

## REVISION OF THE GENUS *RHYZODINA* CHEVROLAT, 1873 (COLEOPTERA, TENEBRIONIDAE, RHYSOPAUSSINI)

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**Abstract:** The historic type material of the species of the genus *Rhyzodina* Chevrolat, 1873 is for the first time revised. *Rhyzodina distincta* Wasmann, 1921, is redescribed and figured: *Rhyzodina mniszechii* Chevrolat, 1873, from Ethiopia agree with the original description and with the figures of Westwood (1875). This is separated from *Rhyzodina methneri* Gebien, 1925 and *Rhyzodina mourgliai* Ferrer, 1996, misinterpreted and treated by Schawaller (2011, 2013) as subjective synonyms of *R. mniszechii* Chevrolat. The inadequate method applied by Schawaller (2011) assuming that the original description and figures are unrealistic, because not correspond to their own material belonging to other taxa, is criticized. Several morphological characters and genitalia supporting the validity of all three taxa are presented. As results of this misinterpretation, six other unknown species, new to science were found under this revision, between the *Rhyzodina* materials previously examined and presented as "*Rhyzodina mniszechii*" by Schawaller (2011, 2013). All taxa are presented and the principal discriminatory characters described. The validity of the subgenera *Rhyzodina* (s. str.), *Aristocerus* Fairmaire, 1869 and *Eurhysodina* Wasmann, 1921 is confirmed. A new key is given to separate the diverse confused *Rhyzodina* species. The reexamined material from different museums, previously examined by Schawaller (2011, 2013) is listed, correcting the erroneous identifications; the types were accurately photographed, and submitted to digital program and morphologic analysis, to avoid perspective artifacts; the overlooked species *Rhyzodina distincta* Wasmann, 1921, from Zimbabwe and five new species, previously labeled as "*Rhyzodina mniszechii*" by Schawaller *in litt.* preserved in several collections are described: *Rhyzodina neglecta* n. sp., from Congo, Rep. of Central Africa and Ruanda, *Rhyzodina defraudata* n. sp. from Congo, *Rhyzodina merkli* n. sp. from Camerun, *Rhyzodina barclayi* n. sp. from Zambia and Zaire and *Rhyzodina bremeri* n. sp., from Namibia. Additionally, a *Rhyzodina* n. sp. aff. *mniszechii* Chevrolat (*nec* Schawaller *loc. cit.*) from Zambia is described. The assignation of *Rhyzodina* to the tribe Amarygmini proposed by Schawaller (2011, 2013), is rejected as arbitrary and based in confusions. The inadequate morphologic method applied by Schawaller (2011, 2013) is discussed. Elementary notions of drawing, geometry and perspective are given explaining the persistent misinterpretations of this author.

**Key words:** Rhysopaussini, *Rhyzodina*, revision, type material, misinterpretations, valid species, new species, Africa.

### Revisión del género *Rhyzodina* Chevrolat, 1873 (Coleoptera, Rhysopaussini).

**Resumen:** El material típico, histórico de las especies del género *Rhyzodina* Chevrolat, 1873 es por primera vez revisado. *Rhyzodina distincta* Wasmann, 1921, es redescrita y figurada. *Rhyzodina mniszechii* Chevrolat, 1873, de Etiopia corresponde a la descripción original y a las figuras de Westwood (1875). Esta especie es separada de *Rhyzodina methneri* Gebien, 1925 y de *Rhyzodina mourgliai* Ferrer, 1996, mal interpretadas y tratadas por Schawaller (2011, 2013) como dos subjectivos sinónimos de *R. mniszechii* Chevrolat. El método inadecuado empleado por Schawaller (2011), asumiendo sin ver los tipos, que las figuras no son realísticas, ya que no corresponden con su propio material es criticado. Muchos caracteres morfológicos y genitales indicando la validez de los tres taxones son presentados. Como resultado de esta revisión, seis otras especies desconocidas, nuevas para la ciencia son descritas en esta revisión, confundidas entre el material previamente presentado como "*Rhyzodina mniszechii*" por Schawaller (2011, 2013). Todos los taxones son descritos, presentando los principales caracteres discriminatorios. La validez de los subgéneros *Rhyzodina* (s. str.), *Aristocerus* Fairmaire, 1869 y *Eurhysodina* Wasmann, 1921 queda confirmada. Una nueva clave se da para separar las diversas especies de *Rhyzodina* confundidas. Se presenta el material de diferentes museos, previamente examinado por Schawaller (2011, 2013), corrigiendo las identificaciones erróneas. Los tipos fueron fotografiados con un programa digital y sometidos a análisis morfológicos, para evitar artefactos de perspectiva. La especie omitida *Rhyzodina distincta* Wasmann, 1921, de Zimbabwe y cinco especies nuevas, previamente mal identificadas como "*Rhyzodina mniszechii*" Schawaller *in litt.*, conservadas en diversas colecciones son descritas y figuradas: *Rhyzodina neglecta* n. sp., de Congo, Central Africa y Ruanda, *Rhyzodina defraudata* n. sp. de Congo, *Rhyzodina merkli* n. sp. de Camerun, *Rhyzodina barclayi* n. sp. de Zambia y Zaire y *Rhyzodina bremeri* n. sp., de Namibia. Además se describe una *Rhyzodina* n. sp. aff. *mniszechii* Chevrolat (*nec* Schawaller *loc. cit.*) de Zambia. La transferencia de *Rhyzodina* a la tribu Amarygmini propuesta por Schawaller (2011, 2013), es rechazada como arbitraria y basada en malas interpretaciones. Elementales nociones de dibujo, geometría y perspectiva se exponen explicando las persistentes equivocaciones de este autor.

**Key words:** Rhysopaussini, *Rhyzodina*, revisión, material típico, errores, especies válidas, nuevas especies, África.

**Taxonomy / Taxonomía:** *Rhyzodina neglecta* n. sp., *Rhyzodina defraudata* n. sp., *Rhyzodina merkli* n. sp., *Rhyzodina barclayi* n. sp. y *Rhyzodina bremeri* n. sp.

### Introduction

In two recent papers Schawaller (2011, 2013) propose two subjective synonyms of *Rhisodina mniszechii* Chevrolat, 1873: *Rhyzodina methneri* Gebien, 1925 and *Rhyzodina mourgliai* Ferrer, 1996. This decision is taken without knowledge of types of Chevrolat (1873) and Ferrer (1996), basing the examination in the description and figures by Westwood (1875), compared exclusively with the type of *Rhyzodina methneri* Gebien (1925). The characters exposed

by Schawaller (2011, 2013) not agree with the morphology of the two types, unknown by him, nor with the description and figure of *Rhyzodina mourgliai* Ferrer, 1996. Following, the results presented by Schawaller (2011, 2013) not agree with the types of the three species treated as synonyms, or with the description and figures respectively given by Chevrolat (1873), Westwood (1875), Gebien (1925) and Ferrer (1996). Unfortunately, Schawaller (2011, 2013) overlook a good

species, *Rhyzodina distincta* Wasmann, 1921 and neglect many of the most conspicuous morphological differences between the four taxa, clearly perceptible observing the external morphology, specially the antennal shape of the respective figures, corresponding with the studied type material.

## Material and Method

To evaluate the preliminary subjective synonyms presented by Schawaller (2011, 2013), nearly all the specimens examined by this author were compared with the available type material and with other historical specimens, searching for diagnostic characters and specially the aedeagus and ovipositor. Despite insistent request, Wolfgang Schawaller (*in litt.*) has refused to arrange a loan of the few *Rhyzodina* specimens preserved in the collection of the Staatliches Museum für Naturkunde, Stuttgart, Germany.

The species typica *Rhyzodina mniszechii* was described from Ethiopia. Since Westwood (1875) redescribe and give the only figure of the type, the species was not found again by any collectors. The recent studies of Schawaller (2011, 2013) are exclusively based in specimens belonging to other species and collected in regions far away from the type locality. For this reason a crucial point was the study of the type and other material found; specially the material collected in Ethiopia by Italian expeditions. All the three types of the species considered as subjective synonyms by Schawaller (2011, 2013) were examined. The types of the species presumed to be synonyms of the species typica, unknown by Schawaller (2011), was confronted with specimens from the type locality Ethiopia and with the iconography of each species in the original and historic descriptions. The types of all previously described species of *Rhyzodina* had been reexamined, except the type of *Rhyzodina (Aristocerus) wasmanni* Fairmaire, not found. The material examined by Schawaller (2011, 2013) preserved in diverse Museums of Europa and Africa was evaluated and several erroneous determinations *in litt.* by Schawaller, corrected.

A priori assumptions without type examination are hazardous and in most cases arbitrary. Sometimes, to find the repository of historical types in old collections is not easy and requires a lot of time, but the temptation to propose "subjective" synonyms is fortunately relatively infrequent.

To repair the taxonomic misinterpretation of the genus *Rhyzodina*, the type of the species hypothetically treated as senior synonym was compared with the material studied by Schawaller (2011, 2013) in diverse collections and additionally, with locotypic material from Ethiopia, to evaluate the subjective synonyms, proposed by Schawaller (2011, 2013).

## Original drawings and morphometric studies with illustrations

*A priori*, it is hard to believe that authors as J. O. Westwood, Director of the British Museum or H. Gebien, commit elemental errors, deforming and confusing the shape of conspicuous characters in the respective figures, drawing for no reasons an nonexistent tooth in the figure of *R. mniszechii* as Schawaller (2011) believe(!). Hans Gebien illustrates with excellent drawings several species under a very long time. I never found incorrect or exaggerate forms in any of the great number of illustrations studied, under about 50 years. In the present case, the crucial character of *Rhyzodina methneri*, is the much broader diameter of the antennomer 5 in relation to

the antennomer 4 (Fig. 3 cf 2). This relation examining the type from all visual positions is absolutely correctly figured by Gebien (1925: fig. 1) and agrees with ocular measures: 3803.61 micro and 1738.59 micro for antennomers 5, respective 4, of the type, measured in strict dorsal and calibrated position. This ratio not corresponds with the diameter of the same antennomers of *R. mourgliae* coinciding in width and practically identical: 2905.03/2873.57 (fig. 4). The plate IV illustrating Westwood (1875) is signed with the anagram JOW del.. Westwood was also the drawer of all the figures representing in the same plate, additionally three species of Molurini. The figures are, after study of the respective types in the Natural History Museum, London, extremely realistic and like a good photography, corresponding in all details and proportions to each type specimen.

For this reason it is not logic to assume that the drawing of *Rhyzodina mniszechii* in the same plate, for unknown reasons not correspond to the reality, representing badly the same insect as Gebien (1921) and Ferrer (1996) and probably even so Blair (1913), according the first prospection of Schawaller (2011). We find that the habitus, proportions, shape and characters of the type of *Rhyzodina mniszechii*, were meticulously reproduced by Westwood, as correctly realistic as the three species of Molurini in the same plate.

The basic visual observations were obtained using the program Deltapix for scientific photography.

To avoid subjective errors, each photo was rigorously controlled with morphometric analyses, a method of see, applying the "Cuadricula" of Dürer (cf. Ferrer, 2009 ; fig. 122). A perspective method, fixing the central point of view for each image and reducing the visual fragments to geometric forms drawing the figures, just as students do in Classic Arts schools. The characters of the selected specimens and holotypes of the presumptive synonyms were compared applying morphometry (Ferrer, 2009).

This procedure is crucial to avoid visual illusions, produced by the laws of perspective. Moreover, it is a fact that the human eye reading or drawing, suffer the saccadian rhythm (Gregory, 1997). Saccades are an involuntary reflex of the eye, phenomena well known of young drawing students. The eye sees a little fragment, lost the scale and sees a new fragment. Many times the scales not match. In other words: if drawing is difficult, to interpret drawings is not easy either. The most plausible explication of the errors of Schawaller (2011, 2013), is the well-known visual difficulty of the human eye (Schawaller self), to correctly see the length of two exact segments: the "arrows" of Müller-Lyer (1889) (cf. Ferrer, 2009 and fig. 123-125). When some viewers see straight segments placed between convergent and divergent lines (as in the case of the antennomers 2-5 of *Rhyzodina*), become unable to see the real differences, before adequate training.

## Abbreviations

CAA: Collection Albert Allen, Boise, Idaho. U.S.A.

CGR: Collection Gérard Robiche, Vernouillet, France.

CJF: Collection Julio Ferrer, Haninge, Sweden.

DMNH: Ditsong Museum of Natural History, Pretoria, South Africa.

HMUG: Hunterian Museum of Zoology, University of Glasgow, United Kingdom.

MCG: Museo Civico Storia Naturale, of Genoa, Italy.

MNHN : Muséum national d'Histoire naturelle, Paris, France.

MNHUB: Museum für Naturkunde Universität Humboldt, Berlin, Germany.

MRAC : Muséum Royal de l'Afrique Centrale, Tervuren, Belgique.

MZUF: Museo Zoologico "La Specola", University of Florens,

Italy.

NHM: The Natural History Museum, London. United Kingdom.

NHRM: Naturhistoriska riksmuseet, Stockholm, Sweden.

NHMB: Naturhistorisches Museum, Basel, Switzerland

NHMM: Natural History Museum, Maastricht, The Netherlands.

SMNS: Staatliches Museum für Naturkunde, Stuttgart, Germany.

ZSM: Zoologiska Staatssammlung, Munich, Germany.

### The types of *Rhyzodina mniszechii* Chevrolat and other *Rhyzodina*

The type of *Rhyzodina mniszechii* Chevrolat is preserved in the collection of the Muséum national d'Histoire naturelle, Paris. The type of Chevrolat (1873) agrees with the good figure and description of Westwood (1875), presenting the strongly pointed basal tooth of the antenna, figured by him and indicated in the original description (*angulo supero extus producto*). A conspicuous character. This existence of this tooth is not surprisingly negated by Schawaller (2011) because He examined toothless species, as *Rhyzodina methneri*, *Rhyzodina mourgliae* and other *Rhyzodina* species without this conspicuous tooth, characteristic but not exclusive of *R. mniszechii*. Wherever, the tooth (fig. 2), combined with other features is an useful character to recognize *R. mniszechii*, permitting to recognize this specie, between other taxa described by Blair (1913), Wasmann (1921), Gebien (1925), Ardoïn (1962) and Ferrer (1993).

Gebien (1925) describe *Rhyzodina methneri* after a single Type female, which is preserved in the coll. G. Frey, Naturhistorisches Museum, Basel. It exists another identical specimen preserved in the Museum für Naturkunde, Berlin, carrying identical labels (locality, data, collector). I have recently compared both specimens. The holotype and a paratype of *Rhyzodina mourgliae* Ferrer are preserved in the Museum of Zoology "La Specola" of the University of Florence, Italy. A paratype male is preserved in the collection of the author. The type of *Rhyzodina methneri* Gebien, 1925 has been examined by Schawaller (2011), but the figure of the habitus (loc. cit. fig. 1) not agrees with the type specimen, because the diameter of the antennomer 5 is much broader in the type, as indicated in the figure of the antenna given by Gebien (1925). The body of the species figured by Schawaller is proportionally much longer. Schawaller (comm. pers. 2014, *in litt.*) was unable to see any conspicuous difference between the type of Gebien and the original illustrations and following labeled the type of *Rhyzodina methneri* as "Rhyzodina mniszechii Chevr. det. Schawaller" (det. *in litt.* In coll. Frey, NHMB). In one species this peculiar antennnomer difference is slightly conspicuous (*R. mourgliae*, fig. 4) and in others not exists at all. Following, Schawaller (2011, 2013) assigned indifferently to "*R. mniszechii*", not only all specimens belonging to *Rhyzodina methneri* and to *Rhyzodina mourgliae*, but the even so to also the overlooked species *Rhyzodina distincta* Wasmann, 1921 and to other five new species to science, preserved in several collections of European and South African Museums (DMNH, HMNH, MRAC, MNHN, NHM, NHMB, SMNS).

