacus* in Iran (Borumand, 1998) is doubtful.

Host Plant

Urginea maritima (L.) Baker (Liliaceae).

Remarks

Brachycerus aegyptiacus was described by Olivier (1807) in Latin and French as following (translation ours, words in brackets added): "12. Egyptian *Brachycerus Brachycerus aegyptiacus* Pl. 3 fig. 34. B. black, pronotum acute [laterally?], marked with five sulci; elytra with two tuberculate lines and high tubercles on sides. Resembles strongly *B. undatus* in form and size. Rostrum is flat and punctured. Orbit not high, on head [=frons] two deep grooves. Pronotum angulate with five longitudinal sulci: the median sulcus without keel. Elytra rough, with two ranges of high tubercles sublaterally. Body black. Occurs in Lower Egypt."

We studied the holotype (Figs. 43–47), preserved in PMNH. This is a middle-sized female (13 mm), in good condition, lacking the left middle leg, bearing three labels: 1) Round, yellowish label (handwritten, by Olivier?): upper side: *B. aegyptius* // Egypte; lower side: Olivier // Scio? Scio?; 2) Rectangular green label (printed): PARIS MUSEUM // EGYPTE // OLIVIER; 3) Rectangular red label (printed): TYPE. Elytra of type specimen devoid of pale scales, although a few black scales present on subapical tubercles of right elytron.

This species was previously recorded from Israel as *B. junix* Lichtenstein and considered to comprise two subspecies: *B. junix junix* Lichtenstein and *B. junix aegyptiacus* Olivier (Bodenheimer, 1937; Zumpt, 1937a,b).

Zumpt (1937a,b), in his revision of the Palaearctic *Brachycerus*, contended that *B. junix* comprises two subspecies: *B. junix junix* in the northeast Mediterranean, from Italy to Israel, and *B. junix aegyptiacus* in Syria, Lebanon, Israel, and Egypt. The distributional patterns of these two subspecies were therefore strongly overlapping in the southeast Mediterranean. According to Zumpt, *B. junix aegyptiacus* differs from *B. junix junix* in the presence of yellowish-brown tufts of scales on the apical third of the elytra. We examined more than 200 specimens from all parts of Israel and were unable to locate any characters useful in subdividing them into two groups that could correspond with the two subspecies. Some Israeli specimens have tufts of scales, more or less developed, and some have no scales, with many intermediate cases. The specimens collected in the northern parts of Israel (Upper Galilee, Golan Heights, and Carmel Ridge) do not differ in the pubescence from specimens from the central or southern parts of Israel. The form of the aedeagus is variable within the population and our study shows that it has no relation to body size, geographical locality, or intensity of pubescence. Examination of the specimens from the northeast Mediterranean showed that most of them lack tufts of scales on the elytra, fitting the concept of *junix* sensu Zumpt, except for several specimens from Turkey, Greece, and Syria that have small tufts of pale scales on tubercles. However, the elytra of the holotype of *B. aegyptiacus* sensu Zumpt, originating in Egypt, and three additional specimens from Egypt studied by us, which should have tufts of scales on elytral tubercles according to Zumpt (1937a,b), are totally devoid of scales.

This led us to conclude that the subdivision of *B. junix* into two subspecies was erroneous and there is only one species, with high intraspecific variability in scale covering, widely distributed over the East Mediterranean. Its name should have been *B. junix*, as the description of this species was published nine years earlier than the description of *B. aegyptiacus*.

However, we found that the name *B. junix auctorum* had serious nomenclatural problems. *B. junix* was described by Lichtenstein (1796) in the catalogue of the auction of the collections of natural history objects, which was held in Hamburg in 1796. The sold collections probably belonged to the amateur Dutch collector, L.F. Holthuijzen, from Amsterdam. We have no information regarding to whom those collections were sold. Brief reviews of this unusual case were given by Kerzhner (1994) and Geiger (2003). The location of type specimen or the type series of *B. junix* has therefore been unknown for more than 200 years. The original description of *B. junix* Lichtenstein, 1796, is given in Latin as follows: "*Brachycerus junix; nobis. Brachycerus nigro fuscus, thorace bisulcato; coleopteris connatis, tuberculorum seriebus quinque. Habitat in Sibiria.*" (= *Brachycerus junix*; new [species]. *Brachycerus* blackish brown, pronotum bisulcate; elytra connate, [with] five rows of tubercles. Inhabiting Siberia.) (translation ours, words in brackets added). Unfortunately, this description is very brief and general; it fits most Mediterranean *Brachycerus* species, and therefore cannot point precisely to the species described by Lichtenstein. The origin of the specimen from Siberia is more than doubtful, as no species of *Brachycerus* occur in this region. We can speculate that at the end of the 18th Century, the term "Siberia" may have been used by Europeans for the territories east of the European part of the Russian Empire, so that a specimen coming from north Caucasus or territories north of the Caspian Sea could erroneously be referred to as "Siberian". In this case, the name "*junix*" could refer to one of the *Brachycerus* species occurring in this area (e.g., *B. sinuatus* Olivier, *B. quadrisulcatus* Fischer von Waldheim, *B. kubanicus* Arzanov, or *B. turkmenicus* Arzanov). Kraatz (1875) suggested that this description can fit *B. lutulentus* Gyllenhal (which was considered by Zumpt (1937a,b) to be a subspecies of *B. sinuatus*). Zumpt (1937a,b) suggested that only a species with an entire median groove on the pronotum can be "*junix*" sensu Lichtenstein, because this is the meaning of "thorace bisulcato". Another possibility is that "Siberia" is a misspelling of "Syria". In that case, too, we cannot associate any species with the description unambiguously.

The catalogue of Lichtenstein (1796) was suppressed for nomenclatural purposes, with conservation of one generic and 20 specific names, among them *B. junix* (Kerzhner, 1994, ICZN, 1995). Kerzhner (1994) suggested conserving the name *B. junix* because it was in general current usage (e.g., by Zumpt 1937a,b), and also because its type was known to Herbst and redescribed by him (Herbst, 1797). However, Kerzhner's reference to Herbst (1797) was erroneous. Herbst (1797) wrote that he neither saw the specimen nor its picture, but had only translated the original description into German. Therefore, conservation of this name was erroneous. Based on all the above-mentioned information, the name *Brachycerus junix* Lichtenstein is nomen dubium (ICZN, 1999) and must be rejected.

***Brachycerus argillaceus* Reiche and de Saulcy, 1857**

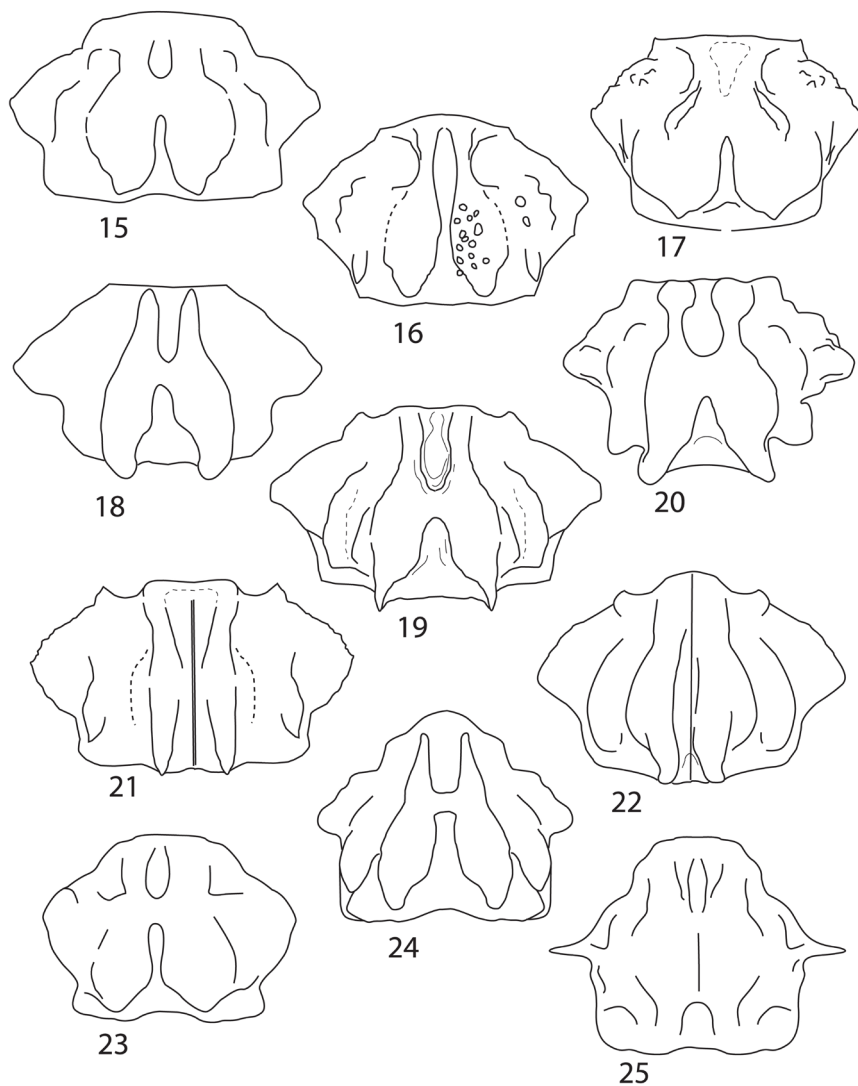
(Figs. 2, 7, 8, 18, 29, 36, 86)

Redescription

Body length 7–18 mm. Head, pronotum, elytra, and legs covered densely by small, yellowish, oblong scales, dense to sparse to entirely bare; thick black bristles, single on pronotum and part of elytral tubercles, arranged in transverse tufts on elytral sutural ridge, producing wide, black, longitudinal strip. Head (Fig. 7): rostrum extended posterolaterally into rounded lobe, separated from eye orbit by more or less deep transverse groove, rostrum posteromedially extended along 0.2–0.3 of frons into wide, flattened longitudinal ridge, antennal segments isodiametrical to transverse; frons concave, not or weakly punctured; eye slightly convex (Fig. 8); eye orbit rounded, thickened anterodorsally in lateral view, not to moderately projecting dorsal to frons. Pronotum (Fig. 18) isodiametrical to slightly transverse, with wide, blunt to strongly tapering lateral lobes, often, but not always, convex anteriorly and concave posteriorly; anterior margin of pronotum more or less straight; mediolateral ridge of pronotum distinct at basal 0.3–0.5; median ridge of pronotum slender at anterior third, swollen in median third, its posterior end pointed, projecting beyond posterior margin of pronotum, puncturation extremely variable in size and density. Pronotum nearly covered by whitish scales and black, thick bristles, often scale covering concentrated on median ridge of pronotum or obsolete, and elevated parts of pronotum covered by sparse, black bristles. Elytra of *argillaceus*-type, parallel-sided, angled at humeri, although in larger specimens, particularly in large females, elytra laterally more rounded, usually slightly flattened latero-ventrally, sutural, median, and lateral ridges usually distinctly prominent, although sometimes (probably in older specimens) low to indistinct, sutural ridge subdivided into distinct oblong, triangular, or nearly rounded tubercles, bearing transverse tufts of black bristles, surrounded by whitish-yellow shorter bristles, subsutural and sublateral ridges nearly obsolete or low, subdivided into small tubercles, bare or bearing single, thick, black bristles, median ridge most prominent, nearly sequential, at least at basal half of elytron, comprised of more or less transverse tubercles, bearing tufts of black bristles surrounded by whitish-yellow bristles, lateral ridge comprised of strongly projecting sharp tubercles, more or less, even from humeral area to apex, often densely covered by scales and/or bristles. Striae rough, coarsely textured by wrinkles or small tubercles. Legs covered by dense, long bristles. Tibiae cylindrical. Male genitalia: Aedeagus (Fig. 29) truncated to slightly rounded at apex, nearly parallel-sided. Tegmen sclerotized sublaterally, basally, and around notch between parameroid lobes, similar to tegmen of *groneri* and *wizeni*. Spermatheca (Fig. 36): narrow, with narrow duct-lobe, nearly indistinct weakly-rounded gland-lobe, tail oblong, tapered at apex, spermathecal gland variable, rounded to narrowly oblong, weakly sclerotized.

Material Examined

ISRAEL: [Palestina], coll. Javet, MUSEUM PARIS // Coll. L. Bedel 1922; handwritten determination label: F. Zumpt det. 1937, *Brachycerus argillaceus* Reiche



Figs. 15–25. *Brachycerus* spp., pronotum, dorsal view: 15. *B. aegyptiacus*. 16. *B. cribrarius*. 17. *B. foveifrons*. 18. *B. argillaceus*. 19. *B. groneri* n. sp. 20. *B. wizeni* n. sp. 21. *B. cinereus*. 22. *B. pulverulentus*. 23. *B. hermoniacus* n. sp. 24. *B. orbipennis*. 25. *B. spinicollis*.

