

# Description of *Granuleubria*, a new genus of Eubriinae from West and South Asia (Coleoptera: Psephenidae)

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### Abstract

*Granuleubria*, a new genus of Psephenidae (Eubriinae) and two new species, *G. kurdistanica* sp.n. [Turkey] and *G. pakistanica* sp.n. [Pakistan], are described. *Drupeus atriceps* PIC, 1916 and *Drupeus marginatus* PIC, 1944, both described from India, are transferred to the new genus. *Drupeus atriceps* is designated as type species of *Granuleubria* gen.n. A key to the males of the known species of *Granuleubria* gen.n. is included. The African genus *Falsodrupeus* PIC, 1949 is formally transferred to Psephenidae.

Key words: Psephenidae, Eubriinae, *Granuleubria*, new genus, new species, Turkey, Pakistan, India

### Introduction

No Psephenid has been reported from West Asia so far. Between 1971 and 1991, 35 specimens of an unknown genus were collected (independently) by 5 correspondants of the Natural History Museum, Vienna, in West and South Asia. The new genus, described below as *Granuleubria* gen.n., superficially resembles the East Asian *Homoeogenus* WATERHOUSE and the African *Afroebria* VILLIERS and *Falsodrupeus* PIC. Two species which were originally described in the genus *Drupeus* LEWIS [Ptilodactylidae] by PIC (1916, 1944) were found to belong to the new genus.

### Acknowledgements

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### Abbreviations

MHNP Muséum national d'Histoire Naturelle, Paris  
 NMW Naturhistorisches Museum, Wien  
 NTU National Taiwan University, Taiwan, R.O.C.  
 SIW Smithsonian Institution, Washington, D.C. [= National Museum of Natural History]