A specimen at first look agreeing with the original description and Westwood's figure of *Rysodina mnischezi*, from Rhodesia (Zimbabwe) was identified by Blair (1913) and it is preserved in the Natural History Museum, London. This *Rhyzodina* in fact, was a new species, *Rhyzodina distincta* Wasmann, 1921, precisely from Zimbabwe. It is a species conspicuously different from the type of *R. mniszechii* and

from other specimens from Ethiopia. Whitout the type species of Chevrolat, Schawaller (2011), scrutiny the only illustration existent of the type of *R. mniszechii* (Westwood, 1875). After comparison of the figure with the type of *Rhyzodina methneri* Gebien, 1925), confronted with the descriptions and figures of *Rhyzodina mourgliae* Ferrer, 1996, Schawaller (2011) affirm not see any consistent differences and conclude that the characters indicated by Westwood, in fact must be "exaggerate by the artist" (dental protuberance of the first antennomer of *Rhyzodina mniszechii*) or "error of perspective" (antennas of *R. methneri*), depending of the point of view (lentiform shape and diameter of antennomeres 2-4 *versus* 5), in Blair (1913), Gebien (1921) and Ferrer (1996). Three different taxa were treated by Schawaller (2011, 2013) as subjective synonyms in base of the examen of only one of the types and without comparative scrutiny of genital organs. Surprisingly, Schawaller (2011) do happily own interpretations of unknown species, rejecting some original characters, as the conspicuous tooth, named in the original description and correctly reproduced by a scientific illustrator (Westwood, 1875) as "inexistent or exaggerate". Moreover, he rejects the determination of specimens belonging to *Rhyzodina methneri* Gebien, identified by Reichensperger *in litt.* (from Ruanda, in MRAC), from Ivory Coast, det. by Ardoïn *in litt.* and by Kaszab *in litt.* (MHHN), assigning all specimens to *R. mniszechii*.

### Examination of diagnostic characters

#### Color and size of body

According to the descriptions of *Rhyzodina mniszechii* in Chevrolat, 1873 and Westwood, 1875, the color is blackish brown and dull, not reddish brown and shiny as in *R. methneri* and dull and reddish brown in *R. mourgliae*. This description examining the holotype is perfectly correct.

The length of body from clypeus to apex and the maximum of width at elytra of the types of *Rhyzodina mniszechii* and *R. mourgliae* are very different: 5332.20 x 2130.41 and 6190.77 x 2131.09 respectively. The ratio pronotum/elytra is different in *R. mniszechii*, *R. methneri* and in *R. mourgliae* because the pronotum of *R. mourgliae* is shorter and the proportions or ratio between the length of pronotum/elytra, are conspicuously different in the three species.

#### Antennas (fig. 1-18)

Schawaller (2011, 2013) wish justify the proposed synonyms, affirming that the respective descriptions are principally based in inconsistent differences between the respective antennas. Differences only dues to the point of view (perspective) regarding the insect. This is not true.

The antennomer 5 of *R. methneri* is obviously broader than 4, examining the antenna from base to apex (from "frog" perspective (fig. 17), the antennomer 5 is perfectly visible, surpassing the diameter of 4. From same position, the antennomer 4 of *R. mourgliae* is broader than 5, according the perspective laws of progressive diminution of the sections of a cylinder (fig. 18). We emphasize that the antennomeres 2-5 are similar in *R. mourgliae* and *R. mniszechii*, but the diameter of the 5 antennomer is clearly larger and broader in *R. methneri*; additionally, the lenticular antennomeres 2-5 are obtusely rounded marginally in *R. methneri*, but the antennomer 2-4 in *R. mourgliae* exhibit a very sharp marginal border (fig. 3, 4).

In the figure given by Westwood (1875) the basal antennomer is strongly dentate in dorsal view (fig. 2). A character negated by Schawaller (2011) as inexistant. This tooth is very conspicuous in the type of *Rhyzodina mniszechii*, but not exists in *Rhyzodina methneri* and *Rhyzodina mourgliai*, confused by Schawaller nor in *R. distincta* Wasmann, 1921) omitted. Examining magnified the basal antennomer of a specimen figured by Schawaller (2011, fig. 1), misinterpreted as belonging to "*Rhyzodina mniszechii*" this tooth not exist.

Schawaller (*comm. pers. in litt.*, 2014) affirm that the photography of the antennas of the type of *R. methneri* (this paper) was *R. holtzi*: additional evidence that he couldn't see any difference between the magnificate photographies of the antenna of two clearly distinguishable species.

The species figured by Schawaller (2011, fig. 2 and 6) as "*R. mniszechii*" is in fact, *R. mourgliai*; but the *Rhyzodina* species figured (2013: fig. 8-13) as *R. mniszechii* is a new species from Congo, described below: *Rhyzodina defraudata n. sp.*

*Rhyzodina mourgliai* exhibits antennomer 5 as broad as the 2-3 precedents, the antennomer 6 is glabrous and globose and the 7 exhibits a setose tuft, occupying the whole of the total length (fig. 4). This ratio of the antennomer not agrees with the type and with figure given by Westwood (1875, fig. 4, 4 b). The antennomer 7 in Schawaller (2011, fig. 2), exhibits a tuft of setae occupying the whole of the antennomer 7 (2013, fig. 13). In the *Rhyzodina* species assigned to "*mniszechii*" from Congo (Schawaller, 2013, fig. 8) the ratio between the setose tuft and the glabrous base is conspicuously shorter (1/2). This *Rhyzodina* conserved in the Muséum of Tervuren (MRAC) is a completely different species, new to science, described below (*Rhyzodina defraudata n. sp.*). In *Rhyzodina mourgliai*, all antennomers 2-5 are nearly identical, but 5 is slightly broader, but not so large as in *R. methneri* and the tuft of setae cover more than 2/3 of the antennomer; the shape of the antennomer is oblong, not globosely round. The precedent antennomer is completely different in shape. Observing the antenna in strictly dorsal view the direction of the expansion of the lateral lines is clearly parallel from base to apex (fig. 4), not conspicuously dilated as in *R. methneri* (fig. 3). The double synonymy based in antennal characters of *R. methneri* and *R. mourgliai* with *R. mniszechii* Schawaller 2011, 2013 (*a species composita*) is arbitrary.

#### Frontal tubercles (fig. 30-44)

Another significant conspicuous difference between the three species, treated as synonyms is the configuration of the head, presenting two small separated tubercles between eyes in the type of *R. mniszechii*, a character according the figure given by Westwood (1875); a broad, strongly transverse tubercle from eye to eye in *R. methneri* and just a little pointed tubercle in *R. mourgliai*. The profile view of *R. methneri* and *R. mniszechii* respective head not agrees with the figure of Westwood (1875) either (fig. 57-58 cf. 56).

#### Ocular separation (fig. 56-58)

The difference between eyes in the three species is conspicuous examining the head dorsally, from profile (fig. 56-58) and from the ventral aspect. However the ventral figure of the head in Westwood (1875) represent the head forming a right angle with the dorsal face and covering the gular zone, invisible from this aspect. The distance between eyes in *R. mniszechii* after Westwood (1875), measured ventrally, is

more reduced and the eyes very small, separated by a distance equivalent to 5 times the diameter of an eye, measured ventrally.

The eyes of *R. methneri* are as broad as the space between eyes. The eyes of *R. mourgliai* are much broader and the space between eyes is reduced to slightly the diameter of the eye, measured ventrally.

#### Prothorax (fig. 56-58, 89-94)

The dorsal view is very similar, but the ventral aspect is conspicuously different in the three taxa treated as synonyms; the position of the dentiform lateral explanation, the lateral and discal ribs of prothorax, and the shape of the apophysis of prosternum are conspicuously different in the three species (fig. 89-94). In dorsal aspect, the length, shape and ribs of pronotum are conspicuously different from the type of *R. mniszechii*, the type of *R. methneri* and from the type and the figure of *R. mourgliai*. From lateral view (fig. 56-58) *R. mniszechii* exhibits only one marginal rib (fig. 56); *R. methneri* and *R. mourgliai* two, but different disposed (fig. 57 cf 58). In ventral view, one of the most conspicuous difference is the shape of the apophysis of prosternum and mesosternum between *R. methneri* and *R. mourgliai* (fig. 89-94).

#### Legs (fig. 67-81)

Legs curved, protibia moderately dilated distally and strongly constricted basally and in this case pubescent on the apical internal border (fig. 69-73); femora sub clavate, posterior tibias sub rights, elongate, carinate at side. Tarsi heteromorous (5, 5, 4 segmented); external margin of tibiae finely carinated in *Rhyzodina* s. str.; in other subgenera slightly curved and elongate (fig. 74); femora elongate, straightly sub claviform, meso- and metatibia elongate, slender and sub parallel.

#### Elytral sculpture and length (fig. 82-102 and 104-124)

In the type of *R. mniszechii* the ratio pronotum/elytra is shorter than in the type specimens of *R. methneri* and *R. mourgliai*; the elytra are proportionally broader 1/2.5). The description "latitudine plus duplo longioribus" indicate that the length of elytra was more than two times as broad. It agrees perfectly with the type specimen. The elytral ribs of *R. mniszechii* and of *R. methneri* are stronger, slightly undulate, appearing conspicuously much finer and sharp in *R. mourgliai*. *Rhyzodina distincta* Wasmann, 1921, overlooked by Schawaller (2013, 2014) is immediately recognizable by different frontal sculpture between eyes. Five new species assigned to *R. mniszechii* by Schawaller (2011, 2013) present elytra more or less pubescent and completely different antennas, aedeagus and ovipositor: *R. barclayi* n. sp., exhibits blackish brown, setose color, combined with elongate body and elytral sharply longitudinal carena, with alternate rows at each side; *R. defraudata* n. sp. is brown, dark, elongate and strongly pubescent, a undescribed *Rhyzodina* from Zimbabwe exhibits linear interrupted rows (fig. 113); *R. neglecta* n. sp. is strongly pubescent at sides and *R. bremeri* n. sp. is apparently similar in size and shape to *Rhyzodina mourgliai*, but exhibits a completely different ovipositor. The unknown aedeagus highly probably confirm in due time the current status as a different species.

#### Aedeagus (fig. 19-29)

The type of *Rhyzodina mniszechii* Chevrolat is a male. The poor state of the specimen does any manipulation hazardous,

wherever, the aedeagus of "Rhyzodina mniszechii" Schawaller 2013 (fig. 20) belongs to *R. distincta* and obviously, not match with the aedeagus of the any of the specimens examined of *R. mniszechii* (fig. 19), nor with *R. mourgliai* Ferrer (fig. 21), 1996, either.

The aedeagus of all known *Rhyzodina* species are more or less lanceolate, but the shape is very different. *Rhyzodina mniszechii* exhibit a very pointy aedeagus, long and lanceolate (fig. 19). The aedeagus of *R. mourgliai* is much longer and moderately pointed (fig. 21). The aedeagus of *R. methneri* is narrowly elongate at apex; the aedeagus of the new species confused with *R. mniszechii* by Schawaller (2013), figured in dorsal view is conspicuously different; longer and apically constricted; the parameral piece is much longer and the paramers is shaped basically as an isosceles triangle (fig. 23). In other hands, the aedeagus of *R. mourgliai* is equilateral (fig. 21). Moreover, the surface of the aedeagus of *R. mourgliai* is clearly concave in dorsal aspect, but the aedeagus of the *Rhyzodina* sp. given by Schawaller (2013) is conspicuously flattened. Any of the other characters invoqued by Schawaller (2013) agrees with any known species of *Rhyzodina*.

#### Ovipositor (fig. 45-55)

The rarity of the type species of the genus *Rhyzodina* not permit at this moment to find the ovipositor of *R. mniszechii*, but the great number of differential characters found between the studied type specimens, strongly support the specific validity of the pretended synonyms *R. methneri* and *R. mourgliai*, as two valid species separated from *R. mniszechii*, confirming the descriptions and the original figures of Westwood (1875). The conspicuous differences between the basic shape of the ovipositor of *R. methneri* (quadrangular, strongly and irregularly punctured, fig. 55) and the ovipositor of *R. mourgliai*, conspicuously elongate (fig. 49) strongly support their respective validity. Additionally, ovipositors of *Rhyzodina distincta* (fig. 49), *R. holtzi* (fig. 51), *R. schou-tedeni* (fig. 54) and of four new species of *Rhyzodina* are figured: *R. barclayi* n. sp. (fig. 46); *R. defraudata* n. sp. (fig. 50), *R. neglecta* n. sp. (fig. 52) and *R. bremeri* n. sp. (fig. 53).

#### Errors in the Key proposed by Schawaller (2013)

A new Key is given to separate the hitherto known species of *Rhyzodina*, because as consequence of the hereby exposed misinterpretations, the key presented by Schawaller (2013) obviously not works: as an example, submitting the specimen type of *Rhyzodina mourgliai* to the key presented by Schawaller, the step 1:

##### -pronotum with two longitudinal keels-

The only option possible is step 3: *mniszechii* (*sensu* Schawaller), with antennomeres 2-5 lenticular and identical in shape. Unfortunately, *R. mniszechii* is not the only species presenting antennomeres 2-5 practically identical in shape. Following, at least six *Rhyzodina* species new to science, confused by Schawaller (*R. barclayi*, *R. distincta*, *R. neglecta*, *R. defraudata*, *R. merkli*, *R. bremeri* and a new undescribed species from Zimbabwe) cannot be recognized either, needing new steps. From the step 1, the following alternative not matches: -species with not dentate pronotum and antennomeres 2 to 4 different from 5 and apical antennomer convex.

This option not works either, because all species of *Rhyzodina* (s. str.) exhibits sub dentate pronotum at middle. In

other hands, *R. mniszechii* differ from *R. methneri* because this species exhibits the 5 antennomer conspicuously broader than the preceding antennomeres 2-4 (fig. 3) and *R. mourgliai* just slightly but constantly dilated in all examined specimens (fig. 4).

The step: 1: Pronotum with two longitudinal keels and dentate sides, in fact, give another option, which is the only correct alternative:

- A Pronotum dentate and with antennomeres 2-4 conspicuously smaller than 5: (fig. 3 and 17)..... *R. methneri*
- B Pronotum dentate and with antennomeres 2-4 slightly smaller in shape than 5: (fig. 4 and 18) .....*R. mourgliai*

Latter in this paper a new key is presented, resolving the present imbroglio, giving dichotomies with correctly diverse differential characters, presenting the overlooked *R. distincta*, supporting *R. methneri* and *R. mourgliai* and including other six species of *Rhyzodina*, new to science, wrongly assigned to "*R. mniszechii*" by Schawaller (2011, 2013).

#### Taxonomic results.

##### Resurrections of valid taxa treated as subjective synonyms.

First of all, the genus *Rhyzodina* Chevrolat, 1873, had to be conserved in the Tribu Rhysopaussini Wasmann, 1921, for the reasons exposed below. It is composed of three valid subgenera, according Wasmann (1821) and Gebien, 1943: 913. Each subgenus is separated by some good diagnostic characters indicated in the Key below. The subgenera were invalidated by Schawaller (2011) for no reasons, in flagrant ignorance of the original description (Wasmann, 1921), as testify the omission of *Rhyzodina distincta*, described in this paper. Until molecular and larval analyses is performed, it is adequate the treatment at least as subgenera (*genus in nascendi*) of *Rhyzodina*.