(1♀; PMNH); [CJ], 15.xii.1942, A. Shulov (1♀); **Golan Heights:** Golan, Har Odem, 10.xii.2003, O. Rittner (1♀); Nahal Hazor, 14.x.2004, U. Roll (1♀); **Upper Galilee:** Rosh haNiqra, 4.iv.1995, E. Colonnelli (1 ex.; COLL); Elon, Nahal Bezet, 22.iv.1982, Cl. Besuchet, I. Löbl (1♀; MNHG); Monfort, 19.iv.1982, Cl. Besuchet, I. Löbl (1♂;

MNHG); Nahal Keziv [N. Kziv], 16.i.1999, M. Finkel (1♀), 27.iii.1999, M. Finkel (1♀), 24.iv.1999, M. Finkel (2♀), 21.i.2000, M. Finkel (2♂), 18.ii.2000, M. Finkel (1♂, 1♀), 18.iii.2000, M. Finkel (2♂, 3♀), 15.iv.2000, M. Finkel (2♀), 13.v.2000, M. Finkel (2♀); 'En Ya'aqov, 23.iii.2006, I. Shtirberg (1♂, 2♀), 8.ii.2007, I. Shtirberg (3♂, 4♀), 20.iii.2007, I. Shtirberg (1♂); **Lower Galilee:** Segev, 25.x.1994, M. Warburg (1♂); Ya'ar Segev, 13.vii.1985, M. Warburg (1♀); **Carmel Ridge:** Nahal Oren [N. Oren], 29.iii.1961, Y. Zvik (1♀), 26.vi.1994, V. Chikatunov (1♀), 5.i.2006, T. Pavlíček (1♂); Ramat haNadiv, 2.ii.1999, Y. Benmajor (1♂), 10.v.1999, Y. Benmajor (1♀); Karmel Ridge, Horvat Sumak, 26.iv.2009, G. Wizen (2♀); **Samaria:** Samaria, ex Piochard de la Brûlerie // MUSÉUM PARIS 1935 coll. Sédillot, (1♂; PMNH); Shekhem [Jordanie, Naplouse], 9.iii.1960, leg. Costa (2♀; PMNH); **Central Coastal Plain:** Dor-Nahsholim, 23.iv.1998, A. Traub (1♀); Nahal Poleg, 21.ii.1941 (1♂); **Southern Coastal Plain:** Tel Aviv, 28.iii.1961, E. Swirski (1♂); Giv'at Koah [Givat Koach], 29.i.1981 (1♀); Ramle, 1.i.1921, I. Aharoni (1♀); Ramle Swamp, 7.iii.1931, I. Aharoni (1♂); Rehovot [Rehobot], 15.i.1931, I. Aharoni (1♂); Nir 'Am, 21.iii.1946, Ch. Bytinski-Salz (1♀); **Foothills of Judea:** Hartuv [Ar-tuv], 25.ii.1952, P. Amitai (1♂); Park Canada, 31.iii.2007, O. Perry (1♂); Ya'ar Eshta'ol, 15.xii.1999, A. Shlagman (2♂); **Judean Hills:** Ramallah, 20.iii.1960, leg. Costa (1♂; PMNH); Yerushalayim [Jerusalem], ex Piochard de la Brûlerie // MUSÉUM PARIS 1935 coll. Sédillot (1♂, 3♀; PMNH); Yerushalayim [Jerusal.], iii.1885 [3.85], DCF. Leuthner, MUSEUM PARIS // Coll. L. Bedel 1922; handwritten determination label: F. Zumpt det. 1937, *Brachycerus argillaceus* Reiche (2♂, 1♀; PMNH); Yerushalayim [Jerusalem], 1904, MUSEUM PARIS // Coll. L. Bedel 1922; handwritten determination label: F. Zumpt det. 1937, *Brachycerus argillaceus* Reiche (1♀; PMNH); Yerushalayim [Jerusalem], 12.iii.[19]33, Schatzmayr. Coll. Museo ent. // Pietro Rossi // Duino, MUSEUM PARIS // Coll. L. Bedel 1922; handwritten determination label: F. Zumpt det. 1937, *Brachycerus argillaceus* Reiche (1♂; PMNH); Yerushalayim [Jerusalem], 27.xii.1933, F.S. Bodenheimer (1♂), 15.ii.1935, A. Shulov (1♀), 5.iii.1935, F.S. Bodenheimer (1♂), 12.i.1943, Ch. Bytinski-Salz (1♀), 15.ii.1944 (1♀), 14.xii.1951, E. Swirski (1♂), 24.xii.1951, E. Swirski (1♀), 15.iii.1952, J. Wahrman (1♀), 28.xii.1954, O. Bash (1♀), 4.iii.1957, H. Eshkol (1♀), 4.iv.1962, Y. Werner (1♀); Yerushalayim [Jerusalem], Gilo, wasteland, 29.iii.2001, A. Orlov (1♀); Yerushalayim, Giv'at haArba'a, Rt. 60 [Jerusalem, Hebron road, Givat Arba], 26.iv.2007, A. Orlov (1♀); Matta', 24.iii.2006, I. Shtirberg (7♂, 2♀), 9.xi.2006, I. Shtirberg (1♂, 2♀), 4.ii.2007, I. Shtirberg (3♂, 3♀), 18.iii.2007, I. Shtirberg (1♂, 2♀), 19.iv.2007, I. Shtirberg (1♂); Sedot Mikha, 18.i.2002, Y. Mandelik (1♂); Zekharya, 16.xi.2001, Y. Mandelik (1♂), 22.iii.2002, Y. Mandelik, V. Chikatunov (1♂); Nahal Sansan [Nahal Sanan], 16.xi.2001, Y. Mandelik (1♂, 1♀); Nahal Sansan, 22.iii.2002, Y. Mandelik, V. Chikatunov (1♂, 1♀); 'Adullam, 18.i.2002, Y. Mandelik (2♂, 1♀), 22.iii.2002, Y. Mandelik (3♀), 3.iv.2003, T. Levany, U. Columbus (5♂, 5♀), 15.i.2004, T. Levany (7♂, 4♀), 10.iii.2008, O. Skutelsky (3♀); Ramot Avishur [Ramot Avishov], 18.i.2002, Y. Mandelik (1♂, 1♀), 22.iii.2002, Y. Mandelik, V. Chikatunov (4♂, 1♀); Nahal Teqoa', 'En Haritun, 31.iii.2009, G. Wizen (3♂, 2♀); Nahal Teqoa', 650 m, 31°38'N 35°14'E, 31.iii.2009, L. Friedman (2♀); Nahal Teqoa', Ma'ale Rehav'am, 460

m, 31°39'N 35°15'E, 31.iii.2009, L. Friedman (1♀); **Hevron** [Hebron], 19.xii.1969, M. Broza (1♀); **Judean Desert**: Nahal Perat [Wadi Kelt], 30.i.1969, Y. Yefenof (1♀); Nahal Perat [Wadi Fara], 2.iii.1943, Ch. Bytinski-Salz (1♀); **Northern Negev**: Eshkolot, 18.iii.2007, I. Shtirberg (1♀); Lehavim, 14–18.iii.2006, O. Shelef (1♂); 15 km south Be'er Sheva', 25.xii.1945, Ch. Bytinski-Salz (1♀).

GREECE: Rhodos, Profitis Ilias, 660 m, 36°16'22''N 27°56'49''E, 1.iv.2007, Bahr, Bayer, Brunner, Winkelmann (FO2) (1♀; WINK). CYPRUS: [Chipre], Mniszech (1♀; MNHG); Rt. E709, 2 km N Pegeia, 380 m, 34°53.9'N 32°22.3'E, 9.iv.2008, L. Friedman, on *Urginea maritima* (2♂, 5♀). SYRIA: Syria, MUSEUM PARIS // Coll. L. Bedel 1922 (handwritten determination label: F. Zumpt det. 1937, *Brachycerus argillaceus* Reiche (1♂; PMNH); Syria (handwritten determination label: F. Zumpt det. 1937, *Brachycerus argillaceus* Reiche) (2♂; 1♀; ZSMU); Syrie, Voy. Boissier (1♀; MNHG); Syrie, Cn Tournier (2♂; MNHG); Damas, ex Piochard de la Brûlerie // MUSÉUM PARIS 1935 coll. Sédillot (1♂, 1♀; PMNH); Shag Hab. (?), 11.ii.1945, K. P. Whitehorn (1♀; BMNH). LEBANON: Liban, ex Piochard de la Brûlerie // MUSÉUM PARIS 1935 coll. Sédillot (2♂, 1♀; PMNH); Beyrout, ex Piochard de la Brûlerie // MUSÉUM PARIS 1935 coll. Sédillot (1♂, 1♀; PMNH); Beirut [Beyrouth] (Staudgr), MUSEUM PARIS // Coll. L. Bedel 1922; handwritten determination label: F. Zumpt det. 1937, *Brachycerus argillaceus* Reiche (1♂; PMNH); Beirut [Beyrouth], coll. Peyron, MUSEUM PARIS // Coll. L. Bedel 1922; handwritten determination label: F. Zumpt det. 1937, *Brachycerus argillaceus* Reiche (1♂; PMNH); Sidon [Syria, Saida], 1884, Durighello (1 ex.; PMNH). JORDAN: Amman, Mafrat, Kilo 18, 13.iv.1951, T. Trought (1♀; BMNH). EGYPT: [Egypte] (1♀; MNHG).

Distribution

Greece, Turkey, Cyprus, Syria, Lebanon, Israel, Jordan (Georghiou, 1977; Lodos, 1977; Zumpt, 1937a,b), Egypt (first record).

Host Plant

Urginea maritima (L.) Baker (Liliaceae).

Remarks

Described from Beirut, Lebanon, the deposition of the type series is unknown. We examined several specimens from Lebanon (see above), mostly from PMNH, including material determined as *B. argillaceus* by Zumpt. Part of these specimens could be used by Reiche and De Saulcy, but we have no clear indication of this. This material comprises either abraded, dirty, and deformed or atypical specimens: too-small specimens, less than 8 mm long, while the body length in the original description is 10–11.5 mm; elytra with reduced tubercles, etc. We failed to obtain any intact *B. argillaceus* from Lebanon. Therefore, we are not designating a neotype in this article.

Zumpt (1937a,b) recognized *B. nodulosus* Reiche and de Saulcy as small specimens of *B. argillaceus*. We assume that *B. argillaceus* was erroneously reported from Israel by Baudi (1894) as *B. plicatus* and by Bodenheimer (1937) as *B. callosus* and *B. plicatus*.

***Brachycerus cinereus* Olivier, 1807**

(Figs. 6, 21, 39, 63–65)

Redescription

Body length 12–15 mm. Body (Figs. 63–64) densely covered by round, whitish, or grayish scales, general appearance of weevil pale yellowish-gray. Head (Fig. 6): eye transverse, wider than high, eye orbit slightly flattened dorsally, dorsoposteriorly free; frons flat or slightly convex, puncturation of frons variable: frons of holotype with several large, formless, shallow concavities, frons of other specimens with shallow, round, sparse punctures; groove between frons and base of rostrum obsolete. Pronotum (Fig. 21) with entire median groove and entire longitudinal median ridge along median groove, tips of median pronotal ridges prominent, but not exceeding basal margin; no connection between median ridges; anterior margin of pronotum prominent, apically abrupt. Elytra of *argillaceus*-type, tubercles low, sutural ridge detectible, tubercles flat, bearing short, black bristles, subsutural, and sublateral ridges indistinct, median ridge subdivided into transverse flat, bare, tubercles, lateral ridge distinct, comprising tapered tubercles. Legs thickly covered by scales; foretibiae flattened, laterally with longitudinal ridge, median and hind tibia cylindrical. Aedeagus rounded at apex (fig. 55 in Zumpt, 1937b) Spermatheca with duct-lobe narrow, gland-lobe slightly protruding, tail elongated, rounded terminally, with strong folds at concave part, spermathecal gland not found (Fig. 39).

Material Examined

Type material: Holotype, ♀. Round, yellowish label (handwritten, by Olivier?): upper side: Olivier // Egypte, lower side: *B. cinereus*. Rectangular green label (printed): PARIS MUSEUM // EGYPTE // OLIVIER. Rectangular red label (printed): TYPE (Figs. 63–65). Paratype, ♀. Round, yellowish label (handwritten, by Olivier?): Lower side: Olivier. Rectangular green label (printed): PARIS MUSEUM // EGYPTE // OLIVIER. Both types deposited in PMNH; preserved in excellent condition.

ISRAEL: No specimens from Israel were available for study.

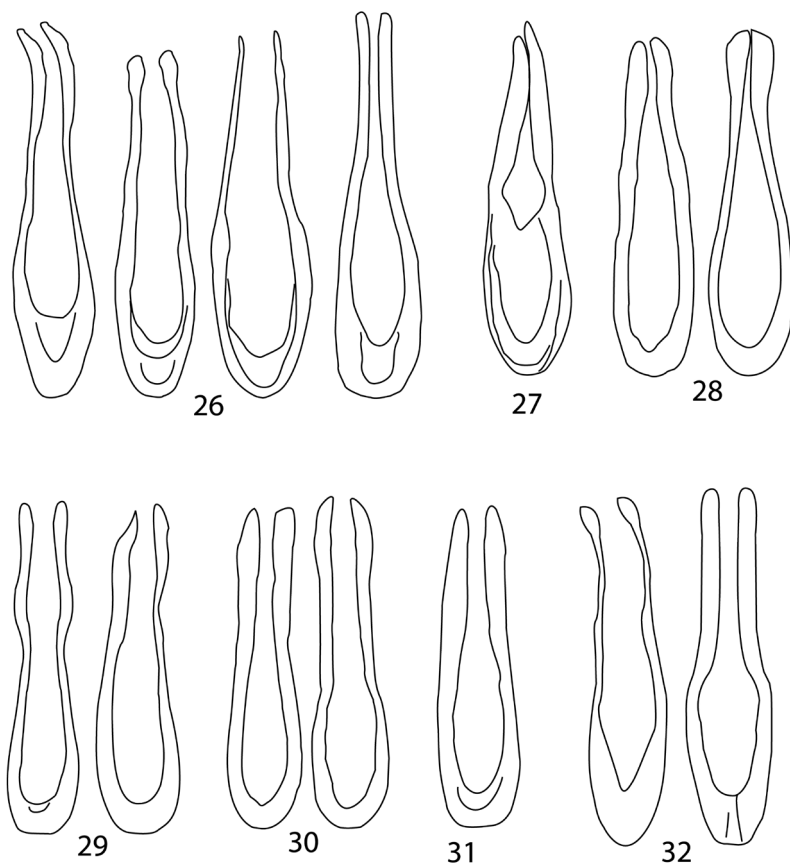
SYRIA: Pascoe coll. (1♂; BMNH). EGYPT: Sinai, St. Katherine (1♂; NMBE); Sinai, St. Katherine, sammlung Rätzer (1♀; NMBE).

