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Papers Celebrating the 80th Birthday of Professor ANDRZEJ WARCHAŁOWSKI

Description of previously reported but hitherto undescribed  
African *Bruchidius*  
(Coleoptera: Bruchidae)

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ABSTRACT. Several African species of seed beetles named by J. DECELLE between 1972 and his death in 1996 were left undescribed. Nine species belonging to the *Bruchidius rubicundus* group, namely *Bruchidius auratopubens*, *Bruchidius cadei*, *Bruchidius campylacanthae*, *Bruchidius gilloni*, *Bruchidius lamtoensis*, *Bruchidius pennatae*, *Bruchidius pygidiopictus*, *Bruchidius sieberiana*, and *Bruchidius summotus* are described. One further species, *Bruchidius nongoniermai*, is described in the *Bruchidius centromaculatus* group. All these species belong to a large clade of Mimosoideae feeders; they predate upon seeds of *Faidherbia albida* and various *Acacia* species. In addition, *Bruchidius ivorensis*, which belongs to a small group of Asian and African seed beetles that predate on various Desmodieae, is described.

Key words: entomology, taxonomy, new species, host plant, *Acacia*, *Pseudarthria*, Coleoptera, Bruchidae, *Bruchidius*, Afrotropical region.

INTRODUCTION

Between 1967 and 1974, A. NONGONIERMA performed an extensive programme of acacia pod sampling throughout the West African sahelian and soudano-sahelian zones, in Burkina Faso, Senegal, Mauritania and Mali. He collected over 450 000 seeds, which yielded about 25 000 bruchid specimens. J. DECELLE studied these beetles between June 1971 and July 1974, and names assigned by him to species new to science were first used in a PhD thesis in Botany defended at Dakar University (NONGONIERMA, 1978). During the following years, DECELLE also identified a number of seed beetles reared by C. VARAIGNE-LABEYRIE in Burkina Faso (then Upper Volta) in 1976-1977, by Y. GILLON and others in Ivory Coast between 1981 and 1986, by I. ALZOUMA and B.A. DIALLO in Niger until the early 1990's. These names were used by NONGONIERMA (1978), DECELLE

(1979), VARAIGNE-LABEYRIE & LABEYRIE (1981), RASPLUS (1989), GILLON et al. (1992), DELOBEL et al. (1995), ANTON (1998), KERGOAT & SILVAIN (2004), KERGOAT et al. (2005a, b), and by several authors of unpublished technical reports. DECELLE gave no diagnostic description that would meet the requirements for the formal erection of taxa (ICZN 1999), so that his species names were not nomenclaturally available and have to be regarded as nomina nuda. In order to meet the needs of entomologists, ecologists, foresters, it has become necessary and urgent to publish a description of these species.

During the course of this work, I had to face an awkward choice: either use new names in order to avoid confusion in the author's name and dates of description, or use DECELLE's names. Some of DECELLE's invalid species were dealt with in a recent past: various *Caryedon* species were described by ANTON & DELOBEL (2004), *Bruchidius sahelicus* was described as *B. raddiana* (ANTON & DELOBEL 2003), *B. sp.* 893 as *B. badjii* (DELOBEL, 2006), and *B. voltaicus* was synonymized with *B. elnairensis* (PIC) (ANTON & DELOBEL 2003). In the present study, my choice was different on the ground that most of DECELLE's names have already been used in various scientific papers, and because specimens bearing DECELLE's labels are present in different collections, particularly in the Paris MNHN, Tervuren MRAC, Institut Fondamental d'Afrique Noire Cheikh Anta Diop (Dakar, Senegal) and in the CBGP (Montpellier) collections. I therefore chose to keep, whenever possible, DECELLE's names. I designate new types and provide formal descriptions for the different species originally named by DECELLE. The series of specimens identified as *B. sieberiana* and *lamtoensis* in the different collections, contained two distinct species; new names, respectively *B. summotus* and *B. gilloni*, were given to the misidentified specimens.

It is worth mentioning here that some specimens (see for example *B. pygidiopicus*) were assigned by DECELLE to the poorly characterized genus *Tuberculobruchus* (DECELLE 1951). This genus, like *Pygobruchidius* (PIC 1951), was established in order to clarify the taxonomy of the large and confused "*Bruchidius* group" (BOROWIEC 1987). Pending a general reappraisal of the group based on a stable and indisputable phylogeny of European, Asian and African species, a decision on the validity of the three genera would be presently hasty. For that reason, I describe the various species in the genus *Bruchidius*.

With the exception of *B. ivorensis*, which feeds in seeds of Desmodieae, and *B. nongoniermai*, which belongs to the *Bruchidius centromaculatus* group, the new species belong to the large *Bruchidius rubicundus* species group. This group comprises, among others, *Bruchidius rubicundus*, *B. dialii*, *B. submaculatus*, *Tuberculobruchus albizziarum*, *T. silaceus* (KERGOAT et al. 2005a); most species in this group feed in the seeds of Mimosoideae Acaciaeae.

#### METHODS

The following remarks apply to descriptions of the new species: body length is measured from apex of pronotum to apex of elytra; terminology follows in most parts KINGSOLVER (1970) and NILSSON & JOHNSON (1993); genitalia of some specimens are mounted on microscope slides, part in toluol-soluble "Canada balsam" (specimens

prepared by J. DECELLE), part in water-soluble DMHF (dimethyl hydantoin formaldehyde). The figures of genitalia have been made from microscope photographs of slide preparations.

DECELLE inserted orange or pink type labels and white designation labels on several specimens presently preserved in Tervuren and Paris Museums. I left DECELLE's labels on their pins, but in an inverted position, and new red type and white designation labels were added. New types are deposited in the collections of the Centre de Biologie et de Génétique des Populations, Montpellier (CBGP), Institut Fondamental d'Afrique Noire Cheik Anta Diop, Dakar (IFAN), Muséum national d'Histoire naturelle, Paris (MNHN), and Musée Royal de l'Afrique Centrale, Tervuren (MRAC). Concerning larval food plants, labels are not always clear; for example, "sur *Acacia seyal*" does not objectively give any information on the host plant of the insect. NONGONIERMA's thesis (1978) and GILLON et al.'s paper (1992) are however perfectly clear on that matter and leave not doubt that the insect was actually reared from *A. seyal* seeds.

#### DESCRIPTION OF THE NEW SPECIES

##### *Bruchidius auratopubens* n. sp.

*Bruchidius auratopubens* DECELLE, **nom. nud.** – NONGONIERMA (1978), KERGOAT & SILVAIN (2004), KERGOAT et al. (2005a, b).

#### TYPE MATERIAL

Holotype: Male, "Senegal – Région de Fatick / Samba Dia - ex gr. *Faidherbia albida* récolte 11 mars 1995 / H. & A. Delobel coll. ", MNHN. Paratypes: 29 males, 31 females, same data as holotype; 9 males, 7 females, near Mekhé, 29.iv.1995; 1 male, 3 females, Dahra, 29.i.1996; 6 males, 2 females, Ngueniène, 8.i.1995; 6 males, 2 females, Sagata, 25.ii.1995, all same host and collectors, CBGP (5), IFAN (5), MNHN (63), MRAC (10).

#### ADDITIONAL MATERIAL

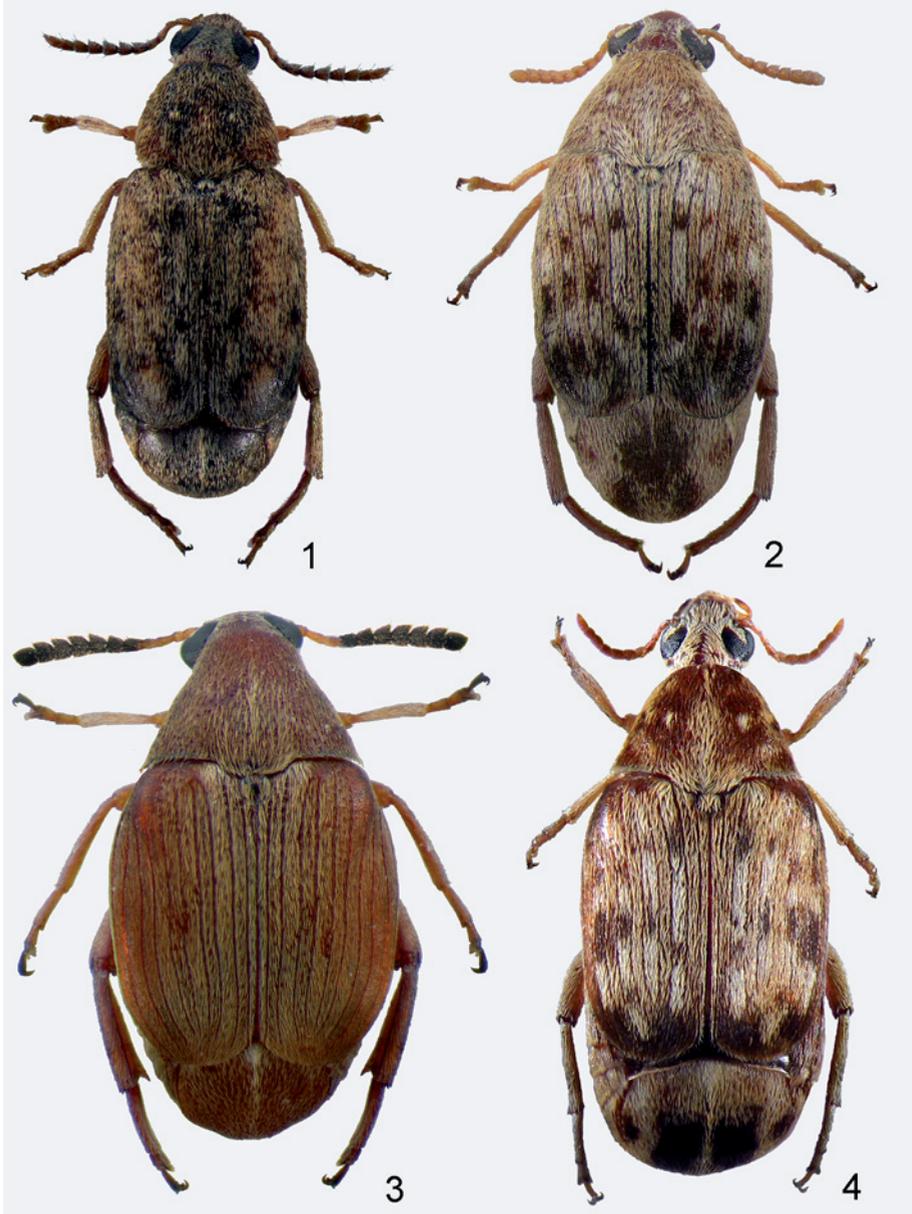
BURKINA FASO: 3 specimens, Kokologho, 14.ii.1989 (K. Arevad), MRAC. CAMEROON: 8 specimens, Moro-Mayo, Ouldémé, ii.1978, *A. albida* (R. Pierlot), MRAC. NIGER: 15 specimens, Namaro, 23.x.1985, *A. albida* (J. Decelle); 9 specimens, Maradi, 19.ii.1986, *A. albida* (G. Pierrard), MRAC. SENEGAL: 3 specimens, Bignona, 15.iii.1984, *A. albida* (Etienne), MRAC. SUDAN: 6 specimens, El Fasher, 1.iv.1988, *A. albida* (Roggeman), MRAC.

#### DESCRIPTION:

Length: 2.7- 4.2 mm; width: 1.3-1.8 mm.