LE maximum length of elytron  
 LP length of middle of pronotum

WP maximum width of pronotum  
 WE maximum width of body across elytra

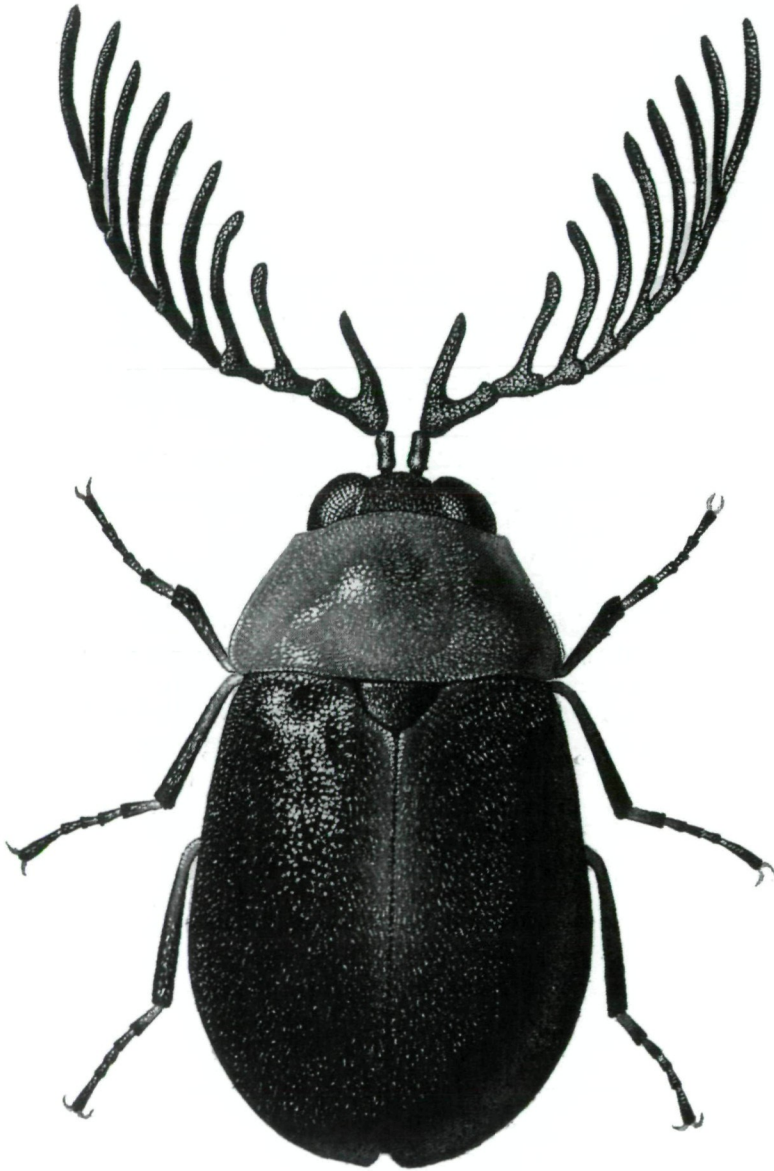


Fig. 1: Habitus of *Granuleubria atriceps*, male



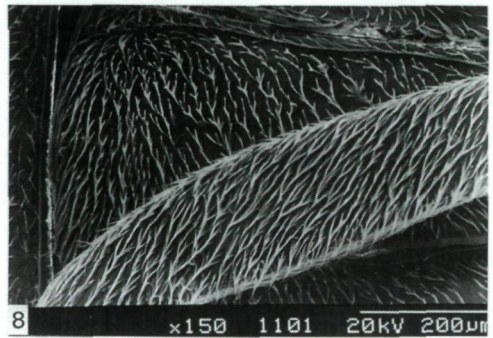
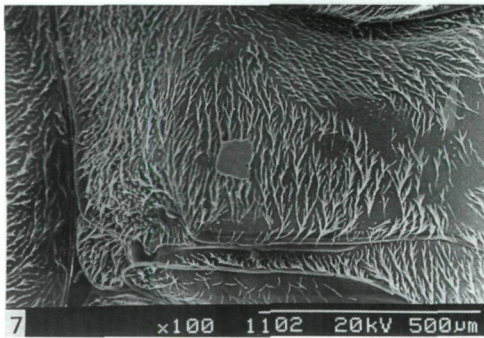
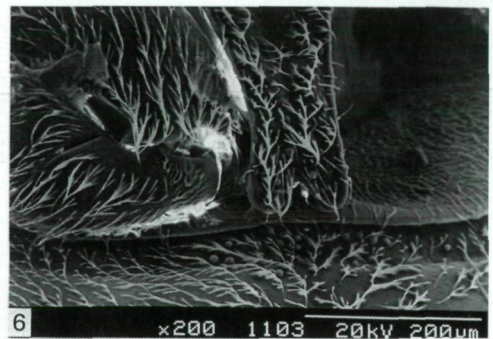
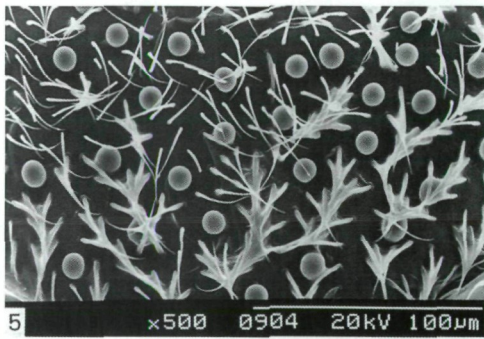
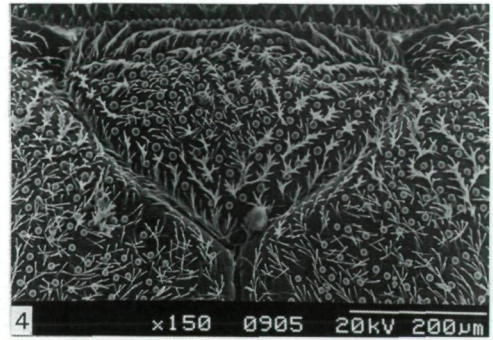
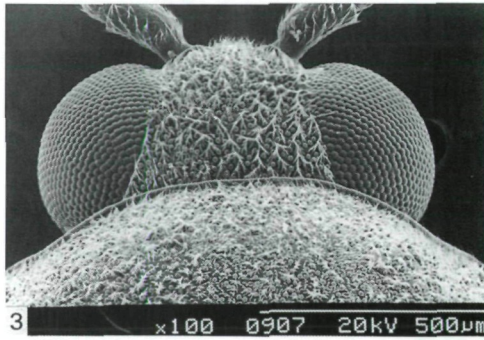
Fig. 2: Habitus of *Granuleubria atriceps*, female

***Granuleubria* gen.n.**

TYPE SPECIES: *Granuleubria atriceps* (PIC).