Distribution

B. cinereus was described from Egypt (Olivier, 1807) and recorded also from Lebanon and Syria (Zumpt, 1937a,b) and Israel (Bodenheimer, 1937). *B. lutosus* Gyllenhal was synonymized by Bedel (1874) with *B. cinereus*; therefore many authors recorded *B. cinereus* from North Africa, Italy, Hungary, Balkan Peninsula, and Caucasus erroneously (Bedel, 1874; Winkler, 1924–1932; Hustache, 1926; Porta, 1932; Arzanov, 2005).

Host Plant

Unknown.



Figs. 26–32. *Brachycerus* spp., aedeagus, dorsal view: 26. *B. aegyptiacus*. 27. *B. hermoniacus*. 28. *B. orbipennis*. 29. *B. argillaceus*. 30. *B. groneri* n. sp. 31. *B. wizeni* n. sp. 32. *B. spinicollis*.

Remarks

B. cinereus is closely related to *B. lutosus* Gyllenhal, but can be distinguished by several characters: *B. cinereus* has a flat frons with shallow to obsolete longitudinal ridge, eye orbit slightly projecting above frons and anterior margin of pronotum with short abrupt projection, while *B. lutosus* has a strongly convex frons with distinct longitudinal ridge, eye orbit strongly projecting above frons, and anterior margin of pronotum with oblong, rounded projection (Fig. 22). Zumpt (1937a,b) mentioned a difference in the form of aedeagus (rounded at apex in *B. cinereus* versus abrupt at apex in *B. lutosus*), but we were unable to check this character.

We studied the holotype of *B. pulverulentus* Olivier, 1807, from Egypt (Round, yellowish label (handwritten, by Olivier?): upper side: Olivier, underside: Bup. // pulverulentus // Egypte. Rectangular green label (printed): PARIS MUSEUM // EGYPT // OL-

IVIER. Rectangular red label (printed): TYPE (1 female; PMNH)) (Fig. 22), which was considered a junior synonym of *B. cinereus* already by Zumpt (1937), and found that it can be distinguished from *B. cinereus* by the same characters as *B. lutosus*, and does not differ from the latter. Therefore, it appears to be a senior synonym of *B. lutosus*, but we are not establishing this synonymy before seeing the type material of *B. lutosus*.

***Brachycerus cribrarius* Olivier, 1807**

(Figs. 4, 16, 34, 69–75)

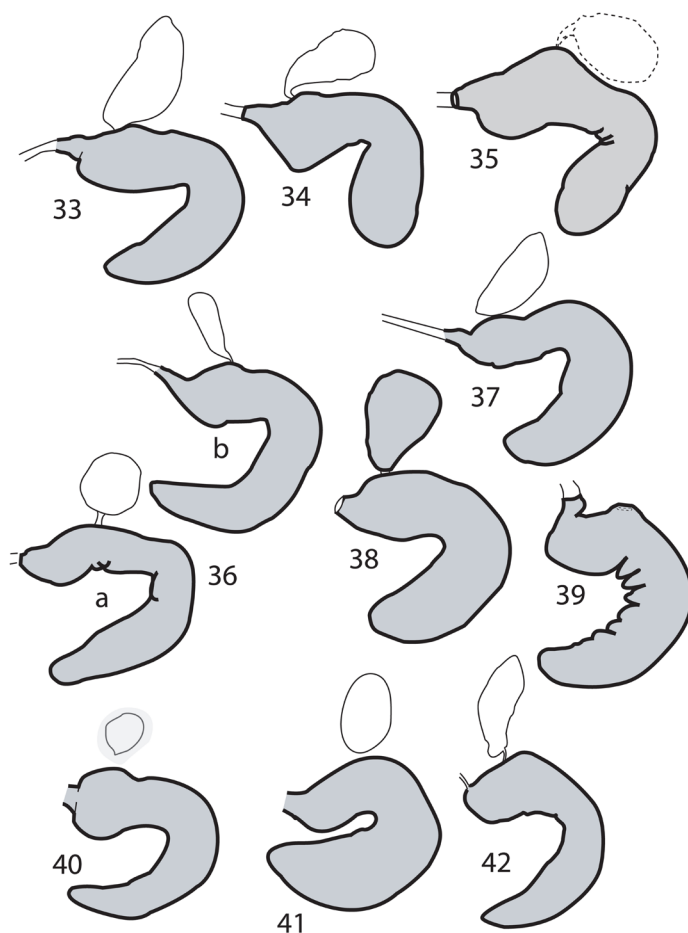
Redescription

Body length 9–20 mm. Elytra and part of body of holotype specimen (20 mm) (Figs. 69, 70, 74) strongly shagreened, sub-sculpture of elytral surface grain-like, partly covered with minute, oblong, pale scales, one of the smaller specimens (13 mm) has similar sub-sculpture, but not that distinct, other specimens (9–12 mm) lack this character. Head (Figs. 4, 70–73): rostrum punctured with round to shapeless punctures of variable size and dense, in smaller specimens surface of rostrum wrinkled; extended posteromedially into wide, flattened, longitudinal ridge reaching occiput, merging with frons in smaller specimens; frons slightly concave, not punctured; eye flat; eye orbit thickened dorsoanteriorly in lateral view, extended into triangle in some specimens, not projecting dorsal to frons, clearly separated from head at posterior margin. Pronotum (Figs. 16, 69, 72) with projecting, wide, blunt lateral lobes, coarsely punctured with round, shallow punctures; anterior margin of pronotum rounded, slightly extended forward, lateromedian ridge distinct only at basal half, median ridge of pronotum widened at basal half, its posterior end not projecting beyond posterior margin of pronotum; median groove entire. Elytra (Figs. 69, 70, 74) oval, convex, more or less rounded laterally, elytral ridges indistinct, at most median and sublateral ridges slightly raised at base of elytron; surface of elytra evenly sculptured, with shallow concavities, producing a net-like or loop-like elytral sculpture. Tibia: at least foretibia flattened with posterior ridge sharp, the holotype has only foretibia flattened, other studied specimens have middle and hind tibia more or less flattened. Male genitalia not examined; according to Zumpt (1937a,b), penis rounded laterally and apically, slightly constricted at base. Spermatheca (Fig. 34): duct-lobe with wide, tapered projection, gland-lobe short, tail globose, spermathecal gland obovoid, weakly sclerotized.

Material Examined

Type material: ?TURKEY/?SYRIA/?IRAQ/?IRAN: Mesopotamia [Mesop.] (1♀; Holotype) (bearing following labels: Round yellowish label (handwritten at underside, by Olivier?): Olivier. Rectangular yellowish label pinned perpendicularly (handwritten, by Olivier?): *B. cribrarius* // Mesop. Rectangular green label (printed): PARIS MUSÉUM // MÉSOPOTAMIE // OLIVIER. Rectangular red label (printed): TYPE) (Fig. 75). The holotype is deposited in PMNH, in good condition; left antenna is broken, only scape remains of right antenna, head and rostrum are partly covered by glue or resin.

ISRAEL: No specimens from Israel were available for study.



Figs. 33–42. *Brachycerus* spp., spermatheca. 33. *B. aegyptiacus*. 34. *B. cribrarius*. 35. *B. foveifrons*. 36. *B. argillaceus* (a. with spheric gland, b. with formless gland). 37. *B. groneri* n. sp. 38. *B. wizeni* n. sp. 39. *B. cinereus*. 40. *B. hermoniacus* n. sp. 41. *B. orbipennis*. 42. *B. spinicollis*.

No locality: MUSEUM PARIS // Coll. L. Bedel 1922 (handwritten determination label: F. Zumpt det. 1937, *Brachycerus cribrarius* Oliv.) (1♀; PMNH). TURKEY: [Syrie], Akbes // C D 1895; MUSEUM PARIS // Coll. L. Bedel 1922 (handwritten determination label: F. Zumpt det. 1937, *Brachycerus cribrarius* Oliv.) (1♀; PMNH); East Turkey, Buglan Geçidi, E Solhan, 17.vi.2003, P. Bialooki (1♀; BIAL). ?SYRIA: Sammlung Cl. Müller (handwritten determination label: Zumpt, 1937, *Brachycerus cribrarius* Oliv. X *argillaceus* Rche.?) (1♂; ZSMU). IRAN: Kermanshah, 11.iv.1959, E.S. Brown (1♂; BMNH); Kurdistan, Chuklag (?), 13.x.1958, E.S. Brown (1♀; BMNH).

Distribution

Turkey, Lebanon, Israel (Zumpt, 1937a,b), Iran.

Host Plant

Unknown.

Remarks

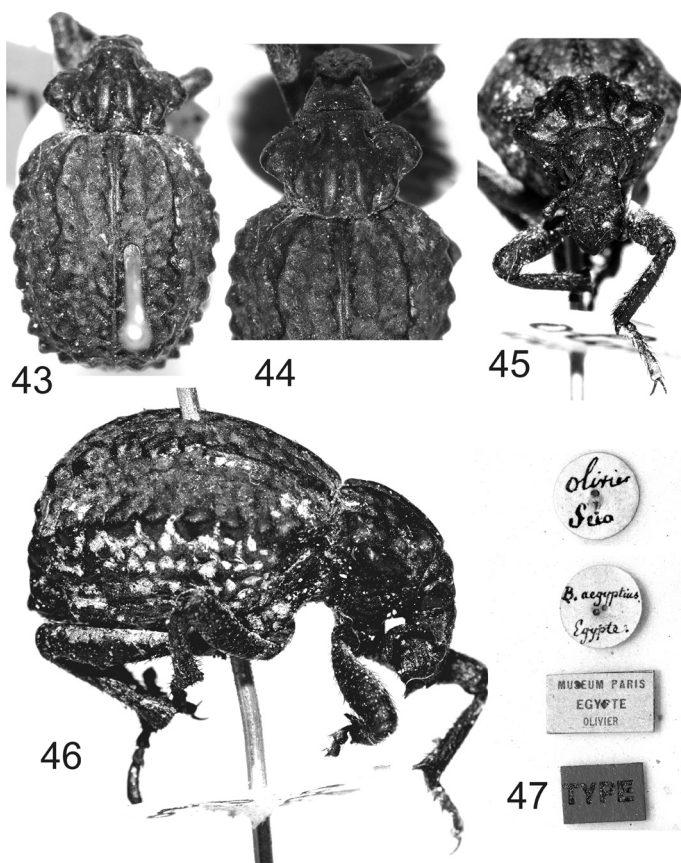
Described by Olivier (1807) from Mesopotamia, which is a toponym for the area of the Tigris–Euphrates River system, along the Tigris and Euphrates Rivers, largely corresponding to Iraq, and including part of northeastern Syria, part of eastern Turkey, and part of the Khūzestān Province of southwestern Iran. The locality label of the type specimen bears only the word “Mesop.” (=Mesopotamia). It is unclear in which part of the area the type specimen was collected. Bedel (1874) indicated additional specimens from Syria and Lebanon (Tripoli, Beirut). Zumpt (1937b) mentioned specimens from Turkey (Diyarbakır), Lebanon (Beirut), and Israel (Yerushalayim). Bedel (1874) synonymized *B. cribrarius* with *B. junix* Lichtenstein (see remarks section of *B. aegyptiacus*). Zumpt (1937b), almost certainly without studying the holotype, reinstated *B. cribrarius*, but considered it to be closely related to *B. junix*.

The record from Israel is not supported by any recent material and is therefore doubtful.

***Brachycerus foveifrons* Bedel, 1874**
(Figs. 5, 17, 35)

Redescription

Body length 13–19 mm. Head, pronotum, and elytra bare with occasional sparse, thin bristles; legs more densely covered by thin bristles. Rostrum and pronotum not punctured or punctures minute and obsolete. Head (Fig. 5): rostrum extending posteromedially into tapered projection, not extending on frons; base of rostrum distinctly separated from frons by transverse hoof-like fovea; antennal segments transverse; frons convex, not punctured; eye flat; eye orbit rounded, slightly thickened dorsally in lateral view, not projecting dorsal to frons. Pronotum (Fig. 17) described by Bedel as “pulviniforme” (=cushion-like), isodiametrical, with wide, short lateral lobes, tapered at very apex; anterior side of lateral lobe and subapical part of pronotum with small, prominent tubercles; anterior margin of pronotum straight; latero-median ridge of pronotum indistinct; median ridge of pronotum indistinct anteriorly, posteriorly expanded and flat, glabrous, with only a few very fine punctures. Elytra of *orbipennis*-type, globose, evenly tuberculated with low, rounded tubercles. Legs: Zumpt (1937a,b) defined *B. foveifrons* by at least foretibia with longitudinal ridge at posterior margin, and other tibiae with more or less distinct longitudinal ridge, while all specimens of *B. foveifrons* studied by us had all tibiae cylindrical. Male genitalia not dissected: Aedeagus shown in Zumpt (1937b) laterally rounded, apically widely tapered. Tegmen not studied. Spermatheca (Fig. 35): duct-lobe rounded, short, narrowed apically, gland-lobe globose, tail elongated, rounded apically, spermathecal gland ovoid, weakly sclerotized.



