

PALACKY UNIVERSITY OLOMOUČ

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**Revision of the Species Group *Cautires obsoletus*
from continental Asia (Coleoptera: Lycidae)**

Bachelor's thesis

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Abstract

The study deals with the net-winged beetle genus *Cautires* Waterhouse, 1879, which is distributed mainly in the rain forests of the Oriental region. I discuss morphology and relationships among Oriental Metriorrhynchini and I propose *Bulenides* Waterhouse, 1879 to be a junior subjective synonym of *Cautires* Waterhouse, 1879. Almost all species previously classified in *Bulenides* were studied, transferred to *Cautires* and they were placed in *C. obsoletus* and *C. pauper* groups, both proposed here. The *C. obsoletus* species group from Indo-Burma is reviewed and seven species, which are new to science, are described: *Cautires bolavensis* sp. n., *C. matsudai* sp. n., *C. kundratai* sp. n., *C. dembickyi* sp. n., *C. hergovitsi* sp. n., *C. jendeki* sp. n., and *C. yunnanus* sp. n. These species are placed in the *Cautires obsoletus* group. *C. testaceus* (Pic, 1921) and *C. regalis* (Kleine, 1929) from the same region are redescribed and placed in the *C. obsoletus* group. A key to the *C. obsoletus* species group from Indo-Burma is presented, and their distribution and biology are briefly discussed. The following new combinations are proposed for species transferred from *Bulenides* and placed in the *Cautires obsoletus* group: *Cautires adventicius* (Kleine, 1926), comb. n., *C. apicalis* (Pic, 1925), comb. n., *C. ater* (Pic, 1921), comb. n., *C. atropunctatus* (Pic, 1925), comb. n., *C. basilanus* (Pic, 1925), comb. n., *C. adumbratus* (Kleine, 1926), comb. n., *C. aterrimus* (Kleine, 1926), comb. n., *C. bicoloratus* (Kleine, 1930), comb. n., *C. coccineus* (Kleine, 1930), comb. n., *C. cognatus* (Bourgeois, 1883), comb. n., *C. corporaali* (Pic, 1921), comb. n., *C. duplicatus* (Kleine, 1928), comb. n., *C. imitator* (Kleine, 1930), comb. n., *C. inhumeralis* (Pic, 1921), comb. n., *C. javanicus* (Bourgeois, 1883), comb. n., *C. lineatus* (Pic, 1921), comb. n., *C. longissimus* (Pic, 1921), comb. n., *C. obsoletus* (Waterhouse, 1878), comb. n., *C. nebulosus* (Kleine, 1930), comb. n., *C. nigromaculatus* (Pic, 1925), comb. n., *C. pudicus* (Kleine, 1931), comb. n., *C. purpureus* (Pic, 1922), comb. n., *C. regalis* (Kleine, 1929), comb. n., *C. reticulatus* (Kleine, 1930), comb. n., *C. rianganus* (Pic, 1925), comb. n., *C. sijthoffi* (Kleine, 1926), comb. n., *C. singularithorax* (Pic, 1925), comb. n., *C. testaceus* (Pic, 1921), comb. n., and *C.*

triangularis (Kleine, 1930), comb. n. The following species are transferred to the *Cautires pauper* group: *C. pauper* (Waterhouse, 1878), comb. n., *C. arens* (Kleine, 1926), comb. n., *C. argilosus* (Kleine, 1926), comb. n., *C. lyciformis* (Kleine, 1932), comb. n., *C. malayensis* (Kleine, 1930), comb. n., *C. nigricolor* (Pic, 1925), comb. n., and *C. turbidus* (Waterhouse, 1878), comb. n. Several species are transferred to *Cautires* without an assignment to the species group: *C. aridus* (Kleine, 1926), comb. n., *C. basalis* (Pic, 1925), comb. n., *C. dubius* (Waterhouse, 1878), comb. n., *C. flavoreticulatus* (Kleine, 1932), comb. n., *C. longeareolatus* (Kleine, 1936), comb. n., *C. papuanus* (Kleine, 1935), comb. n., *C. philippinensis* (Kleine, 1930), comb. n., *C. socius* (Kleine, 1935), comb. n. Several homonyms in *Cautires* resulted from new combinations and new names are proposed: *Cautires pseudoapicalis* nom. n. (for *Cautires apicalis* (Kleine, 1926) preoccupied by *Cautires apicalis* (Pic, 1925)), *Cautires borneensis* nom. n. (for *Cautires bicoloratus* (Kleine, 1932) preoccupied by *Cautires bicoloratus* (Kleine, 1930)), *Cautires sundaicus* nom. n. (for *Cautires javanicus* (Kleine, 1927) preoccupied by *Cautires javanicus* (Bourgeois, 1883)), *Cautires fruhstorferi* nom. nov. (for *Cautires lineatus* (Pic, 1921) preoccupied by *Cautires lineatus* (Hope in Gray, 1831)), *Cautires slamatensis* nom. nov. (for *Cautires obsoletus* (Kleine, 1926) preoccupied by *Cautires obsoletus* (Waterhouse, 1878)), *Cautires kinabalensis* nom. nov. (for *Cautires lyciformis* (Kleine, 1932) preoccupied by *Cautires lyciformis* (Pic, 1922)), *Cautires johannesi* nom. n. (for *Cautires nigricolor* (Pic, 1925) preoccupied by *Cautires nigricolor* (Pic, 1922)), *Cautires africanus* nom. n. (for *Cautires reticulatus* (Kleine, 1930) preoccupied by *Cautires reticulatus* (Kleine, 1930)), *Cautires congoensis* nom. n. (for *Cautires triangularis* (Kleine, 1930) preoccupied by *Cautires reticulatus* (Kleine, 1930)).

Key words. Taxonomy, new species, new combinations, Oriental region.

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Abstrakt

Tato studie se zabývá síťokřídlymi brouky z rodu *Cautires* Waterhouse, 1879, jež se vyskytují převážně v tropických deštných lesích Orientálního regionu. Zamýšlím se nad morfologií a vztahy v podčeledi Metriorrhynchini a navrhuji aby se rod *Bulenides* Waterhouse, 1879 stal mladším synonymem rodu *Cautires* Waterhouse, 1879. Téměř všechny druhy, které byly dříve zařazeny do rodu *Bulenides* byly studovány a převedeny do rodu *Cautires*, byly rozděleny do nově navržených skupin *C. obsoletus* a *C. pauper*. Byla provedena revize druhové skupiny *C. obsoletus* z Indočíny, během revize bylo objeveno a popsáno sedm nových druhů: *Cautires bolavensis* sp. n., *C. matsudai* sp. n., *C. kundratai* sp. n., *C. dembickyi* sp. n., *C. hergovitsi* sp. n., *C. jendeki* sp. n., a *C. yunnanus* sp. n. Tyto druhy byly umístěny do druhové skupiny *Cautires obsoletus*. Také byl znovu proveden popis druhů *C. testaceus* (Pic, 1921) a *C. regalis* (Kleine, 1929), které pochází ze stejné oblasti, na základě společných znaků, byly také zařazeny do druhové skupiny *C. obsoletus*. Dále byl zpracován klíč k určování druhů ze skupiny *C. obsoletus*, a rovněž byla popsána jejich biologie a morfologie. Pro druhy, jež byly přesunuty z rodu *Bulenides* do skupiny *Cautires obsoletus* byly navrženy tyto kombinace: *Cautires adventicius* (Kleine, 1926), comb. n., *C. apicalis* (Pic, 1925), comb. n., *C. ater* (Pic, 1921), comb. n., *C. atropunctatus* (Pic, 1925), comb. n., *C. basilanus* (Pic, 1925), comb. n., *C. adumbratus* (Kleine, 1926), comb. n., *C. aterrimus* (Kleine, 1926), comb. n., *C. bicoloratus* (Kleine, 1930), comb. n., *C. coccineus* (Kleine, 1930), comb. n., *C. cognatus* (Bourgeois, 1883), comb. n., *C. corporaali* (Pic, 1921), comb. n., *C. duplicatus* (Kleine, 1928), comb. n., *C. imitator* (Kleine, 1930), comb. n., *C. inhumeralis* (Pic, 1921), comb. n., *C. javanicus* (Bourgeois, 1883), comb. n., *C. lineatus* (Pic, 1921), comb. n., *C. longissimus* (Pic, 1921), comb. n., *C. obsoletus* (Waterhouse, 1878), comb. n., *C. nebulosus* (Kleine, 1930), comb. n., *C. nigromaculatus* (Pic, 1925), comb. n., *C. pudicus* (Kleine, 1931), comb. n., *C. purpureus* (Pic, 1922), comb. n., *C. regalis* (Kleine, 1929), comb. n., *C. reticulatus* (Kleine, 1930), comb. n., *C. rianganus* (Pic, 1925), comb. n., *C. sijthoffi* (Kleine, 1926), comb. n., *C. singularithorax* (Pic, 1925), comb. n., *C. testaceus* (Pic, 1921), comb. n., and *C. triangularis* (Kleine,

