

## Review of *Parachinavia* ROCHE (Hemiptera, Pentatomidae, Pentatominae) \*

J. Grazia<sup>1</sup> & C.F. Schwertner<sup>2</sup>

<sup>1</sup> Universidade Federal do Rio Grande do Sul (UFRGS), Instituto de Biociências,  
Departamento de Zoologia, Av. Bento Gonçalves 9500, Prédio 43435, 91501-970 Porto  
Alegre, RS, Brazil. E-mail: jocelia@ufrgs.br

<sup>2</sup> Universidade Federal do Rio Grande do Sul (UFRGS), Instituto de Biociências,  
Departamento de Zoologia, Av. Bento Gonçalves 9500, Prédio 43435, 91501-970 Porto  
Alegre, RS, Brazil. E-mail: acrosternum@yahoo.com.br

### ABSTRACT

*Parachinavia* ROCHE, monotypic until the present work, is reviewed and broadened with the inclusion of *Acrosternum prunasis* (DALLAS). The genus is redescribed, including the genitalia of both sexes. Among green stink bugs, *Parachinavia* is distinguished by oval body, small to medium size, color pale green to ochraceous, punctures concolorous and regularly distributed, ocelli on a pale callosity, gonocoxites 8 conspicuously inflated, gonocoxites 9 with anterior margin concave and posterior margin slightly convex, and secondary thickenings of gonapophyses 9 in 1+1 small rounded areas. Diagnostic characters for the species, as well as illustrations for several morphological structures, are provided.

**Keywords.** Afrotropical Region, Afrotemperate Region, Heteroptera, *Parachinavia creola*, *Parachinavia prunasis*, Nezarini.

### INTRODUCTION

The genus *Parachinavia* was described by ROCHE (1977) in a review of Pentatomidae of the granitic island of Seychelles. The author mentioned that three male specimens collected

---

\* Contribution N° 529 of the Department of Zoology, UFRGS.

on Mahé do ‘... not fit into any *Acrosternum* group of genera...’ (ROCHE 1977, p. 564), and proposed the new genus and new species, *Parachinavia creolea* ROCHE. In a tentative tribal classification of Pentatominae, RIDER (2005) included *Parachinavia* in the tribe Nezarini.

SCHWERTNER (2005), studying the phylogenetic relationships of a group of green stink bug genera, established *Parachinavia* as the sister-group of genus *Acrosternum*, the two genera sharing at least three synapomorphies. Our study of type-material of both genera had allowed the recognition of *Acrosternum prunasis* (DALLAS, 1851), a continental African species, as congeneric to *P. creolea*. A new combination, *Parachinavia prunasis* **nov. comb.**, is proposed here in.

GERLACH et al. (2005) extended the distribution of *P. creolea* to Silhouette island, this species being endemic to Seychelles. Therefore, the new combination here proposed extends the geographical distribution of *Parachinavia* into the continental area of Afro-tropical region and to the Afrotropical region (MORRONE 2002).

In this work, *Parachinavia* is redescribed and, for the first time, a detailed description of the genitalia of both sexes is presented. Diagnostic characteristics of the species are given.

We dedicate this paper to Michail Josifov, in recognition of his contribution to the study of the Heteroptera.

## MATERIAL AND METHODS

Material was examined from the following collections (acronyms and curators in parentheses): American Museum of Natural History, New York, USA (AMNH, R.T. Schuh); Musée Royal d’Afrique Centrale, Tervuren, Belgium (MRAC, U. Dall’Asta); Museum Nationale d’Histoire Naturelle, Paris, France (MNHN, D. Pluot-Sigwalt); National Museum of Natural History, Washington D. C., USA (NMNH, T.J. Henry); The Natural History Museum, London, UK (BMNH, M. Webb,).

Dissection of the internal genitalia followed GRAZIA *et al.* (2006); terminology for genitalia followed mainly DUPUIS (1970) for males and females, and BAKER (1937) and SCHAEFER (1977) for males. Drawings were made with camera lucida mounted on a Leica MZ125 stereomicroscope; photographs were taken with a Microptics-USA photographic system.

## RESULTS AND DISCUSSION

### *Parachinavia* ROCHE

*Parachinavia* Roche, 1977:564 (nov. gen.).

Type species: *Parachinavia creolea* Roche

Diagnosis. Recognized among green stink bugs by oval body, small to medium size, color pale green to ochraceous in preserved specimens, punctures concolorous and regularly dis-

tributed, ocelli on a pale callosity but body without callosity areas; unique apomorphies among the group include the following characters of the female genitalia: gonocoxites 8 conspicuously inflated, posterior margin of gonocoxites 9 slightly convex, anterior margin concave; secondary thickenings of gonapophyses 9 in 1+1 small caps. Distinguished from *Acrosternum* by several morphological characters (see comments below).