DESCRIPTION: Body form suboblong, convex dorsally (Figs. 1 - 2). Dorsal surface with dense pubescence and randomly distributed granules (Figs. 3 - 5). Ventral surface similar to dorsal one, but granules of pro-, meso- and metasternum, legs and abdomen not well developed (Figs. 6 - 8).

Head retractile into pronotum. Antenna 11-segmented; male antenna flabellate or pectinate from segments 3 - 10 (Figs. 16 - 18); antenna of female serrate. Terminal segment of maxillary and labial palpus apically bifurcate (Figs. 10 - 15).



Figs. 3 - 8: *Granuleubria atriceps*, adult, SEM photographs, 3) head and anterior part of pronotum, 4) scutellum, 5) detail of scutellum, 6) mesosternal intercoxal process, 7) metasternum, 8) first abdominal sternite and femur.

Pronotum transverse, widest near base; lateral margins slightly arcuate, antero-lateral angles right angled; postero-lateral angles obtuse; posterior margin crenulate, very slightly bisinuate; disc convex. Elytra evenly pubescent and randomly granulate; anterior margin crenulate from suture to humeral region, crenulations more blunt than those of pronotal hind margin. Scutellum evenly pubescent and granulate as elytra; anterior margin straight, crenulate, crenulations smaller than those of pronotal hind margin. Prosternal process slender, keel-like; apex extending into mesosternum. Mesosternal intercoxal process narrow; posterior margin emarginate (Fig. 6). Metasternum with a few granules near middle of base (Fig. 6); metepisternum and metepimeron densely covered with granules. Legs slender; tarsi long, segments 1 - 4 becoming progressively shorter, segments 1 and 5 subequal in length; claws not dilated at middle of inner margin,

apically bifurcate in male (Fig. 9), simple in female.

**Aedeagus:** Trilobate type. Penis long and slender; apically tapering; baso-lateral penile apophyses usually very long, at least as long as remainder (corpus) of penis; corona (sclerotized orifice of ejaculatory duct) well developed, usually placed near middle of corpus of penis; ejaculatory duct inconspicuous; fibula strongly modified ("Y"-shaped) and strongly sclerotized. Phallobasis short, asymmetrical. Suture between phallobasis and parameres not very clearly visible; thus shown as interrupted line in Figs. 20, 23 - 25. Parameres long, tapering apically; ventral margin of parameres partly very difficult to discern, thus partly illustrated as interrupted lines in Figs. 20, 23 - 25. Ventral margin of parameres and suture between parameres and phallobasis is best observed when aedeagus is kept dry! Dorsal margin of parameres clearly visible in *G. atriceps* (Pic), but not illustrated in Figs. 20, 23 - 25.

**LARVA:** The larva of *Granuleubria* gen.n. is so far unknown. (A number of unknown eubriine larvae, which were collected by the senior author in southwestern Turkey, probably represent larvae of an undescribed species of the genus *Eubria* LATREILLE or an undescribed genus closely related to *Eubria*.)

**HABITAT:** Unknown. All specimens were collected at light.

**DISTRIBUTION:** Turkey to India and Nepal.

**DIFFERENTIAL DIAGNOSIS:** The following combination of characters serves to distinguish *Granuleubria* gen.n. from other Eubriinae genera: Upper surface granulate, impunctate; granules randomly distributed; male antenna flabellate or pectinate; terminal segment of maxillary and labial palpus apically bifurcate; posterior pronotal margin crenulate.

The new genus is similar to *Homoeogenus* from which it differs mainly in the presence of granules and lack of punctures on the upper body surface and the distinctive shape of the fibula.

*Dicranopselaphus* GUERIN-MENEVILLE can be distinguished externally from *Granuleubria* gen.n. by the dorsal granules arranged in a regular pattern of polygonal meshes and by the short oval body form.

*Schinostethus* WATERHOUSE and *Falsodrupeus* PIC (the latter is herewith formally transferred from Helodidae to Psephenidae-Eubriinae) differ from the new genus mainly in the elytral granules being confined to slightly impressed vermiculations.