Body ovate, integument yellowish-red, legs and antennae paler. On hind leg, last tarsomere and apical denticles of tibia darker. Vestiture scaly, dirty yellowish dorsally, whitish ventrally, very dense, completely covering integument, recumbent except in

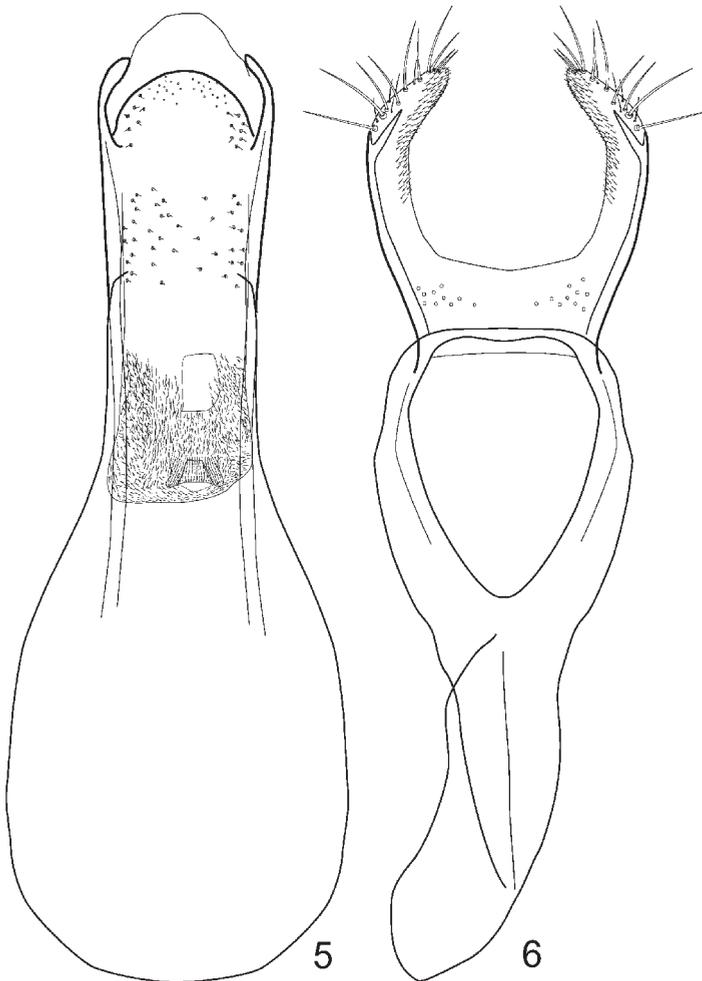
male a small patch of erect hairs on apical third of first ventrite. In male, vestiture almost uniform, with only a barely visible longitudinal line on pronotum and pygidium, and a pair of lateral spots on pronotum. In female, elytral vestiture bicoloured, with areas of pale brownish setation: small spots at basal third of interstriae 3, 5, 7, larger



1-4. Habitus of male *Bruchidius*: 1 – *B. cadei*, 2 – *B. campylacanthae*, 3 – *B. lamtoensis*, 4 – *B. pygidiopictus*

spots before middle of interstriae 3, 5, 7 and 9, and most of the elytral apex. Female pygidium with four ill-defined, more or less coalescent yellowish-red spots.

Male. Head short; eyes bulging, maximum head width 1.3 times width behind eyes; face short and wide, eyes separated by 0.36 times head width including eyes; distance between posterior rim of eyes and apex of clypeus / distance between eyes = 1.8; width at bottom of sinus composed of 7 ommatidia; maximum width of postocular lobes equal to  $1/4^{\text{th}}$  eye width at sinus; carina on frons absent, interocular tubercle indistinct. Antenna very short, not reaching pronotal base; antennal segments 1-4 subcylindrical, with 2 to 4 equal in length, segment 5 widened at apex, segments 6-10 wider apically than long, 11 oval ( $L/W = 1.3$ ). Length of antennomeres: 1.2 : 1 : 1 : 1 : 1.3 : 1 : 0.9 : 1 : 0.9 : 0.9 : 1.6.



5-6. *Bruchidius auratopubens*: 5 – median lobe, 6 – tegmen, ventral view

Pronotum campaniform, with greatest width at base ( $W/L = 1.51$ ), its sides almost parallel basally, then regularly arched, not bisinuate, not expanded behind eyes; with shallow oblique impression on sides of basal lobe. Its disc with strong, well separated punctures, and very dense fine punctures between them.

Elytra 1.09 times longer than combined width, their sides slightly convex; disc flattened basally; at base of interstriae 3 and 4 two small but distinct teeth, about as close to each other than to elytral base. Striae on disc very thin, hardly visible under dense setation.

Hind femora incrassate, at their widest 1.6 times wider than mid femora; mesoventral margin with sharp preapical denticle, concave beyond denticle; hind tibiae strongly widened apically, with dorsomesal and lateral carinae complete, ventral visible only basally; apex of tibia with mucro very small, about  $1/3^{\text{rd}}$  of width of tarsomere 1 at base; lateral denticle about 3 times mucro length, and dorsal denticles equal to mucro length.

Abdomen with ventrite 2 shortest, following ventrites of increasing length, and ventrite 5 only slightly emarginate apically. Pygidium oval, longer than wide ( $W/L = 0.86$ ), almost flat, slightly turned under apically.

Genitalia: Median lobe (Fig. 5) of moderate length (maximum width excluding basal hood / total length = 0.2); ventral valve semi-circular, moderately sclerotized, with broad tip, bearing numerous sensillae and on each side 7 to 9 setae; internal sac basally with short setae and apically numerous small spines and a faintly sclerotized area. Tegminal strut (Fig. 6) with a strong and elongated keel. Lateral lobes cleft to 0.8 their length, widely separated; apex of parameres with about 8 long setae and a few shorter ones.

Female. Similar to male, but vestiture less dense, usually darker, elytral striae more visible, last abdominal ventrite not emarginate, pygidium more elongate, shield-shaped, flattened.

#### AFFINITIES

Males have a quite distinctive homogeneous setation which is not met in other species. The median lobe is much similar with that of most members of the *rubicundus* clade (the faint sclerite of the internal sac is also met in *B. rubicundus*), but the shape of the tegmen is quite distinctive. It is much similar (especially females, which are darker) to *B. pygidiopictus*; the two species differ in colour, size, and morphology of male genitalia. An undescribed species predates the seeds of the same host in Kenya, and is very similar in most aspects to *B. auratopubens*.

#### ETYMOLOGY

From latin words *auratus*, “golden” and *pubens*, “pubescent”; name referring to the golden yellow vestiture of males.

#### HOST PLANTS

Examined specimens bear labels with rearing records from seeds of *Faidherbia albida* (DEL.). NONGONIERMA (1978) reared 1 598 specimens of *B. auratopubens* from

more than 28 000 seeds of the same host, and 3 specimens from a sample of 3 115 seeds of *Acacia macrostachya* from Kaolack (Senegal). In addition he obtained 21 specimens from a sample of 77 seeds of *Acacia schweinfurthii* from Chibi (Zimbabwe), which I was unable to examine. DIALLO & SAADOU (1997) also reared this species from *Faidherbia albida*.

#### DISTRIBUTION

Burkina-Faso, Senegal, Mali, Mauritania, Niger, Zimbabwe (with doubt).

#### *Bruchidius cadei* n. sp.

*Bruchidius cadei* DECELLE, **nom. nud.** – NONGONIERMA (1978), KERGOAT & SILVAIN (2004), KERGOAT et al. (2005a, b).

#### TYPE MATERIAL

Holotype: Male, “Sénégal – Région de Thiès / Fas – ex graines *Faidherbia / albida* récoltées 17 février 1996 / H. & A. Delobel coll.”, MNHN. Paratypes: 29 males, 13 females, same data as holotype; 2 females, Pout, 6.iv.1996, CBGP (5), IFAN (5), MNHN (34); 1 male, *Acacia albida*, Kissane, 7.iv.1970 (A. Nongonierma); 1 male, 3 females, Essouké Diack, 21.iii.1971; 1 male, 1 female, M’Bourouk, 19.iv.1972; 1 male, M’Bourouk, 28.ii.1974, same host and collector; 3 females, M’Bambey, same host, iii.1940 (M. Risbec), MRAC.

#### ADDITIONAL MATERIAL

BURKINA FASO: 2 males, 2 females, *A. albida*, Gorom, 4.i.1969 (A. Nongonierma), MRAC. CAMEROON: 3 males, 4 females, same host, Moro-Mayo, Ouldémé, ii.1978 (R. Pierlot), MRAC.

ETHIOPIA: 1 male, Shoa Pr., L. Langano, xii.1990 (Werner), MRAC. MAURITANIA: 1 female, South of Bir-Moghrein, 10.v.1972 (A. Nongonierma), MRAC. SENEGAL: 1 male, same host, Bignona, 15.iii.1984 (Etienne), MRAC.

#### DESCRIPTION

Length: 3.3-5.2mm; width: 1.5-2.4 mm.

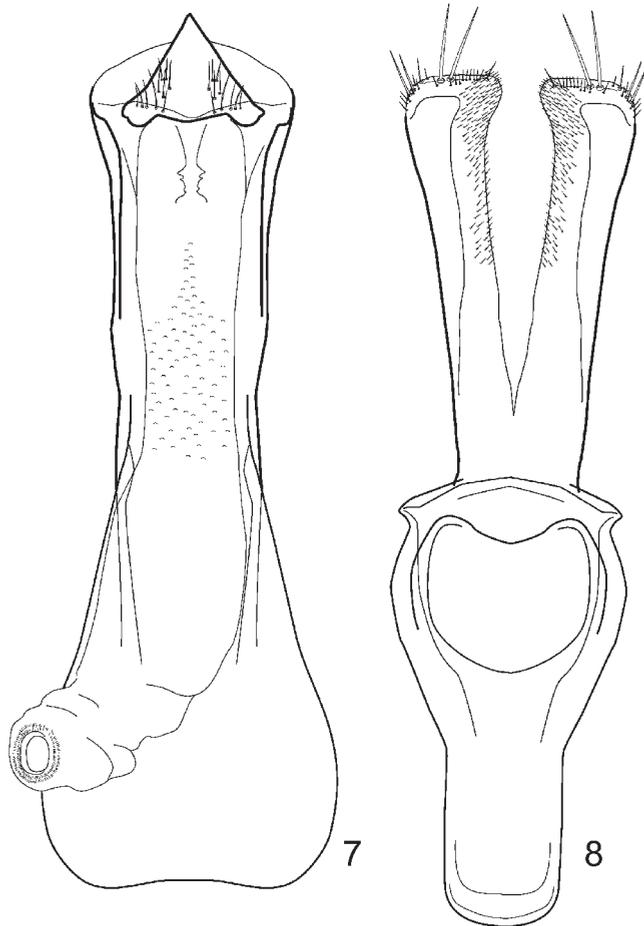
Body elongate, integument reddish-brown, with dark brown areas (Fig. 1): on face, apical rim of pronotum, a pair of indistinct spots on pronotal disc, scattered spots on elytra, specially laterally, pygidium in greater part, ventrally on thoracic sternites, lateral sides of posterior femora. Vestiture made of thin setae, dense but not fully covering integument. Setae mostly dirty whitish or yellowish, but also brownish locally on areas of darker integument.

Male. Head short; eyes bulging, maximum head width 1.4 times width behind eyes; face moderately wide and long; eyes separated by 0.32 times head width including eyes; distance between posterior rim of eyes and apex of clypeus / distance between eyes = 2.2; eye cleft to less than ½ of its length, width at bottom of sinus composed of 8 ommatidia; maximum width of postocular lobes equal to 1/4<sup>th</sup> eye width at sinus; carina

on frons absent, interocular tubercule indistinct. Antenna short, reaching pronotal base; antennal segments 1-4 subcylindrical, with 2-4 almost equal in length, segments 5-10 widened at apex, all segments wider than long, 11 trapezoidal ( $L/W = 1.8$ ). Length of antennomeres: 1.3 : 1 : 1 : 1 : 1.1 : 1.2 : 1.3 : 1.2 : 1.2 : 1.2 : 1.5.

Pronotum oval, with greatest width slightly beyond base ( $W/L = 1.26$ ), its sides regularly arched, not bisinuate, not expanded behind eyes. Its surface irregular, with a longitudinal concavity on basal third and oblique impressions on sides of basal lobe; disc with strong and deep, almost coalescent punctures, the cuticle between them shining.