Description. General color pale green to ochraceous in preserved specimens; apical half of antennal segment III and most of segments IV and V reddish. Dorsal and ventral surfaces with concolorous punctures regularly distributed, coarse; callosity areas absent. Broad, oval, of medium size (9 to 12 mm).

Head triangular, juga as long as tylus. Ocelli on a pale callosity; lateral margins of juga slightly concave. Antennifer tubercle not seen from dorsal side; lateral spine of antennifer tubercle obsolete, ventral spine absent. Antennae five segmented; first segment not surpassing apex of head, antennal segment increasing in length from I to V; segment IV and V subequal. Bucculae low, uniform in height, margins subparallel and evanescent near base of head. Rostrum just attaining or surpassing metacoxae; segment I not surpassing bucculae; segment II shorter than III and IV combined. Pronotum trapezoidal, humeral angles not developed; antero-lateral margins rectilinear. Scutellum almost as broad as long at base, apex surpassing level of fourth connexival segment; parafrenal lobe about two and a half size of postfrenal lobe. Hemelytra: corium surpassing anterior half of connexival segment VI; membrane hyaline, sometimes with green speckles. Connexivum more or less exposed, postero-lateral angles slightly pronounced, tiny black spot on urosternites present.

Mesosternum conspicuously carinate; metasternum longitudinally hexagonal, longer than wide, feebly sulcate. Ostiole of metapleural scent gland elliptical, developed in a long, narrow ruga, evanescent at apex, extending to the  $\frac{3}{4}$  of the metapleura; mesopleural evaporatorium wide, occupying almost half of sclerite; metapleural evaporatorium also wide, occupying most of sclerite. Legs immaculate, tibia dorsally sulcate. Abdominal spine short, blunt, scarcely attaining metacoxae. Spiracles concolorous; lateral trichobothria placed along spiracular line. Abdominal midline with scattered concolorous punctures.

Male genitalia (Figs 4-19). Pygophore quadrangular, postero-lateral angles not developed, round. Genital cup opening dorso-posterior. Superior process (sp) of genital cup present. Dorsal rim (dr) sinuous at middle, scarcely projected over segment X; lateral thirds of dorsal rim with 1+1 spines (sdr). Ventral rim (vr) of pygophore shallowly concave at middle (me); infolding of ventral rim (ivr) wide on dorsal view, simple, inflated laterad to inferior ridge. Inferior ridge (ir) not visible in ventral view. Segment X perpendicular in relation to the sagittal plane of pygophore, quadrangular in outline; dorsal surface uneven at basal half, apical half without processes. Parameres (pa) uniramous, laterally flat; apical part of parameres (ap) more or less wide and latero-basally directed; hairy process at base of paramere (bp) present. Phallosome (ph) tubular, more than four times as long as vesica (v). Vesica short, straight, with 1+1 processes (pv); processes subequal in length to vesica and obscured by conjunctiva (cj) when not extended.

Female genitalia (Figs 20-21). Posterior margin of segment VIII in open U along gonocoxites 8 (gc8). Laterotegites 8 (la8) as long as laterotergites 9 (la9); spiracles (s) present on basal angle of laterotergites 8. Gonocoxites 8 conspicuously inflated, posterior margin slightly convex; sutural margins convex, juxtaposed only at middle. Surface of basal 2/3 of laterotergites 9 concave. Posterior margin of gonapocoxites 9 (gc9) slightly concave, anterior margin concave, prolonged anteriorly in 1+1 short arms; secondary thickenings of gonapophyses 9 (sg9) in 1+1 small caps on anterior margin; chitinellipsen (ch) present. Ductus receptaculi (dre) before vesicular area (va) almost as long as ductus receptaculi after vesicular area; in this portion, reeled and strongly inflated before anterior flange (af). Internal ductus of vesicular area reeled at basal fourth. Capsula seminalis (cs) as long as pars intermedialis (pi), asymmetrical and with one projection anteriorly bent.