Figs. 43–47. *Brachycerus aegyptiacus* Olivier, holotype. 43. dorsal view, 44. pronotum, 45. frontal view, 46 lateral view, 47. labels. (Photo by O. Rittner).

Material Examined

ISRAEL: No specimens from Israel were available for study although Zumpt (1937a,b) recorded a specimen from “Palästina, Jerusalem” (=Israel, Yerushalayim).

TURKEY: Buglan Geçidi, 17.vi.2003, P. Bialooki (1♀; BIAL); Mardin, 17.x.1960, E.S. Brown (1♀; BMNH). SYRIA: Aleppo (1♂; BMNH). LEBANON: Beirut [Beir-outh], coll. Javet (handwritten determination label: Zumpt, 1937, *Brachycerus argilla-ceus* Rche. X *cribrarius* Oliv.?) (1♀; PMNH). IRAN: [Persia], Milliwigew(?), Fry coll. 1905.100 (1♀; BMNH); Kurdistan [Kurd.], Sharp coll. 1905.313 (2♀; BMNH).

Distribution

Turkey, Syria, Israel (Zumpt, 1937a,b; Lodos, 1977), Lebanon, Iran. The record from Israel is not supported by any recent material and is therefore considered doubtful.

Host Plant

Unknown.

***Brachycerus groneri* Friedman and Sagiv, n. sp.**

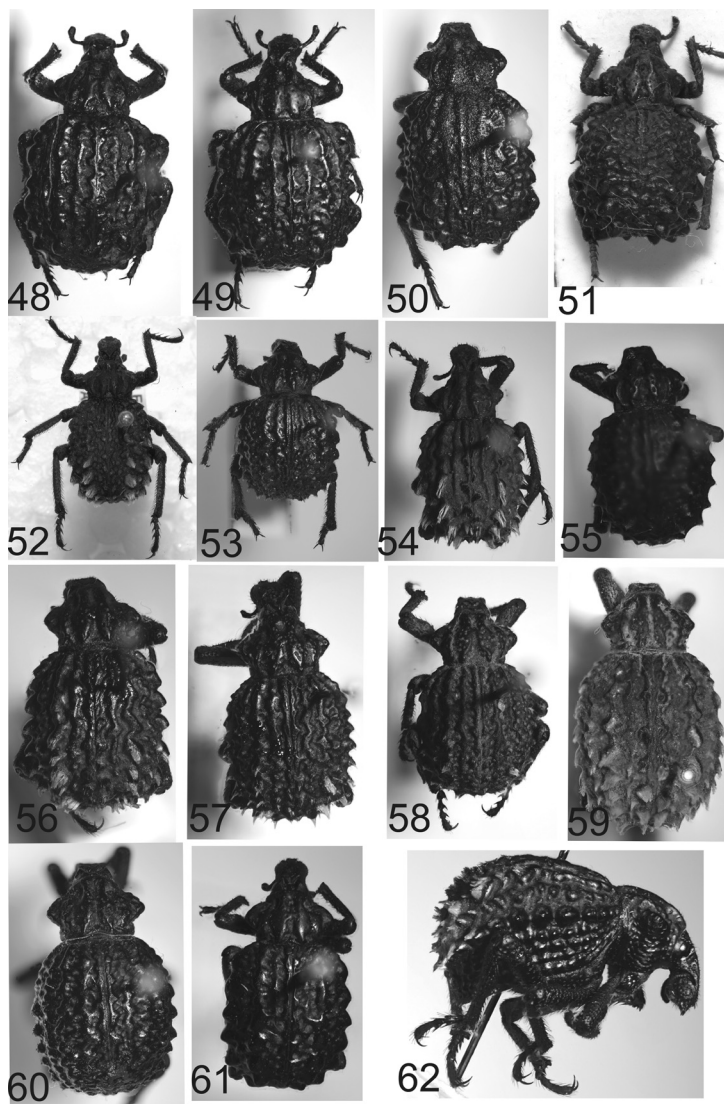
(Figs. 9, 19, 30, 38, 86)

Diagnosis

B. groneri is closely related to *B. argillaceus* Reiche and de Saulcy and *B. wizeni* n. sp., but differs in the flat eyes, elytral tubercles, and very low ridges, lateral ridge comprising small, dense, pointed tubercles, body vestiture composed mostly of dense, small, yellowish lanceolate or round scales and black bristles, which are shorter than in *B. argillaceus* and *B. wizeni*, and the tufts of bristles are sparser, usually comprising only a single line of bristles; distal antennal segments wider than in *B. argillaceus*, and the spermathecal gland obovoid, strongly sclerotized. This species comprises an isolated population in the Central Negev, allopatric with *B. argillaceus* which inhabits the Mediterranean, semi-desert areas of the Southern Coastal Plain, Northern Negev, and Judean Desert, and with *B. wizeni*, which inhabits the Central Coastal Plain.

Description

Body length 10–15 mm. Head, pronotum, elytra, and legs of younger specimens covered densely by small, yellowish lanceolate or round scales, distinctly more oblong on legs, single black bristles and tufts of black bristles reduced to lines. Rostrum and pronotum with large round punctures. Head (Fig. 9): rostrum extending posterolaterally into lobe, posteromedially extended along 0.5–0.8 of frons into wide, flattened longitudinal ridge, sometimes with shallow, median furrow; antennal segments 7 and 8 3–4 times as wide as long, other segments as wide as long or slightly transverse; frons concave, not punctured; eye flat; eye orbit rounded, thickened dorsally in lateral view, slightly projecting dorsal to frons. Pronotum (Fig. 19) with wide, blunt, lateral lobes; anterior margin of pronotum slightly extended over head at its median part, median ridge of pronotum slender at anterior third, swollen in median third, its posterior end pointed, projecting beyond posterior margin of pronotum, coarsely and sparsely punctured. Elytra of *argillaceus*-type, parallel-sided, angled at humeri; sutural ridges parallel, very low, in aged specimens nearly indistinct, comprised of connected low transverse tubercles, bearing one transverse line of black bristles or a few single bristles surrounded by whitish scales, which are longer than regular elytral scales; subsutural and sublateral ridges undistinguished, subdivided into tiny, unordered tubercles; median ridge subdivided into slightly connected or unconnected transverse tubercles, bearing line of black bristles surrounded by whitish-yellow bristles; lateral ridge subdivided into 10–13 tubercles, prominent relative to other ridges. Tarsi covered by long, dense bristles. Tibiae cylindrical. Male genitalia: Aedeagus (Fig. 30) varies widely in form of apex, from rounded to nearly truncated, and laterally rounded to nearly parallel-sided. Tegmen sclerotized medially and basally, or at least at notch between parameroid lobes, similar to tegmen of *argillaceus* and *wizeni*. Spermatheca (Fig. 38): duct-lobe rounded, short, narrowed api-



Figs. 48–62. The variation of the sculpture and pubescence in *Brachycerus aegyptiacus* in the East Mediterranean, from north to south, dorsal view. 48. Italy (Sicily), 49. Greece (Mistras); 50. Turkey (Troja). 51. Syria (Kbachin), elytral tubercles enormously enlarged. 52. Lebanon (Tripoli). 53. Israel, (Upper Galilee, Nahal Keziv). 54. Israel, North (Upper Galilee). 55. Israel (Carmel Ridge, Ramat haNadiv). 56–58. Israel (Judean Hills, 'Adullam). 59. Israel (Central Coastal Plain, Udim). 60. Israel (Northern Negev, Be'er Sheva'). 61. Egypt. 62. *B. aegyptiacus* (Israel, 'Adullam) with strongly developed tufts of scales, lateral view. (Photos 48–50, 53–62 by C. Drees, photos 51–52 by O. Rittner).

cally, gland-lobe nearly obsolete, tail elongated, roundly tapered apically, spermathecal gland obovoid, strongly sclerotized.

Etymology

This species is named in honor of Israeli ecologist Dr. Elli Groner, Sede Boqer, Blaustein Institute for Desert Research, Ben-Gurion University of the Negev, the leader of a research group that studies the biodiversity and ecology of arthropods in Israel, and the collector of part of the type series.

Material Examined

Holotype: ♂, ISRAEL: Sede Boqer, Hatira near Har Zaror, 21.i.2002, E. Groner (TAUI). Paratypes: same data as holotype (2♂, 4♀; TAUI). Additional paratypes: ISRAEL: **Northern Negev:** Bor Mashash, 31°06.273'N 34°49.443'E, 400 m, 11.iii.2009, O. Rittner (1♂; TAUI); **Central Negev:** Park Yeroḥam, 7.iv.1998, E. Filler (1♀; TAUI); Ma'agar Yeroḥam, 30°59'N 34°55'E, 4.iv.2007, S.H. Hornfeld & I. Rosenstein (1♂; TAUI); Zomet Haluqim [Halukim], 15.xii.2002, E. Groner (1♂; TAUI); Naḥal Boqer, 2006, E. Groner (1♂); Har Zaror, Hatira [near Mt.Tzaror, Hatira], 14.ii.2002, E. Groner (1♂; TAUI); Har Zaror, Hatira [Tzaror, Hatira], xi.2002, E. Groner (1♀; TAUI), i.2003, E. Groner (2♂); Sede Boqer, 12.iv.2009, G. Wizen, L. Friedman (1♂; TAUI); 'En Mor, 31.i.2007, L. Friedman, V. Chikatunov, T. Assmann, on *Urginea maritima* (4♂, 4♀; TAUI).

Non-paratype material: Yeroḥam [Bir Rechme], 28.iv, Ch. Bytinski-Salz (1♂; TAUI); Yeroḥam, Har Avnon [Negev: Yeruham, Har Havnon], 500 m, 31.iii.1995, E. Colonnelli (1 ex.; COLL).

The holotype is pinned directly, labeled with a red holotype label, in excellent condition, and deposited at TAUI. Most paratypes are at TAUI; paratypes will be deposited at the Natural History Museum, London, UK, Paris Museum of Natural History, France, and the Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia.

Distribution

Israel: Northern and Central Negev (Fig. 86).

Host Plant

Urginea maritima (L.) Baker (Liliaceae). Larvae develop in the bulb. Adults consume both leaves and bulbs (Figs. 76–79).

Brachycerus hermoniacus Friedman and Sagiv, n. sp.

(Figs. 12, 23, 27, 40, 87)

Diagnosis

B. hermoniacus is most similar to *B. orbipennis*, from which it differs in the anterior margin of the pronotum, straight or slightly rounded and not protruding in *hermoniacus* (Fig. 23), and protruding in *orbipennis* (Fig. 24); in the eye orbit, not projecting or pro-

jecting slightly dorsal to frons in *hermoniacus* (Fig. 12); projecting strongly in *orbipennis* (Fig. 13); in the longitudinal ridge of frons, obsolete or flat and truncated posteriorly in *hermoniacus*, distinct, tapered in *orbipennis*; in the more sclerotized aedeagus of *hermoniacus* (Figs. 27–28); and the shape of the spermatheca (Figs. 40–41); *B. hermoniacus* occurs in the Mediterranean maquis and in the subalpine tragacanth zone of Har Hermon, while *B. orbipennis* occurs in dry desert areas.

Description

Body length 7–12 mm. Body, appendages, and elytra devoid or nearly devoid of scales, bearing single black bristles. Head (Fig. 12): rostrum separated from frons by shallow dorsolateral groove, posteromedially extended into flat ridge; antennal segments 1–3 isodiametric or transverse, 4–8 transverse; frons more or less flat, not punctured; longitudinal ridge obsolete, but if distinct then flat, truncated posteriorly; eye flat, eye orbit well separated from frons, rounded, projecting slightly over frons. Pronotum (Fig. 23) as long as wide; anterior margin of pronotum rounded, slightly prominent; lateral lobes massive, blunt. Pronotal ridges shallow, coarsely punctured; lateromedian ridge distinct only in basal half; median ridge rounded basally, not projecting beyond basal margin of pronotum. Elytra of *orbipennis*-type, globular, ridges obsolete, except lateral with only a few blunt tubercles protruding slightly, mostly in apical half of elytra. Tibiae cylindrical. Male genitalia: Aedeagus as in Fig. 27. Spermatheca (Fig. 40): duct-lobe rounded, swollen, narrowed apically, gland-lobe rounded, tail elongated, tapered apically, spermathecal gland globular, diffuse.

Etymology

The specific epithet refers to the distribution of this species on Har (Mount) Hermon.

Material Examined

Holotype: ♀, ISRAEL: Har Hermon, Man Valley, 7.v.1993, E. Orbach (TAUI). Paratypes: ISRAEL: Har Hermon, 1700 m, 11–27.iv.2010, C. Drees, L. Friedman, pitfall trap (1♂, 1♀; TAUI); Har Hermon, 1600 m, 19.v.1969, Yohanan (1♂; BUSS); Har Hermon, Man Valley [Hermon, Marg' Man], 6.iv.1976 (1♀; TAUI); Har Hermon, Man Valley, 17.iv.1991, E. Orbach (1♀; TAUI); ?ISRAEL/ ?LEBANON/ ?SYRIA: Syrie, Djebel Mazart, 1400 m, xi.1922, R. Soyer (1♂; PMNH).

The holotype is glued to a triangular card, with the genitalia glued to a card rectangle pinned beneath the specimen. It is labeled with red holotype label, is in excellent condition, and is deposited in TAUI.

Distribution

Mount Hermon (Fig. 87).

Host Plant

Unknown. Two specimens were collected in close proximity to *Iris mesopotamica* Dykes (Iridaceae).

Remarks

“Syrie, Djebel Mazart” is probably Jebel Mazar or Jebel Al Mazar (1500 m), located east of Mount Hermon and southwest of Damascus, today nearly inside the city of Damascus, although this name may also refer to Jebel Mazar near Tadmor (Palmyra) in Syria and to part of Har Dov, near Shebaa Farms (located on the present meeting point of the borders between Israel, Lebanon, and Syria).