##### ***Rhyzodina* Chevrolat, 1873**

By monotypy: *Rhyzodina mniszechii* Chevrolat, 1873, with seven species: *Rhyzodina mniszechii* Chevrolat, 1873, *R. distincta* Wasmann, 1921, *R. methneri* Gebien, 1925, *R. mourgliai* Ferrer, 1996 and the new species: *R. barclayi* n. sp., *R. defraudata* n. sp., *R. neglecta* n. sp.; *R. bremeri* n. sp and a new species, waiting formerly for name from Zambia.

##### ***Aristocerus* Fairmaire, 1899**

By monotypy: *Aristocerus wasmanni* Fairmaire, 1899, with four species: *R. wasmanni* Fairmaire; *R. holtzi* Gebien, 1925, *R. schoutedeni* Reichensperger, 1928 and *R. Reichenspergeri* Ardoin, 1961.

##### ***Eurhysodina* Wastmann, 1921,**

by monotypy: *Rhyzodina marshalli* Blair, 1913, Wasmann, 1921, with two species: *R. marshalli* Blair, 1913 and *R. merkli* n. sp.

##### **List of *Rhyzodina* taxa and description of new species**

As results of the present studie, the taxonomic status of *Rhyzodina mniszechii* Chevrolat, 1873, *Rhyzodina methneri* Gebien, 1925 and *Rhyzodina mourgliai* Ferrer, 1996 is established as follow:

**Rhyzodina (s. str.) mniszechii** Chevrolat, 1873, Westwood, 1875.

Fig. 2, 19, 30, 56, 67, 89, 90, 94, 103, 104.

*Rhyzodina mniszechii* Chevrolat, 1873: 209; *Rhyzodina mniszechii* Westwood, 1875: fig. 4, 4b.

*Rhyzodina mniszechii* Wasmann, 1921: 17.

*Rhyzodina mniszechii* Chebrolat, Gebien, 1943: 413 (invalid change of name).

*Rhyzodina mniszechii* Ardoine, 1968: 239, fig. 15 A.

NON *Rhyzodina mniszechii* Blair, 1913: 305, fig. 8 = *R. distincta* Wasmann, 1921: 17.

NON *Rhyzodina mniszechii* Schawaller, 2011: 80, fig. 2, 6 = *R. mourgliai* Ferrer, 1996: 97.

NON *Rhyzodina methneri* Schawaller, 2011, 80: = *Rhyzodina mourgliai* Ferrer, 1996: 97.

NON *Rhyzodina mniszechii* Schawaller, 2013: 66: *species composita*: = *Rhyzodina distincta* Wasmann, 1921, *R. methneri* Gebien, 1925, *R. mourgliai* Ferrer, 1995, *R. defraudata* n. sp., *R. neglecta* n. sp. and *R. bremeri* n. sp.

NON *Rhyzodina mniszechii* Bouchard, 2014: 487 = *Rhyzodina mourgliai* Ferrer, 1996: 97.

NON *Rhyzodina methneri* Gebien, 1925, 322, fig. 1, *species valida*, not synonym of *Rhyzodina mniszechii* Chevrolat, 1873.

NON *Rhyzodina mourgliai* Ferrer, 1996, 97: *species valida*, not synonym of *Rhyzodina mniszechii* Chevrolat, 1873.

MATERIAL EXAMINED: Holotype: male, "Rhyzodina mniszechii" Westwood/ ex Musaeo Mniszech/Museum Paris ex Coll. Oberthur/ TYPE/ Holotype/ Holotype *Rhyzodina mniszechii* Chevrolat, 1873/MNHN Paris EC4543" (MNHN): Ethiopia, male: W Koko SE Mizan Teferi, 1320 m, 8IV.2007, J. Helade leg. (adquis. Entomodena, 2010, R. Poggi, MCG).

DESCRIPTION: Size: 9.1 x 2.0 mm. The type specimen is in poor state. Missing antennomer 2-9 of the left antenna; antennomer 8-9 of right antenna; anterior protarsomer 3-5; right mesotarsomer 4-5 and posterior right leg. The anterior leg is glued. The fragility of the type specimen makes genital examination is hazardous. However, the shape of the protibia, shows that it is a male.

GEOGRAPHIC DISTRIBUTION: The holotype lack locality label, carrying a little discolored paper without data (fig. 103). The examined specimen from Ethiopia in the Museum of Genoa (MCG) agrees with the type specimen.

### ***Rhyzodina (s. str.) distincta* Wasmann, 1921**

Fig. 7, 20, 33, 48, 68, 87, 95, 109.

*Rhyzodina distincta* Wasmann, 1921: 17.

*Rhyzodina mniszechii* Blair, 1913: 305: partim: specimens from Zimbabwe; *Rhyzodina mniszechii* Schawaller (2011, 2013) partim: specimens from South Africa.

NOT *Rhyzodina mniszechii* Chevrolat, 1873, Westwood, 1875.

MATERIAL EXAMINED: Type: Zimbabwe, Victoria Falls, Zambezi River, G. Van Roons leg. (NHMM).

ADDITIONAL MATERIAL: male, Ethiopia: Neghelli, (labeled "Somalia"), aprile, 1936, E. Fáa di Bruno leg./*Rhyzodina mniszechii* Chevr. /Reichensperger det. (MZUF); Kenya: Narok Distr., Loita Hills, Mburubudy Hills, 4 km SE Entasekva, 2200 m., at light, L. Bartolozzi, A. Burdinelli, F. Fabiano, S. Bambi, I. Ranz leg. (2, MZUF); Tanzania: Tanganyka Tanga province, 14.VI.1950 (at light); Zimbabwe, Harare, (labeled: Salisbury), Mashonaland, Feb. 1904, two specimens, both taken at light/1916.190, *Rhyzodina mniszechii* K.G. Blair det. (NHM). Rep. South Africa: Limpopo (labeled as NE. Transvaal), Makutswe River, Ofkolako, 1.1989, (K.

Werner leg. *Rhyzodina mniszechii* det. Schawaller (HMNH); South Africa: Kruger National Park, Camp Lower Sable (no date) (TMSA); Limpopo province, Lekgalameetse, 22-27.XI.2005, D.H. Jakobs leg. (TMSA); same locality, 28.XI.2005, R. Müller leg. (TMSA); Kruger National Park, Skukuza Research Camp, 1.III.1995, S. Endrödy Younga leg. (8 specimens, TMSA), Rep. South Africa: Northern Cape, Kalahari Tsawalu NR, 1160 m., 11-13.III.2009, Mac Fayen and R. Müller leg. (TMSA).

REMARKS: A good species overlooked by Schawaller (2011, 2013). Wasmann (1921) indicates the difference between the enormous basal antennomere of this new species and the basal antennomere of *R. mniszechii*, presenting a conspicuous tooth, well indicated in the figure of Westwood (1875). Additionally, the post ocular tubercles of the species typica are replaced by a short protuberance.

The specimen from Ethiopia, labeled "Neghelli, Somalia, aprile, 1936", was identified as *Rhyzodina mniszechii* Chevr. by Reichensperger (*in litt.*, MZUF). The specimen not agrees with the type of Chevrolat (1873) and ulterior figures of Westwood (1875). *Rhyzodina distincta* is similar in shape to *R. mourgliai* by reddish color and elongate body; different by broadly, convex, longitudinally traceable ribs on elytra; shorter pronotum and much broader and shorter antennas with basal antennomer obtusely rounded, slightly broader than long; antennomers 2-5 progressively and moderately dilated. Immediately differentiable from *R. methneri* by elytral length, conspicuously broader and shorter in *R. methneri* (ratio pronotum/elytra: 2/6). This species is specifically different from all the specimens from diverse localities assigned to *R. mniszechii* by Schawaller (2011, 2013) in diverse collections and it is a valid species, exhibiting a unique combination of characters. In other hands, the examination of the material studied by Schawaller (2011, 2013) shows that the citations of "*Rhyzodina mniszechii*" from Uganda, Rep. of Central Africa and Ruanda (Schawaller, 2011, 2013) correspond to *R. mourgliai* and the citation of Congo to the new species *R. defraudata*, described below; the cites from South Africa, to *Rhyzodina distincta* Wasmann, 1921; the citation from Zambia to the new species *R. barclayi*; the citations from Namibia and from Angola to the new species *R. bremeri*.

GEOGRAPHIC DISTRIBUTION: Ethiopia, Kenya, Tanzania, Uganda, Zimbabwe and Northern Transvaal, in South Africa.

### ***Rhyzodina (s. str.) methneri* Gebien, 1925, *species valida***

Fig. 3, 17, 22, 31, 69, 91, 92, 96, 105-106, 123.

Not synonym of *Rhyzodina mniszechii* Chevrolat, 1873, Westwood, 1875

*Rhyzodina methneri* Gebien, 1925: 322, fig. 1; Gebien, 1943: 913

NOT *Rhyzodina methneri* Schawaller, 2011, 2013 (partim = *Rhyzodina mourgliai* Ferrer, 1996, nec Schawaller, 2011).

NOT *Rhyzodina mniszechii* Schawaller, 2011, 2013 (partim, specimens from Congo = *Rhyzodina defraudata* n. sp.).

MATERIAL EXAMINED: Type: female, Tanzania: preserved in the Coll. G. Frey, is labeled: D.O.Africa, Nairobi bei Tanga, XI.1915, Methner leg./Type No 1287/*Rhyzodina Methneri* Geb.(NHMB), carrying additional recent labels: "*Rhyzodina mniszechii* Chevrolat W. Schawaller det." and my own labels: "*Rhyzodina methneri* Gebien, not agrees with *Rhyzodina mniszechii* Chevrolat" (NHMB).

ADDITIONAL MATERIAL EXAMINED: Tanzania: female carrying identical printed labels as the Type. D.O.Africa, Nairobi

bei Tanga, XI.1915, Methner leg./*Rhyzodina Methneri* Geb. (MNHUB); Tanzania, D.O.A. Lindi, XI.194, coll. M. Pic/ *Rhyzodina wasmanni* (ink label with handstyle of M. Pic, (MNHN); Kenya: East Africa Katona leg. (HMNH); female: S. Ethiopia, near Bitete, 1460 m, 24.IV.2007 (same data and collector, MCG).

**GEOGRAPHIC DISTRIBUTION:** Tanzania; Kenya and Ethiopia; new records for Kenya and Ethiopia.

***Rhyzodina* (s. str.) *mourgliai* Ferrer, 1996, species valida**

Fig. 4, 18, 21, 32, 49, 70, 93-94, 97, 107, 124.

*Rhysodina* (s. str.) *mourgliai* Ferrer, 1996: 97, fig. 63-64.

NON *Rhysodina mourgliai* Schawaller, 2011: 80, fig. 2, 6 = *Rhyzodina mniszechii*, Schawaller, 2011: 80, fig. 2, 6; 2013; Bouchard, 2014: 487.

NON synonym of *Rhyzodina mniszechii* Chevrolat, 1873, Westwood, 1875.

**MATERIAL EXAMINED:** Holotype, male (MZUF, 8652) and 2 male paratypes, same data carrying following labels: *Rhyzodina mourgliai* Ferrer, 1996/ Kenya, Meru District, Materi Mitunguu, 8.IV.1987, R. Mourglia leg. (MZUF, 8653 and CJF). Kenya: Elmentaita Lake, 14-16.IV.2006, E. Jandek leg. (CAA); Malinga, 1900 m., 21.IX-4.XII.1989, R. Mourglia leg. (CAA); Kenya: Nakuru, III.1938. L.S.B. Leakey leg. (TMSA); Kenya, Eastern Province, Emali Range, Sultan Hamud, 4900-5.900 fts, without collector name (TMSA); Tanzania: Africa or. Arusha Ju, XI.1905, Katona leg. (HMNH); Tanzania: D.A. Natala, Ergl, *Rhyzodina methneri* Gebien. H. Kulzer det. *cum typo comparatum* (MNHUB); *Rhyzodina methneri* Gebien, Reichensperger det./*Rhyzodina* sp. n. P. Basilewsky det. (MRAC); Rep. of Central Africa: Ubangi Chari, Bangui, I-III.1968, coll. Breuning (MRAC).

**GEOGRAPHIC DISTRIBUTION:** Kenya, Rep. of Central Africa and Tanzania. The citations of Côte d'Ivoire, Congo, Ruanda and Rep. of South Africa (Schawaller, 2013) are results of misinterpretations of the undescribed species described below: *R. neglecta* n. sp., *R. defraudata* n. sp. and *R. distincta* Wasmann, 1921.

**REMARKS:** The name *Rhysodina* is a lapsus. In the original drawing representing the holotype (Ferrer, 1995), unfortunately the length of elytra is a little short (cf fig. 94 and 107).

***Rhyzodina* (s. str.) *neglecta* n. sp.**

Fig. 12, 23, 36, 52, 71, 99, 110, 116.

**MATERIAL EXAMINED:** **Holotype**, male. Congo: Yangambi, IX.1937, P. Henrard leg. (MRAC). **Paratypes**: Congo: Binerville, VI.1962, J. Decelle leg. (MRAC); Côte d'Ivoire, Yokopa près de Gagnoa, XI.1961, J. Decelle leg. (MRAC); Rep. of Central Africa: Ubangi Chari: Bangui, I-III.1968, coll. Breuning (MRAC); Ruanda: Rwinkwovo, 1300-1400 m, 8.X.1953, (MRAC); Congo, Voka près de Boko, 25.X.1964, G. Onoré leg. (MNHN); Camerun, Ebolowe. St de Mkoemwone, 7.IV.1971 (MNHN).

**DESCRIPTION:** Size: length: 9.5 mm long.; maximum of width at elytra: 2 mm. Similar in shape to *Rhyzodina methneri*, but different by elytra a little more elongate and exhibiting conspicuous, moderately long, yellowish, hirsute hairs, sparsely disposed. Body reddish brown; first antennomer as long as broad, moderately pointed; shoulders obtusely rounded; elytra strongly crenate, the ribs a little broader than in the precedent species, *R. mourgliai*, but not so

broad as in *R. methneri*; male presenting shorter and broader metatibia (fig. 71 cf fig. 70).

**ETYMOLOGY:** Latin: careless, from *neglego*: allusion to the deplorable errors committed with several species of this genus in recent papers.

**GEOGRAPHIC DISTRIBUTION:** Congo, Côte d'Ivoire, Rep. Central Africa and Ruanda.

***Rhyzodina* (s. str.) *defraudata* n. sp.**

Fig. 11, 25, 35, 50, 72, 84, 112.

*Rhyzodina mniszechii* Schawaller, 2011, 2013 (*partim*: some specimens from Congo).

NOT *Rhyzodina mniszechii* Chevrolat, 1873, Westwood, 1875.

**MATERIAL EXAMINED:** **Holotype**: male, Congo: Mayidi, 1945, Rev. P. Van Eyen leg. *Rhyzodina mniszechii* Chevr. det. Schawaller (MRAC); 5 **paratypes** same data and collector (MRAC); paratypes: Congo: Stanleyville, Yangambi, IX.1937, P. Henrard leg. (MRAC); Bas-Congo: Lukunga, 11.XI.1968, P. M. Elsen leg. (MRAC); Tanzania: D.O.Africa, Uhega Iringa, *Rhyzinota mniszechii* Chevr. or near det. M.A. Ivie (HMNH).

**DESCRIPTION:** Size: length: 10.9 mm; maximum of width at elytra: 1.9 mm. Similar in shape to *Rhyzodina mourgliai* by elongate body and slender antennas and legs, but immediately recognizable by strongly pubescent elytra, sparsely covered of fine, long, hirsute, yellowish hairs. Head and pronotum constantly a little darker than the brownish elytra. First antennomer longer than broad, small and conspicuously dentate (fig.11). Elytra elongate, about 3.1 times longer than pronotum; with strongly pointed shoulders, discal costae finely traceable; discal intervals with two rows of punctures transversally disposed, between the transversal rugosities; disco lateral costae much stronger, disposition giving this *Rhyzodina* a very flattened disc of elytra.