Comments. *Parachinavia* was described for *P. creolea*, in comparison with *Acrosternum heegeri*, based on three male specimens (ROCHE 1977). Among green stink bugs, *Acrosternum* and *Parachinavia* represent a monophyletic group, sharing the following synapomorphies (SCHWERTNER 2005): antennifer tubercle obsolete, not visible in dorsal view; mesosternum conspicuously carinate; ductus receptaculi after vesicular area reeled and strongly inflated before anterior flange; capsula seminalis asymmetrical and with one projection anteriorly bent. *Parachinavia* can be readily distinguished from *Acrosternum* by punctures apparently coarser and less dense, scutellum almost as broad as long at base, postero-lateral angles of pygophore not developed, superior process of genital cup conspicuous, dorsal rim only slightly projecting over segment X, lateral third of dorsal rim with 1+1 spines, ventral rim of pygophore shallowly concave at middle; infolding of ventral rim simple, slightly inflated laterad to inferior ridge, and wide in dorsal view; inferior ridge not visible in ventral view; segment X with dorsal surface uneven at basal half, apical half of segment X without processes, internal ductus of vesicular area reeled at basal fourth, and capsula seminalis as long as pars intermedialis.

Distribution. Widely distributed in the Afrotropical and Afrotropical regions, including the west-Pacific islands of Seychelles.

### *Parachinavia creolea* ROCHE

(Figs 1-11, 22)

*Parachinavia creolea* ROCHE, 1977:565 (nov.sp.); GERLACH *et al.* 2005:107 (distribution).

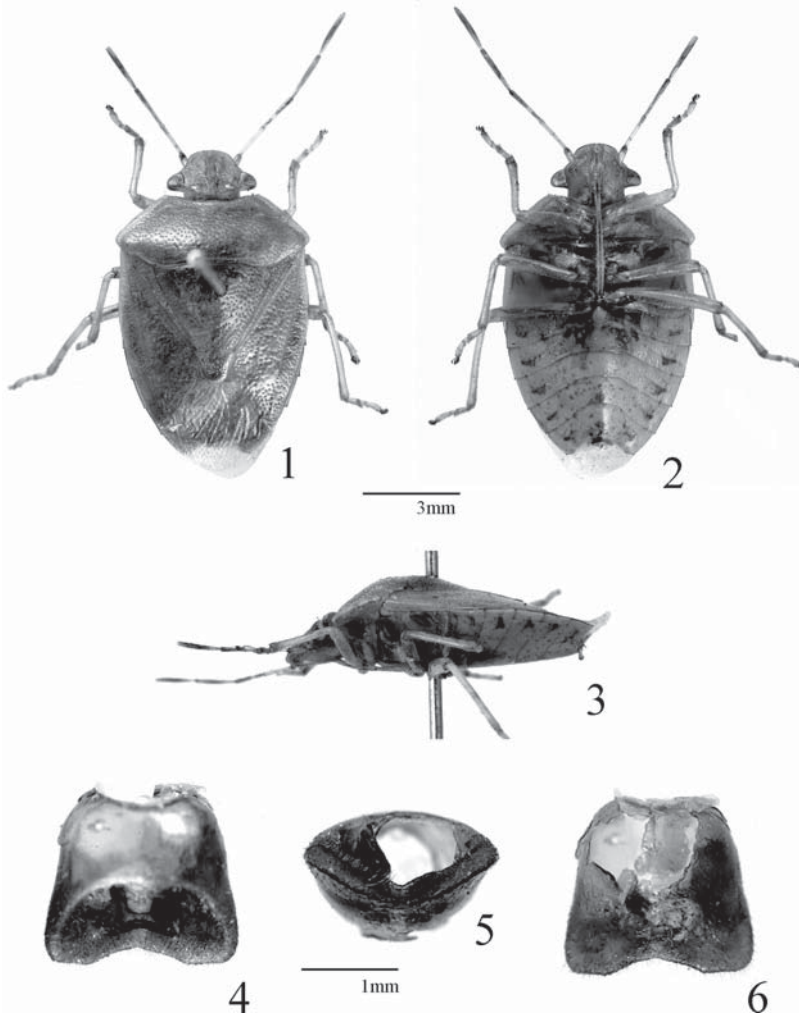
Type-locality: Seychelles.

Male. Rostrum just attaining metacoxae (Fig. 3). Measurements (mm±standard deviation): Total length 9.26±0.29, total width 5.20±0.38, head length 1.93±0.11, head width 2.58±0.11, interocular distance 1.48±0.04, interocelar distance 0.88±0.04, head length in front of eyes 0.93±0.04, antennal segment I 0.58±0.02, antennal segment II 0.98±0.07, antennal segment III 1.28±0.02, antennal segment IV 1.43±0.09, antennal segment V 1.42±0.07, rostral segment I 0.73, rostral segment II 1.33, rostral segment III