Elytra 1.29 times longer than combined width, their sides subparallel; at base of interstriae 3 and 4 two very distinct teeth, slightly more distant to each other than to elytral base. Striae on disc well defined and deep, stria 2 reaching base as a deep furrow; interstriae flat, with micropunctuation and a few scattered punctures.



7-8. *Bruchidius cadei*: 7 – median lobe, 8 – tegmen, ventral view

Hind femora incrassate, at their widest 1.5 times wider than mid femora; mesoventral margin with minute preapical denticle, concave beyond denticle; hind tibiae strongly widened apically, with dorsomesal carina complete and distinct, ventral rather indistinct, lateral faint, vanishing before tibial base; apex of tibia with mucro about half as long as lateral denticle, and dorsal denticles equal in length or longer than mucro.

Abdomen with ventrite 5 emarginate, its length medially about 2/3 of length laterally; disc of ventrite 1 basally with setae converging to a point located on midline at 3/4 of ventrite. Pygidium subcircular, as wide as long, very convex, its apex slightly turned under.

Genitalia: Median lobe (Fig. 7) of moderate length (maximum width excluding basal hood / total length = 0.23); ventral valve triangular, moderately sclerotized, with acute tip, bearing on each side a row of about 10 setae; internal sac bearing a few scattered tubercles, ostium surrounded by a few rows of minute needles. Tegminal strut (Fig. 8) without keel, lateral lobes cleft to 0.8 their length; parameres wide, with apex bearing a few long and numerous short setae.

Female. Similar to male, usually with more extensive dark areas, last abdominal ventrite not emarginate, as long as 4<sup>th</sup> ventrite, ventrite 1 with normally oriented setation; pygidium very convex, but not turned under apically.

#### AFFINITIES

According to current phylogenetic hypotheses (KERGOAT *et al.*, 2005a), *B. cadei* is sister species to *B. pygidiopictus*. Body shape is however quite distinctive, with almost parallel sides and a very convex pygidium in both sexes. The median lobe, with triangular ventral valve, is also noticeably different from all other *Acacia*-feeding *Bruchidius*.

#### ETYMOLOGY

From cade (kad or kade), the woloff name of the host tree *Faidherbia* (= *Acacia*) *albida* (Del.).

#### HOST PLANTS

Examined specimens bear labels with rearing records from seeds of *Faidherbia albida*. *B. cadei* is relatively uncommon in the Sahelian zone: NONGONIERMA (1978) reared 523 specimens from 12 600 seeds of that host, and 103 specimens from a sample of 7 165 seeds of *Acacia raddiana* from Bir Moghreïn (Mauritania).

#### DISTRIBUTION

Burkina Faso, Cameroon, Ethiopia, Mauritania, Senegal.

### *Bruchidius campylacanthae* n. sp.

*Bruchidius campylacanthae* DECELLE, **nom. nud.** – NONGONIERMA (1978), KERGOAT & SILVAIN (2004), KERGOAT *et al.* (2005a, b).

## TYPE MATERIAL

Holotype: Male, "Sénégal – Région de Thiès / Ngazobil - ex graines *Acacia / polyacantha* 8 janvier 1995 / H. & A. Delobel coll.", MNHN. Paratypes: 31 males, 20 females, same data as holotype; 3 males, 2 females, Senegal, région de Thiès, Pout, *Acacia polyacantha*, 21.i.1996, same collectors, MNHN (46), IFAN (5), CBGP (5); 1 male, 4 females, Burkina Faso, Bikirimi, 6.i.1969, same host (*A. Nongonierma*); 2 males, 3 females, Burkina Faso, Ouagadougou, 18.i.1974, same host and collector, MRAC.

## ADDITIONAL MATERIAL

KENYA: 2 males, 3 females, Sultan Hamud (1364m), ex *A. polyacantha campylacantha*, x.2002 (B. Le Ru); 9 males, 7 females, Taita Hills (1180m), x.2002, same host and collector, MNHN. CONGO: 10 males, 15 females, Shaba, Luiswishi, *A. campylacantha*, vi.1981 and vi.1982 (F. Malaisse); 3 males, 4 females, Gandajika, 19.v.1955, one of them with label "Genit. ♂ Br. 131" (J. Decelle); 2 males, Gandajika, *Acacia* sp., vi.1959, *Tuberculobruchus silaceus*, J. Decelle det. 1963 (J. Decelle), MRAC. IVORY COAST: 1 male, Ferkessédougou, 10/20.v.1978, with label "Genit. ♂ Br. 132" (J. Decelle), MRAC. SOUTH AFRICA: 1 female, Transvaal, Tzaneen, *A. polyacantha*, vi.1978 (van Tonder, C. Kok), MRAC.

## DESCRIPTION

Length: 3.5-3.8 mm; width: 1.7-1.9 mm.

Body elongate oval, with pygidium slanted about 30° from horizontal (Fig. 2). Colour of integument variable, lighter specimens yellowish red, with a few darkened areas: mouthparts, apex of last tarsal segments, apical teeth of hind tibia, central part of suture along interstriae 1 and 2, more or less developed elongated areas on pygidium disc; central parts of ventrites often darkened; in darker specimens, head, elytra and pygidium are mostly dark reddish brown or black. Vestiture composed of short, scaly, dense setae, well covering integument, recumbent (except on ventrite 1 in male); setae dorsally whitish and dirty yellow, more whitish on ventral parts; lighter specimens have immaculate elytra and a few black setae on central part of pygidium, whereas darker specimens show more or less extensive blackish areas: central part of interstria 1, a small spot at basal and apical thirds of interstria 2, 2-3 spots in interstriae 4, 6 and 8; the extreme apex of elytra, specially laterally, is usually darkened; in some specimens, elytral pattern consists in elongated whitish and yellowish spots on a dark background; pygidium disc often with a wide longitudinal black stripe from base to apex, and two whitish lateral crescents, each of them often with a central dark spot.

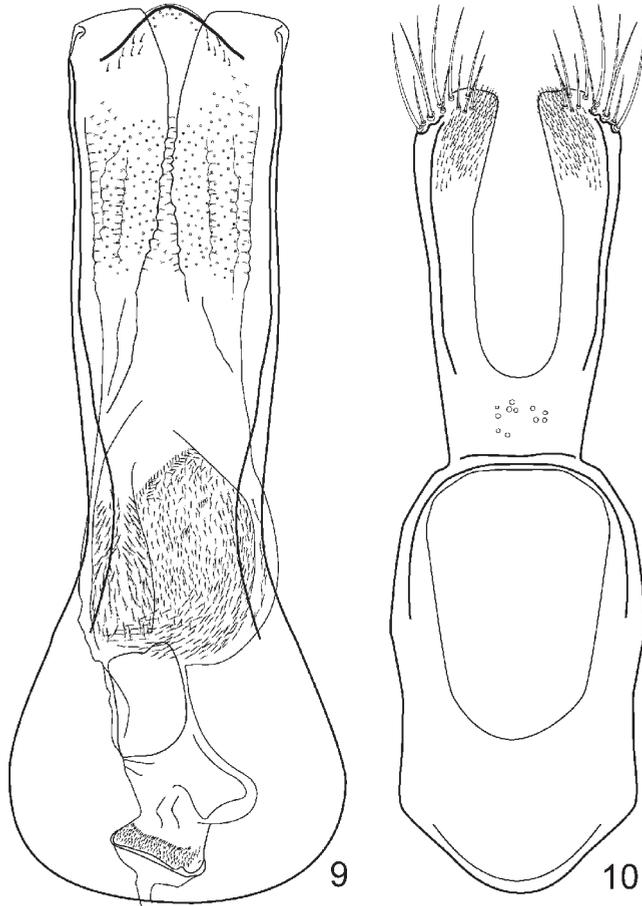
Male. Head short; eyes protruding, widely separated, maximum head width 1.37 times width behind eyes; face short and wide: eyes separated by 0.36 times head width including eyes; distance between posterior rim of eyes and apex of clypeus / distance between eyes = 1.9; eye cleft to about half of its length, width at bottom of sinus composed of 8 ommatidia; maximum width of postocular lobes equal to 1/4<sup>th</sup> eye width at sinus; interocular carina present, not sharp, cuticule finely alutaceous. Antenna short, hardly reaching to pronotal base; antennal segments 1-4 subcylindrical, with 4 smaller,

segment 6 as long as wide, 7-10 apically widened medially, wider than long, 11 oval ( $L/W = 1.3$ ). Length of antennomeres: 1.2 : 1 : 1.1 : 0.8 : 1 : 1 : 1 : 1 : 0.9 : 0.9 : 1.3.

Pronotum transverse, wide at base, its sides regularly rounded, a little widened laterally before foramen ( $W/L = 1.68$ ); with strong oblique impression on sides of basal lobe. Its disc with small shallow punctures, the cuticle between them alutaceous.

Elytra 1.11 times longer than combined width, maximum width at basal third; disc convex, not flattened; at base of interstriae 3 -5 two more or less distinct teeth, about twice closer to each other than to elytral base. Striae on disc thin and partly hidden by surrounding setation.

Hind femora incrassate, at their widest 1.8 times wider than mid femora; mesoventral margin with comparatively strong triangular denticle; hind tibiae with dorsomesal and ventral carinae complete, lateral not visible in basal third; apex of tibia with mucro almost indistinct, smaller than the strongest dorsal tooth; lateral denticle broadly triangular, longer than width of tarsomere 1.



9-10. *Bruchidius campylacanthae*: 9 – median lobe, 10 – tegmen, ventral view

Abdomen: ventrite 1 with a circular spot of very thin and dense erect setae in apical fourth; ventrite 5 only slightly emarginate, longer than ventrite 4. Pygidium shield-shaped ( $W/L = 0.83$ ), with apex convex and turned downwards.

Genitalia: Median lobe (Fig. 9) of moderate length (maximum width excluding basal hood / total length = 0.24); basal hood hardly wider than rest of median lobe; ventral valve small, subtriangular, only slightly sclerotized, bearing numerous sensillae and on each side a row of 6 to 7 setae; basal part of internal sac with small spines; apically divided in two, partly lined with thin spicules, and with a weakly sclerotized plate. Tegminal strut (Fig. 10) wide and short, subquadrate, without keel, lateral lobes cleft to 0.8 their length; apex of parameres with 5 long setae and about 6 shorter ones.

Female. Usually darker than male, with cuticle reddish brown except antennae, fore and middle legs lighter, last abdominal ventrite not emarginate, slightly longer than in male; vestiture white, yellowish and black, with well defined light and dark spots in the interstriae; pygidium a little less convex apically than in male, disc with dark brownish median longitudinal stripe bearing dark setae in anterior part, intermixed with whitish setae towards apex.

#### AFFINITIES

A highly variable species, with southern specimens much darker than specimens found in the soudano-sahelian regions; genitalia exhibit however a strong stability all over the range of the species. Dark specimens show much similarity with the Indian *B. maculipygus* (CHAMPION).

#### ETYMOLOGY

The name refers to the host plant *Acacia polyacantha* Willd. subsp. *campylacantha* (A.Rich.)Brenan.

#### HOST PLANTS

Examined specimens bear labels with rearing records from seeds of *Acacia polyacantha campylacantha*. NONGONIERMA (1978) reared 27 specimens from 4 295 seeds of that host in Burkina Faso.

#### DISTRIBUTION

Burkina Faso, Congo, Ivory Coast, Kenya, Senegal.

### *Bruchidius gilloni* n. sp.

*Bruchidius* sp. 888 DECELLE, **nom. nud.**, pro parte – GILLON et al. (1992).

