Sap beetles of the tribe Mystropini (Coleoptera: Nitidulidae) associated with South American palm inflorescences

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Abstract. The paper is devoted to the complex of pollinators from the tribe Mystropini collected on the inflorescences of the palms, cultivated or growing under natural conditions in South America, which includes *Anthepurops depressa* Kirejtshuk 1996; *Anthocorcina subcalva* Kirejtshuk & Jelínek 2000; *Mystrops astrocaryi* Kirejtshuk & Couturier **n. sp.**; *M. atrata* Kirejtshuk & Couturier **n. sp.**; *M. bactrii* Kirejtshuk & Couturier **n. sp.**; *M. beserrai* Kirejtshuk & Couturier **n. sp.**; *M. costaricensis* Gillogly 1972; *M. dalmasi* (Grouvelle 1902) **n. comb.**; *M. delgadoi* Kirejtshuk & Couturier 2009; *M. discoidea* Murray 1864; *M. gigas* Kirejtshuk & Couturier 2009; *M. hisamatsui* Kirejtshuk & Couturier 2009; *M. kahni* Kirejtshuk & Couturier **n. sp.**; *M. komissari* Kirejtshuk & Couturier **n. sp.**; *M. lobanovi* Kirejtshuk & Couturier **n. sp.**; *M. neli* Kirejtshuk & Couturier 2009; *M. pectoralis* Kirejtshuk, Couturier & Jelínek **n. sp.**; *M. pulchra* Kirejtshuk & Couturier 2009; *M. rotundula* Sharp 1889; *M. squamae* Kirejtshuk & Couturier **n. sp.**; *M. vasquezi* Kirejtshuk & Couturier **n. sp.**; *Platychorodes adentatus* Kirejtshuk & Couturier **n. sp.** The synonymy of the taxa is established. *Mystrops corpulenta* Jelínek 1969 is very similar and could be a variety of *M. rotundula* Sharp 1899. *Palaeocorcina* Jelínek & Kirejtshuk 2000 **n. stat.** is regarded as a separate genus. Lectotype are designated for *Mystrops costaricensis pacificus*, *M. c. orientalis, M. debilis, M. discoidea, M. flavicans, M. insularis* and *Priops mexicanus*. Diagnosis for larva of the tribe Mystropini is elaborated on base of the redescription of mature larva of *M. debilis*. The pollinators from the tribe Mystropini were studied from the next cultivated palms *Astrocaryum vulgare, Bactris gasipaes* and *Elaeis oleifera;* from the next palms in natural forests: *Aiphanes ulei*, *Astrocaryum* spp., *Bactris maraja, B.* cf. *monticola, Ceroxylon quindiuense, Elaeis oleifera*, *Iriartea deltoidea*, *Mauritia flexuosa*, *M. carana, Oenocarpus bataua, O. mapora*, *O. multicaulis, Phytelephas macrocarpa, Phytelephas* cf. *tenuicaulis* and *Socratea salazarii,* and also from *Bactris gasipaes* unknown in natural conditions. The palm tree *Attalea funifera*, also studied, is limited to the atlantic coast of Brazil.

Résumé. Les Mystropini (Coeoptera : Nitidulidae) associés aux inflorescences des palmiers d'Amérique du Sud. Dans ce travail, les auteurs étudient le complexe des pollinisateurs de la tribu des Mystropini collectés sur des inflorescences de palmiers, cultivés ou non, en Amérique du Sud, qui inclut *Anthepurops depressa* Kirejtshuk 1996; *Anthocorcina subcalva* Kirejtshuk & Jelínek 2000; *Mystrops astrocaryi* Kirejtshuk, Couturier & Jelínek **n. sp.**; *M. atrata* Kirejtshuk & Couturier **n. sp.**; *M. bactrii* Kirejtshuk & Couturier **n. sp.**; *M. beserrai* Kirejtshuk & Couturier **n. sp.**; *M. costaricensis* Gillogly 1972; *M. dalmasi* (Grouvelle 1902) **n. comb.**; *M. delgadoi* Kirejtshuk & Couturier 2009; *M. discoidea* Murray, 1864; *M. gigas* Kirejtshuk & Couturier 2009; *M. hisamatsui* Kirejtshuk & Couturier 2009; *M. kahni* Kirejtshuk & Couturier **n. sp.**; *M. komissari* Kirejtshuk & Couturier **n. sp.**; *M. lobanovi* Kirejtshuk & Couturier **n. sp.**; *M. neli* Kirejtshuk & Couturier 2009; *M. pectoralis* Kirejtshuk, Couturier & Jelínek **n. sp.**; *M. pulchra* Kirejtshuk & Couturier 2009; *M. rotundula* Sharp 1889; *M. squamae* Kirejtshuk & Couturier **n. sp.**; *M. vasquezi* Kirejtshuk & Couturier **n. sp.**; *Platychorodes adentatus* Kirejtshuk & Couturier **n. sp.** La synonymie des taxons est établie. *Mystrops corpulenta* Jelínek 1969 est très semblable à *M. rotundula* Sharp 1899 et pourrait n'en être q'une simple variété. *Palaeocorcina* Jelínek & Kirejtshuk 2000 **n. stat.** est considéré comme un genre séparé. Des lectotypes sont désignés pour *Mystrops costaricensis pacificus*, *M. c. orientalis, M. debilis, M. discoidea, M. flavicans, M. insularis* et *Priops mexicanus*. La diagnose des larves de la tribu des Mystropini est élaborée à partir de la redescription de la larve mature de *M. debilis*. Les pollinisateurs de la tribu des Mystropini ont été étudiés sur les palmiers cultivés suivants : *Astrocaryum vulgare, Bactris gasipaes* et *Elaeis oleifera* et pour les palmiers suivants des forêts naturelles : *Aiphanes ulei*, *Astrocaryum* spp., *Bactris maraja, B.* cf. *monticola, Ceroxylon quindiuense, Elaeis oleifera*, *Iriartea deltoidea*, *Mauritia flexuosa*, *M. carana, Oenocarpus bataua, O. mapora*, *O. multicaulis, Phytelephas macrocarpa, Phytelephas* cf. *tenuicaulis* et *Socratea salazarii* ; ainsi que pour *Bactris gasipaes* qui n'est pas connu dans les conditions naturelles. Le palmier *Attalea funifera* est limité a la côte atlantique du Brésil.

Keywords: *Mystrops*, larvae, new species, Arecaceae, pollination.

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Sap beetles of the tribe Mystropini Murray 1864 are present a specialized group, whose both active stages of development are associated exclusively with palm mostly male inflorescences (e. g. Bondar 1940; Gillogly 1955, 1972; Connell 1974; Genty *et al.* 1986; Ervik *et al.* 1999). They are well known as palm pollinators and distributed only in the Western Hemisphere. This group should be regarded as autochthonous for the Neotropical region and a first fossil record on it is known from the age of Dominican amber (Kirejtshuk & Poinar 2007). Most representatives of it even in the recent fauna are still undescribed. Nevertheless, a generic revision of the tribe has been published (Kirejtshuk & Jelínek 2000), although some rather essential corrections and additions are still needed. The present paper aims to clarify the composition of species-pollinators from the tribe Mystropini associated with palm species mostly used for agriculture in countries of South America.

There are many references to occurence of Mystropini on palms and their participation in pollination of palm species (Essig 1971; Henderson 1985, 1986; Listabarth 1992, 1994, 1996, 1999; Mora Urpi 1982; Syed 1979, 1984; Voeks 2002; Wood 1983; Anderson *et al*. 1988; Burquez *et al*. 1987; Lucchini *et al*. 1984; Nunez *et al*. 2005; Mora Urpi & Solis 1980; Scariot & Lleras 1991 and other). However, most of them have only generic names and only few references are provided with a species epithet, which in some cases are rather doubtful. Some indications on specialization of beetles of this group were published, although a rather reliable identification was scarcely possible before the present study, which was accompained by the re-examination of most type series.