1930), comb. n. Následující druhy byly přesunuty do skupiny *Cautires pauper* : *C. pauper* (Waterhouse, 1878), comb. n., *C. arens* (Kleine, 1926), comb. n., *C. argilosus* (Kleine, 1926), comb. n., *C. lyciformis* (Kleine, 1932), comb. n., *C. malayensis* (Kleine, 1930), comb. n., *C. nigricolor* (Pic, 1925), comb. n., and *C. turbidus* (Waterhouse, 1878), comb. n. Několik druhů bylo zařazeno skupiny *Cautires* bez bližšího určení: *C. aridus* Kleine, 1926), comb. n., *C. basalis* (Pic, 1925), comb. n., *C. dubius* (Waterhouse, 1878), comb. n., *C. flavoreticulatus* (Kleine, 1932), comb. n., *C. longeareolatus* (Kleine, 1936), comb. n., *C. papuanus* (Kleine, 1935), comb. n., *C. philippinensis* (Kleine, 1930), comb. n., *C. socius* (Kleine, 1935), comb. n. Pro homonyma, jež vznikla jako výsledek revize v rodě *Cautires* byla navržena nova jména: *Cautires pseudoapicalis* nom. n. (za *Cautires apicalis* Kleine, 1926 za obsazený *Cautires apicalis* (Pic, 1925)), *Cautires borneensis* nom. n. (za *Cautires bicoloratus* Kleine, 1932 za obsazený *Cautires bicoloratus* (Kleine, 1930)), *Cautires sundaicus* nom. n. (za *Cautires javanicus* Kleine, 1927 za obsazený *Cautires javanicus* (Bourgeois, 1883)), *Cautires fruhstorferi* nom. n. (za *Cautires lineatus* (Pic, 1921) za obsazený *Cautires lineatus* (Hope in Gray, 1831), *Cautires slamatensis* nom. nov. (za *Cautires obsoletus* (Kleine, 1926) za obsazený *Cautires obsoletus* (Waterhouse, 1878)), *Cautires kinabalensis* nom. nov. (za *Cautires lyciformis* (Kleine, 1932) za obsazený *Cautires lyciformis* Pic, 1922), *Cautires johannesi* nom. n. (za *Cautires nigricolor* (Pic, 1925) za obsazený *Cautires nigricolor* Pic, 1922)), *Cautires africanus* nom. n. (za *Cautires reticulatus* Kleine, 1930)) za obsazený *Cautires reticulatus* (Kleine, 1930), *Cautires congoensis* nom. n. (za *Cautires triangularis* Kleine, 1930 za obsazený *Cautires reticulatus* (Kleine, 1930)).

Klíčová slova: Taxonomie, nové druhy, nové kombinace, Orientální region.

Declaration

I wrote the bachelor's thesis myself under the leadership of Doc. Ing. Ladislav Bocák Ph D, and I cited all secondary literature.

In Olomouc, 25th April 2009

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Pavla Dudková

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2. Introduction

The extraordinary diversity of the Oriental lycid fauna has been recently described in several geographically restricted taxonomic revisions (*e.g.*, Dvorak and Bocak, 2007; Bocak 1998, 2000, 2007; Bocak *et al.*, 2006). These studies showed how insufficient is our present knowledge. The high level of endemism regularly found in net-winged beetles calls for an extensive collecting program and alpha-taxonomic revisions. I must start with an inventory of the species level biodiversity if lycids may be used for evolutionary studies. Especially, the Indo-Burman fauna remains poorly known, despite the fact the area has been recognized as the “hot spot” of biodiversity (Myers *et al.*, 2000; Beck *et al.*, 2007) and is considered as one of highly endangered (Sodhi *et al.* 2004).

Cautires Waterhouse, 1879 is placed in *Metriorrhynchini*, which are the most diverse tribe of *Lycidae* (Bocak, 2002; Bocak and Bocakova, 2008). *Metriorrhynchini* have full Gondwanan distribution except the Neotropical region (Bocak, 2002). The highest number of genera is known from Australia and New Guinea and only a few genera are recorded from the Afrotropical and Oriental regions. The genera of Oriental *Metriorrhynchini* can be divided in two groups based on distribution of their species richness. The majority of Oriental species belongs to genera *Metanoeus* Waterhouse, 1879 (23 spp.), *Xylobanus* Waterhouse, 1879 (167 spp.), *Cautires* Waterhouse, 1879 (over 100 spp.), and *Bulenides* Waterhouse, 1879 (45 spp.) which occur either only in South East Asia (*Metanoeus* and *Bulenides*) or are widespread in the Afrotropical and Oriental regions (*Xylobanus*, *Cautires*). These genera do not occur east of the Weber line (Bocak, 2002). Among numerous genera of Australian *Metriorrhynchini* only several occur also in the Oriental region. These genera are regularly known in high numbers of species from the Wallacea and New Guinea and they are represented by a limited number of species in the Oriental region: *Microtrichalus* Pic, 1921 (about 10 species), *Diatrichalus* Kleine, 1926 (4 species), and *Metriorrhynchus* Gemminger et Harold, 1869 (16 species) (Bocak, 2002, 2007, Bocak *et al.*, 2006, Bocak, 2007). Altogether over 100 species of *Cautires* are recorded from the eastern part of the Oriental region (Kleine 1933, Bocak, 2002, Bocak, 2007), with highest diversity in the rain forest habitats of the Great Sundas, Peninsular Malaysia, Northern Thailand, Laos, and Vietnam.

Here, I discuss the position of *Bulenides* and I compare morphology of *Cautires* and *Bulenides* from various regions in relation to the previous delimitation of these genera (Waterhouse, 1879; Bocak, 2002). The goal of this study is to critically revise the extent of variability of characters and redefine the classification of the lineage. As our present knowledge of Metriorrhynchini is based mostly on publications by M. Pic and R. Kleine from the first half of 20th century (e.g., Pic, 1921, 1922, 1925a, b, c, Kleine, 1926a, b, c, 1929, 1930b, c, 1931, 1932, 1935, 1936), the another goal of this study, are descriptions of several new *Cautires* from Laos, Thailand, China and India from the newly collected material.

2.1. Taxonomic History and Distribution

Metriorrhynchines were treated as an independent lineage in Lycidae by Kleine (1933) and Bocak and Bocakova (1990). Later, Bocak and Bocakova (2008) placed Metriorrhynchini as a tribe in the redefined subfamily Lycinae, but their relationships to other tribes within the subfamily remain contentious. The generic classification of Metriorrhynchini has been recently revised by Bocak (2002). *Cautires* and *Bulenides* were considered closely related and the only consistent diagnostic character were patterns of the pronotal carinae (Figs 1–9). The detailed classification of the genera was beyond the scope of the study due to inadequate original descriptions which prevent reliable identification of most species. Therefore, mostly the type species were studied in detail and a limited number of additional species was used for character coding in the phylogenetic analysis.

All species rich Oriental genera were described by Waterhouse (1879): *Metanoeus*, *Bulenides*, *Cautires*, and *Xylobanus*. These genera are based on differences in the number of longitudinal elytral costae and the patterns of pronotal ridges. Waterhouse (1879) described only four *Bulenides* from the Oriental region. Later, Pic (1921, 1922, 1925a, b, c) and Kleine (1926, 1929, 1930a, b, c, d, 1931, 1932, 1935, 1936) described several dozens of *Bulenides*. Kleine (1933a) presented 45 species of *Bulenides* in the world catalogue. Almost all species were described from the Oriental region and only single species, *Bulenides purpureus* Pic, 1922, was reported from the Palearctic region (Bocakova and Bocak, 2007). Unlike widespread *Cautires* and *Xylobanus*, all species classified with *Bulenides* occur only in the eastern part of the Oriental region and the highest numbers of

species are known from the tropical rain forests in Sumatra (6 spec.), Peninsular Malaysia (3 spec.), Borneo (6 spec.) and Java (10 spec.), with much higher diversity in the rain forests in Western part of the island (Fig. 10). The northern limits of the range reach to Thailand, Laos, East India and Taiwan. Easternmost limit of the range reach the Philippines. No record of *Bulenides* is available from the Lesser Sundas and the genus does not cross the Wallace line to the Sulawesi. Throughout its range *Bulenides* occurs sympatrically with *Cautires* and *Xylobanus*.

2.2. Biology

Net-winged beetles occur predominantly in the humid forest habitats, because larvae live in decomposed wood or in soil with high content of organic material (Bocak and Matsuda, 2003). *Bulenides* and *Cautires* are much less common in regions with long spell of drought such as central Thailand or eastern Java. Larvae of *Bulenides* have not yet been found, but various larval instars of *Cautires* were identified by breeding or using molecular markers (Hayashi, 1986, Bocak and Matsuda, 2003, Levkanicova and Bocak, 2009). Considering their close relationships and occurrence of adults in same habitats, I can assume similar bionomical requirements in both genera.

Cautires and *Bulenides* adults, like the other groups from the tribe Metriorrhynchini, usually stay under canopy on leaves of the herbal undergrowth and shrubs. They fly slowly and only for a short distance. The highest flight activity was observed in early morning hours and shortly before sunset. Because of the soft body susceptible to desiccation and ineffective flight, the natural barriers such as sea channels or drier habitats unsuitable for larval development limit their dispersal. As a result, *Metriorrhynchini* occur as a rule in narrow ranges, and most species are known only from a single island or mountain range (Kleine, 1933a, Bocak, 2002).

Most species are brightly coloured and the colour patterns resemble unrelated, sympatrically occurring species of net-winged beetles or other insects. Their bodies contain reeking and bitter substances (Moore and Brown, 1981, Eisner *et al.*, 2008), which protect them from potential predators. The species from Laos, Thailand and East India are yellow or light brown and their appearance is quite similar to other sympatrically occurring genera of Metriorrhynchini such as *Xylobanus* or other lycids (*Calochromus* Guérin Méneville,

1833, *Plateros* Bourgeois, 1879, etc.). As unrelated taxa are often similar in one habitat or geographical region, these colour-pattern and body-shape similarities are supposedly the result of Müllerian type of evolution of mimicry.

3. Materials and methods

The revision is based on the male adult semaphoront. The species delineation and diagnoses are based mainly on the morphology of male genitalia and the relative size of eyes in males. Therefore, female specimens could not be reliably identified. All species are similar in external morphology and the characters observable in females vary to such a degree that I preferred not to include females in the type series.

Male genitalia of all available specimens were dissected. Dry mounted specimens material was transferred to 50% ethanol for several hours, then the apical part of the abdomen of each specimen was removed and shortly macerated in hot 10% KOH to clean them of muscles and fat body. Photographs of diagnostic characters were taken by a digital camera attached to a stereoscopic microscope. Illustrations were derived from adjusted photographs. Morphometric data from adult males were measured with an ocular grid on an Olympus SZX-12 binocular dissecting microscope. The following measurements were taken: BL – body length, from the front of head to the apex of elytra; HW – width at the humeri; PW – pronotal width, measured at the widest part; PL – pronotal length at midline; EL – length of elytra; Edist – minimum frontal distance between eyes; Ediam – maximum eye diameter in lateral view.