**ETYMOLOGY:** *defraudata*, latin, fem., defrauded for same reasons as the anterior species.

**GEOGRAPHIC DISTRIBUTION:** Congo, Tanzania.

***Rhyzodina* (s. str.) *barclayi* n. sp.**

Fig. 1, 34, 46, 73, 85, 101, 113.

**MATERIAL EXAMINED:** **Holotype**: female, Zambia, Hillwood Bolenga, 10.IV-11.V.2014; R. Smith, Mrs. Lydia Smith, Chamoval and Hitoshi Takano leg. (NHM). **Paratype**: female. Zaire, coll. J. Simonetta, n. 2812 (MZUF).

**DESCRIPTION:** Similar in elongate shape of body to *R. mourgliai*, but immediately recognizable by conspicuous pointy protruding humeral shoulders, combined with dully black color with a feebly silky aspect at elytra.

Head with a strong, conspicuous, little frontal tooth placed at each side, before eyes;

Pronotum strongly sculpted with conspicuous, but superficial, transversal rugosities.

Elytra elongate, setose; 3.1 times as long as broad, strongly carinated, forming sharply traceable straight rows, presenting alternate secondary rows of small pointed tubercles, secreting some substance preserved between the intervals of the granulation and the foveate punctures.

Gula finely granulate. Apophysis of prosternum strongly truncate anteriorly and basaly, narrowly and curvily constricted from anterior margin to middle, broadly dilated from

middle to base, strongly carinate at sides; propleuras finely granulose punctured; mesosternon short, finely carinate at middle, much denser and finer punctured than prosternal apophysis; metasternon carinate at sides, from coxae to middle; finely punctured at disc, the punctures well separated each from either; episternon finely, convergent and superficially sculpted, the punctures forming transverse reticulations of rugosities.

**ETYMOLOGY:** Species named after Max V. L. Barclay, Curator of Coleoptera and Hymenoptera of the Natural History Museum London).

**GEOGRAPHIC DISTRIBUTION:** Zambia.

***Rhyzodina* (s. str.) n. sp. aff. *mniszechii***

Fig. 5, 37, 80, 86, 114.

**MATERIAL EXAMINED:** Male: Zambia: Mafanta, surround. of Sefula, 28.XI.2008, A. Coache, leg., via C. Vanderberg in Coll. Robiche, Vernouillet, France (CGR).

**PRELIMINAR DIAGNOSIS:** Similar in shape to *Rhyzodina mniszechii*, the first antennomer conspicuously pointed; antennomers 2-5 equals in size; but the head and the eyes are smaller; the pronotum conspicuously longer than broad with longitudinal central section not so broad as in *R. mniszechii*, the expansion of pronotum a little before meiddle, the shoulders subright, not obtusely rounded; the maximum width of elytra is conspicuously broader in *R. mniszechii*. This undescribed new species is immediately recognizable by intense darker brown color with reddish tint. The single specimen was recently found by the French entomologist Alain Coache, Alpes, d'Haute Provence, France, will be formerly described by M. Gérard Robiche, Vernouillet, France.

**GEOGRAPHIC DISTRIBUTION:** Zambia.

***Rhyzodina* (s. str.) *bremeri* n. sp.**

Fig. 6, 40, 53, 74, 108.

*Rhyzodina mehtneri* Ferrer, 2004: 211; NOT Gebien, 1926.

*Rhyzodina mniszechii* Schawaller, 2011, 2013, NOT *Rhyzodina mniszechi* Chevrolat, 1873, Westwood, 1875.

**MATERIAL EXAMINED:** Holotype, Namibia: Grootfontein, Askavolt Farm, 20 Km East Otawi, 18.II.1992, U. G leg./*Rhyzodina mehtneri* det. H.J. Bremer (MNHUB).

**DESCRIPTION:** Size: 10 mm. long.; maximum of width at elytra: 2 mm.

Brown, with a little red tint, dull species. Very similar in habitus to *Rhyzodina mourgliai*, but different by slightly shorter, not so slender and long antennas, with practically identical antennomers 2-5, the 5 not broader than the others; pronotum similar in size and shape; body different by level of the shoulder falling more down, obtusely rounded; tegument ornated by conspicuous elytral pubescence, consisting in lateral sparsely disposed, erectile, yellowish hairs; body slender and with proportionally longer legs.

**ETYMOLOGY:** latin: patronymic, species named in honor of Dr. Hans J. Bremer, Prof. emeritus, Osnabrück, Germany.

**GEOGRAPHIC DISTRIBUTION:** Namibia.

***Rhyzodina* (*Eurhysodina*) *marshalli* Blair, 1913**

Fig. 9, 10, 28, 42, 75, 82, 121.

*Rhyzodina marshalli* Blair, 1913:

*Rhyzodina* (*Eurhysodina*) *marshalli* Blair, Wasmann, 1921: 303.  
= ? *Rhyzodina mniszechii* Schawaller, 2011, with interrogation.  
*Rhyzodina marshalli* Blair, Schawaller, 2013: 66.

**MATERIAL EXAMINED: Holotype:** Zimbabwe, Harare: (Rhodesia, Salisbury), Feb. 1904, crawling up a gate post (NHM); **Syntype**, same data (NHM). Type and syntype designated by Schawaller (2013) as Lectotype (NHM) and paralectotype (NHM).

**ADDITIONAL MATERIAL EXAMINED:** Tanzania, Dodona Prov. 60 km N of Kondoa, 1570 m, 18.XII.2007, Kadlekovo leg. (MCG); Tanzania: Mts Uluguru, Morogoro, Campus faculté d'Agriculture, light trap, 600 m, V-VI.1971, Expeditions L. Berger, N. Leleup, J. Decelle /*R. marshalli* B. Schawaller det. (MRAC); Kenya, Watita Hills, VII-VIII.1908, G. Montague Smyth leg. (NHM); Kenya: British East Africa, Kilwezi, *donatio* C.Z.C/*Rhyzodina marshalli* Blair (MRAC); a specimen without certain provenance preserved from the coll. Sharp ex BMNH (NHM) is labeled "Australia?".

**REMARKS:** Despite the quality of the drawing, exhibiting conspicuous differences with all other known species, Schawaller (2011), suppose *Rhyzodina marshalli*, Blair, 1913, to be a probable additional junior synonym of *Rhyzodina mniszechii* Chevrolat, 1873. This opinion, based in the "similarity" of the respective figures(!) is another crass misinterpretation, corrected by Schawaller himself, (2013).

**GEOGRAPHIC DISTRIBUTION:** Zimbabwe, Tanzania and Kenya.

***Rhyzodina* (*Eurhysodina*) *merkli* n. sp.**

Fig. 16, 27, 43, 78, 83, 122.

**MATERIAL EXAMINED:** Holotype: male, Neu Kamerun, without data and collector (HMNH).

**DESCRIPTION:** Size: 15.5 long; maximum of width at elytra: 2.4 mm. Very similar in shape to *Rhyzodina marshalli*, but immediately recognizable by larger size (the length of *R. marshalli* reaching only 12 mm), progressively dilated antennomers 2-5 and 6 antennomer globular, entirely round (fig. 16), not divided at middle in two branches, as in *R. marshalli* (fig. 9, 10). Diagnostic character is the completely different apex of elytra, oval in *R. marshalli* (fig. 82) and rounded with conspicuous tubular ribs apically in *R. merkli* n. sp. cf fig. 83) and the different aedeagus (fig. 27 cf. 28). The similar shape of body and the antennal configuration place this species in the subgenus *Eurhysodina* Wastmann, 1921 (see key), taking place between *Rhyzodina* s. str. and the subgenus *Astocerus* Fairmaire, 1899.

Head (fig. 43) strongly globular, dilated anteriorly, forming a transverse, convex, protruding protuberance, longitudinally incised at middle, truncate before the frontal zone. Lateral sides strongly constricted before eyes and before vertex; tempora sub parallel, strongly constricted before vertex. Pronotum longer than broad, with strongly protruding, obtuse anterior angles, the maximum of broad basally, with broadly obtuse posterior angles; lateral sides strongly constricted and sinuate before and after the lateral, broadly obtuse dilatation situated a little before middle; disc and lateral zones deeply and longitudinally excavated with two sulcate ribs. Elytra elongate, sub parallel, with sub right shoulders, roundly truncate apically, with two strongly longitudinally elevated rows, entirely traceable, at each side of the suture, reaching

the base but interrupted before apex; intervals strongly punctured, the punctures arranged in two lines, perfectly visible, but not regularly and entirely traceable from base to apex. Protibia of male conspicuously serrate distally or at middle of the internal side (fig. 78). Aedeagus: pointy oval, ratio: parameral piece/phallobase 1/2 (fig. 27); subparallel, rounded apically, ratio parameral piece/phallobase 1/1.5 (fig. 28) in *R. marshalli*.

**ETYMOLOGY:** Latin, patronymic. This species is named after Dr. Otto Mérkl, Hungarian Museum of Natural History, Budapest.

**GEOGRAPHIC DISTRIBUTION:** Camerun.

#### ***Rhyzodina (Apistocerus) wasmanni* (Farmaire, 1899)**

Fig. 15, 39, 81, 115.

*Apistocerus wasmanni* Farmaire, 1899: 98, by monotypy.

NOT *Rhyzodina wasmanni* Reichensperger, 1928: 8 = *R. holtzi*

Gebien Schawaller, 2013, sub "Apistocerus" (lapsus) nec Gebien, 1925.

**MATERIAL EXAMINED:** Type not found, ex coll Fairmaire (MNHN), loc. typicus: Congo: Benito; Wais, Bururi Urundi, C. Girard/*Rhyzodina wasmanni* Fairm. Cum typo comp. P. Ardoine det. (MNHN); Congo Brazzaville, Kindamba, Méya, Louolo River, 5.XI.1963, S. Endrödy Younga leg. *Rhyzodina wasmanni* Reichensperger det. Z. Kaszab (HMNH); Tanzania: Deutsche Ostafrika, Ngerengere, 1932, coll. Reichensperger, det. H. Gebien (TMSA).

**GEOGRAPHIC DISTRIBUTION:** restricted to Congo and Tanzania.

**REMARKS:** The type is certainly preserved in the Collection Fairmaire, because P. Ardoine identify a specimen from Urundi (MNHN) after comparison and wrote: "*Rhyzodina wasmanni* Fairm. Cum typo comp.". The material from the Collection Fairmaire, preserved in the original boxes is not systematically arranged after families. The determination of Kaszab (*in litt.*) is probably a lapsus, because *Rhyzodina wasmanni* Reichensperger is not the species of Fairmaire, but *R. holtzi* Gebien, 1925.

#### ***Rhyzodina (Apistocerus) schoutedeni* Reichensperger, 1928**

Fig. 13, 26, 41, 54, 77, 116-118.

*Rhyzodina schoutedeni* Reichensperger, 1938: 46, 47, fig. 1, Schawaller, 2011: 81; 2013: 68: fig. 3, 7.

**MATERIAL EXAMINED:** Holotype: male, Gabon, Libreville, M. Babault, VI. /*Rhyzodina schoutedeni* Reichensperger, (MRAC); Côte d'Ivoire, Bingerville, 24.XI.19962, J. Decelle leg. (MRAC); Côte d'Ivoire, Lamto Prov. De Toumoudi, 15.II.1968, C. Girard (MNHN); Ghana, Ashanti Kwadaso, 320 m. 18.III.1969, S. Endrödy Younga leg (HMNH); Rep. of Central Africa: Ubangi: Nouvelle Anvers, 9.XII.1952, P. Basilewsky leg. (MRAC); Camerun, Neu Kamerun, Albrechts. Höhe, Jahr 1926 (HMNH); Ruanda: Sungugu, 1500 m, 6.VI.1953, P. Basilewsky leg. (MRAC); Uganda, Entebbe, 12.II.1914, n. 3762/C.C. Gowey/M 1923.444// *Rhyzodina schoutedeni* Reichesp. ex det. K. B. Blair *Apistocerus wasmanni* Reichesp. aft. descrip. det. K. B. Blair (NHM); Congo: Stanleyville, Yangambi, 19.III.1960, J. Decelle leg. (MRAC); PNA 11 Secteur Nord, route Kasindi entre Hololu River et Rugetsi, 1100 m, light trap (MRAC); Equateur, Bolema, XI.1936, P. Hustaert leg. (MRAC); Kivali, Ituri, Kilomines, XII.1939, Mme A. Lepersonae leg. *R. schoutedeni*

Schawaller det. (MRAC); Tanzania, Lindi, XI.194, coll. D.O.A. *Rhyzodina schoutedeni* (MNHN); Angola: Kwanda Sul prov. 25 km N of Quarenta, 17. II.2013, at light, T. Lachner leg. (NHM); Angola (A30) 3 mils W of Gabella, 16-17.III.1973, at light (NHM); Congo, Katanga, Kolwezi, 2.1957, V. Allard leg. (MNHN); Hire Boule, V.1961, J. Decelle/ *Rhyzodina schoutedeni* P. Ardoine det. (MNHN). Test Cacao, S.A.A.dec.63 (MNHN); Nkolbisson, 25.III.1966, (MNHN); idem, 29.V.1969 (MNHN), idem, 22.III.1971 (MNHN).

**REMARKS:** Schawaller (2011) wrote: "this taxon might prove to be a subjective synonym of *R. wasmanni* Fairmaire", another arbitrary assumption, fortunately ignored in the second paper (2013).

**GEOGRAPHIC DISTRIBUTION:** Gabon, Ghana, Côte d'Ivoire, Camerun, Uganda, Ruanda, Congo, Rep. of Central Africa, Tanzania and Angola.

#### ***Rhyzodina (Apistocerus) holtzi* Gebien, 1925**

Fig. 8, 29, 38, 51, 76, 120.

*Rhyzodina holtzi* Gebien, 1925: 324, fig. 2; *Rhyzodina wasmanni* 1928, Reichensperger : 49, fig. 2 (syn.), not *Apistocerus wasmanni* Fairmaire, 1869; *Rhyzodina tanantae* Reichensperger, 1928: 49, fig. 2 (nom. nudum and syn. = *Rhyzodina holtzi* Schawaller, 2011: 80. Fig. 3-4; 2013: 66.

**MATERIAL EXAMINED:** Holotype: female, *Rhyzodina holtzi* Gebien/Tanzania: Mbaruku, IX.914, W. Holtz leg. (coll. G. Frey, NHMB); Holotype *Rhyzodina Tanantae* Reichensperger det./ *Rhyzodina wasmanni* Ardoine det. 1967/*R. holtzi* Geb. Schawaller det. (MRAC); Cameroen (Neu Kamerun) Joh. Albrechts-Höhe, *Rhyzodina wasmanni* Reichensperger det Z. Kaszab (HMNH); Congo Brazzaville, Kindamba Méye, Luolo River, in forest, Endrödy Younga leg. (Congo Brazzaville soil Expedition, HMNH). Brazzavile, Kindambe Meyé, Louolo River, 5.II.1963/*R. wasmanni* Fairm. det. Kaszab (HMNH); Malawi: Chinteché, 13.I.1978, R. Jocqué (MRAC); Rep. South Africa: Mahlutswe River Ofcoloco, I.1985, K. Werner leg. (HMNH); Tanzania: Ost Afrika, Reichensperger, *R. wasmanni* Frm. 73/ *Rhyzodina holtzi* Geb. Blair det. (NHM).