Brachycerus orbipennis Reiche and de Saulcy, 1857

(Figs. 13, 24, 41, 66–68, 87)

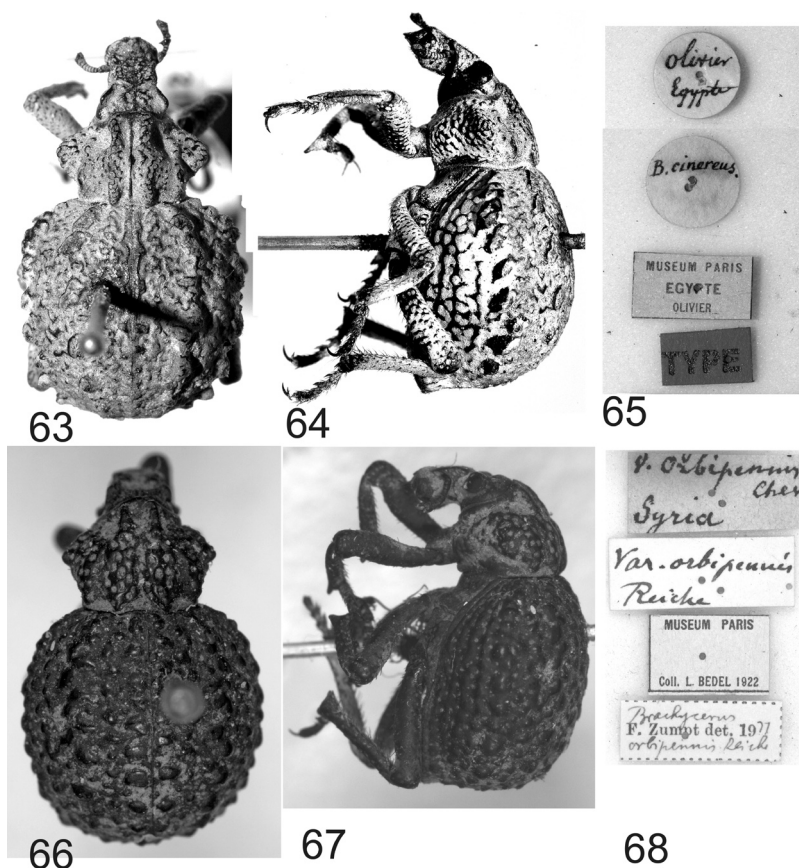
Redescription

Body length 8–16 mm (usually 12–14 mm). Body, appendages, and elytra usually devoid or nearly devoid of scales, rarely covered by minute whitish rounded or slightly oblong scales, bearing single black bristles, particularly on apices of tubercles. Head (Fig. 13): rostrum separated from frons by dorsolateral groove, posteromedially extended, and connected to frontal ridge antennal segments transverse; frons concave, punctured with shallow, round punctures; longitudinal ridge entirely distinct or concave or obsolete medially, but distinct apically and basally; eye flat, eye orbit well-separated from frons, rounded, distinctly projecting dorsal to frons. Pronotum (Fig. 24) as long as wide; anterior margin of pronotum extended; lateral lobes tapering, often pointed. Pronotal ridges prominent, coarsely punctured; lateromedian ridge distinct only in basal half; median ridge rounded basally, not projecting beyond basal margin of pronotum. Elytra of *orbipennis*-type, globular, evenly sculptured with blunt, rounded tubercles, in some smaller specimens nearly smooth, with ridges nearly obsolete, except for specimen from Jordan and specimen from Lebanon, with exceptionally prominent tubercles and distinct median ridge. Tibiae cylindrical, two females from Israel of ordinary appearance have carinated tibiae. Male genitalia: Aedeagus as in Fig. 28. Spermatheca (Fig. 41): duct-lobe cylindrical, narrowed apically, gland-lobe indistinct, tail swollen, tapered apically, spermathecal gland elliptical, distinct.

Material Examined

Type material: Lectotype: SYRIA: Syria (1♀; PMNH).

ISRAEL: **Southern Coastal Plain:** Gat, 26.ii.19??, Ch. Bytinski-Salz (1♀); **Judean Hills:** 'Anatot, 30.xi.1985, Niko (1♂); Yerushalayim, 1.iii.1950, P. Amitai (1♀); Ma'ale Adumim, 9.iii.1973, M. Tintpulver (1♀), 25.i.2007, C. Grach (1♀); **Judean Desert:** Nahal Og [N. Og], 20.iii.1982, R. Kopan (1♂); Yerushalayim-Yericho Rt. [Jerusalem Jericho Road, km 32], 1.xii.1940, Ch. Bytinski-Salz (1♂, 1♀); Yerushalayim-Yericho Rt. [Jerusalem Jericho Road], 1.ii.1942, Ch. Bytinski-Salz (1♀); Har Montar [Gebel Muntar], 21.ii.1973, M. Tintpulver (1♂, 1♀); Har Qana'im, 15.xii.1992, L. Friedman (1♀); 'Arad, 12.xi.1963, M.P. Pener (1♂), 24.xi.1964, S. Blondheim (1♀), 7.xii.1969, M. Broza (1♀), 9.xii.1969, M. Broza (4♀); **Dead Sea Area:** 'En Gedi, 3.iii.1956, L. Fishelsohn (1♂); Rosh Zohar [n. Ras-Zuweira], 8.iv.1953 (1♀), [Ras Zueira], 28.xi.1956, L. Fishelsohn (1♂); **Northern Negev:** Eshkolot, 13.i.2007, I. Shtirberg (1♂); Lahav, 4.ii.2004,



Figs. 63–64. *Brachycerus cinereus* Olivier, holotype. 63. Dorsal view. 64. Lateral view. 65. Labels (Photo by O. Rittner); *Brachycerus orbipennis* Reiche and de Saulcy, lectotype. 66. Dorsal view. 67. Lateral view. 68. Labels. (Photo by S. Zonstein.)

O. Rittner (1♂); Lehavim, 14–18.iii.2006, O. Shelef (3♂, 3♀); Tel Shoqet, 26.xi.1972, M. Tintpulver (1♀); Be'er Sheva' [near Be'er Sheva], 25.xii.1942 (1♂, 1♀); Be'er Sheva' [Be'er Sheva], 15.iii.1956, J. Wahrman (1♂), 7.xii.1969, M. Broza (1♂); [15 km south Be'er Sheva], 25.vii.1945, Ch. Bytinski-Salz (2♂); Ze'elim, 28.iv.1962, Ch. Bytinski-Salz (1♀); N. Negev, Hazerim, 5.ix.1987, E. Orbach (1♂), 17.xi.1987, E. Orbach (1♀); Bor Mashash [Kh Mishash], 13.iii.1958, Ch. Lewinsohn (1♀), Bor Mashash [Bir-Mashash], 8.iv.1979, M. Kaplan (1♀); Bor Mashash, 14.iv.2003, R. Hoffman (1♀); Nahal Lavan [Wadi Abyad], 24.iii.1952, J. Wahrman (1♂); **Central Negev:** 2006, E. Groner (1♂); Dimona, 1.i.2006, G. Wizen (2♂, 2♀), 20.ii.2006, G. Wizen (1♂, 2♀), 15.iv.2007, G. Wizen (1♂, 1♀); Mamshit [Kurnub], 28.iii.1965 (1♀), 4.i.1966, M.P. Pener (1♀); Meshor Rotem [Treibe], 16.iii.1956, A. Edna (1♂); Revivim, 7.xi.2007, I. Renan (1♂);

Daiqa (West to Yeroḥam), 30.v.1957, J. Wahrman (1♀); Park Yeroḥam, 7.iv.1998, Y. Atiya (1♀); Yeroḥam [Bir-Rekhme], 18.iv.1952, (1♀), 5.iv.1954, Y. Werner (1♀), 6.iv.1954, L. Fishelsohn (1♂, 1♀), Yeroḥam, 11.iii.1963, J. Wahrman (7♂); Tel Yeroḥam [Tel Jerucham], 6.iv.1954, Ch. Bytinski-Salz (1♂); Tel Yeroḥam [29 km Beer Sheva Tel Yerucham], 15.iii.1959, A. Shulov (1♀), Tel Yeroḥam [24.5 km Be'er Sheva-Tel Yerucham], 15.iii.1959, A. Shulov (2♀); 3.5 km S to Tel Yeroḥam, 15.iv.1959, A. Shulov (1♀); Mezad Haturim or Mezad Tamar [Qasr Jiheiniye], 26.iii.1952, J. Wahrman (1♂); Hāluqim [Halukim], ii.2002, E. Groner (1♀); Naḥal Boqer [Boqer Wadi], iii.2005, I. Renan (1♀); Sede Boqer, Hātira, near Har Z̄aror, 21.i.2002, E. Groner (1 male, 1♀), Har Z̄aror, Hātira [Tzaror Hatira], 8.ii.2002, E. Groner (1♂), 22.ii.2002, E. Groner (1♀), xi.2002, E. Groner (1♂), xii.2002, E. Groner (1♂, 2♀), i.2003, E. Groner (1♂, 1♀); Hātira Ridge, N Sede Boqer, 30.i.2007, L. Friedman (1♂, 4♀); Naḥal Hāzaz, iv.2006, E. Groner (2♂, 2♀); Sede Boqer [Sde Boker], 4.xii.1952, J. Wahrman (1♀), 17.xii.1952, J. Wahrman (1♂), 19.iii.1978, M. Kaplan (1♂); Sede Boqer, 25.ii.1976 (1♂), 16.iv.2000, R. Dor (1♂), 13.iii.2007, I. Shtirberg (1♀), 20.iv.2007, I. Shtirberg (1♀), 12.iv.2009, G. Wizen, L. Friedman (1♂); 4 km south to Sede Boker, 25.i.1958, A. Shulov (1♂); 'Avedat, 16.iv.1997, A. Freidberg (1♀), 29.iii.2006, O. Shelef (3♂, 3♀), 18.iv.2006, O. Shelef (1♂); Naḥal 'Avedat [Wadi Abdu], 13.v.1966, Ch. Bytinski-Salz (1♂); [Machtech], 29.i.1962, (1♀); northern part of HaMaktesh haGadol, 11.iii.1992, L. Friedman (1♀); HaMaktesh haGadol [Hamachtesh Hagadol], 10.iv.1951, J. Wahrman (1♀); Har Horesha [Khurashe], 22.iv.1952, J. Wahrman (1♂).

?SYRIA/?ISRAEL: Har Hermon [Dj[ebel] Cheikh], ex Piochard de la Brûlerie // MUSÉUM PARIS 1935 coll. Sédillot (handwritten determination label: v. *orbipennis* Reiche) (1♀; PMNH). LEBANON: Liban, ex Piochard de la Brûlerie // MUSÉUM PARIS 1935 coll. Sédillot (1♂, 3♀; PMNH). JORDAN: 50 km S Amman, in wadi, 686 m, 31°34'N 36°01'E, 20.iv.2008, G. Sabatinelli (1♂).

Distribution

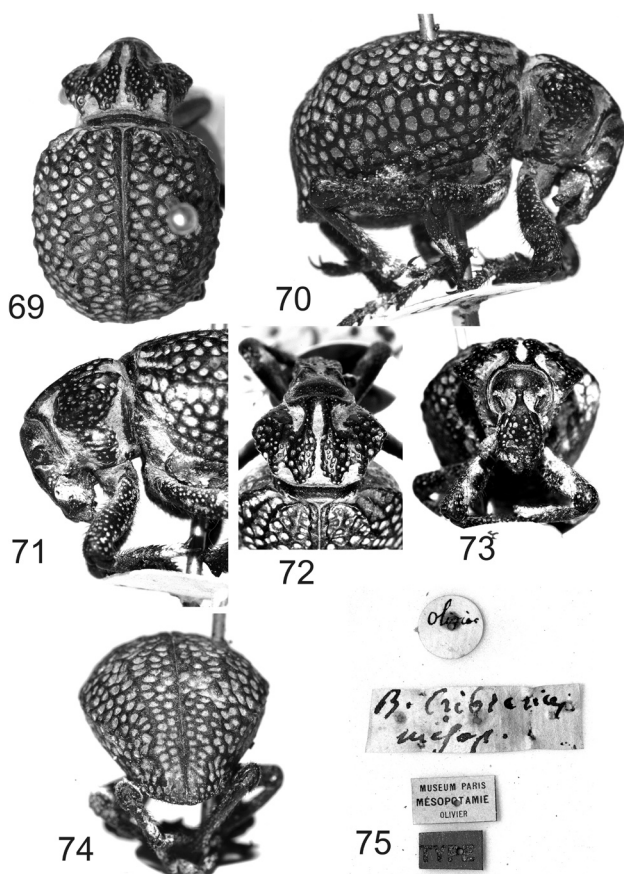
Syria, Israel (Zumpt, 1937a,b), Lebanon, Jordan (new records) (Fig. 87).

Host Plant

Unknown.

Remarks

Described from Syria, the deposition of the type series is unknown. The female from Syria, deposited in PMNH, can be the specimen collected by F.M. de Saulcy and used in the description and therefore is designated here as lectotype (Figs. 66–68). It bears the following labels: handwritten label (by Reiche?): Syria, v. *orbipennis* Chev[rolat], handwritten label (by Bedel?): var. *orbipennis* Reiche; printed label: MUSEUM PARIS // Coll. L. Bedel 1922; handwritten label: F. Zumpt det. 1937, *Brachycerus orbipennis* Reiche. The lectotype is pinned on an entomological pin, in excellent condition, labeled with a red printed label "LECTOTYPE//*Brachycerus orbipennis* Reiche & de Saulcy 1857 // Friedman & Sagiv des. 2010", deposited in PMNH.