3.1. Depositories

BMNH	Natural History Museum, London United Kingdom
KMCT	Kiyoshi Matsuda Collection, Takarazuka city, Japan
LMBC	Department of Zoology, Palacky University, Olomouc, Czech Republic
MHNP	Museum d'histoire naturelle, Paris, France
MIZW	Museum and Institute of Zoology PAN, Warszawa, Poland
ZMAC	Zoological Museum of the University of Amsterdam, The Netherlands

4. Taxonomy

4.1. *The relationships of Cautires Waterhouse, 1879 and Bulenides Waterhouse, 1879.*

Bocak (2002) analyzed morphology of *Metriorrhynchini* and proposed the sister position of *Bulenides* and *Caenioxylobanus* Pic, 1922 and these formed either paraphylum with respect to *Cautires* or a clade formed by *Cautires*, *Xylobanus* and some small genera. The relationship of these two genera with *Cautires* and *Xylobanus* is supported by the similar shape of the internal sac (Figs 23–30). Although some differences between these genera were found in the mouthparts and the morphology of metanotum, these characters had very low consistency with the tree and did not support relationships with any supposed clade (Bocak, 2002).

Studying extensive material of *Cautires*, *Bulenides*, *Caenioxylobanus*, and *Xylobanus*, I found that all species of *Bulenides* share a very similar shape of male genitalia with *Cautires* (Figs 23–30), *Caenioxylobanus* and most *Xylobanus*. These genera have the lanceolate, more or less slender phallus and the membranous internal sac with two sickle shaped thorns on which is based their close relationships. The shape of male genitalia differs substantially from those of metriorrhynchines occurring mostly in the Australian region (e.g., *Porrostoma* Castelnau, 1838, *Metriorrhynchus* Gemminger et Harold, 1869, *Cautiromimus* Pic, 1926; Kleine, 1933, Bocak, 2002) or from genera with shortened first primary elytral costa (Trichalina: *Microtrichalus* Pic, 1921; *Leptotrichalus* Kleine, 1926; *Diatrichalus* Kleine, 1926, etc.; Bocak, 2002). Therefore I consider *Cautires*, *Xylobanus*, *Caenioxylobanus*, and *Bulenides* as closely related genera (the *Cautires* clade) quite distant from the clades represented by *Porrostoma*, *Trichalus* and genera related to them (Bocak, 2002).

The genera within the *Cautires* clade differ in the number of elytral costae: *Xylobanus* and *Caenioxylobanus* having only four longitudinal costae and *Cautires* and *Bulenides* four strong primary and five apparently weaker secondary costae. Additionally, *Cautires* has often fully developed pattern of ridges forming four cells at the frontal margin, two lateral cells and one median cell in the position similar to those of *Bulenides* or the lateral ridges are sometimes reduced in various degree and only frontal and median cells are

more or less distinct. *Bulenides* has strongly reduced pronotal ridges, which form the continuous longitudinal ridge with a slender areola in the basal part of the median longitudinal ridge (Fig. 9). Although species with missing lateral carinae from the Oriental region were placed regularly in *Bulenides*, I found similar, very high variability in the shape of the pronotal carinae in *Cautires* from all parts of its range. Further species with the various degree of reduction of the lateral pronotal carinae were found in collections from the Afrotropical region (Figs 1–8). These species share very similar shape of pronotum with other sympatrically occurring species of *Cautires* and without any doubt are not closely related with Oriental species classified in *Bulenides*. The variability in the number and the strength of pronotal carinae is known also in species previously classified in *Bulenides* (see Supplement for taxonomic decisions). Similarly, I observed reduced pronotal carinae in several *Xylobanus* species, but this character has not yet been used for definition of any genus level taxon within or in relationships with *Xylobanus*. Taking into consideration the fact that the only character distinguishing *Cautires* and *Bulenides* is the reduced amount of pronotal carinae (Waterhouse, 1879), that the degree of reduction is variable, and that similar reduction of carinae is assumed to originate several times in unrelated species groups (see definition of species groups further), I hereby consider *Bulenides* to be a part of the monophylum that includes both *Bulenides* and *Cautires*.

4.2. Taxonomic status of *Bulenides*.

Both genera, *Bulenides* and *Cautires*, were proposed in the same publication without formal name designation by Waterhouse (1878) as “genus 21” (*Bulenides*) and genus 22 (*Cautires*). A year later, Waterhouse (1879) formally named these taxa as genera *Bulenides* (p. 34) and *Cautires* (p. 36). Under provision of the Code (ICZN, 1999) both names were published at the same time (Art. 21) and I use the power of the first revising author (Art. 24.2) and I consider *Bulenides* to be a junior subjective synonym of *Cautires*. The reason for this decision is the considerably higher number of species placed in *Cautires* (189 species, Kleine, 1933) and very extensive range of the genus. *Bulenides* was cited only from the Oriental region and the adoption of this name as valid would result in much more extensive changes in the nomenclature.

The Oriental metriorrhynchine lycids with single narrow areola in the pronotum and nine longitudinal costae in the elytra were placed by previous students in *Bulenides*. Pic (1921, 1922, 1925a, b, c) and Kleine (1926a, b, c, 1929, 1930b, c, 1931, 1932, 1935, 1936) classified further species in the genus and they used the patterns of pronotal carinae as the only diagnostic character for classification at the genus level. *Bulenides* as understood by these authors has served in most cases as an easily recognizable and useful taxon, although apparently two types of pronotum indicate polyphyly of the genus (see species group definitions below). *Bulenides*, considering its here supposed polyphyly, is no longer acceptable for classification, and therefore I propose two informal species groups in *Cautires* defined based on two types of the pronotum. Here, the *Cautires obsoletus* and *C. pauper* species groups are designated to intercept most species previously classified in *Bulenides*. The list of species transferred to *Cautires*, their classification in the species groups and the list of the studied material are given in the Supplement. The position of further about two hundreds of species until now classified in *Cautires* is beyond the scope of this study.

5. The *Cautires obsoletus* and *C. pauper* species groups

As defined here, the species groups contain *Cautires* species with only median lanceolate areola in the pronotum and previously classified in *Bulenides* (Kleine, 1933, Bocak, 2002). I refer thirty-nine and nine taxa to *C. obsoletus* and *C. pauper* groups, respectively. The species from Indo-Burma are revised and some species are newly described.

Differential diagnoses. The species classified in both species groups share all diagnostic characters with *Cautires*: four primary and five secondary longitudinal costae and lanceolate phallus with membranous internal sac bearing at base two sickle-shaped thorns. Both species groups are characteristic in the presence of only single median areola with seldom present vestiges of lateral carinae, but they differ in the shape of the pronotum and in most cases also in the morphology of phallus.

The species classified in the *C. obsoletus* species group have the pronotum with obtuse frontal angles and generally triangular shape (Fig. 9, 20–22) and their phallus is regularly very slender, almost parallel-sided and if widened then in the basal or middle part

(Figs 23–30). *Cautires obsoletus* (Waterhouse, 1878) was designated as the type species of *Bulenides* by subsequent designation (Bourgeois, 1891). *C. obsoletus* occurs in Java; other species are known from the eastern part of the Oriental region (Fig. 10).

Species classified in the *C. pauper* species group have broad pronotum with well marked frontal pronotal angles (Fig. 7, 8) and the phallus of most species is often short and wide apically. *C. pauper* was classified in *Bulenides* by Waterhouse (1879) when the genus was proposed. This species is common and widespread in Sumatra. Further species occur in the eastern part of the Oriental region sympatrically with *C. obsoletus* group.

5.1. Redescription of *Cautires* with single pronotal areola

♂ Body medium-sized, 5.75 – 7.75 mm long, dorsoventrally flattened, slender, coloration variable from dark-brown to black. Pronotum and elytra mostly brown, red or orange. Head small, hypognathous, partly hidden in pronotum, with short pubescence (Figs 12, 13). Vertex slightly concave, shiny, with sparse setae; genae concave, pubescent (Fig. 11). Eyes slightly elliptical, hemispherically prominent and large to relatively small, with maximum diameter 0.38 – 0.50 mm in lateral view. Labrum small, almost 1.5 times longer than wide, covered with light-brown long setae, membranous basally, frontal margin concave, rounded, straight at base; hypopharynx slender, membranous (Fig. 19). Mandibles short, strongly curved, slightly wider in basal part, slender apically, without any teeth (Fig. 16). Maxillary palpi slender, short; 4-segmented; basal palpifer long, widest in middle, palpomere 1 shortest, palpomere 2 almost as long as apical one, wider apically, palpomere 3 short, apical palpomere slender, pointed at apex; cardo slender; stipes robust, heavily covered with setae, galea robust, lacinia small (Fig. 17). Labrum slender, with long setae apically (Fig. 19). Labial palpi 3-segmented, apical palpomere pointed at apex (Fig. 18). Antennae 11-segmented, robust, acutely serrate to flabellate, lamellae moderately long; scapus 3 times longer than pedicel; antennomeres 3-10 similar in size and shape, apical antennomere long and slender; antennae with dense, short, black setae (Figs 14–15). Pronotum usually wider than long at midline, widest at basal angles, narrowed frontally, posterior angles acutely projected. Pronotum wide in *C. pauper*, much narrower in *C. obsoletus*. Median carina attached to both frontal and basal margins, with broad median areola in middle of disc or

adjacent to posterior margin of pronotum (Fig. 21–22), seldom with vestiges of lateral carinae (Fig. 20). Elytra flat, weakly sclerotized, parallel-sided to moderately widened apically, widest in posterior third. Each elytron with four primary strong, elevated longitudinal costae; secondary costae thinner, longitudinal costae connected by transverse costae, cells regular, forming squares, rectangles or circles. Legs slender, laterally compressed, covered with dense pubescence, tarsi 5-segmented. Phallus lanceolate, mostly slender; phallobase circular, paramerae absent (Figs 23–30).