This paper presents a first step in study of systematics of the genus *Mystrops* Erichson 1843 in general and other species of the tribe Mystropini, and it is aimed to reach a preliminary ground in understanding of complex interrelations between this group of insects and palm inflorescences. A complete revision of the tribe and particularly the genus Mystrops presents a further purpose of study of many species which still remain undescribed. As an important nearest purpose the authors regarded to review the species associated with the palm species involved in economical activity of man in the Neotropical Region. After the publication of the species occur in inflorescence of *Ceroxylon quindiuense* (Karsten) H. Wendl 1860, namely: *Mystrops delgadoi* Kirejtshuk & Couturier 2009, *M. hisamatsui* Kirejtshuk & Couturier 2009, *M. neli* Kirejtshuk & Couturier 2009, *M. pulchra* Kirejtshuk & Couturier 2009 and *M. rotundula* Sharp 1889 other palms used by man whose inflorescences have already demonstrated links with sap beetles of Mystropini. Nevertheless, the species described before and ones considered in this paper in detail makes up only a small part of the true diversity of the tribe expected in the Recent fauna. Therefore, the authors elaborated a preliminary grouping of the genus *Mystrops* and distribution of structural characters among the groups proposed below are listed below. Besides, the diagnoses of new species are rather detailed. Identification of the species could be thanks to definition of the groups of species and diagnoses included. They also could be controlled by geographical data and information on food plants (Tab. 1 and Tab. 2). However, it is necessary to take into consideration that probable ranges of the Mystropini species could be only partly coincided with natural ranges of plants because of cultivation of the latters in South America.

Material and methods

The specimens used for this study have been collected during last 15 years according to the programme of biology and ecology of neotropical palms of IRD in cooperation with Embrapa Amazonia Oriental, (Belem), Embrapa Amazonia Ocidental (Manaus), Instituto Nacional de Pesquisas da Amazonia (Manaus) in Brazil, Instituto de Investigacion de la Amazonia Peruana in Iquitos in Peru and Pontificia de la Universidad Catolica del Ecuador. All insects have been obtained from inflorescences of palms, after opening of the bract, in general at the beginning of the antesis. The collecting has been carried out in various areas: rainforest, bank of rivers, degraded areas and plantations.The method of collecting was always the same: we choosed inflorescences recently opened (at the beginning of anthesis) and also inflorescences more aged to verify the presence of Mystropini. Inflorescences were put partially, or completely (when it was possible) into a net of 50 cm in diameter or into a suitable plastic bag. In the first case the contents of the net were quickly transvered into a plastic bag. Insects were anesthesied with an insecticide spray. Mystropini and other insects were separated from vegetal material (anthers). This method made possible to collect many specimens (Figs 202–206) and we often obtained more than a thousand of specimens by inflorescence. They were carefully revised to check the possible presence of different species in the sample. In many cases, the samplings were repeated during different years on the same palm species in the same localities and in neighbouring localities or other Amazonian regions. The beetles were put in alcohol solution and later mounted in traditional way on pinned entomological plates or angles for study and further deposition in different museum collections. Larvae and adults collected on the same inflorescences not infrequently included some species and, therefore, the only *Mystrops debilis* Erichson 1843 can be identified with certainty and redescribed to elaborate the preliminary diagnosis of the tribe (larva of this species was first described as *M. palmarum* by G. Bondar in 1940).

In order to get a reliable identification of specimens obtained for this study it was necessary to make examination of type series of the species described as members of this tribe, because most species of this group are rather variable, on the one hand, and identification of them could be carried out due to the characters, which are frequently not mentioned in the original descriptions and in the previous revisions. The authors have tested representatives of all type series, except for *Cryptoraea*

americana Reitter 1873; *Cychrocephalus corvinus* Reitter 1873; *C. luctuosus* Reitter 1873; *Mystrops basalis* Reitter 1873; *M. corpulenta* Jelínek 1969; *Nitidulora glabrata* Reitter 1875 and *Platychorodes plumicornis* Reitter 1884. If the determination of *Cychrocephalus corvinus* (? = *luctuosus*), *Mystrops corpulenta* and *Platychorodes plumicornis* can be done after the characters in the original description with a rather high probability, the rest three names were proposed without mention of important characters. Therefore for now the latter names are regarded as *incertae sedis*.

In some cases specimens examined were dissected to extract genitalia, which after study were attached by water-soluble glue to the same plate, where each dissected specimen was mounted. All examinations were done with usage of stereoscopic microscopes.

Part of the type series of two new species here described (*Mystrops astrocaryi* **n. sp.** and *M. pectoralis* **n. sp.**) were designated in the collection as 'new' by A. Grouvelle and J. Jelínek. For *Mystrops pectoralis* **n. sp.** J. Jelínek prepared most pictures and a draft of description of the holotype. Therefore he shares the authorship of the last species and the list of the authors is given for it, while in the rest cases only the authors of this paper are responsible for naming and they are omitted after epithets of new species.

The palms have been identified by F. Kahn and K. Mejia, botanists, specialists of palms. In some cases the plant identification on the label do not correspond to the actual taxonomy due to recent changes in taxonomical interpretations (Henderson *et al*. 1995; Kahn & Millan 1992). *Oenocarpus multicaulis* Spruce 1869 is considered here as a good species (Mejia, comm. pers. 2006). In some cases, the host plant is not known, when insects were collected at light trap, fogging or other methods by different collectors.

Depositories

BMNH – Natural History Museum in London (British Museum of Natural History); CIRAD – Centre de coopération Internationale en Recherche Agronomique pour le Développement**,** Montpellier; CNC – Canadian National Collection (Biosystematics Research Institute), Ottawa; CMN – Canadian Museum of Nature, Ottawa; FMNH – Field Museum of Natural History, Chicago; HNHM – Hungarian Natural History Museum, Budapest; INPA – Instituto Nacional de Pesquisas da Amazônia, Manaus; MPEG – Museu Paraense Emilio Goeldi, Bélem; MNHN – Museum National d'Histoire Naturelle, Paris; MNRJ – Museu nacional da Universidade do Rio de Janeiro; NMP – Národní Muzeum in Praze; NMW – Naturhistorisches Museum in Wien; NRS – Naturhistoriska Riksmuseet, Stockholm; PUCE – Pontificia de la Universidad Católica del Ecuador, Quito; SMNS – Staatliches Museum für Naturkunde, Stuttgart; UNALM – Universidad nacional Agraria La Molina, Lima; USNM – U.S. National Museum of Natural History, Washington; ZIN – Zoological Institute of the Russian Academy of Sciences, St. Petersburg; ZMB – Zoologisches Museum (Museum für Naturkunde an der Humboldt-Universität), Berlin.

Family Nitidulidae Latreille 1802

Subfamily Nitidulinae Latreille 1802

Tribe Mystropini Murray 1864

Type genus. *Mystrops* **Erichson 1843**

Generic composition of the tribe

The endemic tribe Mystropini consists of 9 generic (subgeneric) taxa and 44 species (subspecies) taxa proposed before this study (Gillogly 1955; Kirejtshuk & Jelínek 2000; Kirejtshuk & Couturier 2009). After this study the number of genera was decreased because of a synonymy of *Mystrops* and *Cryptoraea* newly established, however, the number of species after it was somewhat increased, because 11 new species were described and 6 species (subspecies) names were put in synonyms. According to current knowledge, the genera and subgenera of the tribe are *Mystrops* Erichson 1943 (=*Priops* Reitter 1873; *Cryptoraea* Retter 1873, **n. syn.**; *Eumystrops* Sharp 1889); *Anthepurops* Kirejtshuk 1996; *Anthocorcina* Kirejtshuk 1996; *Palaeocorcina* Kirejtshuk & Jelínek 2000; *Platychorodes* Reitter 1884; *Cychrocephalus* Reitter 1873 (=*Cychropiestus* Reitter 1875); *Nitidulora* Reitter 1873; *Palmostrops* Kirejtshuk & Jelínek 2000. The taxon *Palaeocorcina* is rather different from the species Anthocorcina and should be regarded as a separate genus (**n. stat.**); see the diagnosis of the latter below. The largest genus of the tribe is Mystrops, which encloses 33 described species (including newly described ones), but a real number of species of it can reach about 100 members, when inflorescences of more species and genera of neotropical palms will be investigated.

Diagnosis of larva

The authors could study the mature larvae of *Mystrops debilis* as well as also some other larvae collected with adults and certainly attributed to this genus. The lack of sclerotization on body segments and very slight sclerotization of epicranium, perhaps, are quite characteristic at least of all species of this genus. This feature is reminiscent of members of Cybocephalinae, however, the larvae of Mystropini are more slender, with a smaller number of setae on all segments and distinct membraneous urogomphi. The raised (sub) acute urogomphi occur in many other groups of the family (Carpophilinae, Amphicrossinae, other tribes of Nitidulinae, Cillaeinae and Cryptarchinae), however, in contrast to the latter, *Mystrops* species have simple mandibles without mola and prosteca, vesicle on tarsungulus (as in Meligethinae and some Cybocephalinae), very shorter labium, lack of frontoclypeal suture and epipharyngeal armature.