Figs. 69–75. *Brachycerus cribrarius* Olivier, holotype. 69. Dorsal view. 70. Lateral view. 71. Head and pronotum, lateral view. 72. Pronotum, dorsal view. 73. Head, frontal view. 74. Caudal view. 75. Labels (Photo by O. Rittner).

***Brachycerus spinicollis* Bedel, 1874**

(Figs. 14, 25, 32, 42, 88)

Description

Body length 6–17 mm. Body and appendages bare or with patches of dense, whitish, oblong scales occurring in concave areas of head, pronotum, and elytra. Head and pronotum with large round punctures. Head (Fig. 14): rostrum nearly not extended posterolaterally into lobe, posteromedially extended over 0.3–0.5 of frons into sharp longitudinal ridge, which often projects medially in more or less distinct denticle; antennal segments transverse; frons flat, punctured with round sparse punctures; eye

(Fig. 14) convex, transverse, eye orbit flattened and often slightly thickened dorsally in lateral view, projecting dorsally to frons. Pronotum (Fig. 25) longer than wide, coarsely and densely punctured, with small slender and pointed lateral lobes; anterior margin of pronotum prominent, straight or rounded; lateromedian ridge of pronotum at base more distinct and more prominent than median ridge, basally rounded, median ridge basally pointed or truncated, both ridges not extended posteriorly; median groove wide with more or less distinct, flat, longitudinal carina, extending entirely from apex to base. Elytra of *spiniacollis*-type—obovate, strongly rounded laterally and sub-basally, but acutely tapered apically, elytral ridges flattened, slender, not raised, forming tubercles, but extended laterally into slender branches, forming a net pattern, except for lateral ridge, extended into sharp tubercles, bearing occasionally isolated whitish bristles. Fore- and mid-tibiae flattened, strongly carinated at posterior margin, hind tibia less flattened or more or less cylindrical at base, and flattened towards apex. Tarsi covered by dense, long bristles. Male genitalia: Aedeagus (Fig. 32) truncated to slightly rounded at apex, laterally straight, slightly widened at base. Tegmen narrow, sclerotized, manubrium with strongly sclerotized longitudinal keel. Spermatheca (Fig. 42): with duct-lobe short, rounded, gland-lobe rounded, slightly projecting, tail oblong, pointed at apex, spermathecal gland oblong, weakly sclerotized.

Material Examined

ISRAEL: [Palestine], 11.ii.1930, F.S. Bodenheimer (1♂); **Northern Coastal Plain:** Akhziv [Achziv], 12.i.1977, Y. Hadar (6♂, 1♀); Nahsholim, ca. 20 km S Haifa, coast, "Hof Dor-haBonim Reserve", 32°37'N 34°55'E, 28.ii.1998, U. Heinig, [an Zwiebelgew.] =? on Liliaceae (probably on *Pancratium*) (2 ex.; TAUI; 2 ex. WINK); **Central Coastal Plain:** Holot Qesarya, 4.iii.2003, A. Moser (1♂), A. Dorchin (2♂, 2♀); Haifa prov., Dor, 5.iv.1995, E. Colonnelli (3 exx.; COLL); Netanya, 6.xii.1996, R. Hoffman (1♂), 4.i.1997, R. Hoffman (2♂, 1♀); Nahal Poleg [Faliq], 19.ii.1960, L. Fishelsohn (5♀); Herzliya, ii.2010, A. Freidberg, *Pancratium maritimum* (3♂, 6♀); Tel Aviv, air-port, 30.xii.1951 (1♂); Tel Aviv, Tel Barukh [Ramat Aviv, Tel Barukh], 21.iii.1997, D. Goldberg (1♀); Tel Aviv, Tel Barukh, 21.iii.1997, E. Sheffer (1♂); **Southern Coastal Plain:** Yafo [Jaffa], ex Piochard de la Brûlerie // MUSÉUM PARIS 1935 coll. Sédillot (1♀; PMNH); Yafo [Jaffa], coll. L. Bedel 1922 (1♂, 5♀; PMNH); Yafo [Jaffa Achille (?)], (1♂, 1♀; PMNH); Yafo [Jaffa abcille (?)], coll. J. Faust, Ankauf 1900 (1♂, 1♀; BMNH); Yafo [Jaffa], 22.iv.1909 (1♂; BMNH); Bat Yam [Bat Jam], 15.vi., Ch. Bytinski-Salz (1♂), 15.iii.1942, Ch. Bytinski-Salz (1♂); Bat Yam, Tel Yona, 27.iii.1995, E. Colonnelli on *Pancratium maritimum* (1 ex.; COLL); Rishon leZiyyon, beach dunes, 15.iv.1991, L. Friedman, on *Pancratium maritimum* (2♂); Holot Palmahim [W. Rubin], 18.iii.1954, J. Wahrman (1♂); Holot Palmahim [Palmachim], 28.i.1981 (3♂); ?Giv'at Brenner [G.B], 15.iii.1936, F.S. Bodenheimer (1♀) Giv'at Brenner [Givat Brenner], 8.xii.1942, Ch. Bytinski-Salz (1♀); Gedera [Gederah], 5.iii.1943, Ch. Bytinski-Salz (1♂, BMNH; 1♀, TAU); Nizzanim [Nitzanim], 15.i.2005, A. Ramot (1♂, 1♀); Nizzanim, 20.ii.2009, T. Assmann (1♂); Nizzanim Nature Reserve, 25.ii.2009, L. Friedman, on *Pancratium maritimum* (1♂, 3♀); Ashqelon [Migdal-Ashkelon], 18.iii.1955,



Figs. 76–79. *Urginea maritima* (L.) Baker (Liliaceae), 'En Mor, Israel, 31.i.2007. 76. Entire plant. 77. Hole, dug by *B. groneri* n. sp. 78. Bulb, damaged by larvae or adults *B. groneri* n. sp. 79. Leaf, damaged by adults of *B. groneri* n. sp. (Photo by T. Assmann).

ALBI (1♀), Ziqqim, 26.i.1993, A. Freidberg (2♂, 1♀); 'Azza strip, Abu Suweira ('Arab Suqreir) or Khirbet Suqreir [Suchrar], 5.i.1955, A. Beinish (1♀); 'Azza [Palestine, Gaza], 21.iii.1938, H.E.J. Biggs (1♀; BMNH); **Foothills of Judea:** Hartuv, 13.xii.1954 (1♀); **Northern Negev:** Gevulot [Gvulot], 24.i.1981 (1♀); Be'er Sheva', 14 km S, 12.iii.1963, J. Wahrman (2♂); Bor Mashash, 20.iv.2005, L. Friedman (1♀), 27.iv.2006, L. Friedman (1♂); Bor Mashash, 31°06.273'N 34°49.443'E, 400 m, 11.iii.2009, O. Rittner (1♂, 1♀, in copula); Be'er Mash'abim [Asluj], 2.iv.1945, Ch. Bytinski-Salz (1♀), J. Wahrman (1♂); Mash'abbe Sade [Mashabei Sade], 30.iii.1969, J. Kugler (1♀); Giv'at Hayil, 21.xii.2009, I. Renan (1♂, 1♀); Holot Haluza, 2.ii.2010, I. Renan (3♂, 1♀); Holot Shunera, 17.ii.2010, I. Renan (1♂, 1♀).

SYRIA: Syria, Pascoe coll. (1♀; BMNH); Syria, coll. L. Bedel 1922 (1♀; PMNH); Syria, [leg.] Castelnau, coll. L. Bedel 1922 (1♀; PMNH); Syria, [leg.] Javet, coll. L. Bedel 1922 (1♂; PMNH); Syria, Muséum de Munich, ex Piochard de la Brûlerie // MUSÉUM PARIS 1935 coll. Sédillot (1♀; PMNH). LEBANON: Beyrouth (1♂; BMNH). EGYPT: Sinai, Gebel Alka. m 350, 30°00'N 32°52'E, 2.iii.1999, E. Colonnelli (1 ex.; COLL); Ruweisia Ridge, 5.ix.1902, E.D. Buck (1♀; BMNH).

Distribution

Syria, Lebanon, Israel, Egypt (Zumpt, 1937a,b). This species lives in sandy biotopes, especially dunes.

Host Plant

Pancratium maritimum L. (Amaryllidaceae). The biology of *B. spinicollis* in Egypt was studied in detail by Hegazi and Moursi (1981). We observed adults climbing up the leaves and stems of *P. maritimum* and consuming them in the coastal dunes of Herzliyya, Rishon leZiyyon, and Nizzanim (Fig. 81). *P. maritimum* is distributed widely in the sandy dunes of the Coastal Plain, but does not occur in the Negev (Feinbrun-Dothan and Danin, 1991). We assume that in the inner dunes of the Northern and Central Negev, *B. spinicollis* feeds on *Pancratium sickenbergeri* C. et W. Barbey. In Holot Mashash (the inner sands of the Northern Negev), specimens were collected and observed near *Urginea maritima* (L.) Baker (Liliaceae).

Brachycerus wizeni Friedman and Sagiv, n. sp.

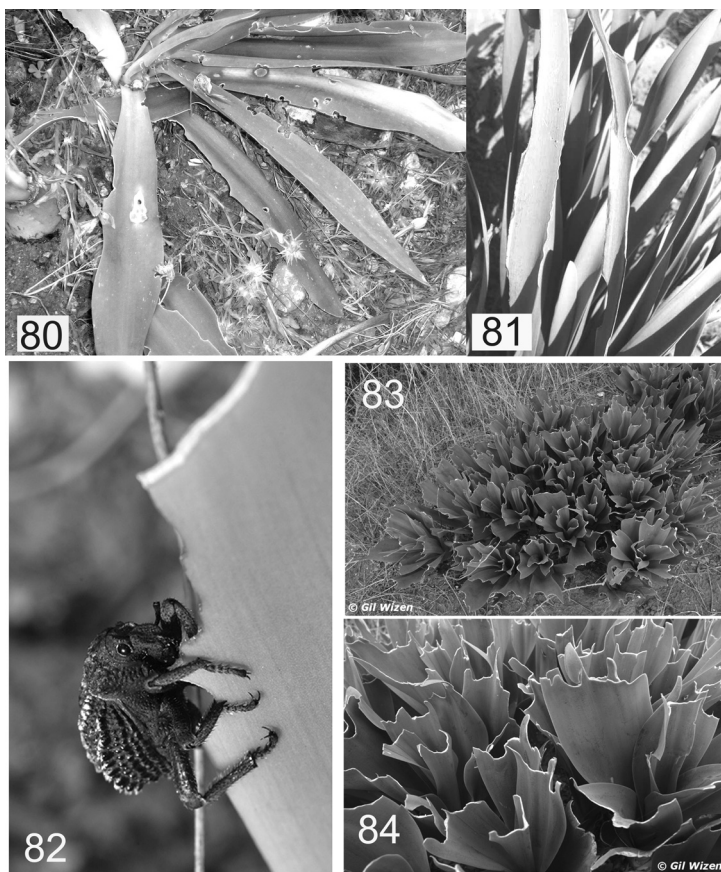
(Figs. 10, 11, 20, 31, 37, 86)

Diagnosis

B. wizeni is closely related to *B. argillaceus* and *B. groneri*, but differs by the eyes strongly convex (Fig. 11), eye orbits, elytral tubercles, and ridges distinct and strongly protruding, body vestiture denser, comprising patches of white scales, particularly on median ridge of pronotum and on median ridge of elytra, and thick, black bristles, arranged in transverse tufts, forming black patches on basal and medial part of sutural ridge; distal antennal segments wider than in *B. argillaceus*.