The African *Afroebria* differs from the new genus mainly in the smooth posterior pronotal margin, in the lack of granules and in the simple claws. All known species of *Afroebria* were examined by the junior author.

### *Granuleubria atriceps* (Pic) comb.n.

*Drupeus atriceps* Pic 1916: 4.

**Lectotype** ♂ (MHNP): "INDIA \ [small red label] \ 40 \ Ptilodactyla \ type \ TYPE \ Muséum Paris Coll. M. Pic \ *Drupeus atriceps* Pic". Number of syntypes unknown.

**Male:** Habitus (Fig. 1). Length (pronotum + elytra) 2.8 - 3.2 mm; maximum width (across elytra) 1.8 - 2.0 mm. Head black; pronotum and prosternum yellowish brown, prosternal process black; remainder blackish brown, base of tibia and tarsi pale. Antenna flabellate from segments 3 - 10; appendages of segments 3 - 7 becoming progressively longer; segments 7 - 10 subequal in length; all appendages more or less flattened (Fig. 18). Maxillary palpus (Fig. 10) slender; terminal segment arcuate, apically bifurcate; relative lengths of segments 2 - 4 about 2.5 : 1 : 2.3. Labial (Fig. 11) palpus small, about 0.5 times as long as maxillary palpus; relative lengths of segments 2 - 3 about 1 : 1.4, terminal segment similar to maxillary palpus. Hind tarsus (Fig. 9) slender, about 0.85 times as long as tibia (not including claw), relative length of each segment about 3.2 : 1.8 : 1.6 : 1 : 2.9. WP/LP = 2.12 - 2.29 (x = 2.21); LE/WE = 1.19 - 1.35 (x =

1.28); WP/WE = 0.79 - 0.86 ( $x = 0.82$ ).

Female: Habitus (Fig. 2). Length 3.2 - 4.0 mm, width 1.9 - 2.4 mm. Similar to male, but venter, legs and antennal segments 1 and 2 paler, yellowish testaceous; antenna serrate (Fig. 19). WP/LP = 2.33 - 2.70 ( $x = 2.50$ ); LE/WE = 1.23 - 1.38 ( $x = 1.29$ ); WP/WE = 0.76 - 0.86 ( $x = 0.81$ ).

Aedeagus (Figs. 21, 23, 24) appears in two different morphs: 1) Total length ca. 0.9 mm; basal penile apophyses not reaching phallobasis; fibula inverse "Y"-shaped (directed ventro-cranial), thus corona lying free, not obstructed by the fibula; parameres distinctly shorter than penis. 2) Total length ca. 0.7 mm; basal penile apophyses reaching into phallobasis; fibula in a normal "Y"-shaped position (directed caudad); corona concealed by fibula; parameres slightly longer than penis.

The aedeagus of *G. atriceps* differs from the aedeagus of the similar *G. kurdistanica* sp.n. mainly in the corpus of the penis being distinctly (1.5 - 1.8 times) longer than its baso-lateral apophyses. The aedeagus of *G. kurdistanica* sp.n. is distinguished by the entirely different shape.

DISCUSSION: The peculiar development of two peculiar and clearly separable morphs is obviously a result of a forward moving of the dorsal parts of the penis and its basal apophyses which skips the fibula (which does not follow the forward movement) into a reversed position. The function of this shift is unknown, but could be either related to copulatory activities or it might be a constant genetic aberration. It is not possible to move the fibula back into the "normal" Y-position with insect pins which contradicts the theory according to which the forward movement (and the skipping of the fibula) is a simple process taking place during each copulation. Of the 15 males which we have examined, 5 specimens (including the lectotype) represent the "shifted morph".

#### ADDITIONAL MATERIAL EXAMINED:

I N D I A: MAHARASTRA: 40 exs., Lonvala, 80 km E Bombay, 13.IX.1991, leg. Schuh (NMW, NTU, SIW).

#### *Granuleubria pakistanica* sp.n.

**Holotype** ♂ (NMW): "NW-PAKISTAN, Prov. Swet 71°90' L/35°70' B Madjan, 1400 m, am Licht 19.6.-4.7.1971 leg. C. Holzschuh".