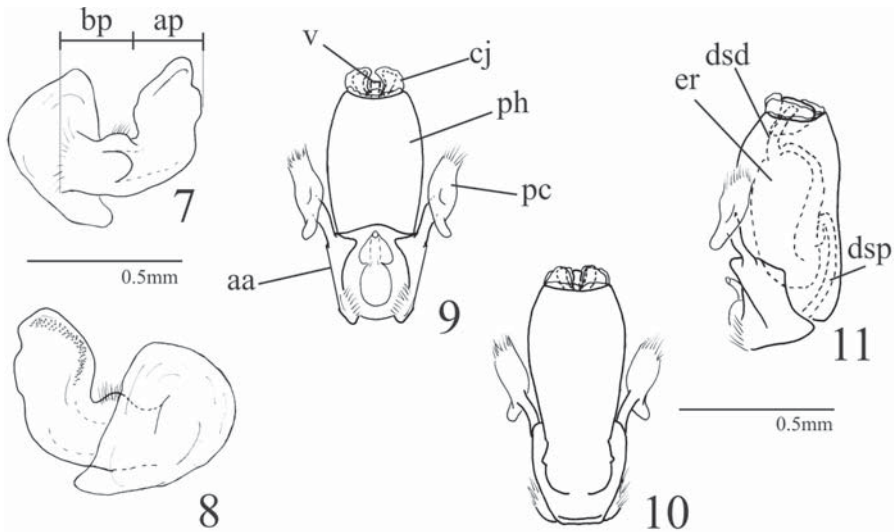
0.93, rostral segment IV 0.97, pronotum length  $1.67 \pm 0.28$ , pronotum width  $5.47 \pm 0.38$ , scutellum length  $3.33 \pm 0.00$ , scutellum width  $3.33 \pm 0.19$ . Pygophore: excavation of ventral rim occupying more than median third of this structure (Figs 4, 6). Parameres: apical portion almost as wide as basal portion; apical margin obtusely rounded; apical process inconspicuous (Fig. 7-8).

Female. Unknown.

Comments. ROCHE (1977) mentioned that this species was apparently rare, and until recently it was known only from type material. More recently, GERLACH et al. (2005) extended its distribution. Distinguished from *P. prunasis* nov. comb. by shorter rostrum, ampliate excavation of ventral rim of pygophore, and narrower parameres, obtusely rounded at apex.



**Figs 1-6:** *Parachinavia creolea*, holotype ♂. 1-3, Habitus in dorsal, ventral and lateral views; 4-6, pygophore in dorsal, posterior and lateral views (dissected and partially damaged).



**Figs 7-11:** *Parachinavia creolea*, holotype ♂. 7-8, Left paramere in latero-medial and latero-external views; 9-11, Phallus in dorsal, lateral, and ventral views (aa- articulatory apparatus; ap- apical portion of paramere; bp-basal portion of paramere; cj- conjunctiva; dsd- ductus seminis distalis; dsp- ductus seminis proximalis; er- ejaculatory reservoir; pc- processus capitati; ph- phallosome; v- vesica).

Holotype ♂ with the following labels (pygophore dissected): [Seychelles, Mt Fleuri, Mahe, 19.III.1972, P.J.L. Roche//Holotype//7178//*Parachinavia creolea* gen. & sp.n., P.J.L. Roche det. 1975] (NHM).

Paratype ♂ with the following labels (pygophore dissected): [Seychelles: Mahe, Mt Fleuri, 10.I.1972, P.J.L. Roche //Paratype//6712//*Parachinavia creolea* gen. & sp.n., P.J.L. Roche det. 1975] (MRAC).

Distribution (Fig. 22). Seychelles, known from Mahé (Mt. Fleuri) and Silhoutte islands.

***Parachinavia prunasis* (DALLAS) nov. comb.**

(Figs 12-22)

*Raphigaster prunasis* DALLAS, 1851: 279 (nov.sp.).

*Nezara prunasis*: DISTANT, 1900:392 (list); Hesse, 1926: 36 (distribution).

*Nezara klugi* SCHOUTEDEN, 1909:59 (taxonomy and distribution). **nov. syn.**

*Nezara (Acrosternum?) prunasis*: KIRKALDY, 1909: 121 (taxonomy and distribution).

*Nezara conspersa* Schouteden, 1909:59 (syn. by LINNAVUORI, 1972).

*Acrosternum prunasis prunasis*: LINNAVUORI, 1972:429 (taxonomy and distribution); 1975:99 (distribution), 1982a:25 (distribution).