#### TYPE MATERIAL

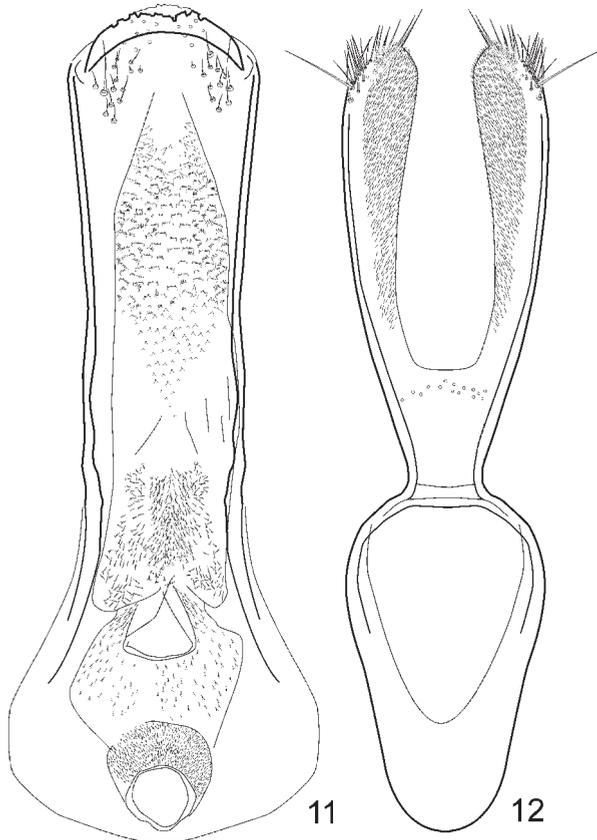
Holotype: Male, Ivory Coast, "LAMTO – RCI / 5°02'W & 6°13'N, 13.1—25.1 1982 / ex *Acacia pennata*", MRAC. Paratypes: 12 males, 3 females, same data as holotype, 6.ii.1982, 18.ii.1982, or 4.iii.1982, of which two males dissected, with labels "Genit. ♂ Br. 888" and "Lame Delobel 03206", MRAC (13), MNHN (2).

## DESCRIPTION

Length: 2.8 – 3.5 mm; width: 1.4 – 1.8 mm.

Body ovate, integument of a more or less deep reddish-brown, with four basal antennal segments and four anterior legs lighter (more yellowish), head and posterior legs more reddish; antennal segments 5-11 and last tarsal segments of all legs black. Vestiture short, slightly scaly, dense, though not completely covering integument, recumbent, uniform, without area of notably denser setation.

Male. Head moderately short; eyes bulging, maximum head width 1.21 times width behind eyes; eyes separated by 0.30 times head width including eyes; face long: distance between posterior rim of eyes and apex of clypeus / distance between eyes = 2.6; eye cleft to 3/5 of its length, width at bottom of sinus composed of 7-8 ommatidia; maximum width of postocular lobes equal to 1/4<sup>th</sup> eye width at sinus; carina on frons absent, interocular tubercle indistinct. Antenna short, not reaching pronotal base; antennal segments 4-7 regularly but only slightly widened apically, 7-10 almost equal, slightly serrate internally, 11 oval (L/W = 1.5). Length of antennomeres: 1.3 : 1.0 : 1.2 : 1.0 : 1.2 : 1.3 : 1.0 : 1.2 : 1.3 : 1.2 : 2.0.



11-12. *Bruchidius gilloni*: 11 – median lobe, 12 – tegmen, ventral view

Pronotum transverse, with greatest width at base ( $W/L = 1.45$ ), its sides regularly rounded from base to apex, slightly expanded laterally behind eyes; without any oblique impression on sides of basal lobe. Its disc with strong punctures, separated by one fourth to two thirds of their own diametre, on a coriaceous background.

Elytra 1.09 times longer than combined width, their sides convex, maximum width at basal third; disc not flattened; at base of interstriae 3 and 4 two small teeth, slightly closer to each other than to elytral base. Striae on disc well defined; interstriae flat, with micropunctuation and irregular lines of punctures.

Hind femora markedly incrassate, at their widest 1.8 times wider than mid femora, widely lobed apically; ventral side distinctly channelled, mesoventral margin with minute preapical denticle; hind tibia strongly widened apically, with dorsomesal and ventral carinae complete, lateral not reaching base; apex of tibia with strong mucro about as long as width of tarsomere 1 at base, lateral denticle about  $3/4$  mucro length, and dorsal denticles  $1/3$  of lateral denticle. First tarsomere ventrally with a denticle that is shorter than width of tarsomere 2.

Abdomen with ventrite 5 without emargination, its length medially about 1.6 times that of sternite 4; ventrite 1 without patch of shorter setae. Pygidium elongated, shield-shaped ( $W/L = 0.85$ ), with a distinct bulge in apical  $1/4^{\text{th}}$ .

Genitalia: Median lobe (Fig. 11) of moderate length (maximum width excluding basal hood / total length = 0.23); ventral valve broad, rounded, moderately sclerotized, bearing numerous sensillae and on each side a row of 12 to 14 setae; internal sac basally with numerous multifid spinules, followed by a smooth area, then by numerous spicules and a faintly sclerotized plate. Tegminal strut (Fig. 12) without keel, lateral lobes cleft to 0.7 their length; apex of parameres with numerous long setae.

Female. Similar to male, antennal segment 4 not widened apically, 3 and 4 of equal size, pygidium with disc flattened, only briefly convex in apical  $1/6^{\text{th}}$ .

#### AFFINITIES

The external morphology of *B. gilloni* is much similar to that of *B. lamtoensis*. Male genitalia are however distinctly different.

#### ETYMOLOGY

Dedicated to Yves GILLON, for his major contributions to the understanding of insect-plant relationships and to the entomological fauna of Ivory Coast and Africa as a whole.

#### HOST PLANTS

Examined specimens bear labels with rearing records from seeds of "*Acacia pennata*" (see comments on this *Acacia* species under *B. pennatae*).

#### DISTRIBUTION

Ivory Coast.

***Bruchidius ivorensis* n. sp.**

*Bruchidius ivorensis* DECELLE, **nom. nud.**, pro parte – GILLON et al. (1992).  
*Bruchidius* sp. KE14 - Kergoat et al. (2005a).

## TYPE MATERIAL

Holotype: Male, “Côte d’Ivoire: Pakobo / 40km N. Tiassalé / J. Decelle x.1962”, MRAC. Paratypes: 8 males, 12 females, same data as holotype, one male dissected with label “Genit. ♂ Br. 90”, MRAC (18), MNHN (2); 1 female, Lamto, 5°02'W & 6°13'N, 28.x – 12.xi.1981, ex *Pseudarthria hookeri*, MRAC; 2 males, 2 females, same data, 6.xi – 22.xii.1981; 1 male, same data, 17.i.1981, dissected, with label “Genit. ♂810415-3”, CBGP.

## ADDITIONAL MATERIAL

GUINEA: 1 male, 1 female, Fouta Djallon, Dalaba 1200m, 22.vi.1951 (Bechyne), one of which bearing label “*Bruchidius ivorensis* mihi, J. Decelle det 1981”, MRAC. KENYA: 4 males, 4 females, Shimba Hills (1180m) 04°11.463S 39°31.921E, ex *Desmodium velutinum*, x.2002 (B. Le Ru), MNHN.

## DESCRIPTION

Length: 1.4-1.7 mm; width: 1.0-1.1 mm.

Body short ovate, integument black, fore and middle legs and 3 basal segments of antenna yellowish, antennal segment 4 and base of mid femora reddish; rest of antenna and last tarsomere of legs 1 and 2 dark brown; mesal side of posterior legs partly brownish or yellowish. Vestiture mainly of small, white scales, not completely covering integument, recumbent; on pronotum disc white scales intermixed with thinner, dirty yellow (transparent) setae. Areas of denser white setation: behind eyes, sides of pronotum, scutellum, upper part of thoracic sternites, pygidium socially at base.

Male. Head short; eyes bulging, maximum head width 1.3 times width behind eyes; face narrow and long; eyes separated by 0.23 times head width including eyes; distance between posterior rim of eyes and apex of clypeus / distance between eyes = 3.0; width at bottom of sinus composed of 4-5 ommatidia; maximum width of postocular lobes equal to 1/3<sup>rd</sup> eye width at sinus; carina on frons distinct, interocular tubercule small. Antenna long, reaching to apical 1/3<sup>rd</sup> of elytra; antennal segments 1-3 subcylindrical, segment 4 slightly widened apically, segments 5-10 very eccentric, serrate, 11 oval (L/W = 2.2). Length of antennomeres: 1.5 : 1 : 1.2 : 1.4 : 1.8 : 1.9 : 2.0 : 2.2 : 2.2 : 2.1 : 3.1.

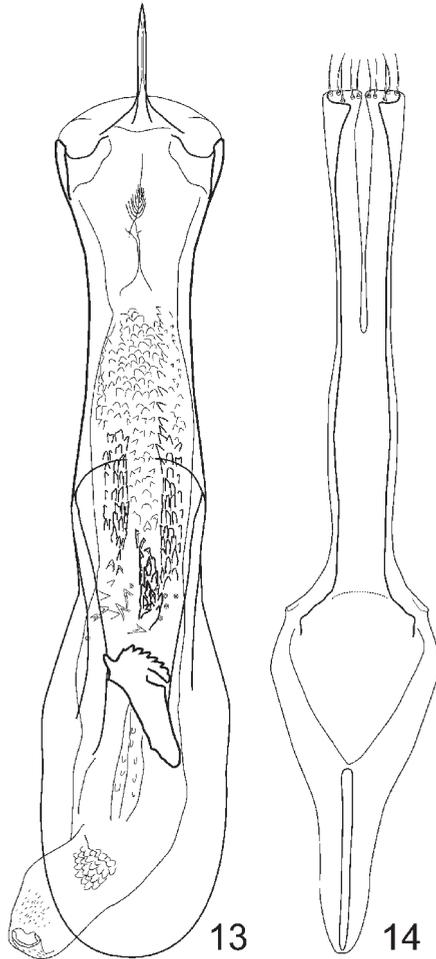
Pronotum subtrapezoidal, with greatest width at base (W/L = 1.39), its sides very slightly bisinuate, not expanded behind eyes; with very shallow oblique impression on sides of basal lobe and a short furrow between the lobes. Disc with dense, almost coalescent, partly ocellate punctation.

Elytra 1.12 times longer than combined width, their sides convex at their widest before half length; disc flattened; at base of interstria 4 a small indistinct bulge. Striae on disc narrow and shallow, with moderately large punctures; interstriae wide, flat, strongly alutaceous.

Hind femora incrassate, at their widest 1.7 times wider than mid femora; mesoventral margin with small, very sharp preapical denticle; hind tibiae with dorsomesal and ventral carinae complete, lateral not reaching base; apex of tibia with mucro slightly shorter than width of tarsomere 1 at base, lateral denticle about 0.6 mucro length, and dorsal denticles minute.

Abdomen with ventrite 5 emarginate, its length medially about 1/2 of sternite 4; ventrite 1 basally with slightly denser white setae, without defined patch of erect setae. Pygidium small, elongate triangular (W/L = 0.96), its disc regularly convex.

Genitalia: Median lobe (Fig. 13) of moderate length (maximum width excluding basal hood / total length = 0.18); ventral valve sclerotized, needle-shaped, without visible sensillae or lateral setae; internal sac proximally with numerous spinules, becoming larger and more sclerotized apically, then a large sclerotized plate with broad



13-14. *Bruchidius ivorensis*: 13 – median lobe, 14 – tegmen, ventral view

serrate apex, and a pair of weakly sclerotized plates with a few small spines. Tegminal strut with strong and long keel (Fig. 14), lateral lobes cleft to 0.48 their length; apex of parameres with a very small number (5-6) of short setae.

Female. Similar to male, but face wider, antennae shorter, with segments 7-10 wider than long, 2-4 of equal size and shape, faintly serrate; 5th abdominal ventrite not emarginate, twice longer than 4<sup>th</sup>, pygidium regularly convex.