Male: Length 2.8 mm; width 1.7 mm. Colouration yellowish. Antennae (Fig. 17) very similar to previous species, but comparatively longer and more slender. Maxillary palpus (Fig. 14) slender; terminal segment not arcuate, apically bifurcate, relative lengths of segments 2 - 4 about 2.2 : 1 : 1.9. Labial palpus (Fig. 15) about 0.5 times as long as maxillary palpus; relative length of segments 2 - 3 about 1 : 1.3; terminal segment as in previous species. Hind tarsus slender, about 0.9 times as long as tibia, relative length of each segment about 2.8 : 1.8 : 1.2 : 1 : 3.2; other tarsi similar. WP/LP = 2.26; LE/WE = 1.33; WP/WE = 0.81.

Aedeagus (Figs. 20, 22): Ca. 0.7 mm long. Baso-lateral penile apophyses not reaching into phallobasis, very slightly shorter than penile corpus (index: 1.08); penile corpus distinctly widening in basal half; fibula in "normal" position; apices of parameres of holotype broken.

#### *Granuleubria kurdistanica* sp.n.

**Holotype** ♂ (NMW): "TR. Prov. Hakkari Ortabag, 27.6.1989, leg. Barries & Cate".

Male: Length 3.3 mm; width 2.0 mm. Head black, but mouth parts pale; pronotum brown, anterior margin and area of antero-lateral angles paler; prosternum yellowish brown, lateral margin of prosternal process black; elytra and abdomen dark brown. Antennae pectinate from segments 3 - 10; appendage of segment 3 short, not flattened; appendages of segments 4 - 10

slightly flattened (Fig. 16). Maxillary palpus (Fig. 12) slender, apically bifurcate, relative lengths of segments 2 - 4 about 2.0 : 1 : 2.2. Labial palpus (Fig. 13) about 0.5 times as long as maxillary palpus; relative lengths of segments 2 and 3 about 1 : 1.4; terminal segment similar to that of maxillary palpus. Hind tarsus slender, about 0.8 times as long as tibia, relative lengths of each segment about 2.9 : 1.3 : 1.2 : 1 : 5.9; other tarsi similar. WP/LP = 2.46; LE/WE = 1.13; WP/WE = 0.84.

Aedeagus (Fig. 25): Ca. 0.7 mm long and comparatively wide (ca. 0.26 mm in ventral aspect). Baso-lateral penile apophyses comparatively short (index: 2); fibula in "normal" position, longer than penile apophyses; corona concealed under fibula. Parameres slightly surpassing penis; lateral margin of parameres sinuous and with a small angulate projection in apical 2.8; lateral margin of Parameres more strongly sclerotized than median parts.

### *Granuleubria marginata* (Pic) comb.n.

*Drupeus marginatus* Pic 1944: 1.

**Lectotype** ♀ (MHNP, Pic collection): "Dehra Dun Dobhalwala \ type \ TYPE \ Muséum Paris Coll. M. Pic \ marginatus n sp \ *Drupeus*". Number of syntypes unknown. This is the only specimen of this species found in the Pic collection.

**Diagnosis of lectotype** (Fig. 26): Length 3.4 mm, width 2.2 mm. Differs from *Granuleubria atriceps* mainly in the slightly wider, less elongate body form and in the colouration: elytra chestnut brown, their margins pale yellowish; scutellum and pronotum also yellowish, distinctly paler than elytra.

Male unknown.