Females. Body slightly larger, robust; without sexual dimorphism in coloration; eyes smaller, antennae acutely serrate, slightly shorter than in males.

5.2. Review of the species group *Cautires obsoletus* from Continental Asia

***Cautires dembickyi* sp. n.**

Figures 20, 26

Differential diagnosis. *C. dembickyi* sp. n. is the only species which has been found in North-eastern India. It is similar in body shape and colouration to *C. testaceus* from Southern Burma which differs in the size of eyes and the shape of male genitalia (Fig. 26).

Description. ♂ Body small, dorsoventrally flattened, slender, body dark brown to black, pronotum and elytra reddish brown. Head small, hypognathous, partly hidden in pronotum, vertex slightly concave, without setae. Eyes small, elliptical, strongly convex, frontal distance between eyes 1.50 times eye diameter. Antennae shortly flabellate, 11-segmented, covered with short light coloured setae. Maxillary palpi slender, apical palpomere pointed; basal palpomere long, wider in the middle; labial palpi short and apical palpomere slender. Pronotum and elytra densely pubescent, pubescence brightly coloured. Pronotum 1.27 times wider than long, slightly concave frontally, basal and lateral margins slightly elevated, strengthen by ridge-like edge; posterior angles sharply projected two costae form distinctive median areola attached to basal part of pronotum, two less conspicuous lateral areolae at frontal margin (Fig. 20); bottoms of areolae dark brown, ridges bright orange. Elytra with

four primary longitudinal costae; secondary costae weaker, cells regular, rectangular in shape. Legs laterally compressed, covered with light coloured setae, two apical tarsomeres light brown, with light setae. Male genitalia with wide apical part of phallus (Fig. 26). Female unknown.

Measurements. BL 7.30 mm, PL 1.21 mm, PW 1.54 mm, HW 1.89 mm, Edist 0.58 mm, Ediam 0.39 mm.

Type material. ♂ holotype, NE India, Meghalaya, 3 km E of Tura, 500–1150m 25° 30' N, 90° 14' E. 1.–8. v. 1999, L. Dembicky and P. Pacholatko leg. (LMBC).

Distribution. North-eastern India, Meghalaya.

Etymology. The specific epithet "*dembickyi*" is a patronym in honor of L. Dembicky (Brno), the collector of the holotype.

***Cautires bolavensis* sp. n.**

Figure 25

Differential diagnosis. *C. bolavensis* sp. n. differs from other sympatrically occurring species in the very slim and long apical part of the phallus and in the median position of paired spines (Fig. 25).

Description. ♂ Body small, dorsoventrally flattened, slender, body and appendages dark-brown to black, pronotum and elytra reddish brown with dense red pubescence. Head small, partly hidden in pronotum, clypeus slightly concave, without setae. Eyes large, hemispherically prominent, their frontal interocular distance 0.86 times eye diameter. Antennae shortly flabellate, 11-segmented covered with short lightly coloured setae. Maxillary palpi slender, apical palpomere pointed; labial palpi short similar in shape. Pronotum flat, slightly longitudinal, 1.15 times longer at midline than width at base; frontal

margin lightly concave; basal and lateral margins slightly elevated, pronotum with slender median areola, attached to middle of basal margin of pronotum, posterior angles acutely projected, bottom of areolae dark brown to black, costae brightly coloured, dark orange. Elytra flat, with separately rounded apices, well developed four primary longitudinal costae; secondary costae considerably weaker, cells regular. Legs laterally flattened, covered with light coloured setae, two apical tarsomeres light brown. Male genitalia with phallus slender and parallel-sided in apical half (Fig. 25). Female unknown.

Measurements. BL 7.35 mm, PL 1.25 mm, PW 1.45 mm, HW 1.89 mm, Edist 0.48 mm, Ediam 0.56 mm.

Type material. ♂ holotype, Laos south., Attapu prov., Bolaven Plateau, 18.–30. iv. 1999, 15 km SE of Ban Houaykong, Nong Lom (lake) env., N 15°02' E 106° 35', alt. 800 m, E. Jendek & O. Šauša leg. (LMBC).

Distribution. *C. bolavensis* occurs in the Bolaven Plateau in Southern Laos (Attapu Province).

Etymology. *C. bolavensis* sp. n. is named according to the type locality – the Bolaven Plateau in Southern Laos.

***Cautires jendeki* sp. n.**

Figures 21, 23

Differential diagnosis. The external morphology of *C. jendeki* does not provide any diagnostic character and the reliable identification of this species is only possible on the basis of the shape of male genitalia. *C. jendeki* sp. n. is characteristic in the very narrow basal part of phallus (Fig. 23).

Description. ♂ Body small, flattened and narrow, dark brown to black. Head small, completely covered by pronotum; clypeus slightly concave, with sparse setae. Eyes small, hemispherically prominent, their frontal interocular distance 1.59 times eye diameter. Antennae shortly flabellate, black, 11-segmented covered with short silver setae. Maxillary palpi slender, apical segment pointed, labial palpi similar in shape. Pronotum and elytra reddish brown to red, densely pubescent. Pronotum 1.29 times wider than length at midline, projected frontally; basal and lateral margins elevated, two costae form slender median areola, adjacent to middle of posterior margin of pronotum; posterior angles sharply projected (Fig. 21); bottom of areolae dark brown, costae brightly orange. Elytra with separately rounded apices, each with four primary longitudinal costae; secondary costae weaker, cells regular, squared and rectangular. Legs black with light setae, two apical tarsomeres lighter, with yellow setae. Male genitalia with very slender phallus (Fig. 23). Female unknown.

Measurements. BL 7.45 mm, PL 1.22 mm, PW 1.67 mm, HW 1.85 mm, Edist 0.56 mm, Ediam 0.35 mm.

Type material. ♂ holotype, North Laos, 5.–11. V. 1997 20 km NW, Louang Namtha, N 21° 09.2, E 101° 18.7, alt. 900 m, E. Jendek & O. Šauša leg. (LMBC).

Distribution. *C. jendeki* sp. n. is known so far in the unique specimen, which was collected in Northern Laos. The species occurs in lower mountain forests.

Etymology. The specific epithet "*jendeki*" is a patronym in honor of E. Jendek (Bratislava) who collected the holotype.

***Cautires hergovitsi* sp. n.**

Figure 27

Differential diagnosis. *C. hergovitsi* sp. n. is similar to *C. matsudai* sp. n. and *C. yunnanus* sp. n. from Northern Thailand and Yunnan. The species can be reliably identified by the wide apical part of phallus (Fig. 27).

Description. ♂ Body small, slender, dark brown to black, pronotum and elytra reddish brown, both densely covered with short reddish setae. Head small, partly hidden in pronotum, eyes small, hemispherically prominent, their frontal distance 1.64 times eye diameter. Antennae shortly flabellate, black, 11-segmented, densely pubescent. Maxillary palpi slender, apical palpomere pointed; labial palpi similar in shape. Pronotum 1.29 times wider than length at midline, projected frontally; basal and lateral margins elevated, posterior angles of pronotum are sharply projected; disc with slender median areola, attached to middle of posterior margin of pronotum; areolae dark brown, margins and costae brightly orange. Elytra flat, with four primary longitudinal costae; secondary costae weaker, cells small, regular. Legs black, covered with white setae, two terminal tarsomeres light brown, with yellow setae. Male genitalia with robust phallus (Fig. 27). Female unknown.

Measurements. BL 7.40 mm, PL 1.23 mm, PW 1.59 mm, HW 1.77 mm, Edist 0.51 mm, Ediam 0.30 mm.

Type material. ♂ holotype, Laos, 15 km N Louang Namtha, 750m 21.07N 101.21E 13.–24. IV 1997, M. Hergovits leg. (LMBC).

Distribution. Laos, Province Louang Namtha.

Etymology. The specific epithet "*hergovitsi*" is a patronym in honor of M. Hergovits (Bratislava) who provided us with the specimen of this species.

***Cautires yunnanus* sp. n.**

Figures 22, 28

Differential diagnosis. This species is closely related to the species from Northern Thailand. The species can be identified by the characteristic shape of phallus with the slender basal and strongly widened apical part of the phallus (Fig. 28).

Description. ♂ Body small, 7.75 mm long, slender, dark brown to black. Head small, partly hidden by pronotum; clypeus convex, with sparse, long setae. Eyes small, hemispherically prominent, their interocular distance 1.58 times maximum eye diameter. Antennae shortly flabellate, black, 11-segmented, densely pubescent. Maxillary palpi slender, apical palpomere pointed; labial palpi similar in shape. Pronotum and elytra yellowish brown to orange, densely covered with red setae. Pronotum 1.16 times wider at base than length at midline, concave frontally, widest basally; posterior and lateral margins elevated, posterior angles considerably projected, sharp; disc of pronotum with longitudinal carina anteriorly, with slender areola posteriorly; vestiges of carinae in frontal part of pronotum and at lateral margins (Fig. 22). Elytra parallel-sided, flat, 3.60 times longer than their width at humeri, with four primary longitudinal costae and five weaker secondary costae. Legs slender, flattened, dark brown to black, with light pubescence. Male genitalia slender, phallus parallel-sided in apical part (Fig. 28). Female unknown.

Measurements. BL 7.75 mm, PL 1.21 mm, PW 1.54 mm, HW 1.79 mm, Edist 0.57 mm, Ediam 0.36 mm.

Type material. ♂ holotype, China, Yunnan, Jizu Shan, 2500 – 2700 m, 25.58N, 100. 21E, 6.–10. 7. 1994, Vit Kuban leg.

Distribution. China, province Yunnan, Northern Laos, province Phongsaly. *C. yunnanus* sp. n. is along with the Taiwanese *C. purpureus* the only species of this species group occurring in the Palaearctic region.

Etymology. The specific epithet "*yunnanus*" is derived from the name of the Chinese province Yunnan.