#### AFFINITIES

A phylogenetic analysis by KERGOAT *et al.* (2005a), using a set of four genes (12S rRNA, 28S-D2 rDNA, COI and Cyt *b*), places *B. ivorensis* (specimen from Kenya, under sp. KE14) in a clade together with two Papilionoid feeders: *B. fulvus*, which feeds in the seeds of *Alhagi graecorum* (Galegeae) and an unnamed senegalese species that predate the seeds of various *Aeschynomene* (Aeschynomeneae) species. *B. ivorensis* belongs to a small, well defined morphological group of bruchids feeding in the seeds of *Desmodium* and allied genera (tribe Desmodieae): in Africa, *B. multivariiegatus* (PIC), *B. diversimembris* (PIC), and in Asia, *B. anderssoni* DECELLE, *B. desmodei* Arora, *B. minutissimum* (MOSTCH.); *B. nalandus* Pic, recorded by VAZIRANI (1975) as feeding in *Desmodium pulchellum* seeds in India, has been identified by DECELLE (1985) in various parts of Africa; its hosts in Asia belong to the genus *Tephrosia* (ARORA, 1977, as *B. tephrosiae*; DECELLE, 1985; unpubl. data). Species in the *B. dilaticornis* group (DELOBEL, in press) are also morphologically closely related with *B. ivorensis*.

#### ETYMOLOGY

The name refers to Ivory Coast, the holotype's country of origin.

#### HOST PLANTS

Material from Ivory Coast was reared from seeds of *Pseudarthria hookeri* Wight & Arn. (Desmodieae). This host plant is widespread in Africa, from Senegal, Chad and Ethiopia to Gabon and South Africa, and is also present in Mauritius and Madagascar. Material from Kenya was reared from *Desmodium velutinum*, a species which is native to tropical Asia and Africa.

#### DISTRIBUTION

Guinea, Ivory Coast, Kenya.

#### REMARK

Kenyan specimens differ from West African specimens in several ways: antennae shorter, reaching only to basal 1/4<sup>th</sup> of elytra; antennal segments 1-2 subcylindrical, segment 3 slightly widened before apex, segments 6-10 subserrate, 11 oval (L/W = 1.8); length of antennomeres: 1.8 : 1 : 1.7 : 1.8 : 2.0 : 2.1 : 2.3 : 2.3 : 2.3 : 3.1. Vestiture is more scaly and covers integument better. Face is narrower (eyes separated by 0.15 times head width including eyes; distance between posterior rim of eyes and apex of clypeus / distance between eyes = 5.0) and pygidium shorter than in the typical form. Some specimens from Ivory Coast show character states intermediate between

the typical form and Kenyan specimens, which leads us to treat Kenyan and West African forms as a single species with two main forms: one with short antennae, one with long serrate antennae. The larval host plants belong to two closely related genera, *Desmodium* and *Pseudarthria*, both in the same tribe, Desmodieae.

***Bruchidius lamtoensis* n. sp.**

*Bruchidius lamtoensis* DECELLE, **nom. nud.** – GILLON et al. (1992), pro parte.

*Bruchidius ivorensis* – GILLON et al. (1992), pro parte.

TYPE MATERIAL

Holotype: Male, Ivory Coast, “Lamto – RCI / 5°02'W - 6°13'N / 11.1 - 14.4.1984 / *Acacia pennata*” ”Genitalia: lame Delobel 03306”, CBGP. Paratypes: 1 male, 2 females, Lamto, 10.xii.82 - 4.i.83, ex: 155, male dissected, with label “Genitalia: lame Delobel 03406”; 1 female, Lamto, 11.i - 14.iv.1984, *Acacia pennata*, CBGP; 1 female, Lamto, 10.xii.82 - 4.i.83, ex: 155, MNHN; 1 male, 1 female, Lamto, 10.xi.82 - 4.i.83, *Entada scelerata*; 1 female, Ghana, Ashanti region, Kwadaso, 6°55'N - 1°39'W, U.V. light, 26.v.1969 (S. Endrody-Younga), MRAC.

ADDITIONAL MATERIAL

IVORY COAST: 1 male (abdomen missing), Lamto - RCI, 10.xii.82 - 4.i.83, ex: 155, MNHN.

DESCRIPTION

Length: 2.8-3.7 mm; width: 1.7-2.0 mm.

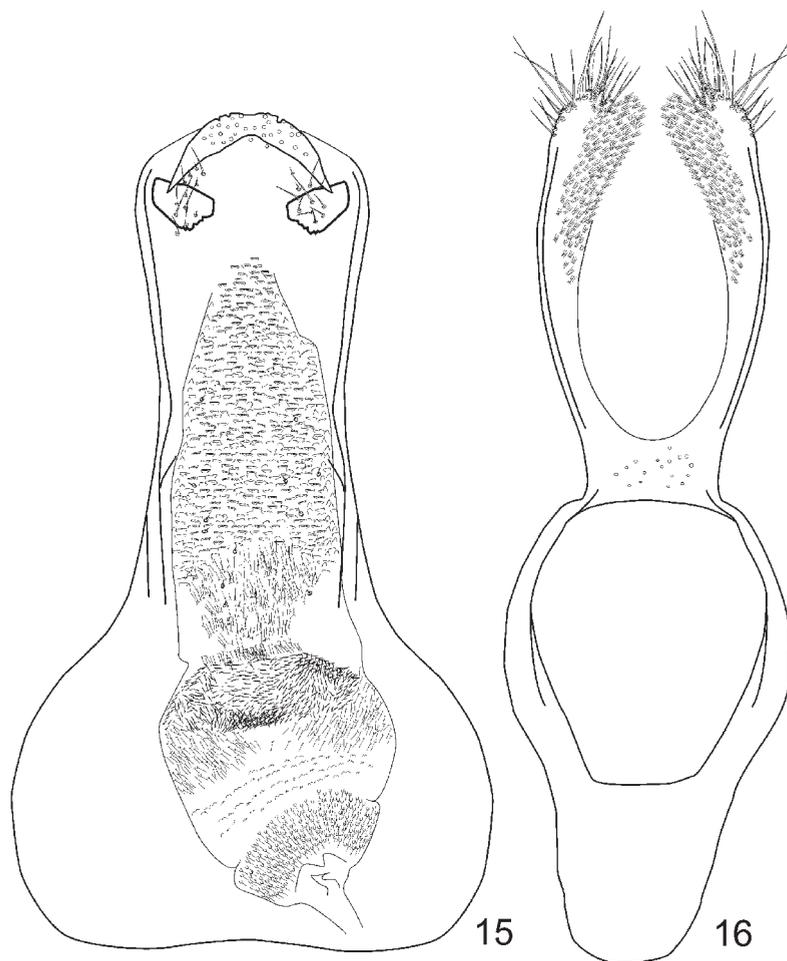
Body short ovate, thick, integument varying from reddish-brown to black (Fig. 3). Lighter specimens almost entirely reddish-brown, with only basal part of ventrite 1 and lower parts of thorax black or blackish. Darker specimens completely black, except for the 4 basal antennomeres, fore and middle legs, reddish-brown. Intermediate specimens show various combinations of reddish and black areas on ventrites, thorax, posterior legs. Vestiture made of short and thin scaly setae; areas of denser whitish or yellowish scales: base of pronotum and a short longitudinal line, mesal sides of basal elytral swelling, a small triangle at base of pygidium, followed by a faint longitudinal line. Elytral base and disc with short whitish / yellowish setae, becoming dark on sides.

Male. Head short; eyes bulging, maximum head width 1.34 times width behind eyes; face moderately wide and long; eyes separated by 0.32 times head width including eyes; distance between posterior rim of eyes and apex of clypeus / distance between eyes = 2.3; eye cleft to 0.6 of its length, width at bottom of sinus composed of 10-12 ommatidia; maximum width of postocular lobes equal to 1/4<sup>th</sup> eye width at sinus; frons convex though without carina or interocular tubercle. Antenna short, reaching to pronotal base; antennal segments 1-4 subcylindrical, with 2 and 4 almost equal in length, segments 6-10 widened at apex, segment 6 as wide as long, following segments wider than long, 11 oval (L/W = 1.7). Length of antennomeres: 1.6 : 1 : 1.2 : 1.1 : 1.5 : 1.3 : 1.3 : 1.3 : 1.3 : 1.3 : 2.3.

Pronotum subtriangular, with greatest width at base ( $W/L = 1.4$ ), its sides almost straight, not expanded behind eyes; without oblique impression on sides of basal lobe. Punctures on disc separated by more than their own diameter, larger and almost coalescent on sides, tegument between them with microsculpture.

Elytra 1.06 times longer than combined width, their sides convex; disc not flattened; at base of interstriae 3 and 4 an elevation with two hardly distinct teeth, about 2 times closer to each other than to elytral base. Striae on disc well defined; interstriae flat, with micropunctuation and irregular lines of punctures.

Hind femora incrassate, at their widest 2.5 times wider than mid femora; meso-ventral margin with minute preapical denticle; hind tibiae strongly widened apically, with dorsomesal and ventral carinae complete, lateral not reaching base; apex of tibia with strong mucro longer than width of tarsomere 1 at base; lateral denticle about 0.4



15-16. *Bruchidius lamtoensis*: 15 – median lobe, 16 – tegmen, ventral view

micro length, and dorsal denticles less than half of lateral denticle. First tarsomere ventrally with a small blunt point.

Abdomen with ventrite 5 not clearly emarginate, its length medially about 1.3 sternite 4; ventrite 1 without patch of short setae. Pygidium shield-shaped (W/L = 0.91), strongly convex in apical half, but hardly turned under apically.

Genitalia: Median lobe (Fig. 15) short and stout (maximum width excluding basal hood / total length = 0.28); ventral valve semi-circular, moderately sclerotized, bearing numerous sensillae and on each side a row of 11 to 12 setae; internal sac with numerous tubercles and spines. Tegminal strut (Fig. 16) without keel, lateral lobes cleft to 0.85 their length; apex of parameres with numerous long setae.

Female. Similar to male, but last abdominal ventrite not emarginate, about twice longer than 4<sup>th</sup> ventrite, pygidium not turned under apically.

#### AFFINITIES

Genitalia bear some similarity (presence of hinge sclerites) with *B. beauprei* (Pic), *luteopygus* (Pic), *natalensis* (Pic). It seems to be related with the European *B. unicolor* species group.

#### ETYMOLOGY

The name refers to Lamto, a research station dedicated to the study of African ecology, located in Southern Ivory Coast.

#### HOST PLANTS

Material identified by J. DECELLE as *B. lamtoensis* was reared from seeds of *Entada scelerata* (= sp. 155). Two conspecific specimens listed under *Bruchidius* sp. 888 by GILLON *et al.* (1992) bear the label "reared from *Acacia pennata*". Most of the material reared from *A. pennata* in Lamto belongs to two other species, *B. quadrisignatus* (Fåhraeus) and *B. gilloni* (as *Bruchidius* sp. n. 888 DECELLE in litt.)

#### DISTRIBUTION

Ivory Coast, Ghana.

### *Bruchidius nongoniermai* n. sp.

*Bruchidius nongoniermai* DECELLE, **nom. nud.** – NONGONIERMA (1978).

#### TYPE MATERIAL

Holotype: Male, "Diré, Mali / 18.IV.1969 / A. Nongonierma", "sur *Acacia kirkii*", MNHN. Paratype: 1 female, same data as holotype, MNHN.

#### ADDITIONAL MATERIAL

CHAD: 3 males, 3 females, Tibesti, Emi Koussi, Bassin de Koudou, 11-20.xii.1958, ix.1959, 1950m, 2000m, on *Ephedra altissima* Desf. (Ephedraceae), *Farsetia aegyptia*

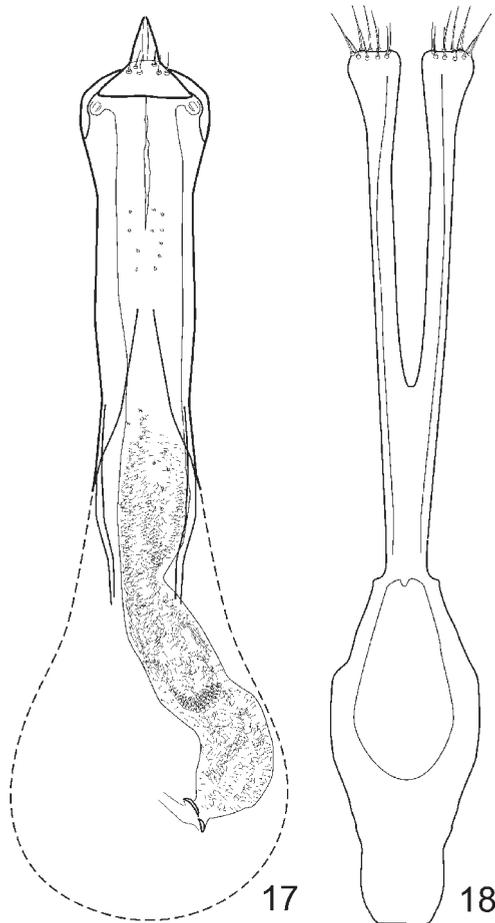
Turra (Brassicaceae), two males dissected, with labels “Genit. ♂ Br. M.P. 90” and “Genit. ♂ Br. 435” (Bruneau de Miré), MNHN.