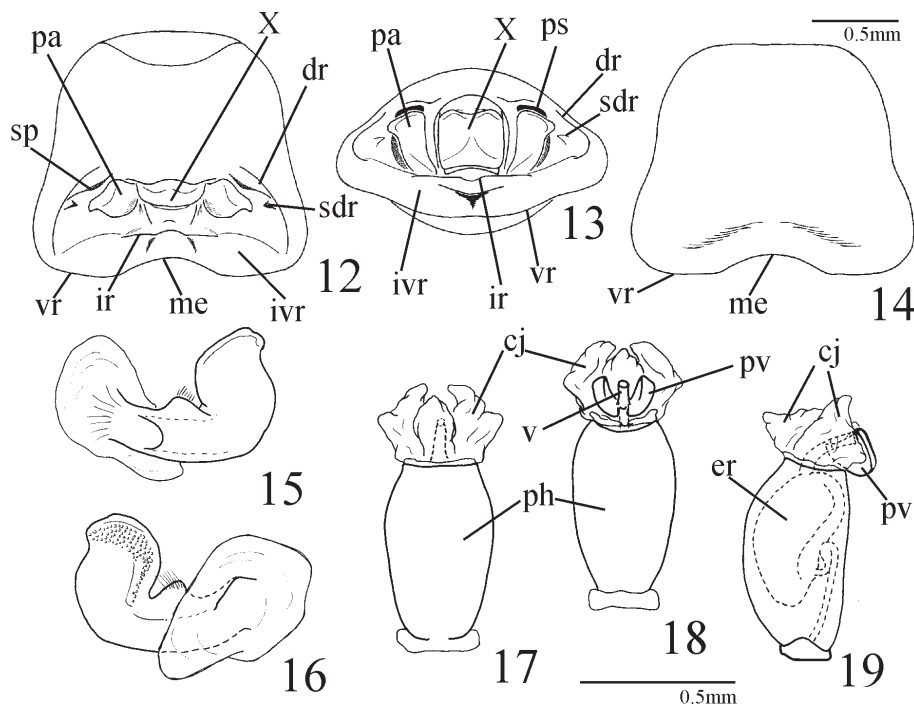
*Acrosternum prunasis klugi*: LINNAVUORI, 1972:429 (taxonomy and distribution); 1975:99 (distribution). **nov. syn.**

*Acrosternum (Acrosternum) prunasis*: LINNAVUORI, 1982b:142 (taxonomy and distribution).

Type-locality: Congo

Male. Rostrum surpassing metacoxae. Measurements (mm±standard deviation): Total length 9.62±0.33, total width 5.66±0.38, head length 1.86±0.06, head width 2.63±0.08, interocular distance 1.61±0.05, interocellar distance 1.02±0.02, head length in front of eyes 0.86±0.04, antennal segment I 0.46 ±0.10, antennal segment II 0.99±0.09, antennal segment III 1.23±0.11, antennal segment IV 1.41±0.13, antennal segment V 1.33±0.04, rostral segment I 0.78±0.07, rostral segment II 1.34±0.12, rostral segment III 1.17±0.14, rostral segment IV 0.96±0.11, pronotum length 1.74±0.10, pronotum width 5.82±0.26, scutellum length 3.60±0.22, scutellum width 3.60±0.17. Pygophore: median excavation of ventral rim occupying less than median third of this structure (Figs 12, 14). Parameres: apical portion wider than basal portion; apical margin somewhat truncate, apical process conspicuous (Figs 15-16).

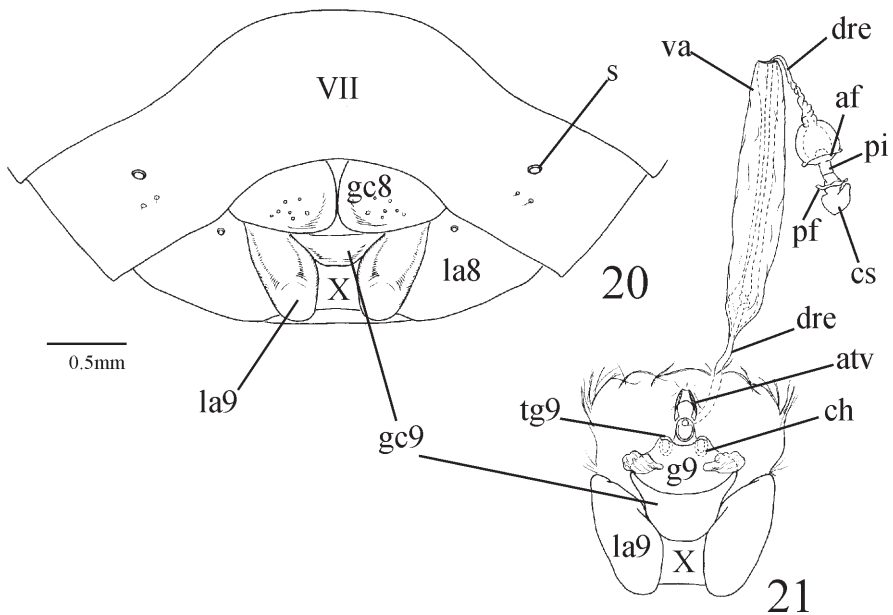
Female. Rostrum same as male. Measurements (mm±standard deviation): Total length 10.90±0.82, total width 6.27±0.45, head length 2.01±0.11, head width 2.80±0.17, interocular distance 1.76±0.11, interocellar distance 1.15±0.07, head length in front of eyes 0.92±0.06, antennal segment I 0.50±0.09, antennal segment II 1.02±0.15, antennal segment III 1.24±0.25, antennal segment IV 1.39±0.05, antennal segment V 1.35, rostral