***Cautires matsudai* sp. n.**

Figures 11, 24

Differential diagnosis. *C. matsudai* sp. n. occurs in Northern Thailand. It differs from other similar species from Laos or Burma in the shape of male genitalia: the phallus is almost parallel-sided, only its apex is slightly widened (Fig. 24).

Description. ♂ Body small, slender, flattened, dark brown. Head small, partly hidden in pronotum; vertex slightly convex, with sparse pubescence. Eyes small, hemispherically prominent, their frontal distance 1.29 times eye diameter. Antennae shortly flabellate, black, 11-segmented, strongly covered with short, light pubescence. Maxillary palpi slender, apical palpomere pointed. Labial palpi similar in shape. Pronotum and elytra from yellowish brown to red, covered by red setae. Pronotum 1.52 longer than width at base, frontal part strongly projected, basal and apical margins elevated; posterior angles considerably projected, sharp; disc with longitudinal ridge and slender areola in posterior part. Elytra convex, with four primary costae, secondary costae form square to rectangular areoles. Legs long, slender, strongly flattened, dark brown to black, densely covered with light setae, two last tarsomeres lighter, with yellow setae. Male genitalia moderately robust, widest in apical third (Fig. 24). Female unknown.

Measurements. BL 5.75 mm, PL 0.90 mm, PW 1.38 mm, HW 1.61 mm, Edist 0.40 mm, Ediam 0.31 mm.

Type material. ♂ holotype, Thailand, Doi Suthep, ii.–iv. 1978, H. Akiyama (KMTC).

Distribution. Northern Thailand.

Etymology. The specific epithet "*matsudai*" is a patronym in honor of K. Matsuda, who kindly lent the material for the present study from his collection.

***Cautires kundratai* sp. n.**

Figures 29

Differential diagnosis. *C. kundratai* sp. n. is so far the only species, which has been found in Eastern Thailand. The species is characteristic in the very narrow phallus, which is strongly narrowed apically (Fig. 29).

Description. ♂ Body small, slender, dorso-ventrally flattened, dark brown to black. Head small, hypognathous, almost as wide as frontal part of pronotum, vertex slightly convex, with sparse pubescence. Eyes small, hemispherically prominent, frontal interocular distance 1.20 times maximum eye diameter in lateral view. Antennae shortly flabellate, black, 11-segmented, with dense light coloured pubescence. Maxillary palpi slender, apical palpomere longest, pointed at apex. Labial palpi slender, similar in shape. Pronotum dark brown with orange margins, width at base 1.37 times length at midline, frontal margin slightly concave, basal and lateral margins elevated, posterior angles acutely projected, median areola very slender. Elytra dark orange, with four strong primary longitudinal costae, secondary costae weaker, cells regular, squared to rectangular. Legs dark brown to black, flattened, covered with light setae, two apical palpomeres black, with black setae. Male genitalia moderately robust, slightly constricted before middle (Fig. 29). Female unknown.

Measurements. BL 6.20 mm, PL 0.98 mm, PW 1.34 mm, HW 1.60 mm, Edist 0.46 mm, Ediam 0.39 mm.

Type material. ♂ holotype, East Thailand, Khao Krok, Kaeng Harg Naw, Chantha Buri, alt. 300 m, 25. iv. 1997, leg. S. Ohmomo (KMTC).

Distribution. Eastern Thailand.

Etymology. The specific epithet "*kundratai*" is a patronym in honor of R. Kundrata (Svatoborice- Mistrin, Czech Republic).

***Cautires regalis* (Kleine, 1929), comb. n.**

Bulenides regalis Kleine, 1929: 227.

Differential diagnosis. *C. regalis* is the only species from the *C. obsoletus* groups occurring in Bangladesh. The species differs from remaining species from continental Asia in the completely black pronotum. Although other species have often darker bottom of areolae in the pronotal disc, they have always the lightly coloured ridges and margins. The species is known only in single female and further material is needed for reliable delineation of this species.

Redescription. Body medium sized, slender, dark brown to black, only elytra reddish brown, with brightly coloured dense pubescence. Head small, partly hidden in pronotum, mat, with dense pubescence, eyes small, mandibles light brown, apical palpomere of maxillary palpi pointed, slightly lighter apically, antennae strongly serrate. Pronotum 1.48 times wider at base than length at midline, frontal margin rounded, projected anteriorly, frontal angles obtuse, rounded, lateral margins straight, posterior angles acutely projected backwards. Median areola slender, directly attached to middle of basal margin, connected with frontal margin by ridge forming one third of pronotal length. Scutellum black, deeply emarginate at apex. Elytra parallel-sided, with completely developed primary and secondary longitudinal costae in basal half of length, secondary costae vestigial apically. Male unknown.

Measurements. BL 7.90 mm, PL 1.12 mm, PW 1.92 mm, HW 2.20 mm.

Type material. ♀ holotype. [Bangladesh] Chandkhira, Sylhet, J. L. S. (BMNH).

Distribution. Bangladesh, Sylhet.

***Cautires testaceus* (Pic, 1921), comb. n.**

Bulenides testaceus Pic, 1921: 8.

Differential diagnosis. *C. testaceus* has slightly smaller eyes than *C. yunnanus*, which is similar in general appearance. The robust phallus enable reliable identification of this species (Fig. 30).

Description. ♂ Body small, slender, dark-brown to black, only pronotum and elytra reddish brown and covered with brightly coloured pubescence. Head small, partly hidden in pronotum. Eyes large, hemispherically prominent, their frontal interocular distance 1.53 times eye diameter. Antennae shortly flabellate, 11-segmented, densely covered with short setae. Pronotum flat, 1.17 times longer at midline than width at base; frontal margin lightly concave; with slender median areola, attached to middle of the basal margin of pronotum, posterior angles acutely projected. Elytra flat, with well developed four primary longitudinal costae; secondary costae considerably weaker, cells regular. Legs laterally flattened, covered with light coloured setae. Male genitalia as in Fig. 30. Female unknown.

Measurements. BL 6.15 mm, PL 1.04 mm, PW 1.24 mm, HW 1.62 mm, Edist 0.54 mm, Ediam 0.35 mm.

Type material. ♂ Holotype. [Myanmar] India, Pegu (= Bago) (MHNP).

Distribution. Southern Myanmar. Although Kleine (1933) reports this species also from Laos, Penang, and India, I have not found this species in any collection from these regions.

Species dubia

Cautires inapicalis (Pic, 1929), comb. n.

Bulenides inapicalis Pic, 1929: 71.

Remark. I have not found the type of this species from Vietnam although I had access to the Pic's collection in the Paris museum. Although the description is quite uninformative and short, it is apparent that the species belongs to *C. obsoletus* species group.

5. 3. Key to the identification of *C. obsoletus* species group from Indo-Burma

1. Eyes large, their diameter 1.1–1.2 times interocular distance, apical part of phallus parallel-sided, phallus slender, parallel-sided in apical half (Fig. 20) .. ***C. bolavensis* sp. n.**
 - Eyes smaller than their frontal interocular distance 2
2. Eye diameter at most 0.7 times frontal interocular distance 4
 - Eye diameter more than 0.7 times frontal interocular distance 3
3. Phallus parallel-sided in most of its length, only slightly wider in apical third (Fig. 24). The maximum eye diameter in the lateral view 0.78 times frontal interocular distance ***C. matsudai* sp. n.**
 - Phallus is the widest in its apical two fifths of length, getting narrow to the apex (Fig. 29). The maximum eye diameter in the lateral view 0.85 times frontal interocular distance ***C. kundratai* sp. n.**
4. Phallus robust, parallel-sided in whole length (Fig. 30)..... ***C. testaceus* Pic**
 - Phallus wider in middle (Fig. 25) or apical part of its length (Figs 23–24, 26–28)..... 5
5. Phallus wide in middle of apical part and gradually narrower towards middle and apex (Figs 26, 27)..... 6
 - Phallus almost parallel-sided in wider apical half 7
6. Phallus 6.5 times longer than wide at the widest part (Fig. 26)..... ***C. dembickyi* sp. n.**
 - Phallus 8.0 times longer than wide at the widest part (Fig. 27)..... ***C. hergovitsi* sp. n.**

7. The apical half of phallus slightly slenderer towards apex (Fig. 23)..... *C. jendeki* sp. n.
– The apical part of phallus parallel-sided (Fig. 28) *C. yunnanus* sp. n.

*The provided key enables identification of male specimens because female genitalia and size of eyes in females are very similar in *Cautires*. The differences in the shape of pronotum and antennae, body colouration or structure of pronotal ridges are minute and highly variable and they cannot support reliable identification. *Cautires regalis* is known only in female, and therefore was omitted from the key. Due to the inadequate description and unavailable type specimen, *C. inapicalis* was also omitted from the key.

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Appendices

1. Supplement

The list of *Cautires* species previously classified in *Bulenides* Waterhouse, 1879

All available species previously classified in *Bulenides* were reviewed and here I propose their revised classification within *Cautires*. I have not found any material for several species, which are placed in *Cautires* without assignment to species groups.

Cautires obsoletus group

Cautires adumbratus (Kleine, 1926), comb. n.

Bulenides adumbratus Kleine, 1926: 85.

Material examined: ♂ paratype. [Indonesia], Sumatra (without further data), Amsterdam 2004

1 ♂ 1 ♀. Philippine Is., E. M. Ledyard, B. M. 1925–491 (without further data), R. Kleine, det. (BMNH).

Cautires adventicius (Kleine, 1926), comb. n.

Bulenides adventicius Kleine, 1926: 84.

Material examined: ♂ paratype. [Indonesia], Sumatra (without further data), OBSOLETUS GROUP PT Amsterdam 2004

Cautires apicalis (Pic, 1925c), comb. n.

Bulenides apicalis Pic, 1925c: 9.

Material examined.: ♂ paratype. [Indonesia] Java occident. Pengalengan, 4000', 1893, H. Fruhstorfer (MHNP).