SUDAN: Male, Khartoum, 4.32 (H.W. Bedford), MNHN.

DESCRIPTION

Length: 2.7 mm; width: 1.6 mm.

Body short ovate, integument orange to reddish-brown, legs and antennae (at least up to 6th antennomere) lighter; darker specimens with brown areas on humerus and elytral apex. Vestiture scaly, dense, locally completely covering integument, recumbent. Head with short yellowish setae. Dorsally scales of two colours: yellowish and white, scales longer and denser on pronotum, in front of scutellum. On elytra, setae arranged in elongated spots on interstriae visible on the general yellowish background; basal area whiter than rest of elytra. On ventral side, dense white scales on upper part of



17-18. *Bruchidius nongoniermai*: 17 – median lobe, 18 – tegmen, ventral view

thoracic and abdominal sternites, less dense on rest of sternites. Pygidium with whitish scales all over, and an elongated triangle of denser and whiter scales at base. Darker specimens with blackish setae on humerus, middle of elytral side, and more or less extended areas apically; sometimes a large black triangle with point at basal third of elytra, spreading over elytral apex, leaving only a few whitish spots.

Male. Head short; eyes bulging, maximum head width 1.33 times width behind eyes; face moderately wide and long; eyes separated by 0.31 times head width including eyes; distance between posterior rim of eyes and apex of clypeus / distance between eyes = 2.1; eye cleft to 3/5 of its length, width at bottom of sinus composed of 7 ommatidia; maximum width of postocular lobes equal to 1/3<sup>th</sup> eye width at sinus; carina on frons absent, interocular tubercule distinct. Antenna short, antennal segments 1-4 subcylindrical, with 2 and 3 almost equal in length, segments 5 and 6 widened at apex. Length of antennomeres: 1.8 : 1 : 1.2 : 1 : 1.1 : 1.1, missing beyond segment 6.

Pronotum trapezoidal, with greatest width at base (W/L = 1.35), its sides almost straight, not expanded behind eyes; with strong oblique impression on sides of basal lobe. Its disc with coalescent ocellate punctures, and smaller punctures.

Elytra 1.08 times longer than combined width, their sides convex; disc flattened only in the scutellar area; at base of interstriae 3 and 4 two more or less distinct teeth, about as close to each other than to elytral base. Striae on disc hidden by setation; interstriae convex, with microsculpture.

Hind femora incrassate, at their widest 2.0 times wider than mid femora; meso-ventral margin with small preapical denticle; hind tibiae strongly widened apically, with dorsomesal and ventral carinae present, lateral carina complete, apex of tibia with small mucro; lateral denticle about 0.7 mucro length, and dorsal denticles 1/3 of lateral denticle.

Abdomen with ventrite 5 slightly emarginate. Pygidium slightly wider than long (W/L = 1.09), shield-shaped, convex, with apical 1/5<sup>th</sup> slightly turned under.

Genitalia: Median lobe (Fig. 17) of moderate length (maximum width excluding basal hood / total length = 0.15); ventral valve triangular, moderately sclerotized, with acute tip, bearing (Mali) on each side a row of 3 setae; distal half of internal sac lined with dense needle-like spicules and a patch of almost transparent spines. Tegminal strut (Fig. 18) without keel, lateral lobes cleft to 0.6 their length; apex of parameres with about 10 setae.

Female. Setation darker: on pronotum disc sides with dark scales reddish brown, with two white spots; on elytra, yellowish scales replaced by reddish-brown scales, with 4 or 5 dark spots apically. Pygidium disc with reddish-brown scales, leaving only sides and a slender basal triangle, prolonged as a thin line to apex, white; last abdominal ventrite not emarginate, longer than 4<sup>th</sup> ventrite.

#### AFFINITIES

Belongs to the *centromaculatus* group, and more specifically to a subgroup with unmodified female pygidium (see ANTON & DELOBEL, 2003). Differs from the Indian *B. andrewesi* (PIC), from the Mideastern *B. arabicus* DECELLE and from the African *B. aurivillii* (BLANC) by the lack of strongly sclerotized plates in the internal sac.

## ETYMOLOGY

The name refers to botanist Antoine NONGONIERMA from Burkina Faso (Cheikh Anta Diop University, Dakar, Senegal).

## HOST PLANTS

Examined specimens bear labels with rearing records from seeds of *Acacia kirkii* OLIV. collected in Diré (Mali), in the flood plains of Niger (NONGONIERMA 1978). *Ep-hedra altissima* and *Farsetia aegyptia* are not food plants, but plants on which adults were caught.

## DISTRIBUTION

Chad, Mali, Sudan.

***Bruchidius pennatae* n. sp.**

*Bruchidius pennatae* DECELLE, **nom. nud.** – NONGONIERMA (1978); VARAIGNE-LABEYRIE & LABEYRIE (1981).

## TYPE MATERIAL

Holotype: Male, “Bord barrage / Ouagadougou / Hte Volta, 1-1969” / “sur *Acacia pennata*, grands fruits” / “A. Nongonierma”; hind tarsi except left tarsomere 1 missing, MNHN. Paratype: Female, same data as holotype, MNHN.

## DESCRIPTION

Length: 4.2 mm; width: 2.2 mm.

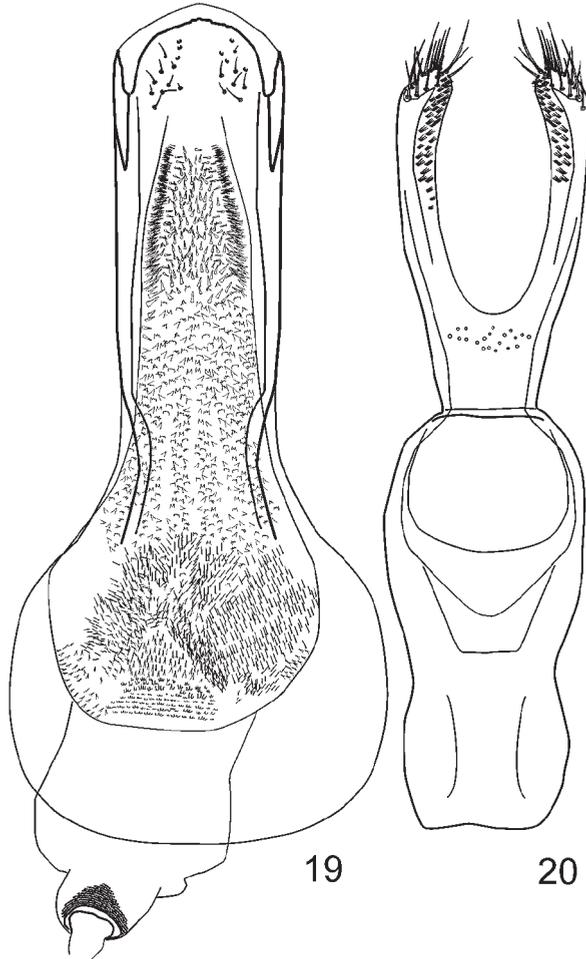
Body ovate, integument of male red brown, with fore and middle legs lighter, antennal segments 1-4 reddish with a small dorsal black dot, rest of antennae black. Vestiture made of dense slender setae, well covering integument, recumbent; dorsally composed of mostly orange-brown scales, with a pair of very small white spots on pronotum disc slightly beyond middle. Head setation white. At base of elytra and on sides of scutellum, small groups of white setae. Ventral setation is whitish. Pygidium setation rather dense, with mixed white and orange setae. Female cuticle is darker, almost black on pronotum and middle of elytra; head dark dorsally. Thoracic sternites are blackish, much darker than abdominal sternites. Setation of elytra and pronotum is mixed white and orange, with the same white spots as in male.

Male. Head moderately long; eyes bulging, maximum head width 1.3 times width behind eyes; face wide: eyes separated by 0.36 times head width including eyes; distance between posterior rim of eyes and apex of clypeus / distance between eyes = 2.2; eye cleft to 0.6 of its length, width at bottom of sinus composed of 6-7 ommatidia; maximum width of postocular lobes equal to 1/3 eye width at sinus; carina on frons absent, interocular tubercule indistinct. Antenna short, not reaching to pronotal base; antennal segments 1-4 subcylindrical, segments 5-8 apically widened, segments 9-10 subrectangular, wider than long, 11 oval (L/W = 1.6). Length of antennomeres: 1.6 : 1 : 1.3 : 1.3 : 1.2 : 1.3 : 1.2 : 1.2 : 1.2 : 1.2 : 2.0.

Pronotum almost trapezoidal, with greatest width at base ( $W/L = 1.59$ ), its sides slightly convex, not expanded behind eyes; with shallow oblique impression on sides of basal lobe. Its disc with strong, ocellate punctures, separated by  $1/3$  to  $1/2$  their diameter, intervals shining.

Elytra 1.11 times longer than combined width, their sides convex; disc not flattened; at base of interstriae 3 and 4 two well defined teeth, separated by 0.7 times their distance to elytral base. Striae on disc well defined, deep, with regular punctures (diameter equal to width of stria); interstriae flat, shining, with irregular lines of punctures.

Hind femora incrassate, at their widest 1.8 times wider than mid femora; meso-ventral margin with small preapical denticle; hind tibiae strongly widened apically, with dorsomesal and ventral carinae complete, lateral not reaching base; apex of tibia with strong mucro about as long as width of tarsomere 1 at base; lateral denticle about



19-20. *Bruchidius pennatae*: 19 – median lobe, 20 – tegmen, ventral view

1/2 mucro length, and dorsal denticles 1/3 of lateral denticle. First tarsomere ventrally with a denticle that is about 1/2 width of tarsomere 2.

Abdomen with ventrite 5 slightly emarginate, its length medially about 0.9 sternite 4; ventrite 1 without patch of short setae. Pygidium subcircular (W/L = 0.94), basally flattened, with apical 1/5<sup>th</sup> slightly turned under; punctation deep and dense, laterally elongated, more or less coalescent.

Genitalia: Median lobe (Fig. 19) of moderate length (maximum width excluding basal hood / total length = 0.2); ventral valve rounded, hardly sclerotized, bearing numerous sensillae and on each side a row of 6 to 8 setae; internal sac entirely lined with various types of microtubercles and spines. Tegminal strut (Fig. 20) without keel, lateral lobes cleft to 0.7 their length; apex of parameres with numerous long setae.

Female. Similar to male, darker, last abdominal ventrite not emarginate, longer than 4<sup>th</sup> ventrite; no patch of short setae on ventrite 1. Pygidium flattened basally, then regularly convex.

#### AFFINITIES

*B. pennatae* belongs to a group of species feeding in *Acacia* and *Albizia* pods, with median lobe devoid of hinge sclerites and rounded ventral valve, like *Tuberculobruchus albizziarum* DECELLE, *B. quadrisignatus* (FAHRAEUS) and several undescribed species.

#### ETYMOLOGY

The name refers to the misidentified host plant *Acacia pennata*, an Asian species (see below).