Genus *Anthepurops* Kirejtshuk 1996

Type species. *Anthepurops depressa* Kirejtshuk 1996, by monotypy

Diagnosis. The alone species of this genus is rather similar to those of the genus *Mystrops* and, but distinct from the latter in the widely rounded pronotal posterior angles, and also from all the groups of the tribe in the laterally compressed male abdomen and rather deeply excised apex of tegmen. The females of it have the abdomen of usual structure and look somewhat like the females of *Mystrops*.

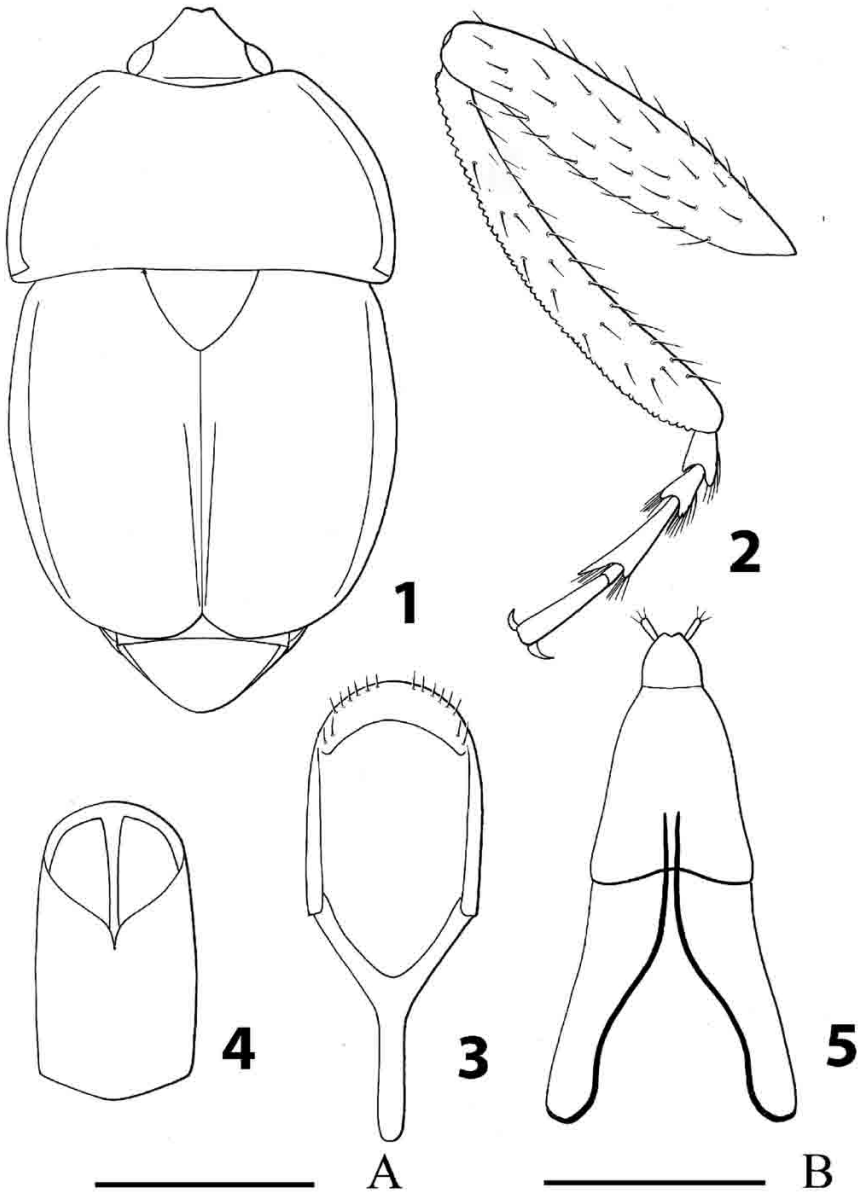
Anthepurops depressa Kirejtshuk 1996 (Figs. 167–168)

Anthepurops depressa Kirejtshuk 1996: 55.

Material. 67 (BMNH, MNHN, NMP, USNM, ZIN, ZMB), **Ecuador** (Kirejtshuk 1996: Napo, Tangurahua (Rio Negro) [1°24'00"S 78°13'00"W]); **Peru**: 'Uchiza [8°27'33"S 76°27'48"W], Plantat. Palmas del Espino, 18.VIII.1987, G. Couturier & F. Kahn', 'sur inflorescences de *Phytelephas*

cf. *microcarpa*, (Palmae)'; 72 (CIRAD, MNHN, MPEG, UNALM, ZIN), 'San Martin, Uchiza – Palmas del Espino, 10.IV.1987, F. Kahn', 'sur inflorescences, male *Phytelephas* cf. *microcarpa* (Aracaceae)'; 35 (MNHN, ZIN), 'Loreto, caserio Jaldar, rio Yarapa, near Puerto Miguel, rio Ucayali, 20.IX.2009, G. Couturier & C. Delgado', '73°23'13"W 4°29'21"S, ex larva on inflorescence ♂ in anthesis *Phytelephas* cf. *tenuicaulis*'; 13 (MNHN) - 'Pérou'; 1 (MNHN), 'Amazons', '*Cryptoraea concolor* Ty. Grouv.' (written by A. Grouvelle, but never published); 3 (MNHN), '**Venezuela**' [?].

Notes. Length of body 1.8–2.5 mm. This species was well characterised in the original description (Kirejtshuk 1996). Externally, at least the females of it are somewhat similar to *M. dalmasi* (Grouvelle 1902), although in contrast to the latter, they have separately rounded elytral apices in both sexes. The males of this species have the strongly laterally compressed abdomen and quite peculiar aedeagal structure. This type of sexual dimorphism is unique not only among members of the family Nitidulidae, but among the order in general.



Figures 1–5
Anthocorcina subcalva: **1,** male body, dorsally; **2,** male anterior leg, dorsally; **3,** tegmen, ventrally; **4,** penis trunk, dorsally; **5,** ovipositor, ventrally. Scales: A to fig. 1, bar = 1.5 mm; B to figs 2-5, bar = 0.75 mm.

Bionomy. Adults on male inflorescences, of *Phytelephas* cf. *macrocarpa* Ruiz & Pavan 1798 (= *P. microcarpa* Ruiz & Pavan 1798), *P.* cf. *tenuicaulis* (Barfod) A.J. Henderson 1995 and other palms in Amazonian rainforest remaining unidentified.
Distribution. Map fig. 207. Ecuador, Peru, Venezuela [?].

Genus *Anthocorcina* Kirejtshuk 1996

Type species. *Anthocorcina connelli* Kirejtshuk 1996, by original designation

Diagnosis. This genus consists of 6 species (Kirejtshuk & Jelínek 2000) which are characterized by the comparatively large oval body with comparatively sparse puncturation and smoothed sculpture of integument, elytra shorter than their combined width and lack of mediolongitudinal carina on mesovenrite. In contrast to other members of the tribe, representatives of this genus have very wide and convex prothoracic segment, rather long and comparatively thin legs (particularly anterior tibiae and especially in males). Three other genera of the tribe include species with more or less large and oval body. *Palaeocorcina colastoides* Jelínek & Kirejtshuk 2000 (well isolated genus – **n. stat.**) differs from the representatives of the genus under consideration in the black and not so convex body, longely pubescent dorsum, paramedian fossae on metaventrite, submesocoxal line deviating from the posterir edge of the cavity in the middle and with outer portion subrectilinear, mentum about as wide as the distance between metacoxae, ciliate lateral edges of pronotum and elytra. The *Anthocorcina* species, except the mentioned features in the legs, differ from the *Cychrocephalus* ones in the lighter and shining body, not flattened transverse head with much shorter and curved mandibles, and also in the not far projecting frons with emarginate anterior edge, not so large mentum, subtruncate elytral apices and shorter anterior legs; from the *Palmostrops* ones in the shorter pronotum with widely rounded and not projecting posterior angles, subtruncate elytral apices, shorter antennae with shorter club, emarginate anterior edge of frons, dilated apex of prosternal process and lack of mediolongitudinal carina on mesoventrite; from the *Platychorodes* ones in the very smoothed integument of dorsum, short and inconspicuous pubescence, elongate (not oval) antennal club, not vertically abrupt prosternal process, more narrowly separated coxae in all pairs, even outer edge of tibiae without dens or projecting outer angles and not modified ovipositor.