### *Granuleubria* sp. 5

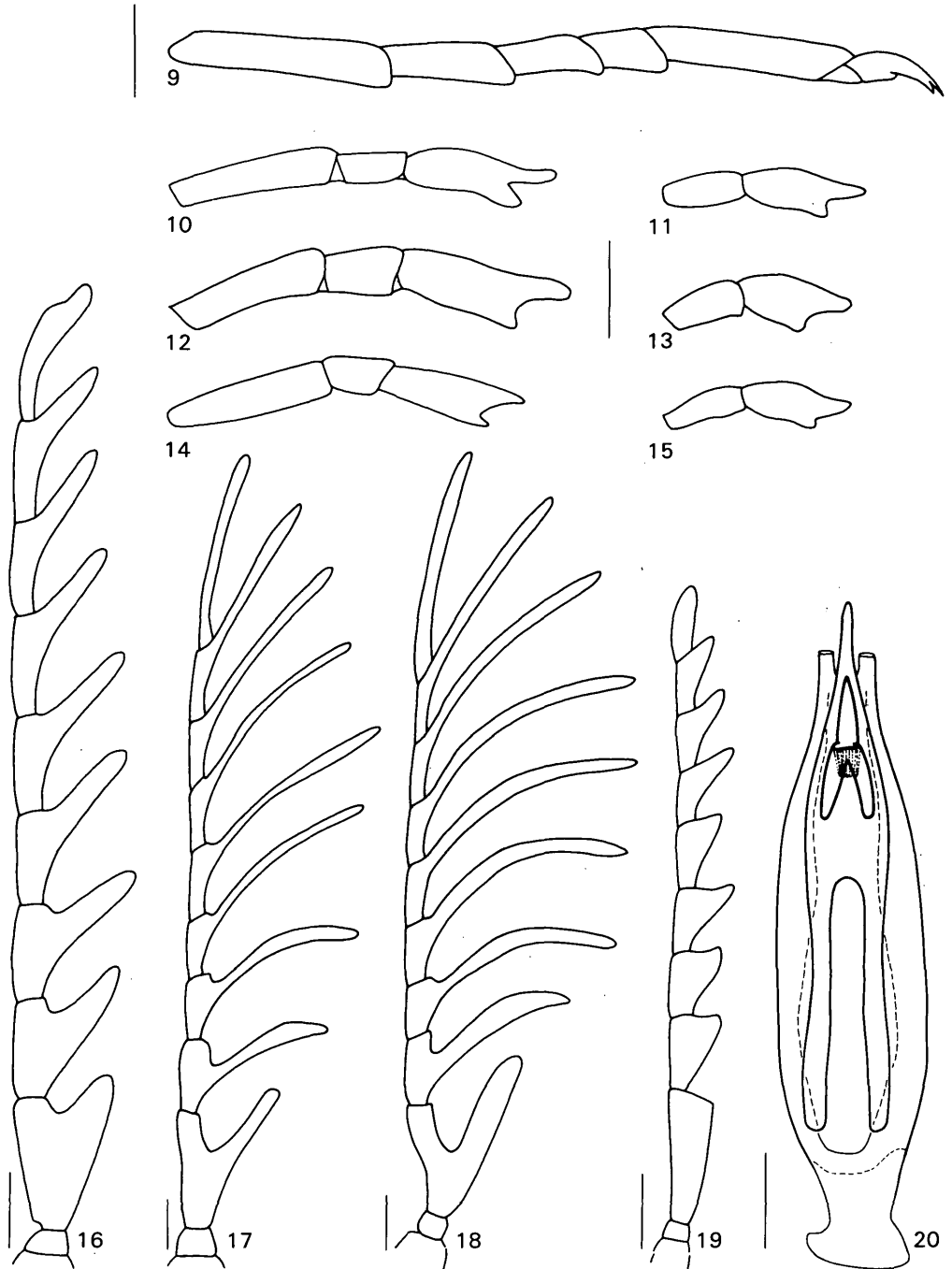
One ♀ ("W-Nepal, Trisuli Dist. Samri Bhanjyang-Trisuli Bazar, 2060-2100 leg. Probst, 11.8.1990") obviously represents a fifth species (Fig. 27). Its surface is glabrous, sparsely granulate and only very sparsely pubescent, which distinguishes it externally from all known species. Colouration and body form very similar to that of *Granuleubria marginata*. Since we have not seen any male we refrain from a species description.