#### HOST PLANTS

Examined specimens bear labels with rearing records from seeds of *Acacia pennata* (L.) WILLD., which is in fact not present in Africa (ILDIS 2006). According to ILDIS, BAKER (1930) misidentified African specimens of *Acacia brevispica* Harms as *A. pennata*, an error that was apparently repeated by succeeding authors, including NONGONIERMA (1978) and VARAIGNE-LABEYRIE & LABEYRIE (1981). Also recorded from *Acacia senegal samoryana* (= *Acacia dudgeoni* CRAIB. ex HOLL.) and *Acacia macrostachya* (NONGONIERMA 1978).

#### DISTRIBUTION

Burkina Faso.

### *Bruchidius pygidiopictus* n.sp.

*Bruchidius pygidiopictus* DECELLE, **nom. nud.** – NONGONIERMA (1978), KERGOAT & SILVAIN (2004), KERGOAT et al. (2005a, b).

*Bruchidius platipennis* DECELLE, **nom. nud., syn. nov.** – NONGONIERMA (1978).

*Tuberculobruchus pygidiopictus* – DIALLO & SAADOU (1997).

## TYPE MATERIAL

Holotype: Male, "Sénégal Région de Thiès / Fas - ex graines *Faidherbia / albida* récolte 17 février 1996 / H. & A. Delobel coll.", MNHN. Paratypes, 22 males, 29 females, same data as holotype; 4 males, 5 females, Senegal, Fatick region, Samba Dia, reared from *Faidherbia albida* seeds, 11.iii.1995 (H. & A. Delobel), MNHN (43), CBGP (4), IFAN (4); 1 male, 1 female, Senegal, Mbourouck, 21.iv.1970, *Acacia albida* (A. Nongonierma), MNHN; 2 specimens, Senegal, Mbourouck, 21.iv.1970, *Acacia albida* (A. Nongonierma); 30 specimens, same data, 19.iv.1972; 7 specimens, same data, 28.ii.1974, MRAC.

## ADDITIONAL MATERIAL

BURKINA FASO: 1 specimen, Tougouri, *Acacia sieberiana*, 5.i.1969 (A. Nongonierma), MRAC. CAMEROON: 4 specimens, Cameroun N, Moro-Mayo Ouldémé, *Acacia albida*, ii.1978 (R. Pierlot), MRAC. NIGER: 3 specimens, Kanga, *Acacia albida*, 24.xii.1993 (B. Diallo), with label "*Tuberculobruchus pygidiopictus* ♂, J. Decelle det., 1997"; 2 specimens, Niamey, *Acacia albida*, 31.i.1980 (I. Alzouma); 3 specimens, Namaro, *Acacia albida*, 23.xi.1985 (J. Decelle); 1 specimen, Maradi, *Acacia albida*, 19.ii.1986 (G. Pierrard), MRAC. SENEGAL: 1 male, 1 female, Sindia, *Acacia sieberiana*, 30.i.1969 (A. Nongonierma), labelled as types, "*Bruchidius platipennis* n.sp., J. Decelle det., 1972" [MNHN]; 1 specimen, Mbourouk, *A. albida*, 19.iv.1972, *Bruchidius pygidiopictus* n.sp., J. Decelle det., 1973; 1 specimen, Sindia, *Acacia sieberiana*, 30.i.1969; 1 male, Sindia, *Acacia sieberiana*, 30.i.1969, Br 820; 1 specimen, Sindia, *Acacia sieberiana*, 30.i.1969; 1 male, Mbourouk, *A. albida*, 19.iv.1972, Br 821, all same collector, MRAC.

## DESCRIPTION

Length: 4.5-5.3 mm; width: 2.2-2.5 mm.

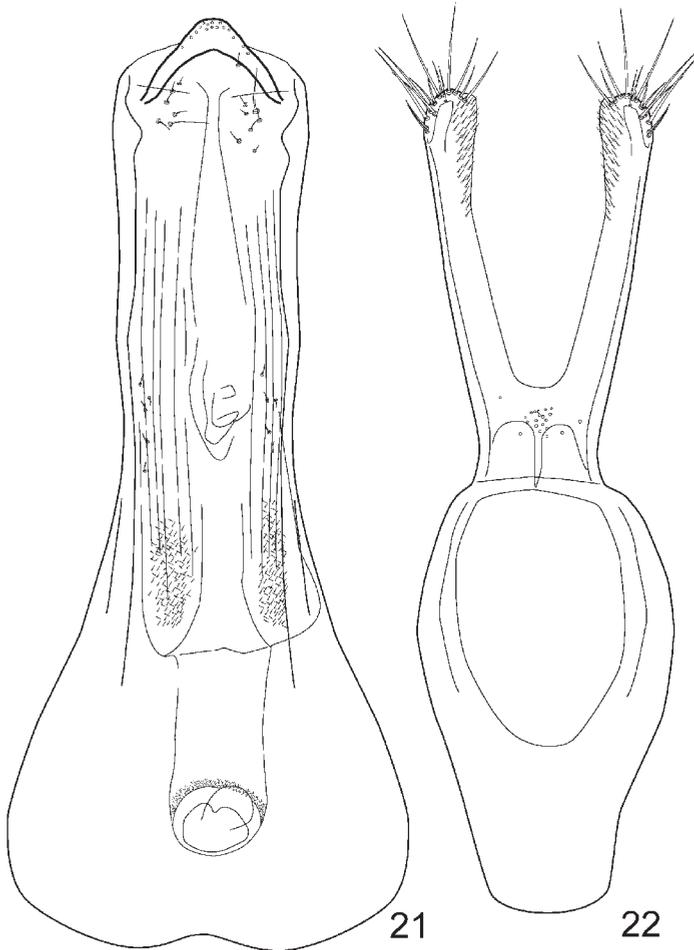
Body ovate, integument orange to reddish-brown, with a few dark areas bearing blackish setation, specially on elytra (Fig. 4). Vestiture dense, scaly, well covering integument, recumbent except erect hairs on central part of ventrites, dorsally composed of yellowish, white and dark brown scales; yellowish setae predominate in odd interstriae, white setae in even interstriae, which show dark dots before and beyond middle; apex of elytra predominantly dark brown. In darker specimens, brown dots are larger, and odd interstriae are lined with a median strand of brownish setae; on pronotum a pair of white spots on disc sides, and a longitudinal strip, which may merge into a cross, surrounded by yellowish or brownish setae; pygidium medially with a strip of white setae, then a pair of wide strands of brown to black setae, which may be reduced to a pair of elongated dots; laterally a dark spot (often reduced or absent) surrounded with white. Ventral side with very dense whitish scales.

Male. Head very short; eyes moderately bulging, maximum head width 1.2 times width behind eyes; face wide: eyes separated by 0.36 times head width including eyes; distance between posterior rim of eyes and apex of clypeus / distance between eyes = 2.2; eye cleft to 0.5 of its length, width at bottom of sinus composed of 7 ommatidia; maximum width of postocular lobes equal to 1/3rd eye width at sinus; carina on frons

obtuse and shining, interocular tubercle distinct. Antenna short, hardly reaching to pronotal base; antennal segments 1-4 subcylindrical, with 3, 4 almost equal in length, segments 5-10 gradually widened at apex, 5 longer than wide, 6-10 wider than long, 11 oval ( $L/W = 1.53$ ). Length of antennomeres: 1.6 : 1.0 : 1.6 : 1.2 : 1.2 : 1.2 : 1.2 : 1.2 : 1.3 : 1.3 : 2.0.

Pronotum trapezoidal ( $W/L = 1.63$ ), its sides straight or slightly sinuate, strongly convergent, slightly expanded behind eyes; with strong oblique impression on sides of basal lobe. Its disc with strong, well separated ocellate punctures.

Elytra 1.17 times longer than combined width, their sides almost straight, maximum width at basal 1/4th; disc flattened; at base of interstriae 3 and 4 two wide blunt teeth, about 1.5 times closer to each other than to elytral base. Striae on disc well defined; interstriae flat, micropunctate.



21-22. *Bruchidius pygidiopictus*: 21 – median lobe, 22 – tegmen, ventral view

Hind femora moderately incrassate, at their widest 1.7 times wider than mid femora; mesoventral margin with well defined denticle; hind tibiae with dorsomesal and ventral carinae complete, lateral not reaching base; apex of tibia with mucro small, about half as long as lateral denticle, and about as long as largest of dorsal denticles. First tarsomere ventrally with very short denticle.

Abdomen with ventrite 5 emarginate, its length medially about 2/3 of sternite 4; ventrite 1 with circular patch of thinner, denser beyond ventrite middle, in a shallow depression; similar setae may be seen at base of ventrites 2-5. Pygidium subcircular (W/L = 1.0), with apex vertical.

Genitalia: Median lobe (Fig. 21) moderately slender (maximum width excluding basal hood / total length = 0.21); ventral valve subtriangular, moderately sclerotized, with rounded tip, bearing numerous sensillae and on each side a row of 6 to 7 setae; internal sac with only very few thin spinules apically. Tegminal strut (Fig. 22) without keel, lateral lobes cleft to 0.77 their length; apex of parameres with long setae.

Female. Similar to male, usually darker, last abdominal ventrite not emarginate, longer than 4<sup>th</sup> ventrite, ventrite 1 with a brush of erect setae slightly beyond middle.

#### AFFINITIES

Closely related to *B. auratopubens*, but larger in size.

#### ETYMOLOGY

The name refers to the dark and white colouring of the pygidium.

#### HOST PLANTS

Examined specimens bear labels with rearing records from seeds of *Faidherbia albida* and *A. sieberiana*. NONGONIERMA (1978) reared 279 specimens of *B. pygidiopictus* from 8 272 seeds of the former host.

#### DISTRIBUTION

Burkina Faso, Cameroon, Niger, Senegal.

### *Bruchidius sieberianae* n. sp.

*Bruchidius sieberianae* DECELLE, **nom. nud.**, pro parte – NONGONIERMA (1978); VARAIGNE-LABEYRIE & LABEYRIE (1981).

#### TYPE MATERIAL

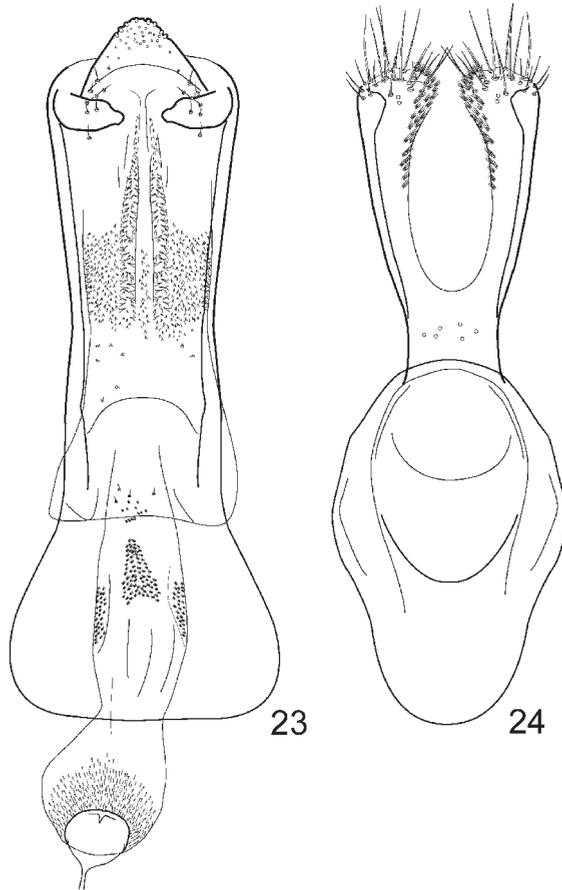
Holotype: Male, "Genitalia: Lame Delobel 01706" "Bandia, Sénégal, 10.IV.1967" "sur graines d'*Acacia seyal*" "IFAN 1967, A. Nongonierma" "Coll. Mus. Tervuren", MRAC. Paratypes: 3 males, Senegal, Sindia, 20.iv.1967, reared from *Acacia sieberiana* seeds (one of which dissected, with label "Genit. Br. 381"); 5 males, Burkina Faso, Ouagadougou 15.ii.1974, *Acacia seyal*, one of which dissected, with genitalia in vial; 1 female, Senegal, Bandia, 10.iv.1967, *Acacia seyal*; 1 female, Senegal, Dakar,

10.ii.1973, *Acacia nilotica* var. *nilotica*; all paratypes collected by A. Nongonierma, MRAC (8), MNHN (2).