**Figs 12-19:** *Parachinavia prunasis* nov.comb. 12-14, Pygophore in dorsal, lateral and ventral views; 15-16, Left paramere in latero-medial and latero-external views; 17-19, Phallus, with vesica expanded, in dorsal, lateral and ventral views; articulatory apparatus omitted (cj- conjunctiva; dr- dorsal rim; dsd- ductus seminis distalis; dsp- ductus seminis proximalis; er- ejaculatory reservoir; ivr- infolding of ventral rim; me- median excavation of ventral rim; pa- paramere; ph- phallosome; pv- processus vesicae; sdr- spine of dorsal rim; sp- superior processes of dorsal rim; v- vesica; vr- ventral rim; X- segment X).

segment I  $0.82 \pm 0.11$ , rostral segment II  $1.36 \pm 0.10$ , rostral segment III  $1.14 \pm 0.09$ , rostral segment IV  $0.95 \pm 0.06$ , pronotum length  $1.89 \pm 0.12$ , pronotum width  $6.38 \pm 0.42$ , scutellum length  $4.05 \pm 0.38$ , scutellum width  $4.02 \pm 0.28$ . Genitalia as described for the genus.

Comments. DALLAS (1851) described this species in *Raphigaster*, subgenus *Nezara*, based on a female collected from Congo. STÅL (1876) included *R. prunasis* in his 'Inseri Pentatomidarum Loci Systematici' list, while KIRKALDY (1909) expressed doubt as to its position within *Nezara*. DISTANT (1900) and HESSE (1926) listed the species in *Nezara*, and LINNAVUORI (1972, 1975, 1982a, 1982b) included it in *Acrosternum*. SCHOUTEDEN (1909) described *Nezara conspersa* and *Nezara klugi*, and compared them to *Nezara miliaris* Klug. LINNAVUORI (1972) included all these species in *Acrosternum*, established *N. conspersa* as a junior synonymy of *A. prunasis*, and considered *A. klugi* as a subspecies of *A. prunasis*; he also compared *A. prunasis* with *A. millierei* (MULSANT & REY) and, according to him, the two differ mainly in the structure of male genitalia. In fact, this difference among *A. prunasis* and *Acrosternum* spp. corresponds to the diagnostic character proposed by ROCHE (1977) to establish *Parachinavia*. LINNAVUORI (1972) proposition of *A. prunasis klugi* was based just on head length; the variation observed in the specimens studied did not support this hypotheses. Therefore, *A. prunasis klugi* is synonymized with *P. prunasis* comb.nov.



**Figs 20-21:** *Parachinavia prunasis* nov. comb. 20- genital plates; 21- Ectodermal ducts and laterotergites, gonocoxites and gonapophyses of ninth segment (af- anterior flange; atv- anterior thickenings of vaginal intima; ch- chitinellipsen; cs- capsula seminalis; dre- ductus receptaculi; g9- gonapophyses 9; gc8- gonocoxites 8; gc9- gonocoxites 9; la8- laterotergites 8; la9- laterotergites 9; pf- posterior flange; pi- pars intermedialis; s- spiracles; tg9- thickenings of gonapophyses 9; va- vesicular area; VII- segment VII; X- segment X).