**REMARKS:** Schawaller (2011) cited this species from Tanzania, Morogoro Prov. 10 km N Mikumi, 11.I.2007, Kantner leg. and from Kigoma Prov. 45 km N of Uvinza, 1150 m. 28.XII.2006, idem (SMNS).

**GEOGRAPHIC DISTRIBUTION:** Tanzania, Congo, Malawi and South Africa.

#### ***Rhyzodina (Apistocerus) reichenspergeri* Ardoine, 1968**

Fig. 14, 24, 38, 80, 119.

*Rhyzodina Reichenspergeri* Ardoine, 1968: 238-240, fig. 14, 15 B, 22; Schawaller, 2013: 66, fig. 2, 6.

**MATERIAL EXAMINED:** Holotype: male, Côte d'Ivoire, Kepaighé, VI.1962, J. Decelle leg. (MRAC).

**GEOGRAPHIC DISTRIBUTION:** Côte d'Ivoire.

#### **Key of the species of genus *Rhyzodina*:**

1. Species with protruding, sharply dentate sides of pronotum and antennomers 2-5 lenticular and perfectly symmetrical (s. gen. *Rhyzodina* s. str.) ..... 2
- Species with rounded, no dentate sides of pronotum (sugen. *Apistocerus* and *Eurhysodina*) ..... 10

2. Antenna with antennomers 2-5 equal in shape and size (fig. 5-7) ..... 3
- Antenna with antennomers 2-5 different in size, the 5 antennomer more or less broader in diameter than the preceding (fig. 3, 4 and 11) ..... 4
3. Antenna with antennomers 2-5 equal in shape, but different in size; antennomer 5 broader than the preceding, lenticular, symmetric, conspicuously broader than the preceding 3-4, lenticular in shape and inserted with the following and the preceding exactly at middle not displaced, inserted at side (fig. 3). Ratio pronotum/elytra short: 1/2.7; elytra strongly carinate by broad perfectly traceable ribs. Legs (fig. 69, 105) with protibia of male elongate, slightly subsinuate, not longitudinally carinate, without tuft of pubescence on the interior side; mesotibia and metatibia smaller and finely carenate ..... *methneri* Gebien
- Antennomer 5 slightly broader than the preceding 3-4, lenticular in shape and inserted with the following and the preceding at middle, not displaced at side (fig. 4). Ratio pronotum/elytra long: 1/3; elytra finely carinate by continuous perfectly traceable ribs. Legs with protibia of male broad, conspicuously dilated after base, longitudinally carinate, presenting a very shortly and finely setose fringe of golden hairs, without tuft, on the interior side (fig. 70); mesotibia and metatibia smaller and finely carenate ..... *mourgliae* Ferrer
4. Basal antennomer toothed and nearly as long as broad (fig. 2); dark, brown species with reddish tint species presenting glabrous body; ratio pronotum/elytra short: 1/2.5. Legs (fig. 84, 104) with protibia of male broadly dilated distally, with pubescent tuft on the interior side; all tibias broad, short and carinate (fig. 67) ..... *mniszechii* Chevrolat
- The preceding characters never appearing together: Species with basal antennomer 1 without strongly conspicuous, pointy protruding tooth, but presenting in some cases an obtuse protuberance (fig. 3-12). Antennomer 5 lenticular and symmetric, equal in size or conspicuously broader than the preceding 3-4, regular in shape and inserted with the following and the preceding at middle not displaced at side (fig. 3, 5, 8, 9, 12) ..... 5
5. Elytra almost glabrous, exceptionally carrying sparse, hardly visible, erectile lateral setae. Species with conspicuous longitudinal keels ..... 6
- Elytra conspicuously pubescent. Species brown with reddish tint; dorsal surface of elytra conspicuously pilose, with sparse, long, erectile, yellowish hairs dorsally or at last from the two lateral intervals at sides of elytra, presenting the basal antennomer obtusely pointed, as large as broad or longer ..... 8
6. Elytra with finely traced longitudinal keels; the traceable line forming the elevate ribs of elytra carinate and continuous ..... 7
- The carinate line forming the elevate ribs of elytra finely interrupted, in short traces. Brown reddish, dark species presenting basal antennomer 1, with a conspicuous obtuse and short protuberance (fig. 5) ..... *Rhyzodina* (s. str.) n. sp. aff. *mniszechii* Chevrolat (nec Schwaller, loc. cit.)
7. Ratio pronotum/elytra long: 1/3; antennas slender and long, antennomer 1 longer than broad; the carinate ribs of elytra finely carinate, the line forming the elevate ribs of elytra finely and entirely traceable but slightly sinuate (fig. 6) ..... *bremeri* n. sp.
- Ratio pronotum/elytra shorter: 1/2.5 or 1/2.7 long. Antennas short, compact and broadly shaped, antennomer 1 as broad, as long (fig. 7); the carinate line forming the elevate ribs of elytra broadly and entirely traceable, straight, not slightly sinuate. Brown, with a reddish tint species ..... *distincta* Wasmann
8. Long, dark, blackish or dark brown species; ratio pronotum/elytra 1/3; shoulders protruding in a little tooth ..... 9
- Shorter, brown species; ratio pronotum/elytra 1/2.5; lateral intervals of elytra sparsely but conspicuously covered of long, hirsute hairs; basal antennomer slightly longer than broad (fig. 12) ..... *neglecta* n. sp.
9. Dorsal surface of body sparsely but entirely and conspicuously covered of long, hirsute hairs; basal antennomer conspicuously longer than broad (fig. 11) ..... *defraudata* n. sp.
- Dorsal surface of body nearly glabrous, only the lateral intervals sparsely covered of long, hirsute hairs; basal antennomer slightly pointed and conspicuously longer than broad (fig. 1) ..... *barclayi* n. sp.
10. Species with antennomers 2-4 lenticular and antennomer 5 strongly dimorphic and asymmetric; antennomer 6 not divided in two branches, entirely globular (s. gen. *Aristocerus*) ..... 12
- Species with only antennomers 2-3 lenticular, antennomer 5 strongly dimorphic and antennomer 6 conspicuously symmetrical (s. gen. *Eurhysodina* Wasmann, 1921) ..... 11
11. Antennomer 6 (in strict dorsal view: fig. 9 cf 10) divided in two separate branches at each side, with setose tufts. Aedeagus with paramers long and subparallel (fig. 28) ..... *marshalli* Blair
- Antennomer 6 strongly globose (fig. 16); protibia of male slightly dilated distally, with a finely serrate lateral margin at the distal border of the external side (fig. 40). Aedeagus with paramers proportionally short, ovaly pointed (fig. 27) ..... *merkli* n. sp.
12. Species presenting rounded sides of pronotum (s.g. *Aristocerus*) and apical antennomers 8-9 conspicuously reduced ..... 13
- Species with rounded sides of pronotum and antennomers 8-9 nearly as broad as the preceding ..... 14
13. Species with antennomer 6 moderately dilated, nearly as broad as the preceding (fig. 15) ..... *wasmanni* Fairmaire
- Species with antennomer 6 conspicuously dilated ad much broader than the preceding (fig. 8) ..... *holtzi* Gebien.
14. Antennomer 6 very broad and surpassing the maximum of width of the antennomer 5 (fig. 13) ..... *schoutedeni* Reichenberger
- Antennomer 6 nearly as broad as the antennomer 5 and slightly surpassing the maximum of width (fig. 14) ..... *reichesperbergi* Ardoin

### Tribal characters of *Rhyzodina*

Fig. 62-66, 87-88.

The characters of the genus *Rhyzodina*, considered as a member of the Rhysopaussidae Wastmann, 1896, had been studied by several authors (Blair, 1913, Wasmann, 1921, Gebien 1925, Reichensperger, 1928, Ardoïn, 1969, Ferrer, 1996, Schawaller, 2011, 2013 and Bremer and Lillig, 2014). Additionally the considerable number of taxonomic misinterpretations, already signaled, Schawaller (2013) decide that *Rhyzodina* belongs to the Tribe Amarygmini Gistel, 1858 (uncited in the references). Well, the correct year of publication is 1856. The Amarygmides was erected as family Amarygmidae, but the definition of Gistel (1856) is inactual, because some of the characters invoqued by Gistel, are homoplastic features appearing again and again in several subfamilies and tribes and never can be used today as discriminatory tribal characters, needling complementary synapomorphies. The reference given by Schawaller (2013) to Matthews and Bouchard (2008) is really surprising, because any of the characters of Amarygmini agree with *Rhyzodina*. Wherever, Schawaller mean that *Rhyzodina* are Amarygmini, but present a peculiar shape of antennas, with 9 vistose and peculiar antennomers, adapted to the termiteophile *modus vivendi* of these insects. Schawaller (2013) not give any mention about the disposition or existance of the Amarygmini tribal characters: specially, the basic differential characters (Ardoïn, 1962) consisting in the asymmetric phallobase of the aedeagus (fig. 44) and the anterior border of prosternum covering the buccal pieces (fig 59). The number of antennomers is constantly 11, not 9 as in *Rhyzodina* and more or less elongate and filiform. Modern classifications of Amarygmini (Matthews and Bouchard, 2008, Bremer and Lillig, 2014) emphasize the convex, ovoid, metallic, glabrous aspect, the filiform antenna, only slightly widening apically, and indicate several differential characters absents in *Rhyzodina*: prothorax widest basally, evenly convex, very short before coxae, (normal or large and long in *Rhyzodina*), allowing head to be held vertically against thorax, a feature impossible in *Rhyzodina*, which is a genus recalling the free, vertical position of head in Col. Cerambycidae, perfectly visible from dorsal view, but protected and hidden in Amarygmini (fig. 56-58 cf fig. 59). All Amarygmini exhibits toxic glands (fig. 64), absent in *Rhyzodina* (fig. 65); The female genital organs (Doyen and Tschinkel, 1982) are very different: the female tract with fine, tightly smermateca, attached to base of very long, slender, usually keeled sclerites (fig. 63); the female tract (fig. 62 cf fig. 63) and ovipositor of *Rhyzodina* /fig. 46-55) are completely different from Amarygmini (fig. 45 and 63). The proximal end of the paraproct baculi is contained within membranous pockets in Amarygmini. These features characteristic of Amarygmini are absent in *Rhyzodina*. Bremer and Lillig (2014) describe extremely detailed the characters of Amarygmini and any feature match with *Rhyzodina*, a genus not mentioned in the tribal description of Amarygmini by the precited authors. The female genitalia are of different type; in all Amarygmini the ovipositor exhibits the paraproctum longer than coxites and the aedeagus is strongly curved basally and asymmetric (fig. 66), not slightly curved and perfectly symmetric as in all known *Rhyzodina* (fig. 19-29). The ciliation of the antennas is completely different. *Rhyzodina* presented combined setae of the last antennomer with long tubular, not flagellate and

shortly broad types of setae (fig. 87). Termitophilous Amarygmini, as *Gonocnemis* exhibits another type of ciliation, with conspicuous stellar microsetae and flagellate cils (fig. 88).

All the precited diagnostic characters of Amarygmini are inexistent in *Rhyzodina* species. In other hands, *Rhyzodina* exhibit the buccal appendages completely free and visible, observing the head from profile (fig. 56-58), not hidden as Amarygmini (fig. 59-61). The prosternum never is large, as in members of Amarygmini, but smaller, constricted anteriorly and long. Another argument to the peremptory decision of Schawaller (loc. cit.) is the similarity of *Rhyzodina* with the genus *Azarelius* Faimaire, 1892, with antennas composed of 11-antennomers. Phylogenetic analyse supporting this decision, not exist and the apparent similarity obviously can be explained as a case of evolutive convergence.

The material studied by Schawaller (2011, 2013) was in most cases incorrectly identified, the basic definition of the subgenera of *Rhyzodina* Wasmann (1921) ignored and one basic species overlooked, so the supposed new tribal status of *Rhyzodina* is so arbitrary as the identification, morphology and geographic distribution of "Rhyzodina mniszechii" by Schawaller (2011, 2013). I cannot find any reasonable reasons to this peremptory decision, emphasizing that the position of the tribe Rhysopaussini must be stablished with comparative study of the larval characters, hitherto unknown, supported if possible, with molecular analyses and not with subjective decisions *ex catedra*. *Rhyzodina* species are morphologically extremely different from Amarygmini (see below) and their transfer to Amarygmini is so arbitrary as transfer for no reasons Amarygmini to Rhysopaussini.

### Biology

The species of *Rhyzodina* are nocturnal and according labels attached to many specimens, often collected at light. Wasmann (1921) assume a termitophilous adaptation regarding the peculiar shape of antennas, apparently indicating termitophilous habitats. In other hands, direct data based in scientific observations permitting to confirm a termitophilous *modus vivendi* not exist (Bouchard, 2014). The peculiar morphology of the species belonging to this genus, seems indicate a symbiosis with termites, offering the host attractive substances produced by internal glands. Probably the secretory process is subcutant, the "turban" which ornate the antennomer 7 is only a reservoir, concentrating the substance secreted by the body and preserved in the multipla fovea excavated between the carenate rows. These peculiar features easily permitting termites lick, not only the pubescent antennomer, but the surface of the insect. Morphologically, the peculiar faculty to incline the head down facilitate the termites to suck the concentrate, running substance. Rhysopaussini recalling habitually some characters of Amarygmini, linked to old termites' nests in decay but feeding the fungi inside the galleries. If the anterior postulate is truth, the diet and style of life must be totally different. Schawaller (2014) finding a specimen of *Rhyzodina* presenting one antennal tuff lacking setae, think that termites not only licks, but "cut" the pubescence or the antennomers. This seems mean less and contra productive. Alternative explanations, as results of competition, attack of predators and longevity of the specimen are much more logic and plausible.

## Conclusions

Schawaller (2013), transferring *Rhyzodina* to Amarygmini, no pay much attention to the current definition and characters of Rhysopaussini and Amarygmini *sensu* Wasmann (1921) *et auct.*, or to the validity of the subgenera *Rhyzodina*. It is a fact that the omission of *Rhyzodina distincta* evidentiate the ignorance of the fundamental paper of Wasmann (1921), concerning the subgenera and tribal characters of both groups and the composition of the genus *Rhyzodina*.

The imbroglio "*Rhyzodina mniszechii*" Schawaller (2011, 2013) is a conglomerate of at last nine species completely different from *Rhyzodina mniszechii* Chevrolat. In other words: "*Rhyzodina mniszechii*" *sensu* Schawaller (2011, 2013) is a *species composita* excluding the type species, but including the overlooked species *Rhyzodina distincta* Wasmann, 1921, from East and South Africa. Additionally, the "subjective" synonyms *R. methneri* and *R. mourgliai* were confused with the truly *R. mniszechii* and with other six species, new to science. The type species *Rhyzodina mniszechii* from Ethiopia not agrees either with the types of *Rhyzodina methneri* and *R. mourgliai*, two valide species. Following, the two proposed subjective synonyms are not only subjective, but wrong. In otherhands the specimens labeled *Rhyzodina "mniszechii"* and "*R. marshalli*" in the Museum of Stuttgart (SMNS) claim for special caution for the exposed reasons and because it exist a very similar species: *Rhyzodina (Eurhysodina) merkli* n. sp. new to science, determinated *in litt.* "*Rhyzodina marshalli*" by Schawaller (HMNH), described in this paper. Moreover, after pertinent examen I find that any specimen determined by Schawaller as the type species *Rhyzodina mniszechii*, preserved in European and South African Museums Museums agree with the holotype of Chevrolat. Concluding this revision, the number of species belonging to genus *Rhyzodina* Chevrolat is elevated from 6 (Schawaller, 2011, 2013) to 15.