DESCRIPTION

Length: 2.6-2.8 mm; width: 1.3-1.4 mm.

Body ovate, integument of male reddish-brown, legs and antennae paler; thoracic sternites with more or less extended blackish patches; last tarsomeres and apical denticules of posterior tibia darker. Vestiture variable, made of long scaly setae, well covering integument, setae longer on pronotum, specially basally, recumbent, except for a small brush of erect hairs on ventrite 1 in female. In male, vestiture composed dorsally of whitish, yellowish (golden) and a variable amount of dark brown setae; on head, setae whitish, on pronotum mostly whitish or yellowish, with a pair of round spots on disc, surrounded by a few dark setae; on elytra, setae whitish with 3 transversal dark incomplete stripes: one before basal third, one after middle, one apical, more



23-24. *Bruchidius sieberianae*: 23 – median lobe, 24 – tegmen, ventral view

complete and more conspicuous; a few dark setae on humerus; apex of elytra with light-coloured setae; pygidium disc with a bold X-shaped dark pattern and a pair of small lateral spots of the same colour. Ventral setation whitish, with patches of brown setae on upper part of ventrites 2 to 5.

Male. Head short and wide, with eyes bulging, maximum head width 1.5 times width behind eyes; face wide, eyes separated by 0.34 times head width including eyes; distance between posterior rim of eyes and apex of clypeus / distance between eyes = 2.1; width at bottom of sinus composed of 7 ommatidia; maximum width of postocular lobes equal to 1/3 eye width at sinus; carina on frons shallow, well visible, interocular tubercle indistinct. Antenna very short, not reaching pronotal base; antennal segments 2-5 almost equal in length (2 wider), segment 5 widened apically, segments 6-10 wider than long, asymmetrically cup-shaped, 11 oval (L/W = 1.5). Length of antennomeres: 1.4 : 1 : 1.1 : 0.9 : 1 : 0.9 : 0.9 : 0.9 : 0.9 : 0.9 : 1.7.

Pronotum dome-shaped, with greatest width at base (W/L = 1.4 to 1.5), sides regularly arched, not bisinuate, not expanded behind eyes; with shallow rounded impression on sides of basal lobe. Its disc with ocellate punctures bearing each a thin dark seta, and smaller, more numerous punctures bearing scaly, whitish or yellowish setae.

Elytra 1.11 times longer than combined width, their sides slightly convex; disc flattened; at base of interstriae 3 and 4 two small but wide teeth, two or three times closer to each other than to elytral base. Striae on disc well defined, interstriae flat, with dense punctation, normally not visible under dense setation.

Hind femora incrassate, at their widest 1.6 times wider than mid femora; meso-ventral margin without clearly defined preapical denticle; hind tibiae widened apically, with dorsomesal carina strong, lateral carina faint, ventral carina complete and strong; apex of tibia with mucro shorter than lateral denticle, and dorsal denticles about half as long as mucro.

Abdomen with ventrites 2 to 4 of equal length, and ventrite 5 slightly emarginate apically. Pygidium oval, wider than long in view perpendicular to disc (W/L = 1.10), strongly convex in apical part, slightly turned under apically.

Genitalia: Median lobe (Fig. 23) rather short (maximum width excluding basal hood / total length = 0.27); ventral valve subtriangular, moderately sclerotized, bearing numerous sensillae and 8 setae on each side; internal sac with numerous small spines and apically an area with very thin setae. Tegminal strut (Fig. 24) without keel, wide apically, lateral lobes cleft to 0.74 their length; apex of parameres with numerous long setae.

Female. Somewhat darker than male, a brush of erect setae emerging from middle of ventrite 1, last abdominal ventrite not emarginate, pygidium more elongate, shield-shaped, flattened.

#### AFFINITIES

*B. sieberiana* is very similar to *B. petechialis* GYLLENHAL, from which it may be distinguished through the absence of long trichose tubule prolonging the internal sac. Several members of the *rubicundus* clade from Eastern and Southern Africa share the same type of male genitalia, with hinge sclerites and rounded ventral valve. The faint sclerotized plate of the internal sac is also met in *B. rubicundus*, but tegmen is quite distinctive.

## ETYMOLOGY

The name refers to the host plant *Acacia sieberiana* DC.

## HOST PLANTS

Examined specimens bear labels with rearing records from *Acacia seyal* DELILE, *A. sieberiana* DC. and *A. nilotica nilotica* seeds. NONGONIERMA (1978) reared 1 specimen from 239 seeds of *A. nilotica*, about 13 from 5 699 seeds of *A. seyal* (together with *B. summotus*), 17 from 2 949 seeds of *A. sieberiana*. VARAIGNE-LABEYRIE & LABEYRIE (1981) also reared it from *A. seyal*.

## DISTRIBUTION

Burkina Faso, Mali, Senegal.

***Bruchidius summotus* n. sp.**

*Bruchidius sieberianae* DECELLE, **nom. nud.**, pro parte – NONGONIERMA (1978).

## TYPE MATERIAL

Holotype: Male, Burkina Faso, “récolté sur *Acacia seyal*” “coll. Mus. Tervuren, Haute-Volta, 15.II.1974, Ouagadougou, A. Nongonierma” dissected (genitalia in vial), MRAC. Paratypes: 1 male, 8 females, same data as holotype, MRAC (7), MNHN (2). Formerly in Decelle’s series of *B. sieberianae* in the MRAC collection, all specimens bear an orange “Paratypus” label, but no designation label.

## DESCRIPTION

Length: 3.0-3.7 mm; width: 1.6 mm.

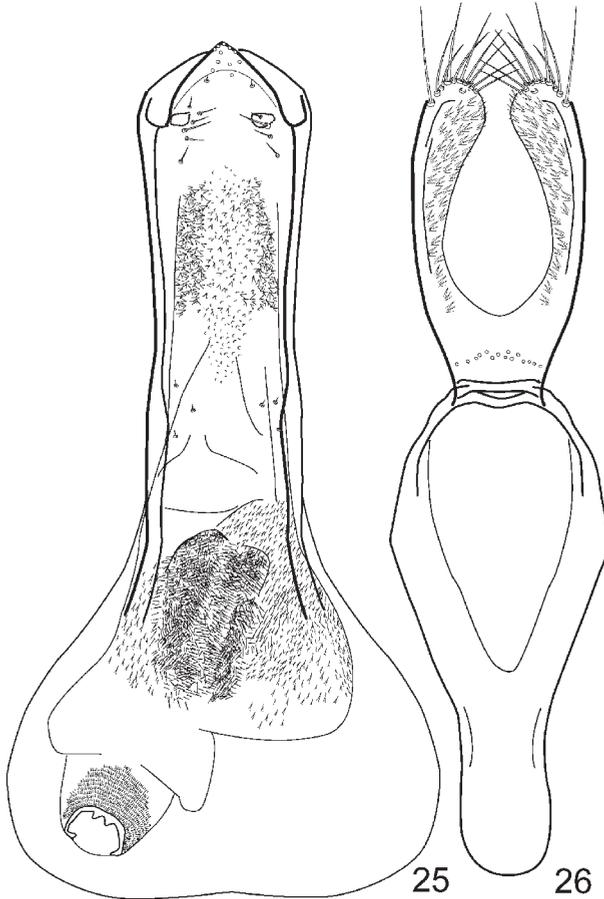
Body ovate, integument of male dark brown on head (except clypeus, labrum and antennae), most of pronotum, part of elytra (base, sides, apex and suture); major part of pygidium, rest of elytra, pronotum sides reddish-brown; antennae, four anterior legs pale orange, posterior legs reddish, except femoral base reddish brown; last two tarsomeres of all legs entirely or partly blackish. Base of first ventrite brownish, rest of ventrites red-orange. Vestiture composed of rather slender setae, dense and recumbent and rather well covering integument. Setae on head whitish, on pronotum dark brown except a few very small yellowish patches (specially small patch in middle of basal lobe); on elytra, setae blackish on sides, apex, and on pairs of spots on intervals 3, 5, 7, and 9 (first before basal third, second around middle); setae yellowish white on rest of elytral disc and suture, apex entirely covered with dark setae; pygidium mainly covered with dark setae; a thin basal triangular spot, a small elongated apical triangle, a sinuate strip on sides (sometimes basal and apical median triangles joined by a strand of white setae); setae whitish on ventral side, except upper part of ventrites with a few black setae; female with a small brush of hair on ventrite 1.

Male. Head short and wide, with eyes bulging, maximum head width 1.3 times width behind eyes; face moderately wide, eyes separated by 0.32 times head width including eyes; distance between posterior rim of eyes and apex of clypeus / distance

between eyes = 2.3; width at bottom of sinus composed of 6-7 ommatidia; maximum width of postocular lobes equal to half eye width at sinus; carina on frons shallow, well visible, interocular tubercle indistinct. Antenna very short, not reaching pronotal base; antennal segments 2-4 almost equal in length, segment 5 widened apically, segments 6-10 wider than long, asymmetrically cup-shaped, 11 oval (L/W = 1.6). Length of antennomeres: 1.3 : 1 : 1 : 1 : 1.2 : 0.9 : 0.8 : 0.8 : 0.8 : 0.7 : 1.6.

Pronotum dome-shaped, with greatest width at base (W/L = 1.5), sides regularly arched, not bisinuate, not expanded behind eyes; with very shallow oblique impression on sides of basal lobe. Its disc irregularly punctured, with stronger and smaller punctures.

Elytra about as long as combined width, their sides slightly convex; disc flattened basally; at base of interstriae 3 and 4 two small but wide teeth, slightly closer to each other than to elytral base. Striae on disc with closely spaced punctures, microsculpture of interstriae barely visible under dense setation.



25-26. *Bruchidius summatos*: 25 – median lobe, 26 – tegmen, ventral view

Hind femora incrassate, at their widest 1.6 times wider than mid femora; meso-ventral margin with small but sharp preapical denticle, concave beyond denticle; hind tibiae strongly widened apically, with dorsomesal carina and ventral complete, lateral carina visible only to basal fourth; apex of tibia with mucro very small, about half of width of tarsomere 1 at base; lateral denticle about 1.5 times mucro length, and dorsal denticles only slightly shorter than mucro.

Abdomen with ventrite 1 longest, ventrites 2-4 of increasing length, and ventrite 5 only slightly emarginate apically. Pygidium oval, wider than long in view perpendicular to disc ( $W/L = 1.06$ ), slightly convex in apical part, slightly turned under apically.

Genitalia: Median lobe (Fig. 25) rather slender (maximum width excluding basal hood / total length = 0.20); ventral valve subtriangular, moderately sclerotized, with pointed tip, bearing numerous sensillae and 4-6 setae on each side; armature of internal sac consisting basally of a pair of small ill-defined structures, in the position of hinge sclerites, then numerous small broad-based spines, and apically lined with numerous fine spicules. Basal hood wide. Tegminal strut (Fig. 26) without keel, long and apically narrowed, lateral lobes cleft to 0.77 their length; apex of parameres with about 10 long setae.

Female similar to male, except pygidium almost entirely flat, and a brush of erect setae emerging from small depression at posterior 2/3 of ventrite 1.

#### AFFINITIES

Closely related to *B. sieberianae*, from which it may be distinguished by a darker colour (metasternite entirely black, ventrite 1 partly black), and by details of male genitalia: hinge sclerites faint or absent, saccus densely lined with fine spicules, tegminal strut slender.

#### ETYMOLOGY

From latin verb *submovere*, "to separate"; a reference to the fact that this taxon is erected for specimens previously identified by DECELLE as *B. sieberianae*.

#### HOST PLANTS

Examined specimens bear labels with rearing records from *Acacia seyal* DELILE.

#### DISTRIBUTION

Burkina Faso.

#### ACKNOWLEDGEMENTS

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