Anthocorcina subcalva Kirejtshuk & Jelínek 2000 (Figs 1–5; 166)

Anthocorcina subcalva Kirejtshuk & Jelínek 2000: 190.

Material. 5 (NMHN, ZIN, UNALM) – **Peru**: 'Loreto, Jenaro Herrera [4°54'14"S 73°40'50"W], 08.V.1987, F. Kahn & K. Mejia', 'sur inflorescences de *Socratea salazarii*, Ref: 2 051'; Kiretshuk & Jelínek 2000: Madre de Dios near Puerto Maldonado [12°50'S, 69°20'W]..

Addition to description. **Male.** Differs from the female in the much longer anterior legs with darkened anterior and posterior edges of the distal part of the profemur (more than 1.5 times as long as antenna) and protibia (about twice as long as antenna), with asymmetical tarsus (tarsomere 3 bearing a long acute process instead of the outer lobe) as well as somewhat longer antennal club, brush of long hairs on the middle of the mentum and subtruncate pygidial apex. Besides, the male mentum of this species has a dense brush of long hairs in the middle; protibia is with sparse, but not very long hairs along its inner edge, but without subapical teeth at outer edge; antennal club is narrower, about twice as long as wide; subflattened anal sclerite is slightly exposed dorsally from under pygidal apex. The aedeagus is well sclerotized; tegmen is moderately short, subparallel-sided in the basal 2/3 and almost gradually narrowing to widely rounded apex, which wears rather sparse and short hairs; the penis trunk is moderately short and subparallel-sided, gradually narrowing only at a widely rounded apex. **Female**. Ovipositor wider than that in the holotype and frequently with a more pigmented apex.

Variations and sexual dimorphism. Length of body 3.9–4.9, width 2.0–2.4, height 1.0–1.3 mm. The sexual dimorphism is expressed in the shape of pygidium, sclerites of anterior leg and shape of antennal club (see above). In contrast to the description, the specimens examined under this study show a considerable variability in the puncturation, sculpture and pubescence on their dorsum, particularly in the pubescence, which can be very short and inconspicuous (as in the type specimens) or well developed and rather conspicuous, with length somewhat extended a puncture diameter on the elytra. The punctures on the distal half of the head are 1.5–2.0 times as large as eye facets in diameter and interspaces between them 1/3–2/3 of puncture diameter; punctures on the pronotum are somewhat deeper and looking like almost twice as large as those on head (because of very smoothed edges of punctures), but indeed punctures about as large as those on head and interspaces between them 2–3 puncture diameters; punctures on the elytra somewhat larger and rather denser than those on the pronotum with the genuine interspaces between them about a puncture diameter, but looking like extremely narrow because of smoothed edges. The adsutural lines in all cases are well traceable in distal 2/3. Surface between punctures on the head always bears more or less expressed microsculpture, that on the pronotum is usually more or less smoothed, but that on the elytra is completely smooth and rather shining. The scape of most specimens is not more than twice as long as thick. The female pygidium is rounded to subangulate at apex. The body outline is about as that in *A. badia* Kirejtshuk & Jelínek 2000, *A. connelli* Kirejtshuk 1996 and *A. longimana* Kirejtshuk 1996. The coloration of these specimens is as that in the paratype described. Despite of the greater width of the ovipositor in the specimens examined during this study, they clearly are conspecific with the type specimens.

Diagnosis. Externally this species seems to be most similar to *A. badia* and *A. longimana*, differering from both in the shorter scape, less developed, subrecumbent and much shorter hairs (particularly on dorsum), distinctly curved male protibia narrowed at apex, with sparser and shorter hairs along its outer edge; and also: from the first in the lighter body, more widely explanate pronotal sides, lack of more prominent subapical teeth on the male protibia and convex anterior edge of the male profemur, from the second in the deeply emarginate anterior edge of head, as well as in the longer outer tooth of the male protarsomere 3. *Anthocorcina subcalva* is also rather similar to *A. connelli*, and they can be distinguished mostly by very different characters of sexual dimorphism of the male as well as by the

more deeply emarginate anterior edge of head and much less developed pubescence in *A. subcalva*. Besides, the new species under consideration has the male genitalia somewhat similar to those in *A. badia*, but with the apex of penis trunk more widely rounded. At the same time ovipositor of *A. subcalva* seems to be the widest among congeners.

Bionomy. The adults were collected in one inflorescence in anthesis of *Socratea salazarii* H.E. Moore 1963 in Amazonian rainforest.

Distribution. Map fig. 208. Peru.

Genus *Mystrops* Erichson 1843

Type species. *Mystrops debilis* Erichson 1843, here designated.

Priops Reitter 1873 (type species: *Priops mexicanus* Reitter, 1872, by monotypy);

Cryptoraea Reitter 1873, **n. syn.** (type species: *Cryptoraea americana* Reitter 1873: 58, by monotypy);

Eumystrops Sharp 1889 (type species: *Eumystrops centralis* Sharp 1889, by monotypy).

Diagnosis. This genus has some definitions, however the current taxonomical interpretation follows the concept formulated in Kirejtshuk & Jelínek 2000 with addition of one new synonym (*Cryptoraea* **n. syn.**). This genus is most numerous and most variable in the tribe Mystropini and different members of it share a part of characters with different genera. Nevertheless, representatives of this genus can be recognized due to the well conspicuous (comparatively long and dense) pubescence, usually elongate body, elytra more or less longer than their combined width (although the species related to *Mystrops discoidea* (group 6) and *M. rotundula* (group 9) with shorter elytra), usually expressed sexual dimorphism in mandibles and antennae, prosternal process curved along procoxae and more or less dilated apex, comparatively narrowly separated coxae in all pairs, truncate apex of male pygidium.

Gender of species epithets of members of the genus *Mystrops*

According to the Grammar of the Greek language the nouns ended with "ps" (ψ) should belong to the feminine, but not masculine gender, as was proposed for the name *Mystrops* in the original description (Erichson 1843).

Synonymy

1. Generic names *Mystrops* and *Cryptoraea* **n. syn.** were regarded separately to distinguish the related groups with an expressed sexual dimorphism in structure of the antennae (*Mystrops*) and without (*Cryptoraea*) (Kirejtshuk & Jelínek 2000). However, this peculiarity can be very characteristic of certain species or show both expressed and unexpressed conditions. Besides it, among certainly related species some can have this type of dimorphism and others can not have it. Thus, this feature can be scarcely used for discrimination of groups of relatives and therefore these generic names should be treated as synonyms. Besides, the type series of *Cryptoraea americana* remains without re-testing after E. Reitter (1873) and, therefore, its position should be still regarded as somewhat obscure and the current taxonomic interpretation of the name *Cryptoraea* is not quite completely defined.

2. Taking into consideration of variability of *M. rotundula* Sharp 1889 known after study of specimens from Mexico, Panama, Ecuador (BMNH, CMN, FMNH, USNM, ZIN) including the type specimens (BMNH), most characters of the type specimens of *M. corpulenta* Jelínek, 1969 (remained unknown to the authors) are quite correspondent to some specimens *M. rotundula*, although according to the description the males of type series of *M. corpulenta* have strongly haired antennal scape.

3. *Mystrops costaricensis* Gillogly 1972 (= *pacificus* Genty, Garson, Lucchini & Delvare 1986, **n. syn.**; *orientalis* Genty, Garson, Lucchini & Delvare 1986, **n. syn.**): see the notes to *M. costaricensis* (see below).

4. *Mystrops debilis* Erichson 1843: 235 (=*Mystrops flavicans* Murray 1864, **n. syn.**; *Priops mexicanus* Reitter 1873, **n. syn.**; *Mystrops insularis* Grouvele 1898, **n. syn.**; *Mystrops palmarum* Bondar 1940, **n. syn.**; *Mystrops gilloglyi* Connell 1974, **n. syn.**; *Mystrops luteola* Jelínek 1969, **n. syn.**) (see below)

Composition of the genus *Mystrops*

Species of the genus *Mystrops* display, at least in the male sex, considerable morphological differences of sexual dimorphism, but eventual subdivision of the genus is probably untimely before many new species are described. Females and gynomorph males resemble those of many other *Mystrops* species. Besides, structure of ovipositor is rather variable. The groups here proposed are provisional and cannot be regarded as the groups of relatives in all cases, although in most cases some level of close relation can be supposed.