## Acknowledgements

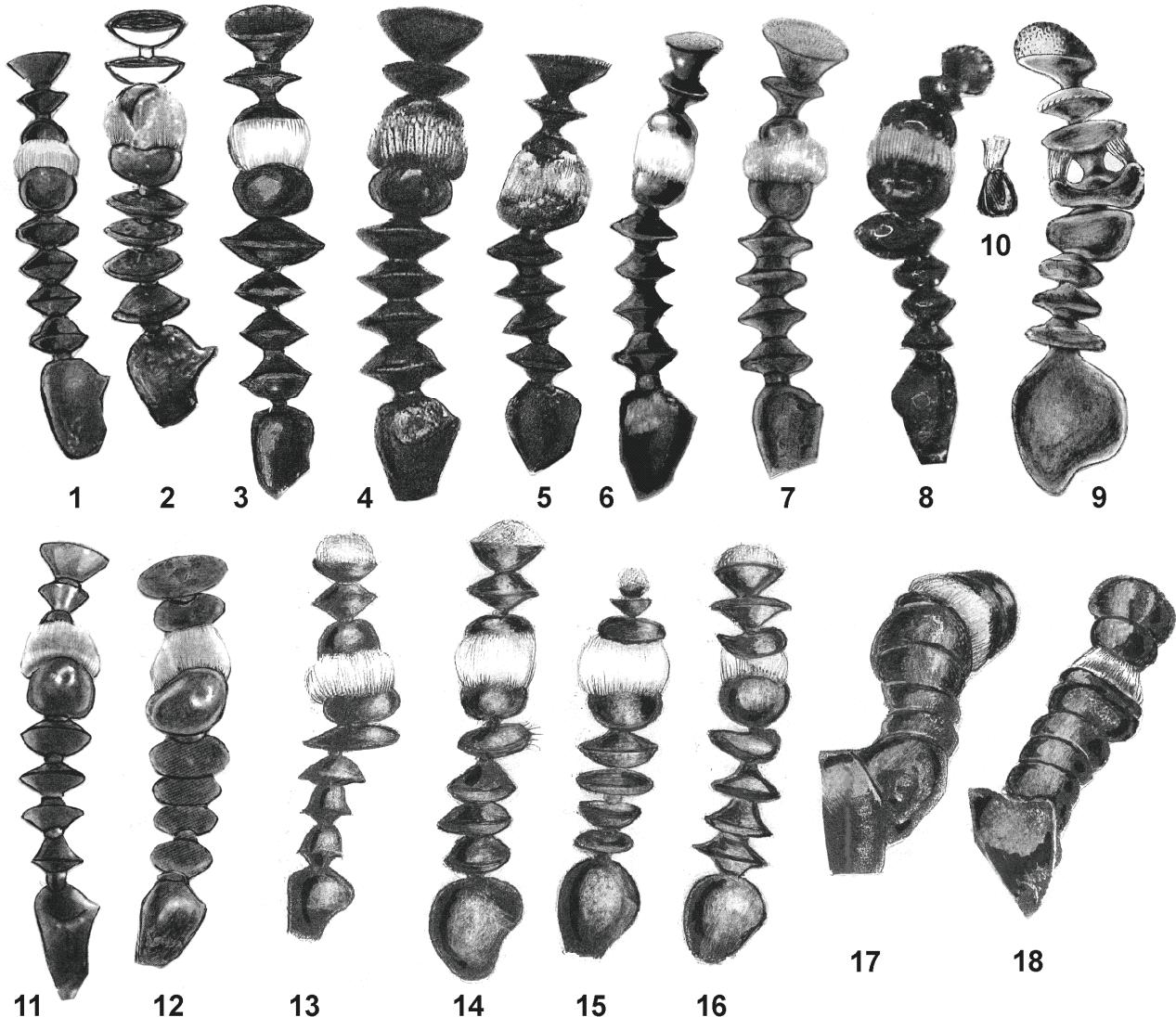
A special thanks to Prof. emeritus Hans J. Bremer, great specialist of Amarygmini, exhorting me to great prudence examining pertinent characters studying of this difficult genus, evaluating eventual factors of taxonomic importance with description of new taxa, to avoid misinterpretations as results of perspective artifacts, conservation status, individual or geographic variation concerning size, form and color, etc.; in other hands, I thank him for stimulating methodological discussions. In other hands, Wolfgang Schawaller's obstination was a very stimulating challenge to find new irrefutable diagnostic characters to resolve the current imbroglio. This paper has been possible by a grant by Muséum national d'Histoire naturelle, Paris, COLPARSYST in November 2002, another from SYSRE-SOURCE, in June 2003, permitting the visit of the author to the Natural History Museum, London and to the William Hunter Museum, University of Glasgow, in July 2004. For access or loan of material from respective Museums, the author is deeply indebted and thanks to Mr. Max Barclay, The Natural History Museum, London, to Dr Ben Brugge, Museum of Zoology of Amsterdam, and to Dr Paul Beuk, The Museum of Natural History, Maatricht for help me to trace the fate of the type of Wasmann, to Dr. R. Poggi, Museo Civico Storia Naturale, Genoa, to Dr Luca Bartolozzi, Museo Zoológico "La Specola" of the University of Florens, to Dr. Antoine Mantilleri, Muséum national d'Histoire naturelle, Paris, to Mr. Alain Coache, Alpes d'Haute Provence, France, to Prof. J. Decelle et Dr. E. de Coninck, Muséum Royal de l'Afrique Centrale, Tervuren, to Dr Otto Mérkl, Hungarian Museum of Natural History, Budapest, to Dr. Ruth Müller, Ditsong Museum of Natural History, Pretoria, to

Dr Geoff Hancock, Museum of Zoology of the University of Glasgow and to prof. Kjell Arne Johanson and Dr Johannes Bergsten, Naturhistoriska riksmuseet, Stockholm, Sweden, supporting this project. The late friend and dear colleague Bert Viklund (1955-2014) help me under yeras searching for material in several collections.

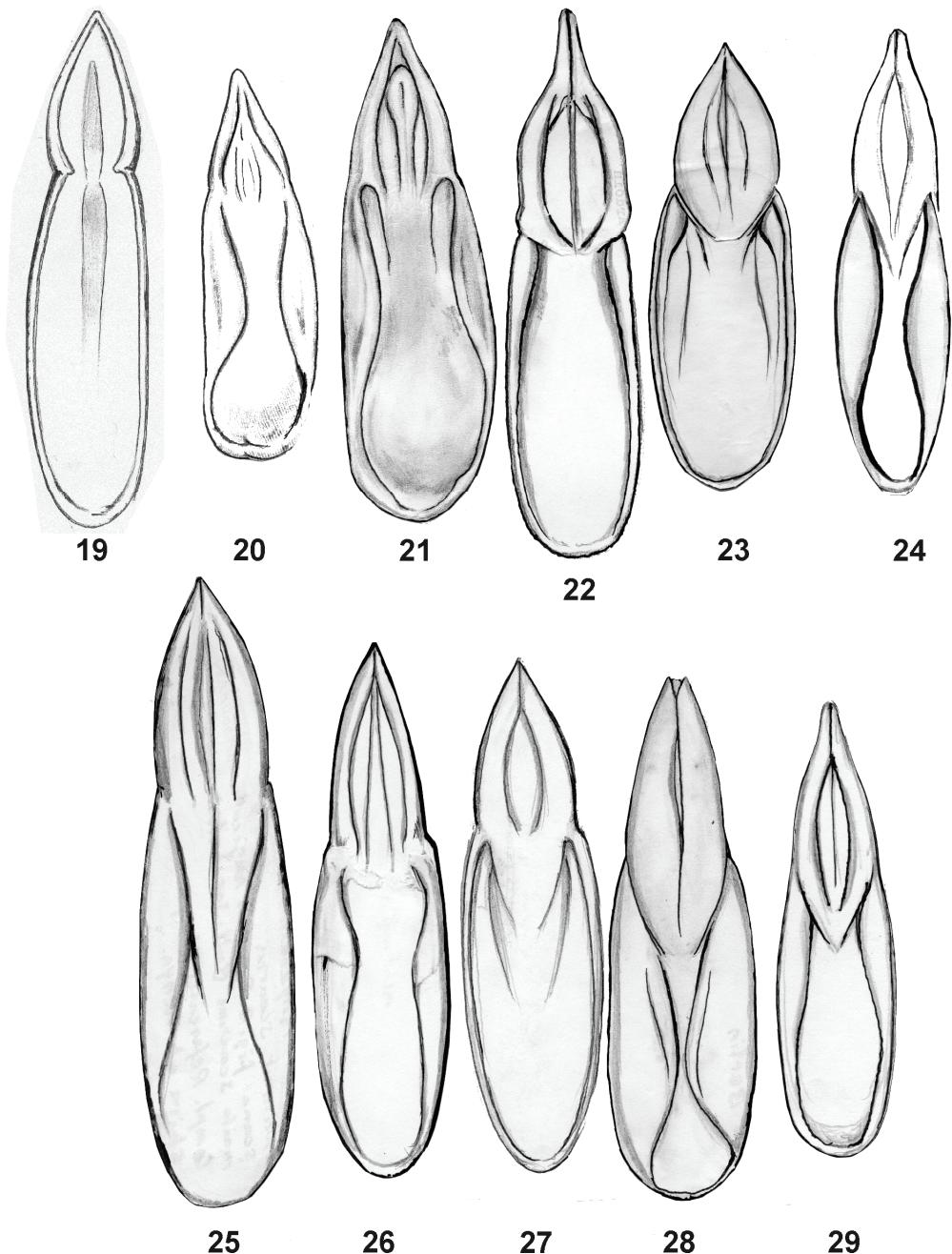
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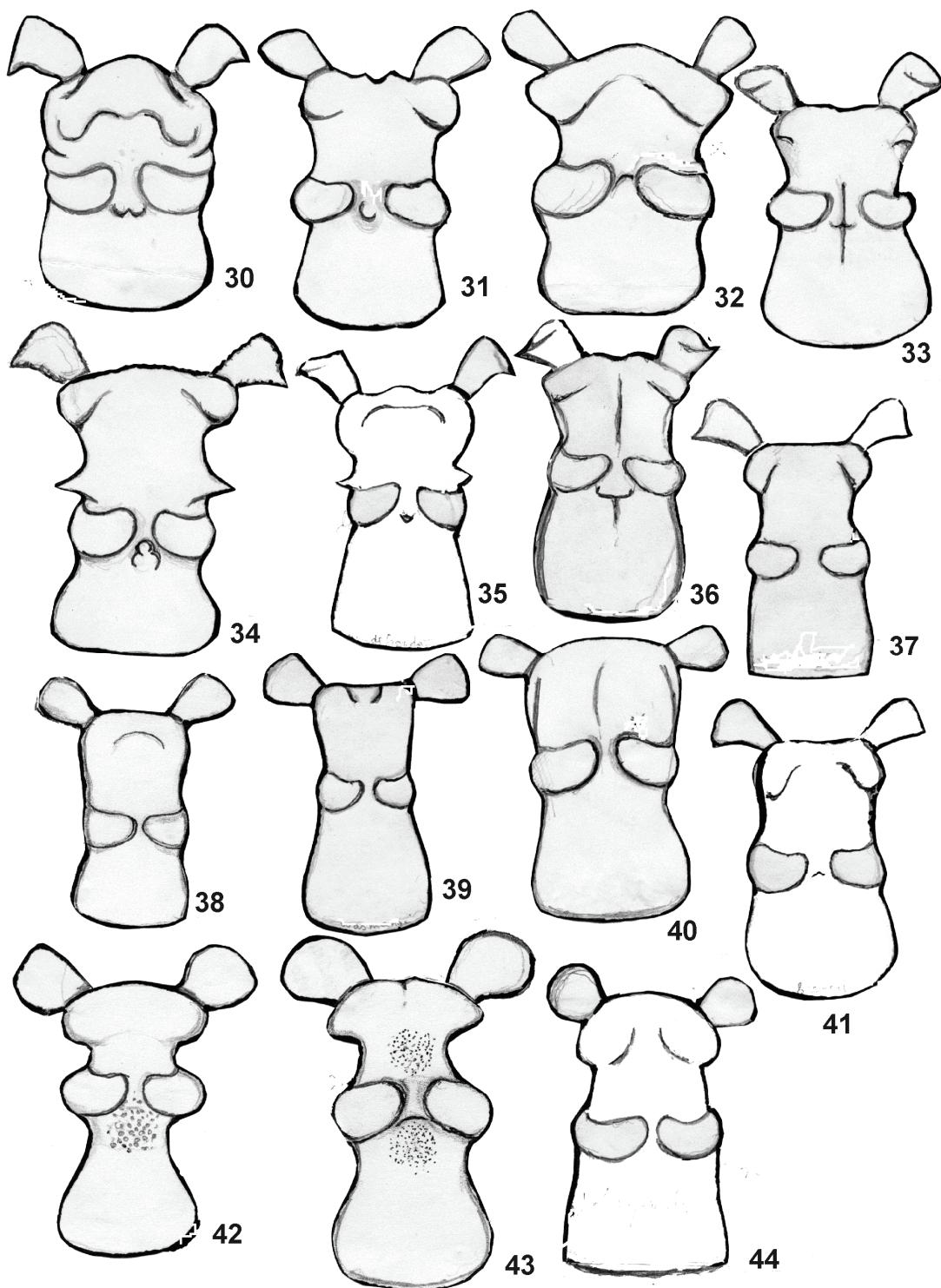
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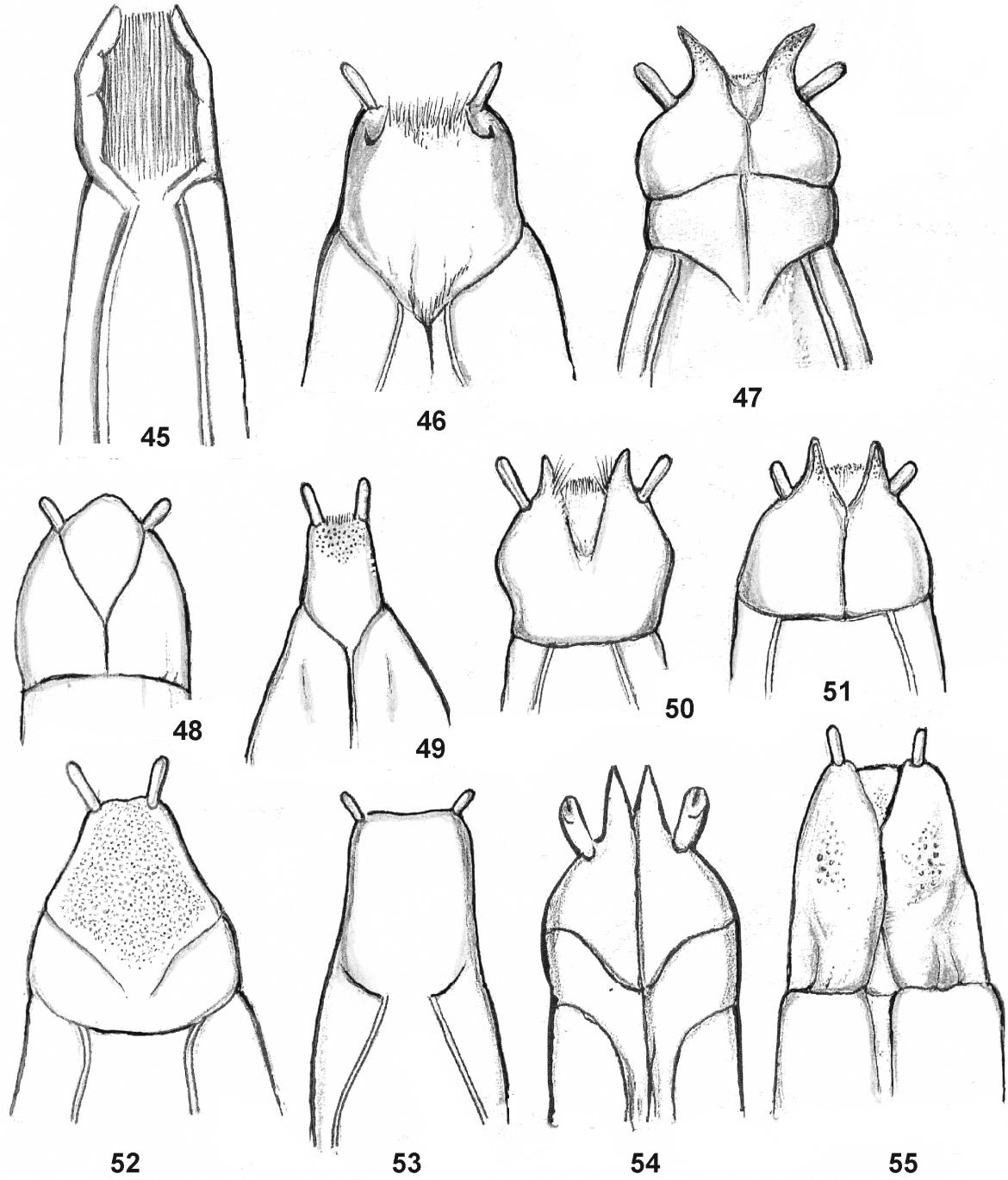
**Fig. 1-18:** Antennas of *Rhyzodina* (Holotypes, except fig. 15): **1.** *Rhyzodina barclayi* n. sp.; **2.** *R. mniszechii*; **3.** *R. methneri*; **4.** *R. mourgliai*; **5.** *R.* n. sp., aff. *mniszechii* n. sp.; **6.** *R. bremeri* n. sp.; **7.** *R. distincta*; **8.** *R. holtzi*; **9.** *R. marshalli*; **10.** antennomere, profile; **11.** *R. defraudata*; **12.** *R. neglecta* n. sp. **13.** *R. schoutedeni*; **14.** *R. Reichenspergeri*; **15.** *R. wasmanni* (after Fairmaire 1869); **16.** *R. merkli* n. sp.; **17-18.** Antennas of *Rhyzodina* in "frog view" perspective; **17.** *R. methneri*; **18.** *R. mourgliai*.