### Key to ♂♂ of *Granuleubria* gen.n. (excluding *G. marginata* and *G. sp. 5*)

- 1 antennae pectinate (Fig. 16); aedeagus (Fig. 25) wide; Turkey..... *kurdistanica* sp.n.
- 1' antennae flabellate (Figs. 17, 18); aedeagus longer and more slender; India, Pakistan .....2
- 2 antennal appendages slightly longer and more slender (Fig. 17); granules of upper surface less dense; corpus of penis slightly inflated anterior to middle; corpus of penis and baso-lateral apophyses approximately equal in length (Fig. 20); Pakistan ..... *pakistanica* sp.n.
- 2' antennal appendages slightly wider and slightly shorter (Fig. 18); granulation of surface more dense; corpus of penis more slender, not distinctly inflated; corpus of penis distinctly longer than baso-lateral apophyses (Figs. 23, 24); India ..... *atriceps*

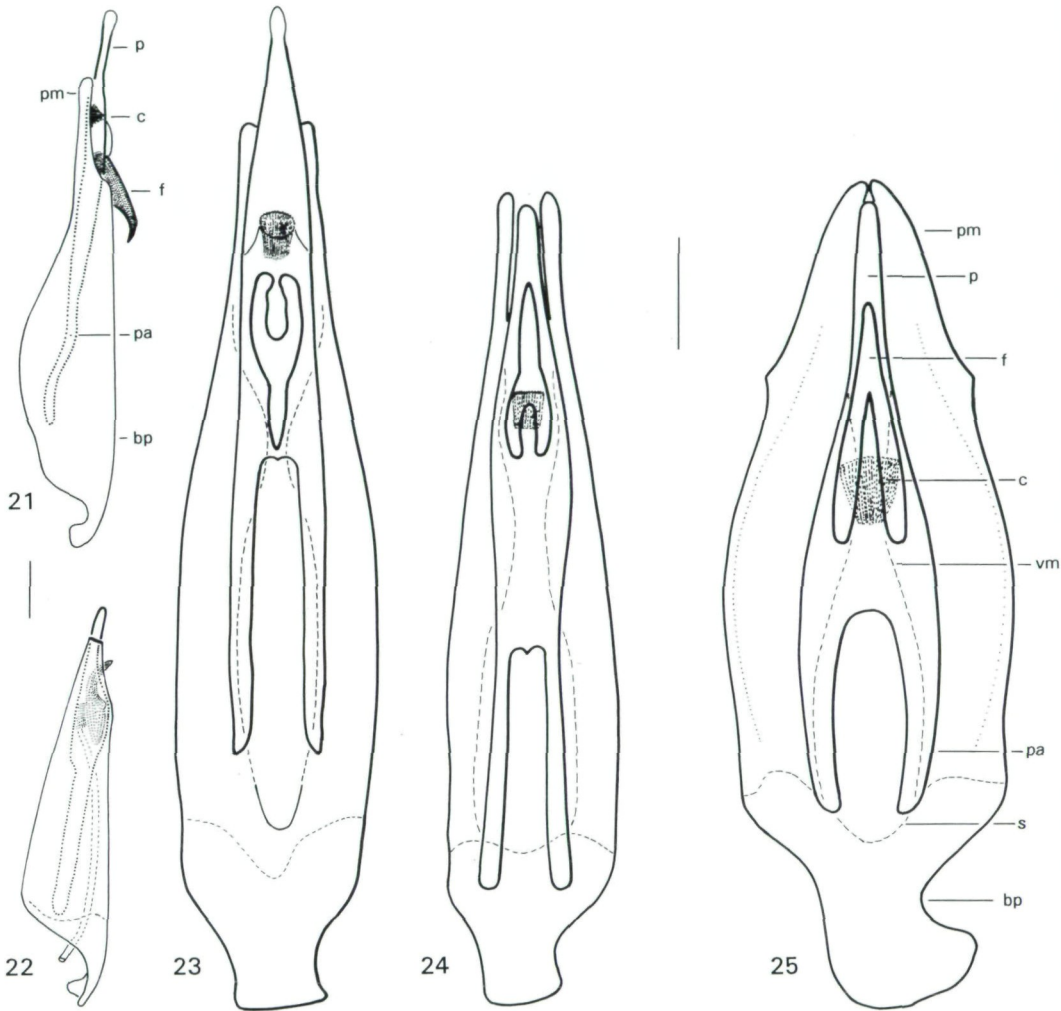
### Zusammenfassung

*Granuleubria* gen.n., eine neue Psepheniden-Gattung und 2 neue Arten werden beschrieben: *G. kurdistanica* sp.n. [Türkei] und *G. pakistanica* sp.n. [Pakistan]. *Drupeus atriceps* Pic, 1916 und *D. marginatus* Pic, 1944, beide aus Indien beschrieben, werden in die neue Gattung transferiert. *Granuleubria atriceps* wird als Genotypus festgelegt.