Group 1. More or less light, moderately convex and oval body; pronotum not or slightly narrowed at base; with sexual dimorphism in elytral apices, but not in antennae; dorsal pubescence moderately long and subrecumbent: *M. costaricensis* Gillogly 1972; *M. bactrii* **n. sp.**; *M. dalmasi* (Grouvelle 1902) **n. comb.**; *M. kahni* **n. sp.**; *M. squamae* **n. sp.**; *M. vasquezi* **n. sp.**

Group 2. More or less dark coloration of oval and not strongly convex body; pronotum not or slightly narrowed at base;without sexual dimorphism or very slightly expressed dimorphism in both elytral apices and antennae; dorsal pubescence moderately long and subrecumbent: *M. atrata* **n. sp.**; *M. rufidens* (Reitter 1873) **n. comb.**; ? *M. teapensis* Sharp 1889 (known only after females).

Group 3. Light coloration of more subparallel-sided and strongly convex body; pronotum not or slightly narrowed at base; without sexual dimorphism or very slightly expressed dimorphism in both elytral apices and antennae; dorsal pubescence moderately long and subrecumbent: *M. centralis* (Sharp 1889); *M. astrocaryi* **n. sp.** (part).

Group 4. Dark and weakly convex oval body or blackish and rather convex elongate oval body, pronotum strongly narrowed at base, sexual

dimorphism is expressed in antennae, but not in elytral apices; dorsal pubescence moderately long and subrecumbent: *M. adustus* Murray 1864; *M. pulchra* Kirejtshuk & Couturier 2009.

Group 5. Light and weakly convex oval to elongate body, pronotum not or slightly narrowed at base, sexual dimorphism is expressed in antennae (in *M. astrocaryi* **n. sp.** not always), but not in elytral apices; dorsal pubescence short to moderately long and subrecumbent: *M. astrocaryi* **n. sp.** (part); *M. beserrai* **n. sp.**; *M. bondari* Gillogly 1955; *M. debilis* Erichson 1843; *M. delgadoi* Kirejtshuk & Couturier 2009; *M. heterocera* Sharp 1889; *M. komissari* **n. sp.**; *M. lucanoides* Jelínek 1969; *M. pectoralis* **n. sp.** [*M. heterocera* has the joint similarity with the members of this group in the characters chosen, but lack of antennal grooves and surface behind mentum not depressed, forming a one plane with mentum are similar to those in the species of the next group.]

Group 6. More or less dark and strongly convex oval body, pronotum not or slightly narrowed at base, sexual dimorphism is expressed in antennae or in both antennae and elytral apices; dorsal pubescence very short to moderately long and subrecumbent: *M. discoideus* Murray 1864; *M. dura* Erichson 1843.

Group 7. More or less dark or bicolorous and strongly to moderately convex oval body, pronotum not or slightly narrowed at base, sexual dimorphism is well expressed in antennae, but not in elytral apices; dorsal pubescence very short to moderately long and subrecumbent: *M. dufaui* Grouvelle 1912.

Group 8. More or less light or bicolorous and strongly to moderately convex and rather elongate body, pronotum strongly narrowed at base, sexual dimorphism is well expressed in antennae, but not in elytral apices; dorsal pubescence very short and subrecumbent: *M. fryi* Grouvelle 1898.

Group 9. Light to dark reddish and strongly convex oval body, pronotum strongly narrowed to moderately narrowed at base, sexual dimorphism is well expressed in antennae, but not in elytral apices; dorsal pubescence very short, sparse and subrecumbent: *M. lobanovi* **n. sp.**; *M. rotundula* Sharp 1889 (?=*M. corpulenta* Jelínek 1969).

Group 10. Nearly black, moderately convex and elongate oval body, pronotum not or slightly narrowed at base, sexual dimorphism is not expressed in antennae and elytral apices; dorsal pubescence short to moderately long and subrecumbent: *M. gigas* Kirejtshuk & Couturier 2009; *M. hisamatsui* Kirejtshuk & Couturier 2009; *M. neli* Kirejtshuk & Couturier 2009.

Incertae sedis (type series remain unstudied): *Cryptoraea americana* Reitter 1873; *Mystrops basalis* Reitter 1873.

Preliminary key to species of *Mystrops* associated with cultivated palms

Notes. The key proposed should be used with additional application to the diagnoses and genital structures given in this paper and Kirejthuk & Couturier 2009 because of great variability of many species. Sometimes females of different species look like very similar and small males have the structures without expressed sexual dimorphism.

1 a. Dorsal sclerites, at least elytra, covered with distinct scales (squamae); elytral apices in males arcuately oblique and in females acutely projecting; subunicolorous straw reddish; length of body 1.4–1.8 mm **2**

1 b. Dorsal sclerites covered with hairs **3**

2 (1) a. Pronotum longer and not narrower than elytra; sexual dimorphism in elytral apices stronger; tegmen about 2.5 times as long as wide and with subapical dilatation; penis trunk about 3 times as long as wide and acute at apex. Peru (Iquitos, Rio Maniti). On *Astrocaryum javarense* and *A. macrocalyx*. Figs 104–111; 187..... *M. kahni* **n. sp.**

2 (1) b. Pronotum shorter and usually narrower than elytra; sexual dimorphism in elytral apices weaker; tegmen mot more than twice as long as wide and without subapical dilatation; penis trunk about twice as long as wide and rounded at apex. Peru (Jenaro Herrera, near Ucayali River, Santa Cecilia, near Maniti River), Ecuador (Tena, Coca). On *Aiphanes ulei*, *Astrocaryum javarense*, *A. huicongo* and *A. urostachys*. Figs 140–143; 179–180..... *M. squamae* **n. sp.**

3 (1) a. Dorsum unicolorous black or nearly blackish with lighter appendages; anterior edge of frons shallowly emarginate to subtruncate **4**

3 (1) b. Dorsum variable in coloration, unicolorous straw reddish to brownish with lighter appendages, sometimes with color pattern, but never blackish or black [*M. atrata* **n. sp.** with reddish brown dorsal sclerites with darkened lateral and apical parts of elytra] **6**

4 (3) a. Body elongate and rather convex; pronotum widely explanate at sides; sexual dimorphism well expressed in antennae and mandibles; male antennae extending posteriorly far behind pronotal base and with club very elongate; antennomere 9 much longer than each of antenomeres 10 and 11. 1.7–2.7 mm. Peru (Malipampa). On *Ceroxylon quindiuense* ..... *M. pulchra*

4 (3) b. Body oval to elongate oval and slightly convex; pronotum narrowly bordered at sides; sexual dimorphism scarcely expressed in antennae and mandibles; male antennae at most reaching posteriorly pronotal base and with club subcircular..... **5**

5 (4) a. Pronotum with evenly convex disc and steeply sloping sides; integument without or sometimes with a very slight bronze metallic tint; frons without transverse line between antennal insertions; elytra separately rounded at apex, about 1 and 1/9 as long as combined width; submetacoxal line scarcely deviating from posterior edge of coxal cavities; male hypopygidium widely

rounded at apex. Body 3.1–3.5 mm long and 1.6–1.9 mm wide. Peru (Malipampa). On *Ceroxylon quindiuense* ..... *M. hisamatsui*

5 (4) b. Pronotum evenly convex; integument without any metallic tint; frons with a clear transverse line between antennal insertions; elytra longest at suture (suboblique at apices), about 1 and 1/8 as long as combined width; submetacoxal line strongly deviating from posterior edge of coxal cavities (reaching distal 1/5 of ventrite 1); male hypopygidium subtruncate at apex; body 3.6–5.5 mm long and 1.8–2.7 mm wide. Peru (Malipampa). On *Ceroxylon quindiuense* ..... *M. neli*

6 (3) a. Sutural angle between elytral apices wide and very deep (remaining median parts of tergites V and VI open); body oval and strongly convex; head more or less elongate and without both antennal and subparamental grooves (or lines); male antennae very long with segments of antennal club slightly wider than previous antennomeres; body 2.3–4.4 mm long and 1.2–1.9 mm wide. Central America (Costa Rica, Panama) and Amazonia (Ecuador, Colombia, Brazil, Peru). On *Astrocaryum campestre*, *A. jauari* and *A. vulgare*. Figs 94–103; 181–182 ..... *M. discoidea*