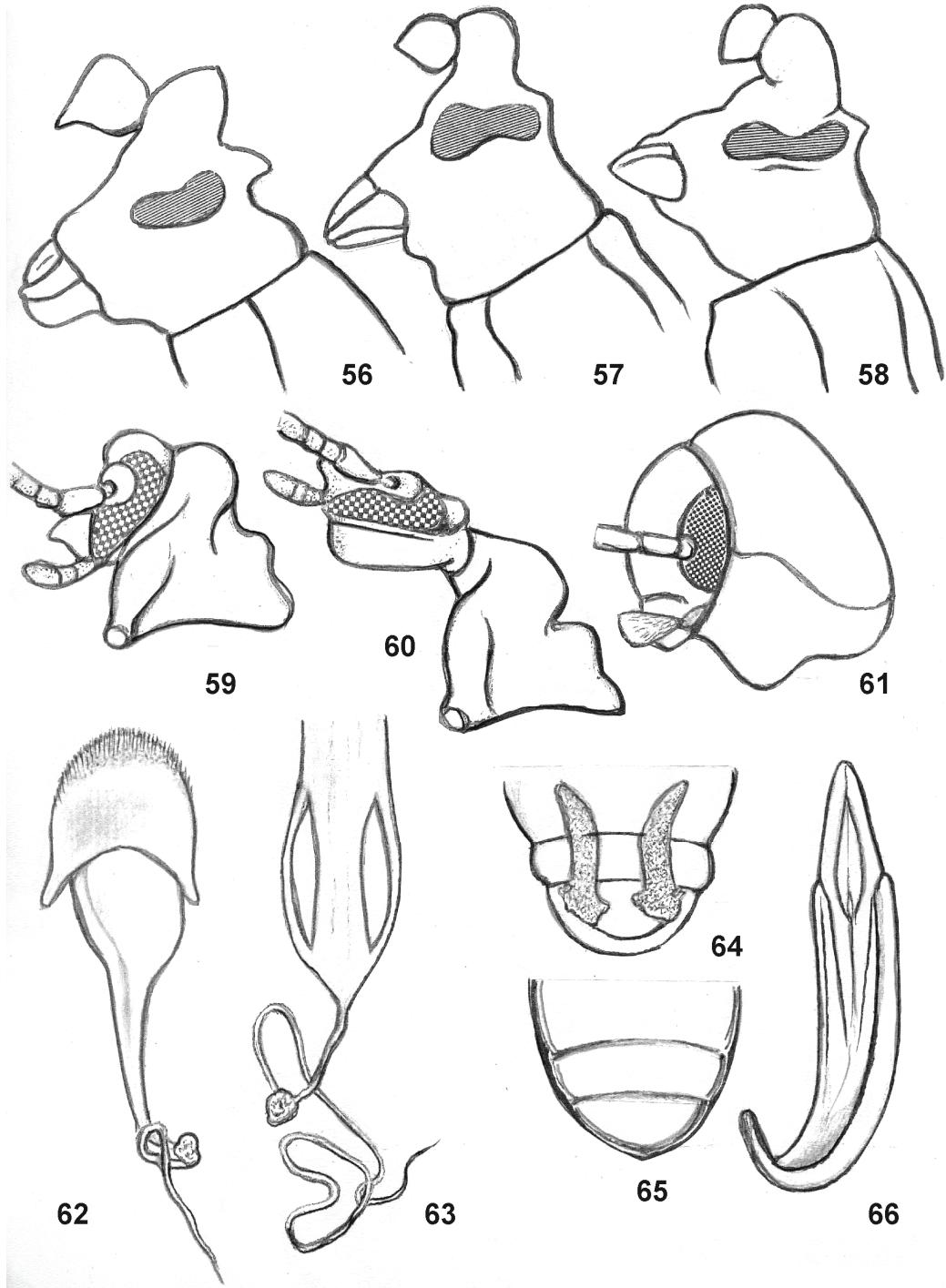
**Fig. 19-29:** Aedeagus of *Rhyzodina*: **19.** *R. mniszechii*; **20.** *R. distincta*; **21.** *R. mourgliai*; **22.** *R. methneri*; **23.** *R. neglecta* n. sp.; **24.** *R. reichenspergeri*; **25.** *R. defraudata* n. sp.; **26.** *R. schoutedeni*; **27.** *R. merkli*; **28.** *R. marshalli*; **29.** *R. holtzi*.



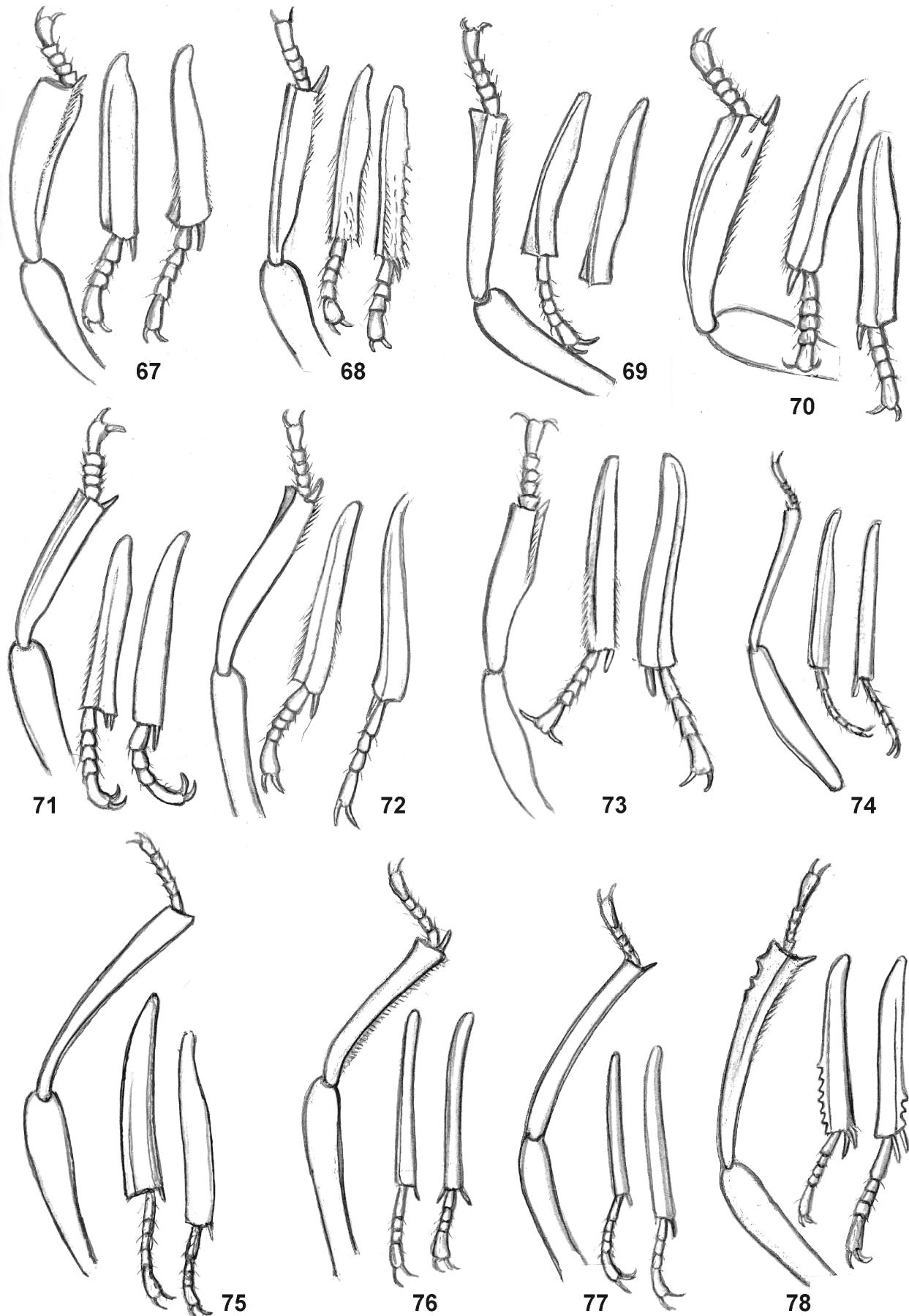
**Fig. 30-44:** Head of *Rhyzodina*: 30. *R. mniszechii*; 31. *R. methneri*; 32. *R. mourgliai*; 33. *R. distincta*; 34. *R. barclayi* n. sp.; 35. *defraudata* n. p.; 36. *R. neglecta* n. sp.; 37. *R.* n. sp., *aff. mniszechii* n. sp.; 38. *R. holtzi*; 39. *R. wasmanni*; 40. *R. bremeri* n. sp.; 41. *R. schoutedeni*; 42. *R. marshalli*; 43. *R. merkli* n. sp.; 44. *R. reichenspergeri*.



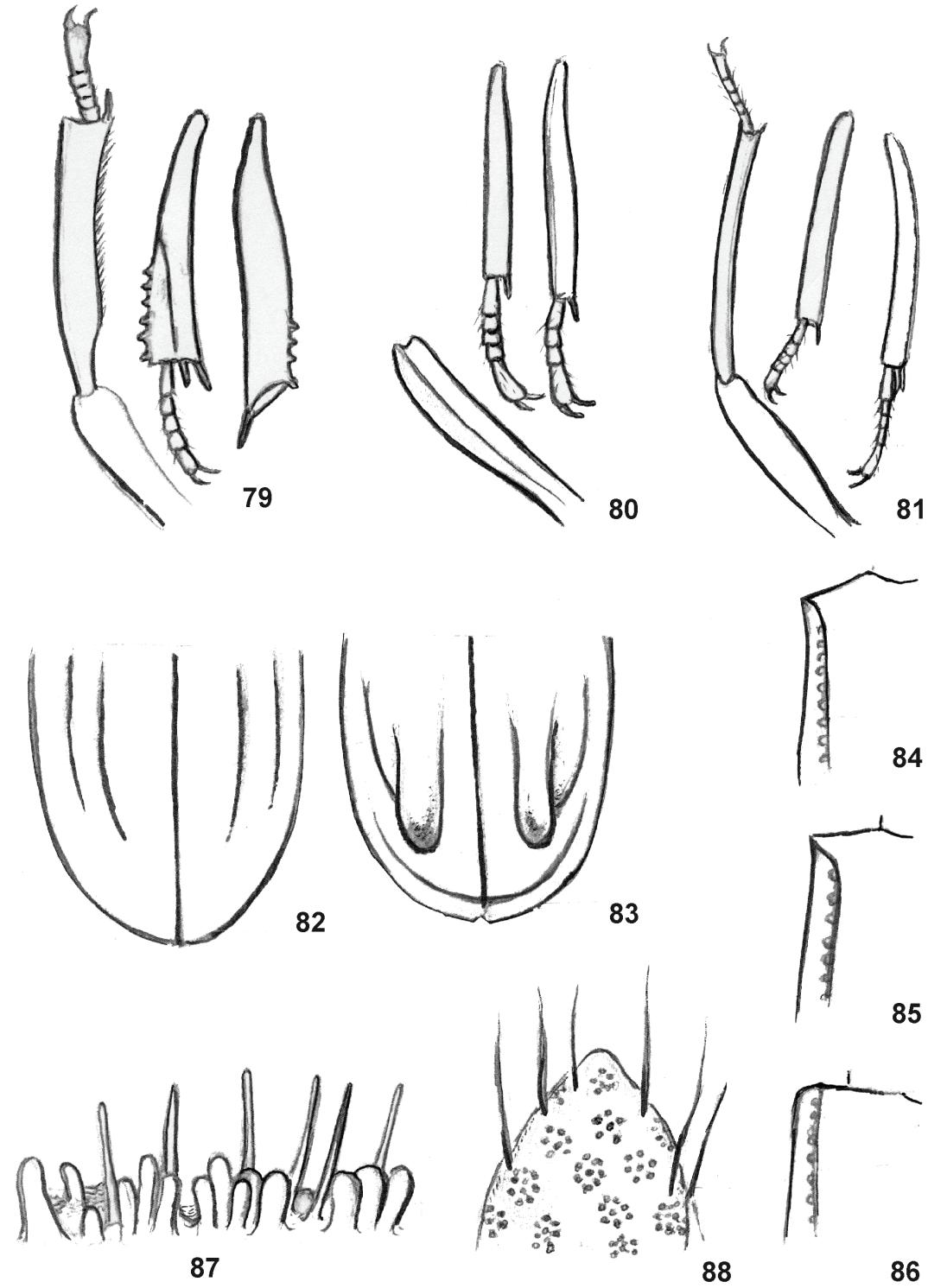
**Fig. 45-55:** Genitalia of Amarygmini and of Rhyzodina: **45.** Ovipositor of *Amarygmus* sp. (after Matthews and Bouchard, 2008); **46-55:** Ovipositors of *Rhyzodina*: **46.** *R. barclayi* n. sp.; **47.** *R. barclayi* n. sp. ; **48.** *R. distincta*; **49.** *R. mourgliai*; **50.** *R. defraudata* n. sp.; **51.** *R. holtzi*; **52.** *R. neglecta* n. sp.; **53.** *R. bremeri* n. sp.; **54.** *R. schoutedeni*; **55.** *R. methneri*.