Figs. 9 - 20: 9 - 11) *Granuleubria atriceps*, 9) male hind tarsus, 10) maxillary palpus, 11) labial palpus, 12 - 13) *G. kurdistanica*, 12) maxillary palpus, 13) labial palpus, 14 - 15) *G. pakistanica*, 14) maxillary palpus, 15) labial palpus, 16) *G. kurdistanica*, male antenna, 17) *G. pakistanica*, male antenna, 18 - 19) *G. atriceps*, 18) male antenna, 19) female antenna, 20) *G. pakistanica*, aedeagus, ventral aspect. Scale for Figs. 9, 18, 19 = 200  $\mu$ m; scale for remaining Figs. = 100  $\mu$ m.



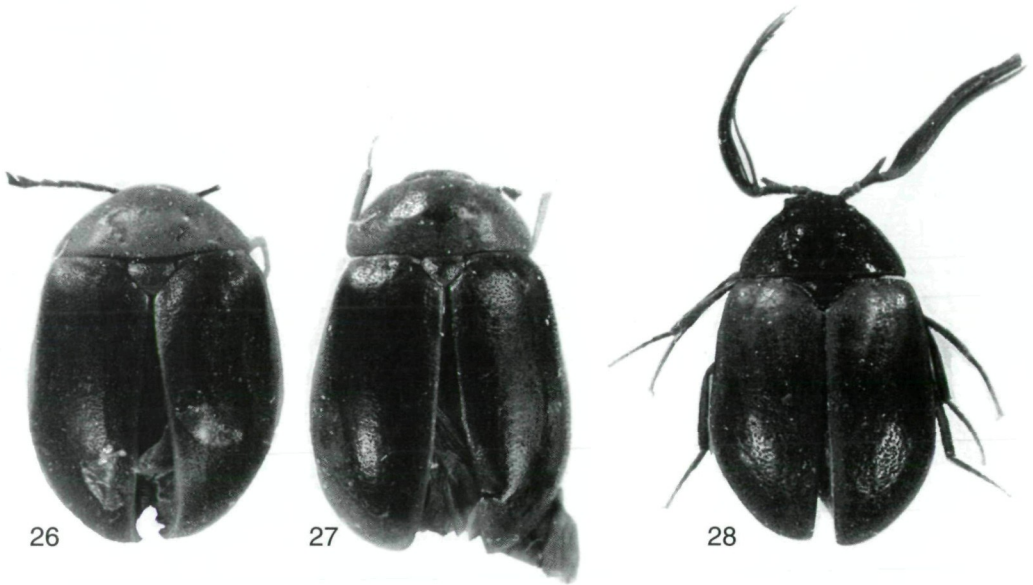


Figs. 21 - 25: Aedeagus of 21) *Granuleubria atriceps*, lateral aspect, 22) *G. pakistanica*, lateral aspect, 23) *G. atriceps*, ventral aspect, 24) same, different morph, 25) *G. kurdistanica*, ventral aspect; (bp) basal piece, (c) corona, (f) fibula, (p) penis, (pa) baso-lateral penile apophyses, (pm) paramere, (s) suture between paramere and basal piece, (vm) ventral margin of paramere. Scale = 100  $\mu$ m.

Die neue Gattung ist durch die Kombination der folgenden Merkmale charakterisiert: dorsale Oberfläche unpunktiert, unregelmäßig granuliert; Antennen der Männchen kurz-gekämmt oder lang-gekämmt; letztes Segment der Maxillar- und Labialpalpen apikal eingeschnitten; Hinterrand des Pronotums krenuliert. Der Aedeagus ist durch die pfeil-förmige, stark sklerotisierte Fibula gekennzeichnet.

Ein Bestimmungsschlüssel (für ♂♂) ist inkludiert.

Die afrikanische Gattung *Falsodrupeus* PIC, 1949 wird formell zur Familie Psephenidae transferiert.



Figs. 26 - 28: Habitus of 26) *Granuleubria marginata* (lectotype), 27) *G.* sp. 5 (Nepal) and 28) *Falsodrupeus singularicornis* PIC. All to same scale.

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