6 (3) b. Sutural angle between elytral apices small or not expressed; body elongate or elongate oval and slightly or moderately convex; head more or less transverse with both antennal and subpamedian grooves lines or with lack of only one pair of grooves (lines) **7**

7 (6) a. Male protarsi wider than protibiae and female elytral apices acuminate and extremely projecting (extending bejond the abdominal apex) [female protarsi about as wide as protibiae and male elytral apices obliquely rounded]; dorsum with very dense and long golden pubescence; labral lobes very long; antennal club elongate and with longest antennomere 9; male anal sclerite very large and largely exposed between subtruncate pygidial and bisinuate hypopygidial apices; body 3.5–3.8 mm long, 1.2–1.8 mm wide. Ecuador (Napo, Tena and Rio Hollin Loreto). On *Bactris gasipaes*. Figs 37–48; 171–172 ..... *M. bactrii* **n. sp.**

7 (6) b. Male protarsi not wider than protibiae and female elytral apices subtruncate and not projecting or, if acuminate and projecting not extending beyond the abdominal apex; male anal sclerite slightly or moderately exposed between pygidial and hypopygidial apices **8**

8 (7) a. Elytra much longer than wide combined and with strongly expressed dimorphism in elytral apices (in males ratio between length and combined width – 1.2:1, in females – 1.5:1); sides of elytra subparallel; anterior edge of frons nearly straight at bottom between projecting lateral angles; labrum rather long; dorsum with rather long and dense yellow hairs (not golden hairs as in *M. costaricensis* and not scales as in *M. kahni* **n. sp.** and *M. squamae* **n. sp.**); acuminations of female elytra markedly longer than in other species; body 2.2–2.4 mm long. Ecuador (Tena). On *Oenocarpus bataua*. Figs 144–156, 194–195 ..... *M. vasquezi* **n. sp.**

8 (7) b. Elytra always not longer than wide combined and with more or less arcuate sides **9**

9 (8) a. Male antennal club consisting of loose and very transverse 4-6 segments (extremely rarely 3 segments), dorsum rather dull, very finely and densely punctured, and also contrastingly pubescent; male prosternum with posterior half abruptly elevated and separated from the anterior half by blunt transverse edge; body 1.3–2.3 mm long (males usually not less than 1.5, female usually not more than 2.0), 0.6–1.1 mm wide. Brazil, Suriname and Peru. On *Astrocaryum campestre*, *A. chambira*, *A. jauari*, *A.vulgare*. Figs 129–139; 192–193 ..... *M. pectoralis* **n. sp.**

9 (8) b. Male antennal club consisting of 3 segments **10**

10 (9) a. Antennal club of both sexes compact and suboval; body very convex and subparallel-sided and with subquadrate pronotum (typical form) or from the middle arcuately narrowing anteriorly (aberrant form); dorsum with very sparse and comparatively coarse punctures, with smooth and smothed interspaces (typical form) or dense and shallow punctures, with microreticulated to alutaceous interspaces (aberrant form); dorsal pubescence more or less sparse and very conspicuous; body 1.5–2.1 mm long, 0.6–0.8 mm wide. Ecuador, French Guyana, Peru. Amazonian rainforest and Pacific Coast of Ecuador. On *Aiphanes ulei*, *Astrocaryum javarense, A. huicongo, A. macrocalyx, A. urostachys*, *Elaeis guineensis.* Figs 6–24; 169 ..... *Mystrops astrocaryi* **n. sp.**

10 (9) b. Antennal club of both sexes more or less elongate . **11**

11 (10) a. Elytral surface very shining and with subinconspicuous pubescence; head very transverse with antennal insertions disposed on frons along inner edge of eyes (particularly in males) **12**

11 (10) b. Elytral surface dull and with more or less conspicuous pubescence; head not so transverse and antennal insertions located at lateral edge of frons **13**

12 (11) a. Body less shining; antennae of both sexes shorter with 3-segmented club; male antennal scape curved; male mandibles without outer projection; frons between antennal insertions weakly depressed in males and subflattened in females; hairs on male protibia shorter and raised only along inner edge; body 2.0–2.6 mm long, 1.1–1.3 mm wide. Peru. On *Iriartea deltoidea* and *Socratea salazarii*. Figs 119–128; 190–191 ..... *M. lobanovi* **n. sp.**

12 (11) b. Body more shining; antennae of both sexes longer with 2-segmented club in males and 3-segmented club in females; male antennal scape more or less straight; male mandibles with clear outer projection; frons between antennal insertions deeply depressed in males and weakly depressed in females; hairs on male protibia longer and raised along whole their surface; body 2.0–2.9 mm long, 1.1–1.5 mm wide. Mexico, Panama, Ecuador, Peru. On *Ceroxylon quindiuense* ..... *M. rotundula*

13 (11) a. Sexual dimorphism in antennae and mandibles scarcely expressed **14**

13 (11) b. Sexual dimorphism in antennae and mandibles well expressed **16**

14 (13) a. Body smaller (body 1.1–1.4 mm long) and unicolorous straw reddish; anterior edge of frons

subtruncate; eyes larger and their transverse diameter about a third of distance between eyes; punctures on dorsum sparser (with interspaces about a puncture diameter). Mexico, Honduras, Costa Rica, Ecuador, Colombia, Paraguay. On *Elaeis guineensis.* Figs 61–63; 176–178 ..... *M. costaricensis*

14 (13) b. Body smaller (body 1.6–2.8 mm long) and reddish to dark brown; anterior edge of frons more or less excised **15**

15 (14) a. Body reddish brown with darker lateral and apical parts of elytra; head with moderately large eyes and with temples behind them; anterior edge of frons deeply excised and labral lobes slightly projecting from under them; tibiae wider than antennal club; body 2.0–2.6 mm long, 1.2–1.3 mm wide. Ecuador, Peru. On *Phytelephas macrocarpa* and *P.* cf. *tenuicaulis.* Figs 25–36; 170 ..... *M. atrata* **n. sp.**

15 (14) a. Body unicolorous straw yellow to reddish or sometimes with somewhat darker head; head with rather large eyes and without temples behind them; anterior edge of frons shallowly excised and labral lobes strongly projecting from under them; tibiae about as wide as antennal club; body 1.6–2.8 mm long, 0.8–1.2 mm wide. Brazil, French Guyana, Peru, Venezuela. On *Mauritia carana* and *M. flexuosa*. Figs 64–74; 183–184 ..... *M. dalmasi* **n. comb.**

16 (13) a. Anterrior edge of frons shallowly emarginate. 1 7

16 (13) b. Anterrior edge of frons angularly excised (particularly in males) **18**

17 (16) a. Body more slender and lighter (usually subunicolorius straw yellow); dorsum with sparser and less conspicuous pubescence; labral lobes longer; elytral apices widely rounded to subtruncate; tibiae wider; body smaller: 1.4–2.4 mm long (females in general smaller), 0.6–1.0 mm wide. Mexico, Panama, Columbia, Brazil, Antilles (Trinidad), Paraguay. On *Attalea funifera*, *A. pindobassa*, *Cocos coronata*, *C. nucifera.* Figs 75–93; 185–186 ..... *M. debilis*

17 (16) b. Body more robust and darker (usually reddish brownish with darker metaventrite, two paramedian stripes on pronotum and base of head); dorsum with denser and more conspicuous pubescence; labral lobes shorter; elytral apices obliquely rounded; tibiae narrower; body larger: 2.5–3.5 mm long, 1.3–1.6 mm wide. Peru (Molinopampa). On *Ceroxylon quindiuense* ..... *M. delgadoi*

18 (16) a. Body less convex, usually wider and lighter (unicolorous straw yellow); head moderately large with moderately large eyes and raised temples behind them; male antennae shorter; subparamental grooves (lines) absent; tarsomere 5 much longer; submetacoxal lines less distinct; typical form: body 2.0–2.5 mm long, 1.1–1.2 mm wide; aberrant form: body 1.2-1.8 mm long, 0.6–0.8 mm wide. Brazil, Ecuador, Peru. On *Elaeis oleifera*, hybrid *Elaeis oleifera* X *E. guineensis*, *Oenocarpus mapora* and *O. multicaulis.* Figs 49–60; 173–175 ..... *M. beserrai* **n. sp.**