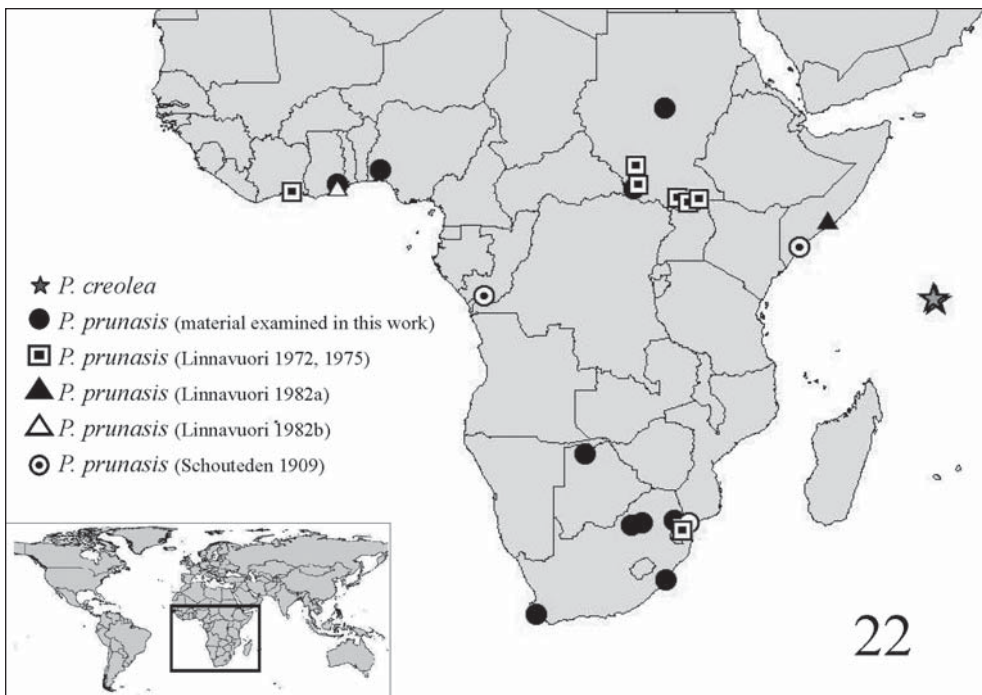


*Parachinavia prunasis* can be distinguished from *P. creolea* by the longer rostrum, the narrower excavation of ventral rim of pygophore and the somewhat wider parameres, truncate at apex.

Holotype: ♀ [a. Congo] (BMNH).

Other specimens examined: 1 ♀ [Kordofan, Tendelti, UmmRuwaba, Sudan, 25.I.1963, Linnavuori] (AMNH); 1 ♂ [Sudan, Equatoria, Tambura-Wau road, 25-26. IV.1963, Linnavuori] (AMNH); 1 ♂ [Legon, A.D., Ghana, 15.XI.68, D. Leston//U.V.] (AMNH); 1 ♂ [Legon, Ghana, 20.XI.1968, D. Leston//U.V. trap] (AMNH); 1 ♀ [Tron, Ghana, 14.X.1967, D. Leston] (AMNH); 1 ♂ [Olokemepi, Ibadan, Nigeria//Bridwell collection //Acrosternum (A.) prunasis, Rider det. 1989] (NMNH); 1 ♂ [Botswana: Xugana, Okavango swamp, 19°05'S 23°06'E, 3200ft, 1-12 December, 1975, W. Carter//collected at Black light] (NMNH); 1 ♀ [Pretoria, Transvaal Meientpes Kop., 25.Nov.1967, JA & S Slater, T.Schuh] (AMNH); 1 ♂ [Rostenburg, U. SO. Afr., XII.1961, A.L. Capener] (AMNH); 1 ♀ [Umtentweni, Natal, VII.1953, A.L. Capener] (AMNH); 1 ♀ [Museum Paris, Transvaal, HammanSkraal, E. Simar, Coll. Noualhier 1898] (MNHN); 1 ♀ [Uitenhage, Dunbroby, Rev. O'Neil//prunasis Dall.//N°8//Distant Coll. 1911-383] (NHM); 1 ♀ [Museum Paris, Cape Town, E. Simon, coll. Noualhier 1898] (MNHN);

Distribution (Fig. 22). Widely distributed in the continental area of Afrotropical region (Sudan, Ghana, Ivory Coast, Nigeria, Somalia, Congo, Botswana, Mozambique) and Afrotemperate region (South Africa).



Figs 22: .....

## ACKNOWLEDGEMENTS

To the curators of the listed collections, especially M. Webb (BMNH and U. Dall'Asta (MRAC) for the loan of type-material. Our sincere thanks to Randall T. Schuh, for assistance and facilities during the stay of CFS at AMNH, where this study was partially carried out. This work was supported by grants of Conselho Nacional de Pesquisa (CNPq) and Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) to the authors.