Cautires ater (Pic, 1921), comb. n.

Bulenides ater Pic, 1921: 8.

Material examined: ♂ holotype. [Indonesia], Sumatra (MNHP).

Cautires aterrimus (Kleine, 1926), comb. n.

Bulenides aterrimus Kleine, 1926: 83.

Type material. ♂ paratype. [Philippines] Luzon, Prov. Nueva Viscaya, Boetcher, Lunugan, 4000 ft., 2. v. 1916 (ZMAC).

Cautires atropunctatus (Pic, 1925a), comb. n.

Bulenides atropunctatus Pic, 1925a: 37.

Material examined: ♂ holotype. [Philippines] N. Palawan, Binaluan, Nov. – Dec. 1913, leg. G. Boetcher (ZMAC).

Cautires basilanus (Pic, 1925a), comb. n.

Bulenides basilanus Pic, 1925a: 1.

Material examined: ♀ holotype. [Philippines] Basilan (MHNP).

Cautires bicoloratus (Kleine, 1930d), comb. n.

Bulenides bicoloratus Kleine, 1930d: 351.

Type material. ♂ holotype. [Sumatra] Anai Klof, Sumatra's Westküste, 500 m, leg E. Jacobson 1926 (MIZW).

Cautires coccineus (Kleine, 1930d), comb. n.

Bulenides coccineus Kleine, 1930d: 350.

Type material. ♂ holotype. [Malaysia] Malay Peninsula, West coast, Langkawi Islands, 18. v. 1928 (BMNH).

Cautires cognatus (Bourgeois, 1883), comb. n.

Bulenides cognatus Bourgeois, 1883: 637.

Material examined. ♀ [Malaysia] B. N. Borneo, Mt. Kinabalu, Kepokok, 3,300 ft., 25. iv. 1929 (BMNH).

Cautires corporaali (Pic, 1921), comb. n.

Bulenides corporaali Pic, 1921: 8.

Material examined. ♂ holotype. [Indonesia] Sumatra's O. K., Brastagi, 1300 m, 16. v. 1918, J. B. Corporaal (ZMAC); 1 ♂ [Indonesia] Java, Mt. Tangkoeban, Prahoe, 1400 m, v. 1936 (BMNH).

Remark. W. Wittmer designated in the collection of the BMNH that *C. apicalis* and *C. corporaali* are conspecific, but he never published his opinion.

Cautires duplicatus (Kleine, 1928a), comb. n.

Bulenides duplicatus Kleine, 1928a: 230.

Type material. ♂ holotype, [Malaysia] Borneo, Mt. Tibang 1600 ft. (without further data) (MIZW).

Cautires imitator (Kleine, 1930c), comb. n.

Bulenides imitator Kleine, 1930c: 95.

Type material. ♂ holotype. [Malaysia] Perak (without further data), Doherty, Fry Coll. 1905–100 (BMNH).

Cautires indus (Kirsch, 1875), comb. n.

Caenia indus Kirsch, 1875: 36.

Bulenides indus Kirsch, 1875: Kleine, 1933a: 45.

Type material. ♂ holotype of *Bulenides brevelineatus*. [Indonesia] J. B. Corporaal, J. B. Corporaal, Sumatra's O. K. Sibolangit, 30. 10. 21, 550 m (MHNP). ♀ holotype of *Bulenides vicinus*. [Indonesia] J. B. Corporaal, Sumatra's O. K. Sibolangit, 30. 10. 21, 550 m (MHNP).

Cautires inhumeralis (Pic, 1921), comb. n.

Bulenides inhumeralis Pic, 1921: 7.

Type material. ♂ holotype. [Indonesia] Bogor, 1000', v–vi 96 I. Z. Kannegieter (MHNP).

Cautires javanicus (Bourgeois, 1883), comb. n.

Bulenides javanicus Bourgeois, 1883: 439.

Material examined. ♂ holotype. [Indonesia, Java] Giava, Tcibodas, Ott. 1874, O. Beccari (MHNP).

Cautires fruhstorferi nom. n.

Bulenides lineatus Pic, 1921: 8.

Cautires lineatus (Pic, 1921), comb. n.; a junior secondary homonym of *Cautires lineatus* (Hope in Gray, 1831: 26) (described as *Omalysus lineatus*).

Type material. ♀ holotype. [Indonesia] Java occident., Sukabumi, 2000', 1893 H. Fruhstorfer (MHNP).

Etymology. The specific epithet is a patronym in honour of the collector of this species.

Cautires longissimus (Pic, 1921), comb. n.

Bulenides longissimus Pic, 1921: 8.

Type material. ♀ holotype. [Indonesia] Sumatra, St. Rambe, xii. 90 – iii. 91, E. Modigliani (MHNP).

Cautires nebulosus (Kleine, 1930d), comb. n.

Bulenides nebulosus Kleine, 1930d: 350.

Type material. ♂ holotype. [Malaysia] Island of Penang, Baker (without further data) (MIZW).

Cautires nigromaculatus (Pic, 1925b), comb. n.

Bulenides nigromaculatus Pic, 1925b: 7.

Type material. ♂ holotype. [Indonesia] Java occident., Sukabumi 2000', H. Fruhstorfer (MHNP).

Cautires obsoletus (Waterhouse, 1878), comb. n.

Bulenides obsoletus Waterhouse, 1878: 109.

Type material. ♀ holotype. [Indonesia] Java (without further data) (BMNH).

Cautires parvulus (Kleine, 1926), comb. n.

Bulenides parvulus Kleine, 1926: 84.

Remark. The types was not available for the study. Kleine (1926) noted that the species is similar in morphology to *C. aterrimus*, and therefore I place the species in *C. obsoletus* species group.

Cautires pudicus (Kleine, 1931), comb. n.

Bulenides pudicus Kleine, 1931: 257.

Type material. ♂ holotype. [Indonesia] Toegoe, West–Jawa–Pasteur (without further data), (MIZW).

Cautires purpureus (Pic, 1922d), comb. n.

Bulenides purpureus Pic, 1922d: 74.

Type material. ♂ holotype. [Taiwan] Formosa, Fainan, iv. (MHNP).

Cautires reticulatus (Kleine, 1930d), comb. n.

Bulenides reticulatus Kleine, 1930d: 352.

Material examined. ♂ type (without further specification). [Philippines] Zamboanga, Mindanao, Baker (without further data) (MIZW).

Cautires rianganus (Pic, 1925b), comb. n.

Bulenides rianganus Pic, 1925b: 7.

Type material: ♀ holotype. [Indonesia] Mana Riang, Ranau Palembang, April 90, 2–3000' I. Z. Kannegieter (MHNP).

Cautires sijthoffi (Kleine, 1926b), comb. n.

Bulenides sijthoffi Kleine, 1926b: 149.

Material examined. 3 ♂ 2 ♀. [India] Andaman Islands, Roepskorff (BMNH).

Cautires singularithorax (Pic, 1925b), comb. n.

Bulenides singularithorax Pic, 1925b: 7.

Type material: ♀ holotype. [Indonesia] Coll. Dr. H. J. Veth, P. J. Sijthoff, Java, Preanger (MHNP).

Cautires triangularis (Kleine, 1930d), comb. n.

Bulenides triangularis Kleine, 1930d: 351.

Type material: ♂ holotype. [Malaysia] Quop, W. Sarawak. III – IV. 1914, G.E. Bryant, G. Bryant Coll. 1919 – 147 (MIZW).

***Cautires pauper* group**

Cautires arens (Kleine, 1926b), comb. n.

Bulenides arens Kleine, 1926b: 146.

Type material. ♀ type (without further specification). [Malaysia] Quop, W. Sarawak, G. E. Bryant, iii. 1914 (BMNH).

Cautires argilosus (Kleine, 1926b), comb. n.

Bulenides argilosus Kleine, 1926b: 152.

Type material. ♂ holotype. [Malaysia] Quop, W. Sarawak, G. E. Bryant, iii. 1914 (BMNH).

Cautires discolor (Kleine, 1926b), comb. n.

Bulenides discolor Kleine, 1926b: 149.

Remark. I have not yet opportunity to study the type specimen deposited in the Leyden Museum (Kleine, 1926), but the relationships of this species to *C. pauper* was proposed already in the original description and therefore I place the species in this species group. The locality ‘Nagasibara’ cited by Kleine (1926) refers to the highlands in vicinity of the Lake Toba in Northern Sumatra.

Cautires johannes nom. n.

Bulenides nigricolor Pic, 1925b: 7.

Cautires nigricolor (Pic, 1925b), comb. n., a junior secondary homonym of *Cautires nigricolor* Pic, 1922: 20.

Type material. ♂ holotype. [Indonesia] Sumatra's O. K., Bandar Baroe, 10. 2. 21, J. B. Corporaal (MHNP).

Etymology. The specific epithet is a patronym in honour of Johannes Bastian Corporaal (1880–1952), the collector of the type specimen.

Cautires kinabalensis nom. n.

Bulenides lyciformis Kleine, 1932: 54.

Cautires lyciformis (Kleine, 1932), comb. n.; a junior secondary homonym of *Cautires lyciformis* Pic, 1922: 7.

Etymology. The specific epithet refers to the area of occurrence.

Material examined. ♂ holotype. [Malaysia] Brit. N. Borneo, Mt. Kinabalu, Kenokok, 3330 ft, 23. iv. 1929, BM 1933–87 (BMNH).

Cautires malayensis (Kleine, 1930d), comb. n.

Bulenides malayensis Kleine, 1930d: 349.

Type material. ♀ holotype. [Malaysia] Malay Peninsula, West coast, Langkawi Islands, 21. iv. 1928 (BMNH).

Cautires pauper (Waterhouse, 1878), comb. n.

Bulenides pauper Waterhouse, 1878: 35.

Type material. ♂ holotype. [Indonesia] Sumatra (without further data) (BMNH).

Cautires pauperulus (Bourgeois, 1883), comb. n.

Bulenides pauperulus Bourgeois, 1883: 638.