18 (16) b. Body rather convex, slender and darker (unicolorous bright reddish); head very large with rather large eyes and absent temples behind them; male antennae longer; subparamental lines very distinct and curved; tarsomere 5 much shorter; submetacoxal lines quite distinct; body 1.9–2.1 mm long, 0.8–0.9 mm wide. Peru. On *Bactris* cf. *monticola* and *B. maraja*. Figs 112–118; 188–189..... *M. komissari* **n. sp.**

Description of species

Mystrops astrocaryi n. sp. (Figs 6–24; 169)

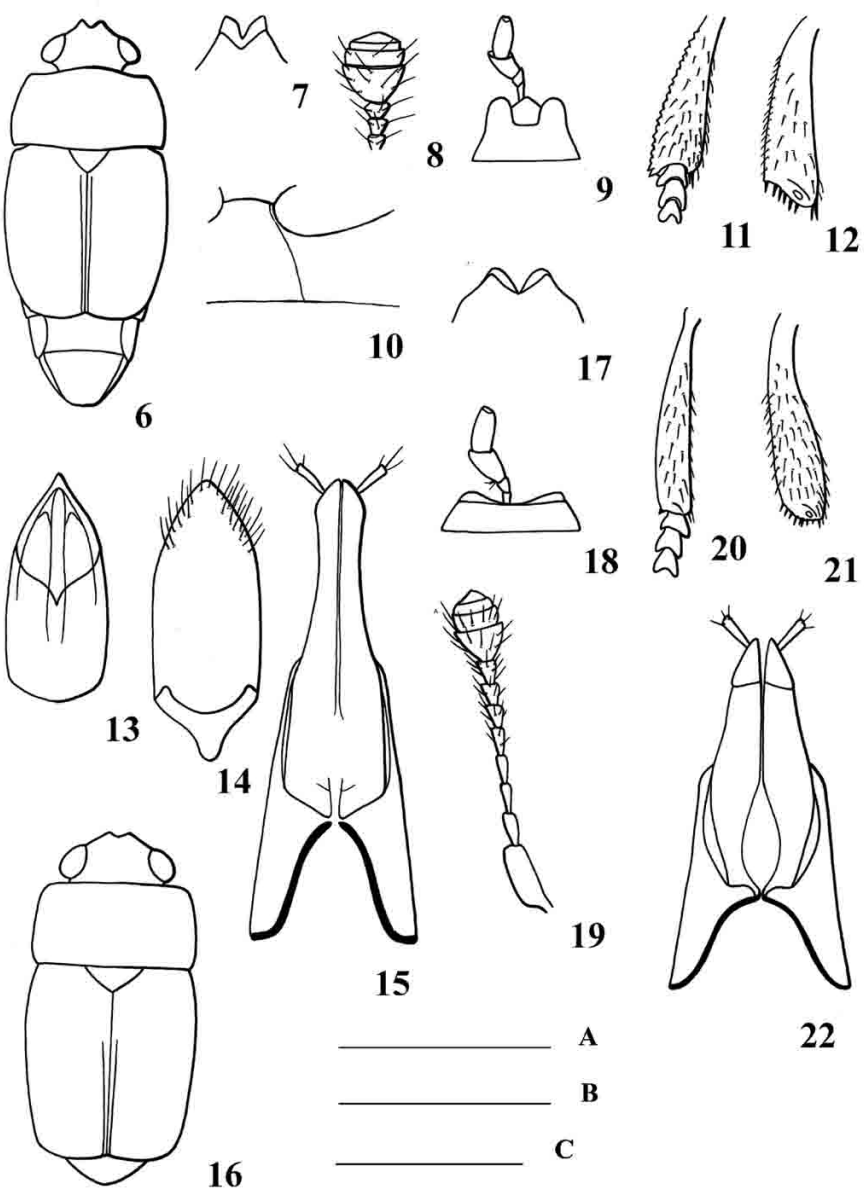
Material. **Holotype** (MNHN), male & 31 **paratypes** (MNHN, ZIN), **Peru**: 'Loreto, Rio Maniti, Santa Cecilia [3°36'00"S 72°57'00"W], 10.VIII.1993, G. Couturier', 'inflorescence en anthèse *Astrocaryum javarense*, Arecaceae'; other **paratypes**: 3 (MNHN, ZIN), '4º65'S 73º40'W, Jenaro Herrera, X.1986, K. Mejia & F. Kahn', 'sur *Astrocaryum macrocalyx*, Palmae', 'sur inflorescence'; 38 (MNHN, MPEG, ZIN, UNALM), 'San Martin, Moyobamba [6°01'00"S 76°58'00"W], 19.XI.1991, Kahn F. & Moussa F.', '*Astrocaryum huicongo*, Palmae', 'on inflorescence'; 3 (MNHN), 'Loreto, Rio Maniti, Sta Cecilia, 23.X.88, G. Couturier', 'Host Plant *Astrocaryum javarense*, Palmae', 'in male flowers of palm'; 4 (MNHN), 'Loreto, Jenaro Herrera, 19.V.1987, F. Kahn & K. Mejia', 'sur inflorescence de *Aiphanes ulei*'; 9 (MNHN, ZIN), 'Loreto, Rio Maniti-Villa Maria [03°36'00"S 72°57'00"W], 6.X.2006, G. Couturier & C. Delgado', 'en inflorescencias en antesis de *Astrocaryum javarense*, "huicongo" (Arecaceae)'; 15 (MNHN, NMP, ZIN), **Ecuador**: 'Napo, route Tena Puyo, 01º07'73"S, 77º49'25"W, 28.XII.1999, F. Kahn, s/inflorescence *Astrocaryum urostachys* Burr., Arecaceae'; 41 (MNHN, USNM, ZIN, ZMB, PUCE), 'Napo, Tena, 2.IX.1999, L. Reynaud & I. Suarez', 'sur inflorescence *Astrocaryum urostachys*, Arecaceae'; 7 (MNHN), Ecuador: 'Napo, Coca [0°28'00"S 76°58'00"W], 13.X.1999, L. Reynaud', '*Astrocaryum urostachys*, Arecaceae, on inflorescence'; 1 (BMNH), 'Santo Domingo de los Colorados [0°15'00"S 79°10'00"W], on oil palm inflorescence', '2.VI.1982, C.D. Bennett', '*Mystrops costaricensis* Gillogly det. R.B. Marge, 1982'; 3 (BMNH), **French Guyana**: 'Goudonville [?], E. Le Moult, 1905-6' (some specimens with the label 'Paratype *Mystrops pygmaeus* det. Jelínek 1975'); 33 (BMNH, MNHN), 'Cayenne, R. Kourou' [5°09'00"S 52°39'00"W] (some specimens with the label '*Cryptoraea pygmaea* ined. Grouvelle'); 3 (BMNH, MNHN), 'Rocher de Kourou' [5°9'00"N 52°39'00"W], 'Collection Le Moult, Naturaliste, Paris'; 2 (MNHN), 'Nouveau Chantier, Collection Le Moult' (some specimens with the label '*Cryptoraea pygmaea* ined. Grouvelle'); 1 (ZIN), '22 km NW Régina, pk 79 Route Nle 2, 4º25'N 52º19'W, V. Gusarov, 21.VII.1995'.

Description of holotype (male). Length of body 2.0, width 0.7, height 0.4 mm. Elongate oval, rather convex dorsally and moderately convex ventrally; subunicolorous straw reddish; dorsum rather and underside moderately shining; dorsum with rather conspicuous and subrecumbent yellowish golden hairs 2-3 times as long as distance between their insertions; underside with finer, shorter, less conspicuous and recumbent hairs; lateral edges of pronotum and elytra slightly fringed, at posterior pronotal angles with slight "false angles" forming by longer hairs projecting posteriorly.