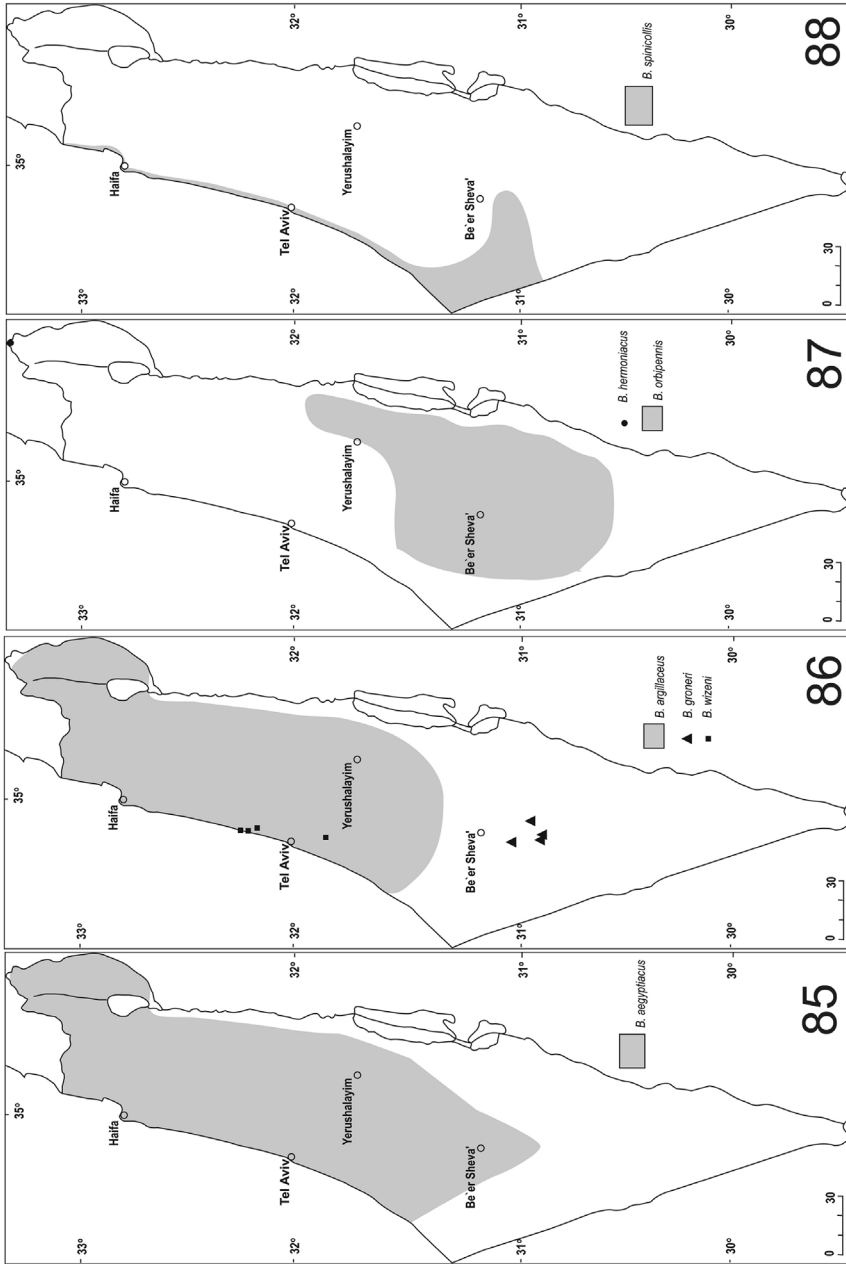
Description

Body length 10–13 mm. Head, pronotum, elytra, and legs of younger specimens covered densely by small, yellowish, oblong scales, dense to sparse; oblong, lanceolate, yellowish-white scales concentrated on median pronotal ridges, comprising inverted V-form patch on pronotum, on median lateral ridges, comprising pattern of two longitudinal parallel white stripes on elytra and on tips of tubercles; thick black bristles, single on pronotum and part of elytral tubercles, arranged in transverse tufts on elytral sutural ridge, producing wide black longitudinal strip. Rostrum and pronotum with large round punctures. Head (Fig. 10): rostrum extended posterolaterally into lobe, posteromedially extended along 0.5–0.8 of frons into wide flattened longitudinal ridge, sometimes with



Figs. 80–84. 80. *Urginea maritima* (L.) Baker (Liliaceae) near Pegeia, Cyprus—heavily damaged by *B. argillaceus*, iv.2008 (Photo by A.L.L. Friedman). 81. *Pancratium maritimum* L. (Amaryllidaceae)—leaves damaged by *B. spinicollis* (Photo by C. Grach). 82–84. *Urginea maritima* (L.) Baker (Liliaceae) in Netanya, type locality of *B. wizeni* n. sp., 7.i.2008. (Photo by G. Wizen). 82. *B. wizeni* n. sp. feeding. 83. *U. maritima* heavily grazed by *B. wizeni* n. sp. 84. Leaves of *U. maritima* damaged by *B. wizeni* n. sp.

shallow median furrow; antennal segments 7 and 8 3–4 times as wide as long, other segments as wide as long or slightly transverse; frons concave, not punctured; eye convex (Fig. 11); eye orbit rounded, thickened dorsally in lateral view, slightly to moderately projecting dorsal to frons. Pronotum (Fig. 20) with wide, blunt to strongly tapering lateral lobes; anterior margin of pronotum slightly extended over head at its median part; median ridge of pronotum slender at anterior third, swollen in median third, its posterior end pointed, projecting beyond posterior margin of pronotum, coarsely and sparsely punctured. Elytra of *argillaceus*-type, parallel-sided, angled at humeri, sutural ridge com-



Figs. 85–88. 85. General distribution of *Brachycerus aegyptiacus* in Israel. 86. General distribution of *B. argillaceus*, *B. groneri*, and *B. wizeni* in Israel. 87. General distribution of *B. hermontiacus*, and *B. orbipennis* in Israel. 88. General distribution of *B. spinicollis* in Israel.

prised of flat, transverse tubercles, bearing tufts of black bristles, sometimes surrounded by whitish scales, subsutural and sublateral ridges nearly obsolete, subdivided into rounded protruding tubercles, unordered or indistinctly ordered in 1–2 longitudinal rows, median ridge distinct, parallel, comprised of connected, strongly protruding, rounded, or transverse tubercles, bearing huge tufts of whitish scales with few single black bristles, lateral ridge subdivided into 10–12 prominent rounded tubercles, usually bearing sparse tufts of white scales. Legs covered by dense, long bristles. Tibiae cylindrical. Male genitalia: Aedeagus (Fig. 31) truncated to slightly rounded at apex, nearly parallel-sided to slightly rounded laterally. Tegmen sclerotized medially and basally, or at least at notch between parameroid lobes, similar to tegmen of *argillaceus* and *groneri*. Spermatheca (Fig. 37): with duct-lobe narrow, gland-lobe rounded, slightly projecting, tail swollen at base and tapered at apex, spermathecal gland oblong, weakly sclerotized.

Etymology

The species is named in honor of Mr. Gil Wizen, our good friend, a young and talented entomologist, in gratitude for his help in collecting many species of *Brachycerus* for this study, particularly the type series of *B. wizeni*.

Material Examined

Holotype: ♂, ISRAEL: Netanya, 10.xii.2005, G. Wizen (TAUI). Paratypes: same collecting data as holotype (6♂, 4♀; TAUI); Netanya, 29.xii.2005, G. Wizen, on *Urginea maritima* (4♂; TAUI), 18.xii.2005, G. Wizen (2♂; TAUI), 1.iii.2007, G. Wizen (2♂, 5♀; TAUI), 8.i.2008, G. Wizen, on *Urginea maritima* (3♂, 8♀; TAUI), 12.xii.2008, G. Wizen, on *Urginea maritima* (4♂, 6♀; TAUI).

Non-paratype material: ISRAEL: Udim, 26.x.1996, R. Hoffman (1♂, lacking head); Bene Ziyon, 24.i.2009, A. Nir (1♀); Gane Yehuda [Ganey-Yehuda], 7.ii.1952, Y. Zvik (1♂); Ramle, 1.i.1921, I. Aharoni (1♂), all in TAUI.

The holotype is pinned directly, is labeled with red holotype label, is in excellent condition, and is deposited at TAUI together with most of the paratypes; some paratypes will be deposited at the Natural History Museum, London, UK, Paris Museum of Natural History, France, and the Zoological Institute of the Russian Academy of Sciences, St. Petersburg, Russia.

Distribution

Israel: Coastal Plain (Fig. 86); probably Lebanon.

Host Plant

Urginea maritima (L.) Baker (Liliaceae).

Remarks

On the basis of the original description by Reiche and de Saulcy (1857) we strongly suspect that *B. wizeni* was described by them as *B. ornatus* Reiche and de Saulcy, 1855. We can neither support nor reject our suspicion, however, because the location of

Brachycerus types by Reiche and de Saulcy is unknown. The name *B. ornatus* Reiche and de Saulcy is in any case not valid because it is a homonym of *B. ornatus* (Drury, 1773). Zumpt (1937a,b) erroneously synonymized *B. ornatus* Reiche and de Saulcy under *B. cribrarius* Olivier, most probably without studying the type material.

DISCUSSION

Phenology

Most *Brachycerus* species in Israel (namely *B. aegyptiacus*, *B. argillaceus*, *B. groneri*, *B. orbipennis*, *B. spinicollis*, and *B. wizeni*) are active in the winter and spring season, during the growth season of their Host Plants. For the Mediterranean species (*B. aegyptiacus*, *B. argillaceus*, and *B. wizeni*), the season of activity is longer and lasts from October to April–May; the desert-dwelling species (*B. groneri*, *B. orbipennis*, and *B. spinicollis*) are active only from December to January–February. The few specimens of *hermoniacus*, which were collected in April–May, are insufficient to draw conclusions about the phenology of this species, although it is obvious that their occurrence matches the spring season on Har Hermon. We assume that the adults of all species enter diapause during the dry season (May–October). Nothing is known about the life expectancy of *Brachycerus* spp.

Zoogeography

The Israeli fauna of *Brachycerus* is East Mediterranean: *B. aegyptiacus* has a Ponto-East Mediterranean distribution, partly penetrating into the West Mediterranean, *B. argillaceus* is widely distributed in the East Mediterranean, and six species are endemic to the Levant (Southeast Mediterranean): *B. cinereus*, *B. groneri*, *B. hermoniacus*, *B. orbipennis*, *B. spinicollis*, and *B. wizeni*. The distribution of *B. groneri*, *B. hermoniacus*, and *B. wizeni* is extremely local and restricted to certain landscapes. The distribution patterns and status of *B. foveifrons* are insufficiently clear.

Chorology

Brachycerus is a xerophilic genus. In Israel, three ecological groups of species can be defined: Mediterranean (*B. aegyptiacus*, *B. argillaceus*, *B. hermoniacus*, and *B. wizeni*), desert (*B. groneri*, *B. orbipennis*), and psammophylic (*B. spinicollis*). Two complexes of the closely-related species demonstrate an allopatric distribution: *B. argillaceus* is widely distributed in the Mediterranean zone, *B. wizeni* is restricted to the non-sandy soils of the coastal plain, and *B. groneri* inhabits the Central Negev desert; *B. orbipennis* occurs in the desert while *B. hermoniacus* occurs in the Mediterranean and sub-alpine zones of Har Hermon (1400–1700 m). The general distribution of *Brachycerus* spp. in Israel is shown on Figs. 85–88.

Systematics

The following analysis is restricted to Palaearctic species only. We studied represen-

tatives of 35 species of *Brachycerus* of the approximately 40 Palaearctic species. Based on this study and on the descriptions, mainly in Zumpt (1937a,b) and Arzanov (2005), we suggest the division of the Palaearctic *Brachycerus* into four groups of species that eventually can correspond to formal species-groups:

1. *aegyptiacus* group. This group is characterized by the elytra rounded and globose, of *aegyptiacus-cribrarius*- and *orbipennis*-type, body bare or sparsely covered by scales, eye round to obovoid, eye orbit slightly prominent to well-defined from frons, projecting or not dorsal to frons, tibiae rounded or flattened, longitudinally keeled, and the aedeagus rounded laterally and apically. The group includes 19 species: *B. aegyptiacus* Olivier, *B. armeniacus* Arzanov, *B. balearicus* Bedel, *B. cribrarius* Olivier, *B. foveicollis* Gyllenhal, *B. foveifrons* Bedel, *B. freyi* Zumpt, *B. hermoniacus* n. sp., *B. kubanicus* Arzanov, *B. lutulentus* Gyllenhal, *B. mlokosevitschi* Arzanov, *B. orbipennis* Reiche and de Saulcy, *B. normandi* Desbrochers, *B. persicus* Zumpt, *B. rotundicollis* Escalera, *B. rufipes* Zumpt, *B. quadrisulcatus* Fischer von Waldheim, *B. sinuatus* Olivier, and *B. turkmenicus* Arzanov. This group of species has Ponto-East Mediterranean distribution, except *B. aegyptiacus* Olivier and *B. sinuatus* Olivier, which penetrate into the West Mediterranean, *B. rotundicollis* Escalera occurring in southern Spain, *B. balearicus* Bedel endemic to Balearic Islands, and *turkmenicus* Arzanov found in Middle Asia.
2. *argillaceus* group. This group is characterized by the elytra of *argillaceus*-type, body often densely covered by scales and groups of black or brown bristles, eye rounded to transverse, eye orbit well-defined from frons, usually projecting dorsal to frons, the aedeagus straight laterally, truncated, or tapered apically. This group includes 14 species: *B. argillaceus* Reiche and de Saulcy, *B. cinereus* Olivier, *B. cylindripes* Bedel, *B. groneri* n. sp., *B. hustachei* Zumpt, *B. kabylianus* Desbrochers, *B. lutosus graecus* Zumpt, *B. lutosus lutosus* Gyllenhal, *B. muricatus* Olivier, *B. perlatus* F. Solari, *B. plicatus* Gyllenhal, *B. pradierei* Fairmaire, *B. scutellaris* Lucas, *B. similis* Zumpt, *B. wizeni* n. sp. This group has a wide and uneven distribution around the Mediterranean: the distribution of seven species is restricted to the West Mediterranean (*B. cylindripes*, *B. hustachei*, *B. kabylianus*, *B. perlatus*, *B. scutellaris*, *B. similis* in North Africa, and *pradierei* in Spain and France); four species are East Mediterranean (the widely distributed *B. argillaceus* and three species endemic to the Levant: *B. cinereus*, *B. groneri*, and *B. wizeni*); and three species are widely distributed over the entire Mediterranean (*B. lutosus*, *B. muricatus*, and *B. plicatus*), while *B. plicatus* has the widest distribution among the Palaearctic *Brachycerus*, occurring from North Africa to Turkey and on the Canary Islands.
3. *spinicollis* group. This group is characterized by slender and pointed lateral spines of pronotum, the elytra of *spinicollis*-type, eye orbit flattened and widened dorsally, and by psammophily. It includes the single species: *B. spinicollis* Bedel, distributed only in the Levant.
4. *undatus* group. This group is characterized by the elytra of *undatus*-type, with strongly reduced ridges, transverse rugulosity, eye orbit usually strongly-projecting

dorsal to frons, the aedeagus laterally subparallel, truncated, or apically tapered. It includes seven species: *B. albidentatus* Gyllenhal, *B. barbarus barbarus* Linnaeus, *B. barbarus lateralis* Gyllenhal, *B. callosus* Schoenherr, *B. crispatus* Fabricius, *B. schatzmayri* Zumpt, *B. riguus* Erichson, *B. transversus* Olivier, *B. undatus* Fabricius; distributed predominantly in the West Mediterranean, although *B. barbarus* and *B. undatus* occur also in the western parts of the East Mediterranean.