Bulenides medanensis Pic, 1925b: 7; Kleine, 1933b: 46.

Bulenides atricollis Pic, 1921: 8; Kleine, 1933b: 46.

Bulenides notaticollis Pic, 1921: 8; Kleine, 1933b: 46.

Type material. ♂ holotype of *B. medanensis*. [Sumatra] Medan (MHNP).

Cautires turbidus (Waterhouse, 1878), comb. n.

Bulenides turbidus Waterhouse, 1878: 35.

Type material. ♀ holotype. [Indonesia] Sumatra (without further data) (BMNH).

Cautires incertae sedis

Here, I list species which either could not have been studied because the type material has not been found in collections available for the study or which do not belong to either of here proposed species groups.

Cautires aridus Kleine, (1926b), comb. n.

Bulenides aridus Kleine, 1926b: 152.

Type material. ♂ holotype. [Malaysia] Penang, G. E. Bryant, x. 1913 (without further data) (BMNH).

Remark. Pronotum of *C. aridus* has well developed frontal ridges in the pronotum and only lateral ridges are absent. The pronotum does not remind neither of the species groups proposed to replace former concept of *Bulenides*. The pronotum is flat, without characteristically elevated lateral parts of pronotum and lateral margins are parallel-sided in contrast to both species groups.

Cautires basalis (Pic, 1925b), comb. n.

Bulenides basalis Pic, 1925b: 7.

Remark. The type of *C. basalis* was not available for the study and I place this species provisionally in *Cautires* without an assignment to the species group.

Cautires dubius (Waterhouse, 1878), comb. n.

Bulenides dubius Waterhouse, 1878: 35.

Type material. ♀ holotype. [Malaysia] Borneo (without further data) (BMNH).

Remark. Similarly with *C. aridus*, this species has developed, although weak, frontal ridges in the pronotum and only lateral ridges are absent. The pronotum does not resemble neither

of the species groups proposed to replace former concept of *Bulenides*. The uncertainty of the placement in *Bulenides* was expressed already by Waterhouse in the specific epithet.

Cautires flavoreticulatus (Kleine, 1932), comb. n.

Bulenides flavoreticulatus Kleine, 1932: 155.

Type material. ♀ holotype. [Malaysia] B. N. Borneo, Mt. Kinabalu, Lumu Lumu, 5,500 ft, 12. iv. 1929 (BMNH).

Remark. *C. flavoreticulatus* does not remind any of here proposed species group. The median areola is replaced by the continuous longitudinal keel along the whole length of the midline. The basal half of the keel corresponding to the place where areola is present in *Metriorrhynchini* is wider, obtuse. Pronotum has conspicuous both anterior and posterior angles and the strongly forward produced anterior margin.

Cautires longeareolatus (Kleine, 1936), comb. n.

Bulenides longeareolatus Kleine, 1936: 142.

Type material. ♂ holotype. [Indonesia, Java] F. C. Drescher, G. Tongkoeban Prahoe, 4000–5000 Voet, Preanger, 14. x. 1930 (MIZW).

Remark. *C. longeareolatus* belongs to the widely defined *Cautires*, but it does not remind in the shape of pronotum and male genitalia any of here proposed species group.

Cautires papuanus (Kleine, 1935), comb. n.

Bulenides papuanus Kleine, 1935: 311.

Type material. ♀ holotype. Papua, Mafulu, 4,000 ft, i. 1934, L. E. Cheesman, B. M. 1934–321 (BMNH)

Cautires socius (Kleine, 1935), comb. n.

Bulenides socius Kleine, 1935: 311.

Type material. ♀ holotype. Papua, Kokoda, 1,200 ft, v. 1933, L. E. Cheesman, B. M. 1934–321 (BMNH). 2 ♀ the same locality data, without type designation labels.

Remark. *Bulenides papuanus* and *B. socius* are provisionally placed in *Cautires* although they should be classified in a separate genus and are more closely related to other Papuan

genera than to Asian *Cautires*. Both species are known in females, therefore considering the very ambiguous delimitation of most Papuan genera of Metriorrhynchini without conspecific males available I prefer to postpone the description of the new genus.

Cautires philippinensis (Kleine, 1930d), comb. n.

Bulenides philippinensis Kleine, 1930d: 351.

Remark. The type of *C. philippinensis* was not available for the study and we place this species provisionally in *Cautires* without an assignment to the species group.

Nomenclatorial changes in *Cautires* Waterhouse, 1879.

Cautires pseudoapicalis nom. n.

Cautires apicalis Kleine, 1926: 131; a junior secondary homonym of *Cautires apicalis* (Pic, 1925c).

Etymology. The specific epithet is derived from the original name.

Cautires borneensis nom. n.

Cautires bicoloratus Kleine, 1932: 151; a junior secondary homonym of *Cautires bicoloratus* (Kleine, 1930d).

Etymology. The specific epithet refers to the type locality.

Cautires sundaicus nom. n.

Cautires javanicus Kleine, 1927: 302; a junior secondary homonym of *Cautires javanicus* (Bourgeois, 1883).

Etymology. The specific epithet refers to the area of occurrence.

Cautires slamatensis nom. n.

Cautires obsoletus Kleine, 1926c: 125; a junior secondary homonym of *Cautires obsoletus* (Waterhouse, 1878).

Etymology. The specific epithet refers to the type locality of this species (Kleine, 1926).

Cautires africanus nom. n.

Cautires reticulatus Kleine, 1930b: 9; a junior secondary homonym of *Cautires reticulatus* (Kleine, 1930a).

Etymology. The specific epithet refers to the area of occurrence.

Remark. Although the exact dates of publication are not available, I consider *Cautires reticulatus* (Kleine, 1930a) as an older name as it was published in the number 3 of *Treubia* and *Cautires reticulatus* Kleine, 1930b in the annually published *Revue de zoologie et de botanique africaines* (volume 19, presumed to be published on Dec. 31, 1930).

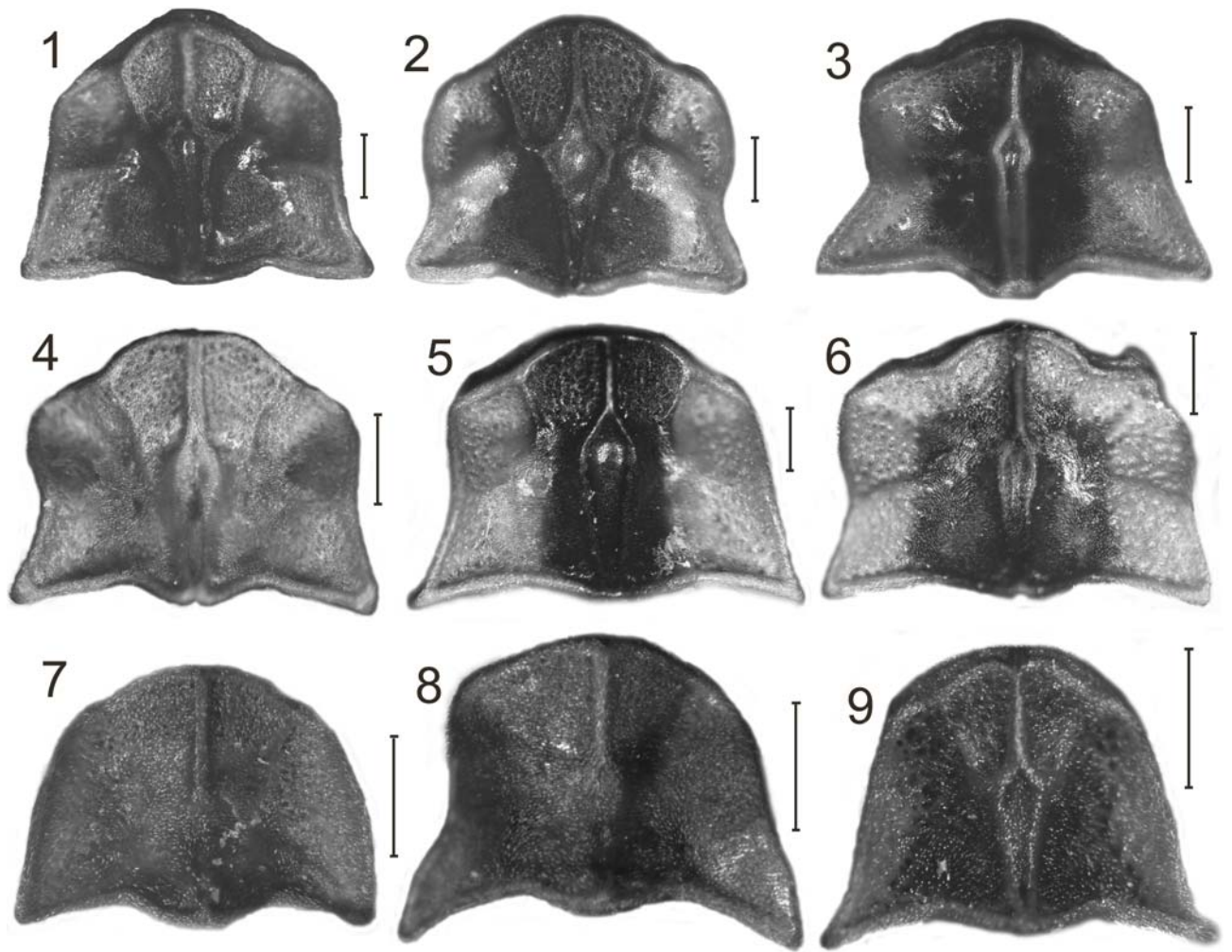
Cautires congoensis nom. n.

Cautires triangularis Kleine, 1930b: 6; a junior secondary homonym of *Cautires reticulatus* (Kleine, 1930a).