## РЕЗЮМЕ

Мономипичният досега род *Parachinavia* ROCHE е ревизиран и в него е включен *Acrosternum prunasis* (DALLAS). Родът е преописан, включени са данни за гениталиите на двата пола. От останалите пентатомиди със зелена окраска, *Parachinavia* се отличава с овално тяло, с малки или средни размери, с бледо зелено до охрено оцветяване, пунктировката еднотонна и равномерна, оцелите на светли мазолести издатини, 8 гонокосити значително изгънати, 9 гонокосити с преден вълнат и заден изпъкнал ръб, и вторично одебеляване на гонокоситите 9 в 1+1 малки кръгли пространства. Представени са диагностичните белези за видовете, някои морфологични структури са илюстрирани.

## REFERENCES

- BAKER A.D. (1937). A study of the male genitalia of Canadian species of Pentatomidae. — *Canadian Journal of Research*, 4: 148–220.
- DALLAS W.S. (1851). *List of the specimens of hemipterous insects in the collection of the British Museum*. — Trustees of the British Museum, London: 1–368+pls. 1–11.
- DISTANT W. L. 1900. Rhynchotal notes IV. Heteroptera: Pentatominae (part). — *Annals and Magazine of Natural History*, (7) 5:420–435.
- DUPUIS C. (1970). Heteroptera. — In: TUXEN S.L. (ed.): *Taxonomist's glossary of genitalia in insects*, 2nd ed. Munksgaard, Copenhagen: 190–209.
- GERLACH J., M. MADL & P. MATYOT (2005). Review of the Pentatomidae of Seychelles Hemiptera, Heteroptera). — *Phelsuma*, 13: 104–108.
- GRAZIA J., C.F. SCHWERTNER & A. FERRARI (2006). Description of five new species of *Chinavia* ORIAN (Hemiptera, Pentatomidae, Pentatominae) from western and northwestern South America. — In: Rabitsch W (Ed.): *Denisia 19*. Biologiezentrum der Oberösterreichischen Landesmuseen, Linz: 423–434.
- HESSE A.J. (1926). A list of the Heteropterous and Homopterous Hemiptera of South West Africa. — *Annals of the South African Museum*, 23: 1–177+2 plates.
- KIRKALDY G.W. (1909). *Catalogue of the Hemiptera (Heteroptera). 1- Cimicidae*. — Felix L. Dames, Berlin: xxxix+1–392.

- LINNAVOURI R. (1972) Studies on African Pentatomidae. — *Arquivos do Museu Bocage*, 3: 415–434.
- LINNAVOURI R. (1975). Hemiptera of the Sudan, with remarks on some species of the adjacent countries 5. Pentatomidae. — *Boletim da Sociedade Portuguesa de Ciências Naturais*, 15: 5–128.
- LINNAVOURI R. (1982a). Some hemipterous fauna from Somalia and Ethiopia. — *Monitore zoologico italiano*, 16: 1–33.
- LINNAVOURI R. (1982b) Pentatomidae and Acanthosomidae of Nigeria and the Ivory Coast, with remarks on species of the adjacent countries in West and Central Africa. — *Acta Zoologica Fennica*, 163: 1–176.
- MORRONE J.J. (2002). Biogeographical regions under track and cladistic scrutiny. — *Journal of Biogeography*, 29: 149–152.
- RIDER D. (2005). Pentatomodeia Home page. North Dakota State University, Fargo. Available at <http://www.ndsu.nodak.edu/ndsu/rider/Pentatomoidea/>. Access in: 01.IX.2005.
- ROCHE P.J.L. (1977). Pentatomidae of the granitic islands of Seychelles (Heteroptera). — *Revue Zoologique africaine*, 91: 558–572.
- SCHAEFER C.W. (1977). Genital capsule of the trichophoran male (Hemiptera: Heteroptera: Geocorisae). — *International Journal of Insect Morphology & Embryology*, 6: 277–301.
- SCHOOTEN H. (1909). Catalogues raisonnés de la Faune entomologique du Congo Belge. Hémiptères, fam. Pentatomidae. — *Annales du Musée du Congo Belge. Zoologie, Serie 2c* (3), 1: 1–85.
- SCHWERTNER C.F. (2005). *Filogenia e classificação dos percevejos-verdes do grupo Nezzara Amyot & Serville, 1843* (Hemiptera, Pentatomidae, Pentatominae). — DSc Thesis, Universidade Federal do Rio Grande do Sul, Porto Alegre: xv+1–246.
- STÅL C. (1876). Enumeratio Hemipterorum V. — *Kongliga Svenska Vetenskaps-Akademiens Handlingar*, 14: 1–162.