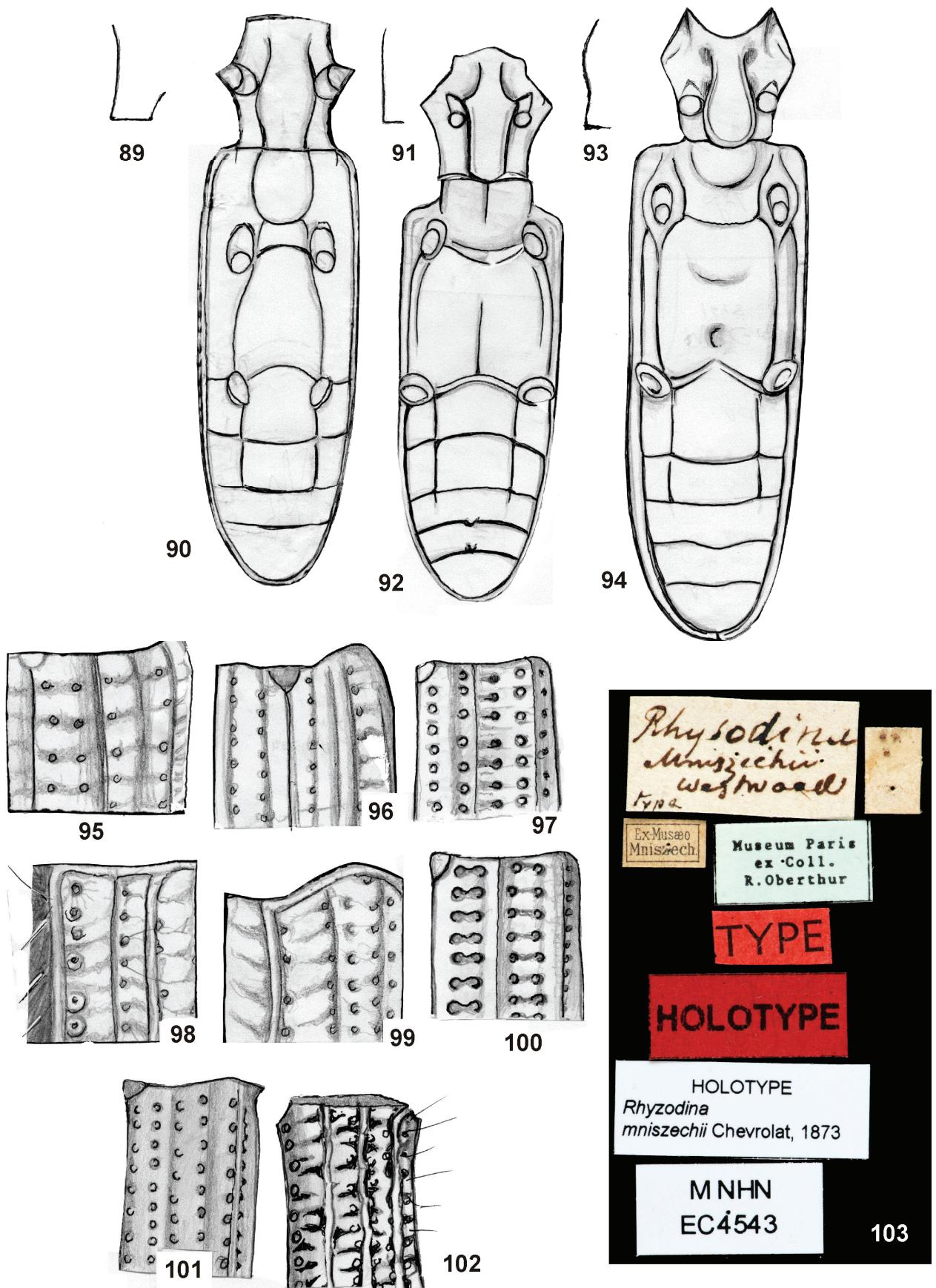
**Fig. 56-58:** Head and prothorax on profile of *Rhyzodina*: **56.** *R. mniszechii*; **57.** *R. mehtneri*; **58.** *R. mourgliai*; **59.** *Amarygmus* sp.; **60-61.** *Stigmoderus* Spinola. **Fig. 62.** Female tract of *Amarygmus*. **Fig. 63.** female tract of *Rhyzodina*. **Fig. 64.** Toxic abdominal glands of *Amarygmus*. **Fig. 65.** Abdomen without toxic glands of *Rhyzodina*. **Fig. 66.** Strongly asymmetric aedeagus of *Amarygmus* (after Matthews and Bouchard, 2008), cf perfectly symmetric aedeagus of *Rhyzodina* (fig 20-29);



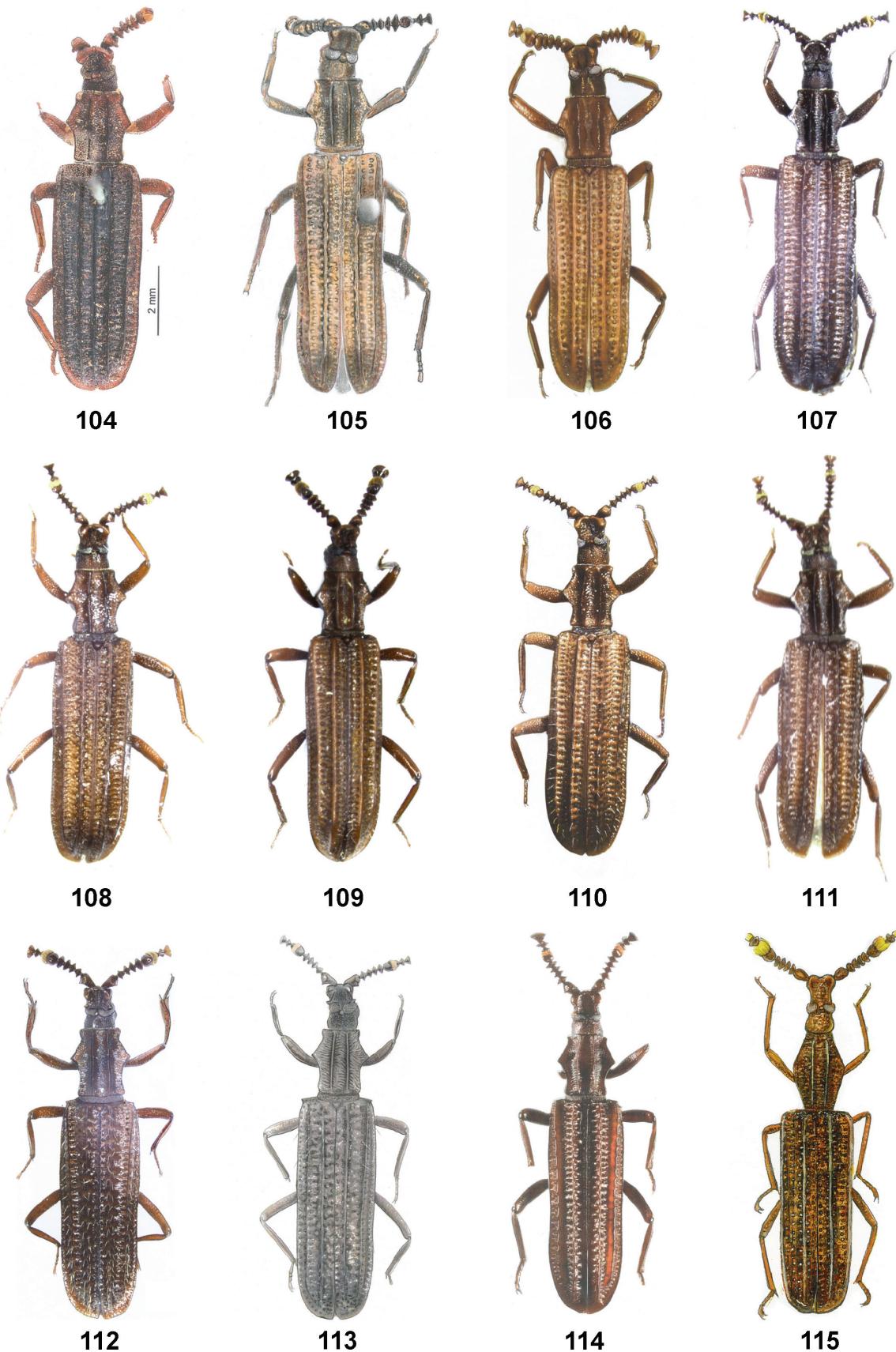
**Fig. 67-78:** Legs of *Rhyzodina*: **67.** *R. mniszechii*; **68.** *R. distincta*; **69.** *R. mehtneri*; **70.** *R. neglecta* n. sp.; **71.** *R. mourgliai*; **72.** *R. defraudata* n. sp. **73.** *R. barclayi* n. sp.; **74.** *R. bremeri* n. sp.; **75.** *R. marshalli*; **76.** *R. holtzi*; **77.** *R. schoutedeni*; **78.** *R. merklin* n. sp.



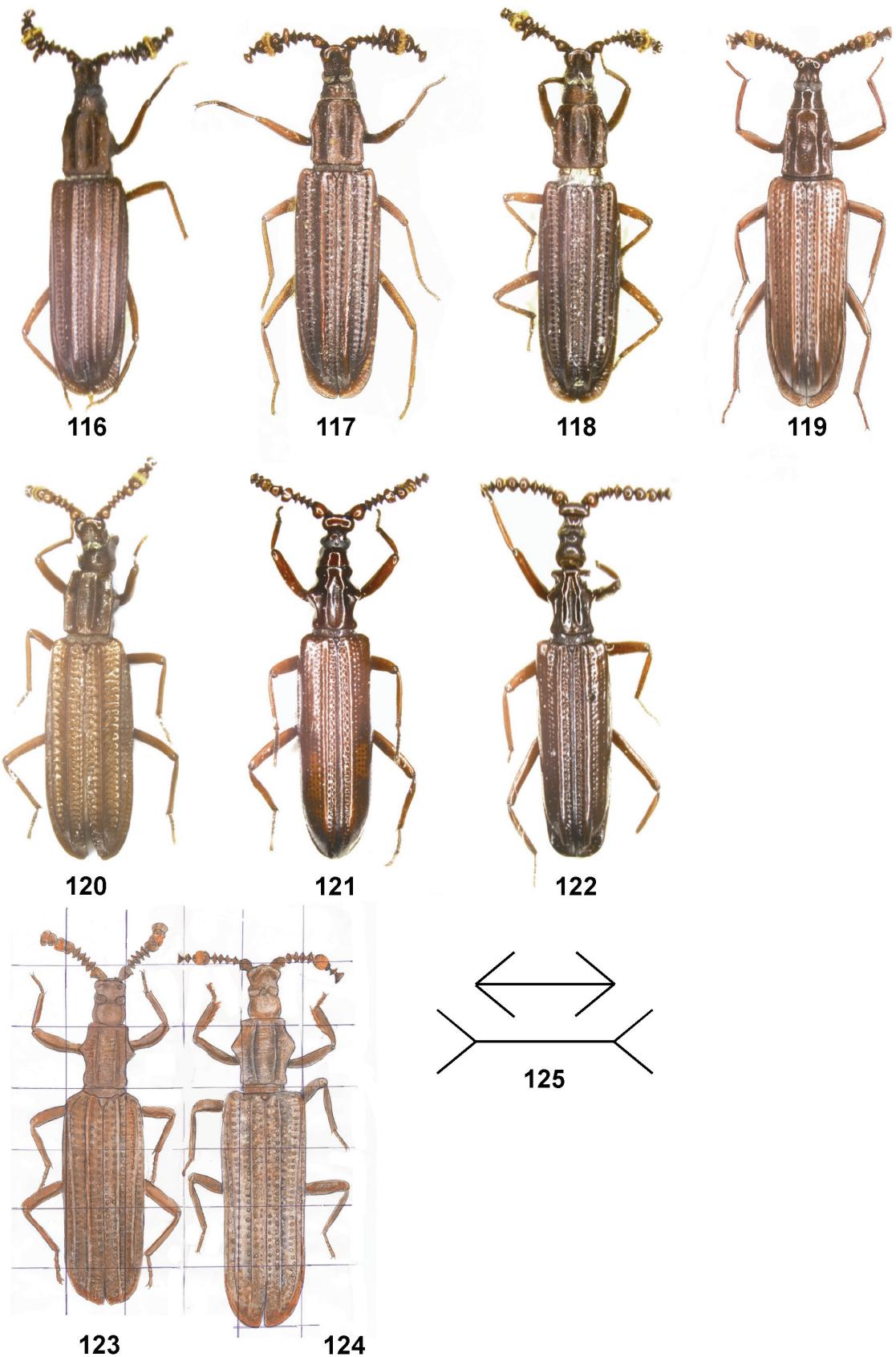
**Fig. 79-81:** Legs of *Rhyzodina*. **79.** *R. reichenspergeri*; **80.** *R. n. sp., aff. mniszechii n. sp.*; **81.** *R. wasmanni*. **Fig. 82-87.** Characters of *Rhyzodina*: **82.** Apex of elytra of *R. marshalli*; **83.** Idem of *R. merkli n. sp.*; **84.** Humeri of *Rhyzodina defraudata n. sp.*; **85.** Idem. *R. barckayi n. sp.*; **86.** idem of *Rhyzodina mniszechii*; **87.** Combined setae of the last antennomer of *Rhyzodina distincta* with long tubular and shortly broad; **88.** idem of Amarygmmini, *Gonocnemis* with stellar microsetae and flagellate cils.



**Fig. 89-91:** Ventral surface of *Rhyzodina*: Apophyse of prosternum in profile: 89. *R. mniszechii*; 90. *R. mehthneri*; 91. *R. mourgliai*. **Fig. 92-94:** Habitus in ventral view of *Rhyzodina*. 92. *R. mniszechii*; 93. *R. mehthneri*; 94. *R. mourgliai*. **Fig. 95-102:** Elytral sculpture of *Rhyzodina*: 95: *R. mniszechii*; 96: *R. mehthneri*; 97: *R. mourgliai*; 98: *R. defraudata*; 99: *R. neglecta*; 100: *R. bremeri*; 101: *R. barclayi*; 102: *R. n. sp. aff. mniszechii* n. sp. **Fig. 103:** Typical Labels of *Rhyzodina mniszechii* (Photo A. Mantilleri, Muséum national d'Histoire naturelle, Paris, MNHN).



**Fig. 104-115.** Habitus of *Rhyzodina*: **104.** *R. mniszechii* (Photo A. Mantilleri, Muséum national d'Histoire naturelle, Paris, MNHN); **105.** *R. methneri* (Holotype, NHMB, Basel); **106.** *R. methneri* (MNHUB, Berlin); **107.** *R. mourgliai*; **108.** *R. bremeri* n. sp.; **109.** *R. distincta* (Holotype, NHMM, Maastricht); **110-111.** *R. neglecta* n. sp.; **112.** *R. defraudata* n. sp.; **113.** *R. barclayi* n. sp., aff. *mniszechii* n. sp.; **114.** *R. n. sp. aff. mniszechii* n. sp.; **115.** *R. wasmanni*.



**Fig. 116-122.** Habitus of *Rhyzodina*: **116.** *R. schoutedeni* (Holotype, MRAC, Tervuren); **117-118.** *R. schoutedeni* non type; **119.** *R. reichenspergeri* (Holotype, MRAC, Tervuren); **120.** *R. holtzi* (Holotype, NHMB, Basel); **121.** *R. marshalli* (Holotype, NHM, London); **122.** *R. merkli* n. sp. **Fig. 123-124:** Quadrangular morphometry for drawing: **123.** *R. methneri*; **124.** *R. mourgliai*; **125.** Optical illusion of identical lines between "arrows" after Müller-Lyer, 1889.