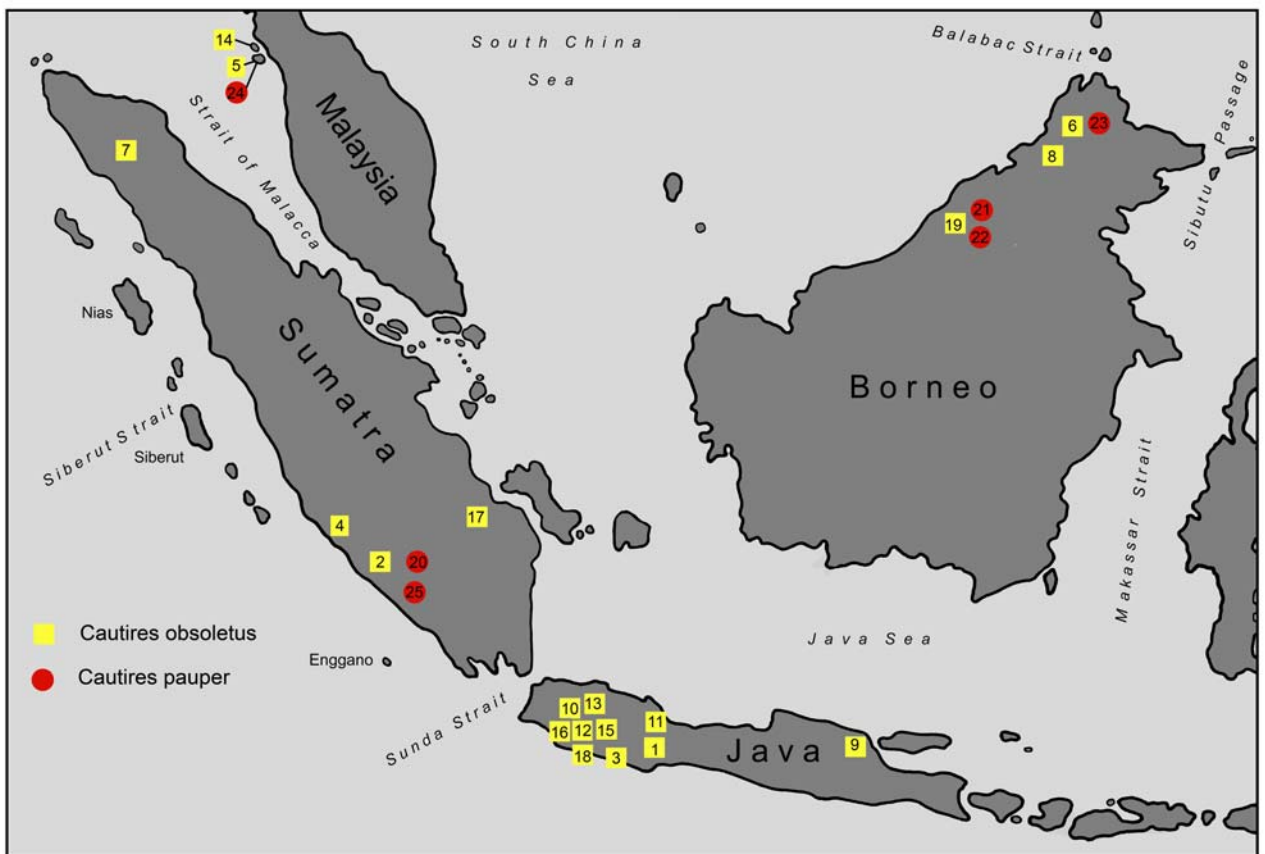
Etymology. The specific epithet refers to the area of occurrence.

Remark. The justification of the nomenclatural act is given under *C. africanus* nom. n.

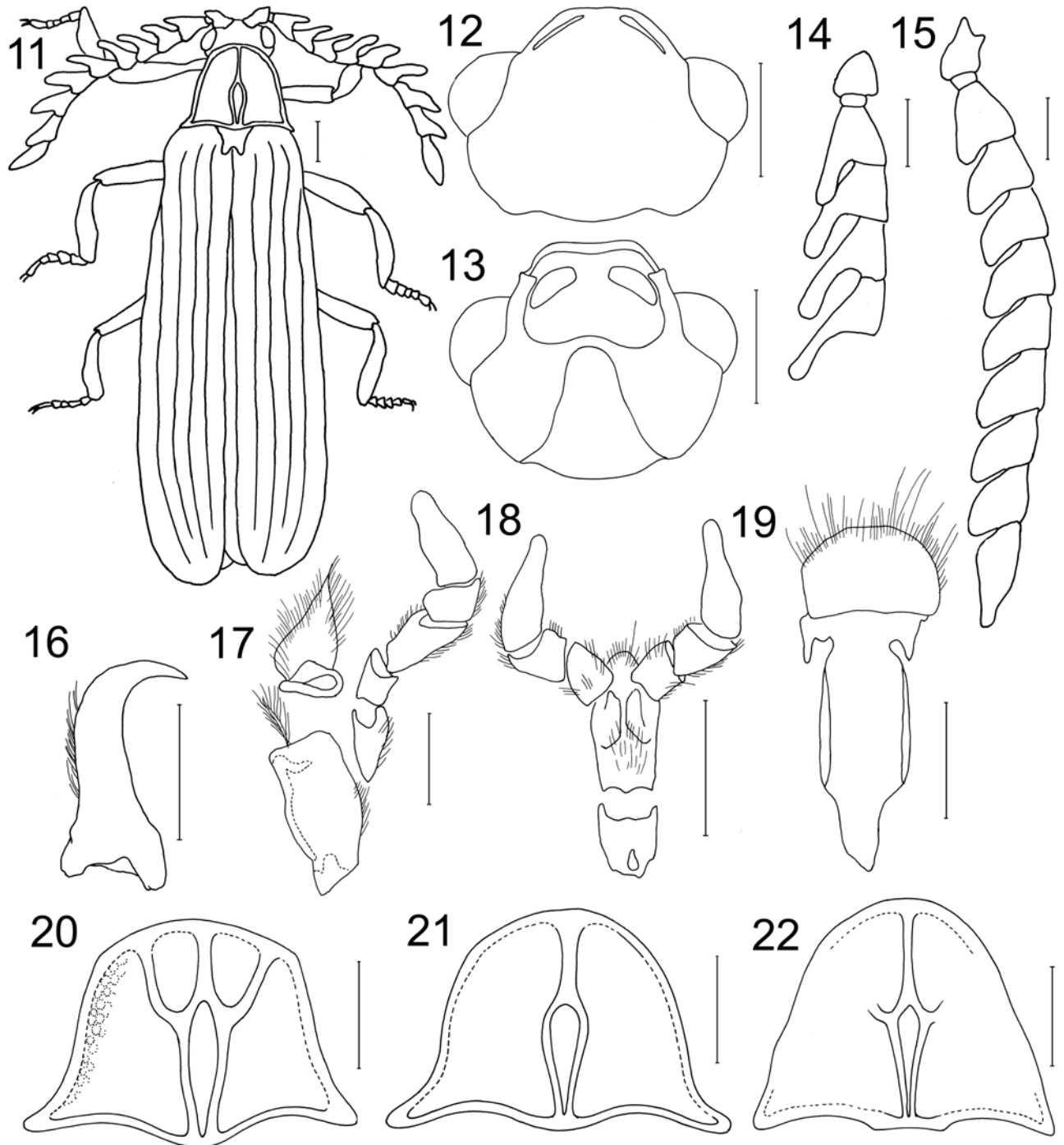
2. **Figures 1 – 9:** Pronotum. 1 – *Cautires* sp., Laos; 2 – *Cautires* sp., Cameroon; 3 – *Cautires* sp., Cameroon; 4 – *Cautires* sp., Cameroon; 5 – *Cautires* sp., Cameroon; 6 – *Cautires* sp., Cameroon; 7 – *C. pauper*, Sumatra; 8 – *Cautires* sp., Philippines; 9 – *C. purpureus*, Taiwan. Scales 0.5 mm.



3. Figure 10. Distribution of *Cautires obsoletus* and *C. pauper* in the Malay Peninsula, Sumatra, Java. and Borneo. The *C. obsoletus* group: 1. *C. apicalis*, 2. *C. ater*, 3. *C. obsoletus*, 4. *C. bicoloratus*, 5. *C. coccineus*, 6. *C. cognatus*, 7. *C. corporaali*, 8. *C. duplicatus*, 9. *C. imitator*, 10. *C. inhumeralis*, 11. *C. javanus*, 12. *C. lineatus*, 13. *C. longissimus*, 14. *C. nebulosus*, 15. *C. nigromaculatus*, 16. *C. pudicus*, 17. *C. rianganus*, 18. *C. singularithorax*, 19. *C. triangularis*. The *Cautires pauper* group: 20. *C. pauper*, 21. *C. arens*, 22. *C. argilosus*, 23. *C. lyciformis*, 24. *C. malayensis*, 25. *C. nigricolor*.



4. **Figures 11 – 22:** 11 – *Cautires matsudai*, general appearance.; 12 – *Cautires* sp., head from above; 13 – *Cautires* sp. head from the bottom; 14 – *Cautires* sp., basal antennomere, male; 15 – *Cautires* sp., basal antennomere, female; 16 – *Cautires* sp., mandible; 17 – *Cautires* sp., maxilla; 18 – *Cautires* sp., labium; 19 – *Cautires* sp., labrum and hypopharynx; 20 – 22 Pronotum. 20 – *C. dembickyi* sp. n.; 21 – *C. jendeki* sp. n.; 22 – *C. yunnanus* sp. n. Scales 0.5 mm (Figures 11–15, 20–22), 0.25 mm (16–19).



5. Figures 23 – 30: Male genitalia. 23 – *Cautires jendeki* sp. n.; 24 – *Cautires matsudai* sp. n.; 25 – *Cautires bolavensis* sp. n.; 26 – *Cautires dembickyi* sp. n.; 27 – *Cautires hergovitsi* sp.n.; 28 – *Cautires yunnanus* sp. n.; 29 – *Cautires kundratai* sp. n.; 30 – *C. testaceus*. Scales 0.5 mm.