As mentioned previously, the form of the aedeagus is largely variable within the species of *Brachycerus*, and even within series from the same locality. The value of this character in the classification of *Brachycerus* is questionable, and it should be treated with extreme caution. This character should be used in *Brachycerus* only when long series of specimens are available.

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REFERENCES

- Alfieri, A. 1976. The Coleoptera of Egypt. *Memoires de la Société entomologique d'Égypte* 5: I–XIV + 1–362.
- Alonso-Zarazaga, M.A. and Lyal, C.H.C. 1999. *A World catalogue of families and genera of Curculionoidea (Insecta: Coleoptera) (Excepting Scolytidae and Platypodidae)*. Entomopraxis, S.C.P. Edition, Barcelona, Spain, 313 pp.
- Arnoldi, L.V., Ter-Minassian M.E., and Solodovnikova, V.C. 1974. *Sem. Curculionidae – Dolgonosiki/Nasekomye i kleschi—vrediteli sel'skokhozyaystvennyh kul'tur. (Fam. Curculionidae—weevils/Insects and mites—agricultural pests)*. Vol. 2. Coleoptera, p. 237, (in Russian).
- Arzanov, Yu. G. 2005. Review of weevils of the genus *Brachycerus* Olivier (Coleoptera: Brachyceridae) from the European part of Russia, the Caucasus and contiguous countries. *Caucasian Entomological Bulletin* 1(1): 65–80.
- Baron, M.G. 1875. Séance du 25 Août 1875. Communications. *Bulletin des Séances de la Société entomologique de France* 58: 177.
- Baudi, F. 1894. Viaggio del Dr E. Festa in Palestina, nel Libano e regioni vicine. *Bollettino dei Musei di Zoologia ed Anatomia comparata della R. Università di Torino* 9(173): 1–13.
- Bedel, L. 1874. Révision des Brachycérides du bassin de la méditerranée. *Annales de la société entomologique de France* 5(4): 119–211, + 1 pl.
- Billberg G.J. 1820. *Enumeratio Insectorum in Museo Gust. Joh. Billberg*. Stockholm, Holmiae Typis Gadelianis: 138 pp. + 2 unnumbered pp.
- Bodenheimer, F.S. 1937. Prodrum faunae Palaestinae. Essai sur les éléments zoogéographiques et historiques du sud-ouest du sous-règne paléarctique. *Mémoires de l'Institut d'Égypte* 33: 1–286 + 4 figs.
- Borumand, H. 1998. *Insects of Iran. The list of Coleoptera in the insect collection of Plant Pests & Diseases Research Institute. Coleoptera (XXIV): Curculionodea: Fam. 162, 166–171 (Anthribidae, Attelabidae, Brentidae, Apionidae, Curculionidae, Scolytidae, Platypodidae)*. Plant Pests & Diseases Research Institute, Insect Taxonomy Research Department, Publ. No. 2, Tehran, 1 unnumbered + iii + 110 + 6 unnumbered [+ 1 errata & corrections] pp.
- Codina i Ferrer, A. 1914. Sobre biologia de *Brachycerus undatus* Fabr. (Col. fam. Brachyceridae). *Butlletí de la Institució Catalana d'Història Natural* 14(7): 122–125.
- Dieckmann, L. 1980. Beiträge zur Insektenfauna der DDR: Coleoptera, Curculionidae (Brachycerinae, Otorhynchinae, Brachyderinae). *Beiträge zur Entomologie* 30(1): 146–147.
- Drury, D. 1773. *Illustrations of natural history. Wherein are exhibited upwards of two hundred and forty figures of exotic insects, according to their different genera; very few of which have hitherto been figured by any author, being engraved and coloured from nature, with the greatest accuracy, and under the author's own inspection, on fifty copper-plates. With a particular description of each insect: interspersed with remarks and reflections on the nature and proper-*

- ties of many of them...To which is added, a translation into French.* Vol. II. Privately published by the author, London. 90 pp.
- Feinbrun-Dothan, N. and Danin, A. 1991. *Analytical Flora of Eretz-Israel*. CANA, Publishing House Ltd., 1040 pp.
- Geiger, D.L. 2003. A.A. Lichtenstein's (1794) *Catalogus rerum naturalium rarissimarum* section secunda on mollusks: an appraisal of taxa described in an overlooked tome. *Archives of Natural History* 30(1): 75–84.
- Georghiou, G.P. 1977. *The insects and mites of Cyprus with emphasis on species of economic importance to agriculture, forestry, man, and domestic animals*. Kiphissa, Athens, Greece. 347 pp.
- Germann, Ch. 2003. Erfolgreiche Zucht von *Brachycerus undatus* (Fabricius, 1798), (Coleoptera: Curculionidae, Brachycerinae). *SNUDEBILLER*, Studies on taxonomy, biology and ecology of Curculionoidea, Mönchengladbach: CURCULIO-Institute 4: 233–238.
- Haaf, E. 1957a. Revision der äthiopischen und madagassischen Arten der Gattung *Brachycerus* Ol. (Col. Curc.) (Mit 70 Textabbildungen). *Entomologische Arbeiten aus dem Museum G. Frey* 8(1): 1–274.
- Haaf, E. 1957b. Revision der äthiopischen und madagassischen Arten der Gattung *Brachycerus* Ol. (Col. Curc.) (Mit 70 Textabbildungen). (Fortsetzung). *Entomologische Arbeiten aus dem Museum G. Frey* 8(2): 343–560.
- Haaf, E. 1958. Neue äthiopische *Brachycerus*-Arten und eine neue Gattung der Subfamilie Brachycerinae (Col. Curc.). *Entomologische Arbeiten aus dem Museum G. Frey* 9: 220–228.
- Hegazi, E.M. and Moursi, K.S. 1981. Studies on *Brachycerus spinicollis* Bedel (Curculionidae, Coleoptera), a destructive species of sand-dune plants in the Egyptian Western Desert. *Zeitschrift für angewandte Entomologie* 92: 520–526.
- Herbst, J.F.W. 1797. *Natursystem aller bekannten in- und ausländischen Insekten als eine Fortsetzung der von Büffonischen Naturgeschichte. Käfer*. VII. J. Pauli, Berlin. 346 pp.
- Hoffmann, A. 1963. Pp. 948–952. Sous-famille des Brachycerinae. In: Balachowsky, A.S. (ed.). *Entomologie appliqué à l'agriculture. Tom. I—Coléoptères 2e volume: Phytophagoidea (suite et fin)*. Masson & Cie, Paris, 1391 pp.
- Hustache, A. 1926. Curculionidae Gallo-Rhénans. *Annales de la Société Entomologique de France* 95: 211–317.
- International Commission on Zoological Nomenclature 1995. Opinion 1820. A.A.H. Lichtenstein's (1796, 1797) *Catalogus musei zoologici...Sectio Tertia. Continens Insecta* and D.H. Schneider's (1800) *Verzeichniss einer Parthei Insekten...*: suppressed, with conservation of some Lichtenstein (1796) names (Insecta and Arachnida). *Bulletin of Zoological Nomenclature* 52(3): 283–285.
- International Commission on Zoological Nomenclature. 1999. *International Code of Zoological Nomenclature*. 4th Ed. The International Trust for Zoological Nomenclature. The National History Museum, London, UK, 222 pp.
- Kerzhner, I.M. 1994. Case 2862. A.A.H. Lichtenstein's (1796, 1797) *Catalogus musei zoologici...Sectio Tertia. Continens Insecta* and D.H. Schneider's (1800) *Verzeichniss einer Parthei Insekten...*: suppressed, with conservation of some Lichtenstein (1796) names (Insecta and Arachnida). *Bulletin of Zoological Nomenclature* 51(2): 108–115.
- Kleinjan, C.A. and Edwards, P.B. 2006. *Asparagus* weeds in Australia—a South African perspective with emphasis on biological control prospects. Proceedings of a workshop convened by the National *Asparagus* Weeds Management Committee held in Adelaide on 10–11 November 2005. Virtue, J. (ed.). *Plant Protection Quarterly* 21(2): 63–68.

- Kraatz, G. 1875. Ueber *Brachycerus*-Arten. *Deutsche Entomologische Zeitschrift* 19: 421–422.
- Laboulbène, A. 1874. Note sur la larve du *Brachycerus undatus* (Curculionidae). *Annales de la Société Entomologique de France* (5)5: 95.
- Lichtenstein, A.A.H. 1796. *Catalogus musei Zoologici ditissimi Hamburgi, d III. Februar 1796. Auctionis lege distrahendi. Sectio Tertia Continens Insecta. Verzeichniss von höchstseltenen, aus allen Welttheilen mit vieler Mühe und Kosten zusammen gebrachten, auch aus unterschiedlichen Cabinettern, Sammlungen und Auctionen ausgehobenen Naturalien welche von einem Liebhaber, als Mitglied der Batavischen und verschiedener anderer Naturforschenden Gesellschaften gesammelt worden. Dritter Abschnitt, bestehend in wohlerhaltenen, mehrentheils ausländischen und höchstseltenen Insecten, die theils einzeln, theils mehrere zusammen in Schachteln festgesteckt sind, und welche am Mittwochen, den 3ten Februar 1796 und den folgenden Tagen auf dem Einbeckschen Hause öffentlich verkauft werden sollen durch den Mackler Peter Hinrich Pachischefsky.* Hamburg, G.F. Schniebes : Titelbl.+[13]+222+[2] pp.
- Lodos, N. 1977. Preliminary list of Curculionidae (Coleoptera) with notes on distribution, abundance and biology of species in Turkey. III. *Brachycerus* Ol. *Türkiye Bitki Koruma Dergisi* 1(2): 29–38.
- Louw, S. 1990. The life history and immature stages of *Brachycerus ornatus* Drury (Coleoptera: Curculionidae). *Journal of Entomological Society of South Africa* 53(1): 27–40.
- Marseul, M.S.A. de 1875. Nouvelles et Faits. *L'Abeille* 12: 96.
- Marvaldi, A.E. 1997. Higher level phylogeny of Curculionidae (Coleoptera: Curculionoidea) based mainly on larval characters, with special reference to broad-nosed weevils. *Cladistics* 13: 285–312.
- Morimoto, K. and Kojima, H. 2006. Larva of *Desmidophorus crassus* and the systematic position of the Desmidophorini (Coleoptera: Curculionoidea). *Esakia* 46: 89–100.
- Oberprieler, R.G. 2004. *Phylogeny and evolution of the Brachycerinae sensu lato (Coleoptera: Curculionidae)*. Abstracts CD-ROM, XXII International Congress of Entomology, Brisbane, 15–21 August 2004, Australian Entomological Society, Brisbane.
- Oberprieler, R.G., Marvaldi, A.E., and Anderson, R.S. 2007. Weevils, weevils, weevils everywhere. *Zootaxa* 1668: 491–520. In: Zhang, Z.-Q. and Shear, W.A. (eds.). (2007) Linnaeus tricentenary: progress in invertebrate taxonomy. *Zootaxa* 1668: 1–766.
- Olivier A.G. 1789. *Encyclopédie méthodique. Histoire Naturelle. Vol. 4 Insectes.* Paris Panckoucke CCCLXXII+331 pp.
- Olivier, A.G. 1807. *Entomologie ou histoire naturelle des Insectes, avec leurs caractères génériques et spécifiques, leur description, leur synonymie, et leur figure enluminée. Coléoptères.* Vol. 5. Desray, Paris, 612 pp.
- Perris, E. 1874. Notes sur les métamorphoses du *Brachycerus albidentatus* Gyl. *Annales de la Société Entomologique de France* (5)4: 125–133.
- Peyerimhoff, P. de. 1926. Notes sur la biologie de quelques Coléoptères phytophages du Nord-Africain (4e série). *Annales de la Société Entomologique de France* 95: 319–390.
- Porta, A. 1932. *Fauna Coleopterorum Italica. Volume V: Rhynchophora, Lamellicornia*, 476 pp.
- Reiche, L. and de Saulcy, F. 1857. Espèces nouvelles ou peu connues de Coléoptères, recueillies par M.F. de Saulcy, membre de l'Institut, dans son Voyage en Orient. (Suite) (1). (Séance du 24 Mai 1854). *Annales de la Société Entomologique de France* (3)5: 649–695.
- Theodor, O. 1975. *Orthoptera: Diptera Pupipara.* Fauna Palaestina. Insecta I. Jerusalem. The Israel Academy of Sciences and Humanities, 170 pp.
- Thompson, R.T. 1992. Observations on the morphology and classification of weevils (Coleoptera, Curculionoidea) with a key to major groups. *Journal of Natural History* 26: 835–891.

- Vitale, F. 1933. Contributo alla biologia del *Brachycerus albidentatus* Gyll. *Memorie della Società entomologica italiana* 12: 142–149.
- Winkler, A. (ed.). 1924–1932. *Catalogus Coleopterorum Regionis Palearcticae*. Wien. 1698 pp.
- Zumpt, F. 1937a. Curculioniden-Studien XXVII. Revision der paläarktischen *Brachycerus*-Arten (Mit 55 Abbildungen und 3 Karten). *Entomologische Blätter* 33(5): 348–374.
- Zumpt, F. 1937b. Curculioniden-Studien XXVII. Revision der paläarktischen *Brachycerus*-Arten (Mit 55 Abbildungen und 3 Karten) (Schluss). *Entomologische Blätter* 33(6): 385–426.