Head, pronotum and elytra with distinct punctures slightly smaller than eye facets in diameter, interspaces between them

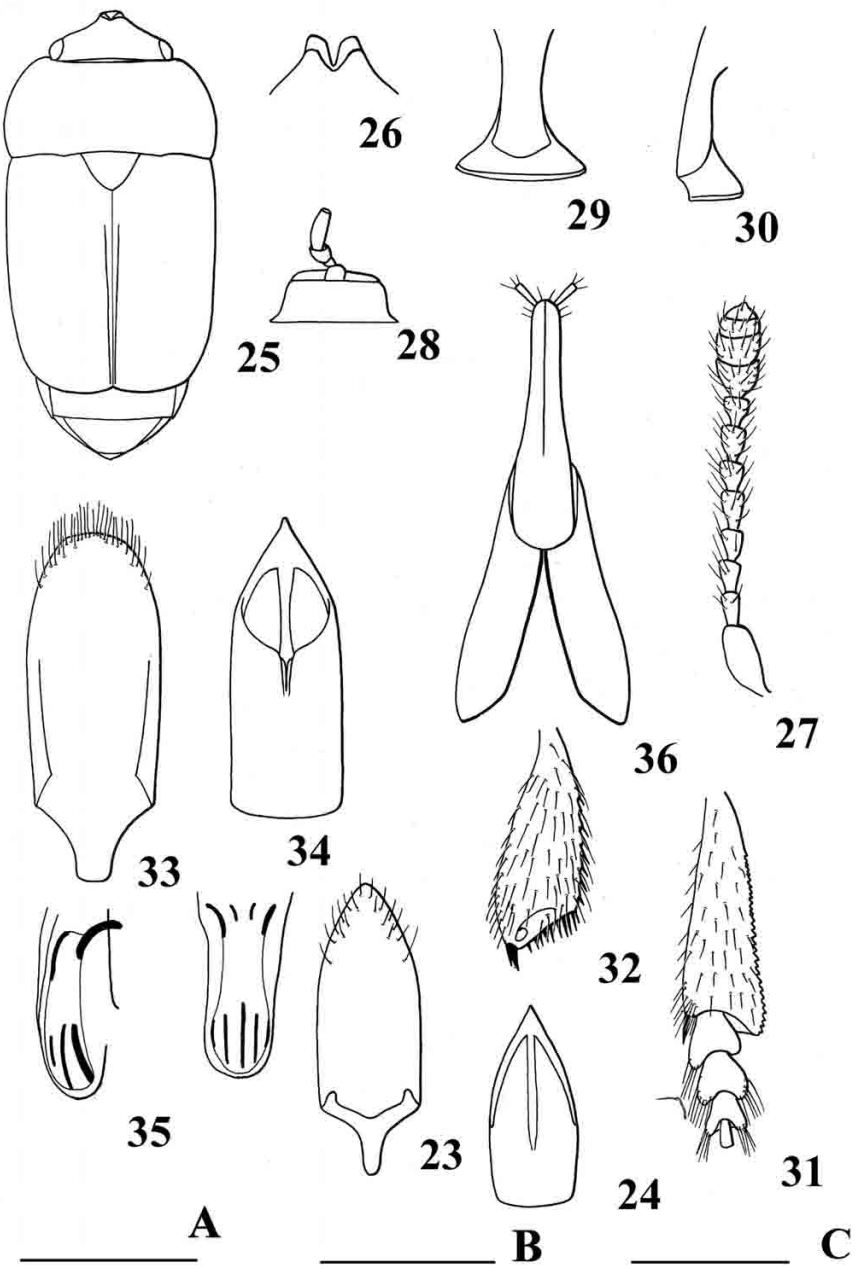
¼–1/2 of puncture diameter, rather smooth, although on elytral base punctures larger and becoming finer and sparser apically, interspaces between them becoming more alutaceous distally. Pygidium with smaller and less distinct than those on the remainder of dorsum and with some microreticulation. Prosternum with obsolete puncturation, finely and densely alutaceous. Metaventrite with punctures somewhat similar to those on pygidium, but interspaces between them about as great as a puncture diameter or greater and smoothly microreticulated. Abdominal ventrites finely, rather densely and not quite distinctly punctured, and with somewhat smoothly microreticulated narrow interspaces.

Head slightly shorter than distance between eyes, slightly convex at base, with a rather weak transverse ('fronto-clypeal') line in a shallow transverse depression, lateral edges above insertions of antennae very slightly elevated, anterior edge of frons not clearly bordered and deeply angularly excised; eyes broadly convex, very coarsely facetted; temples absent. Labrum



Figures 6–22
Mystrops astrocaryi: typical form (6–15): **6,** male body, dorsally; **7,** anterior part of frons and labrum, antero-dorsally; **8,** male antennal club, dorsally; **9,** male mentum and labial palpus, ventrally; **10,** submetacoxal line, ventrally; **11,** male protibia, dorsally; **12,** metatibia, dorsally; **13,** penis trunk, dorsally; **14,** tegmen, ventrally; **15,** ovipositor, ventrally; aberrant form (16–22): **16,** male body, dorsally; **17,** anterior part of frons and labrum, antero-dorsally; **18,** male mentum and labial palpus, ventrally; **19,** male antenna, dorsally; **20,** male protibia, dorsally; **21,** metatibia, dorsally; **22,** ovipositor, ventrally. Scales: A to figs 6, 16, bar = 1.0 mm; B to figs 7–12, 17–21, bar = 0.5 mm; C to figs 15–15, 22, bar = 0.25 mm.

with rather far projecting lobes (nearly ½ as long as scape), separately obliquely abrupt, with a deep and wide V-shaped median excision. Mandibles moderately exposed from under frons. Antennae slightly longer than the head width across eyes; scape nearly 2.5 times as long as wide and about as long as club, somewhat wider than 6 following ones; antennomeres 2 oval and slightly longer than antennomere 3; antennomeres 3–8 subconical, antennomere 3 slightly longer than wide; antennomeres 4–6 about as long as wide and antennomeres nearly 7 and 8 transverse, shorter and wider than preceding ones; club comprising almost ¼ of total antennal length, oval, compact, almost symmetrical, with longest antennomere 9;



Figures 23–36
Mystrops astrocaryi, aberrant form (23–24): **23,** tegmen, ventrally; **24,** penis trunk, dorsally; *Mystrops atrata* **n. sp.** (25–36): **25,** male body, dorsally; **26,** anterior part of frons and labrum, antero-dorsally; **27,** male antenna, dorsally; **28,** male mentum and labial palpus, ventrally; **29,** male prosternal process, ventrally; **30,** idem, laterally; **31,** male protibia and tarsus, dorsally; **32,** metatibia, dorsally; **33,** tegmen, ventrally; **34,** penis trunk with inner sac, dorsally; **35,** armature of inner sac of penis, laterally; **36,** ovipositor, ventrally. Scales: A to fig. 25, bar = 1.0 mm; B to figs 26–32, bar = 0.5 mm; C to figs 23–24, 33–36, bar = 0.25 mm.

antennomeres with moderately long and rather sparse setae. Pronotum widest at the middle, about 1 and 4/5 as wide as long in the middle; its anterior edge nearly straight, not bordered; sides nearly straight, extremely narrowly canalicular; posterior edge slightly convex in the middle and shallowly emarginate at each posterior angle, distinctly bordered; both anterior and posterior angles widely rounded; disk rather and gently convex and sides steeply sloping. Scutellum large, subtriangular and with subrounded apex. Elytra widest before their midlength, slightly longer than their combined width, longest at suture and leaving uncovered the pygidium and most part of the preceding tergite; their lateral edges very broadly arcuate to almost straight, not explanate, just visible simultaneously from above, adsutural lines expressed along almost entire length. Pygidium slightly convex and very widely rounded at apex. Widely subtruncate and flattened apex of anal sclerite clearly exposed. Mentum markedly less than twice as wide as long, subrectilinearly narrowing anteriorly and deeply excised at anterior edge, its anterior angles strongly projecting anteriorly as very thin lobes with arcuate apices. Ultimate maxillary palpomere subcylindrical to slightly narrowing apically, more than 4 times as long as thick. Ultimate labial palpomere oval to subcylindrical to slightly narrowing apically, about 2.5 times as long as thick. Antennal grooves not expressed and subparamental grooves slightly expressed, comparatively wide and convergent. Prosternum slightly convex along the middle and with process narrow, medially subflattened and roof-liked at apex, moderately curved along coxae, its apex rather widened before subtruncate posterior edge, with maximal width almost subequal to antennal club and with narrowly rounded outer angles. Ratio of distances between pro-, meso- and metacoxae about as 1:2:3. Metaventrite medially subflattened and and with a distinct median line, its posterior edge between coxae very shallowly emarginate. Submetacoxal line very distinct and reaching posterior edge of abdominal ventrite 1. Abdominal ventrite 1 slightly longer than hypopygidium and somewhat shorter than ventrites 2 and 3 combined; hypopygidium widely subtruncate at posterior edge. Epipleura at base about 1.5 times as wide as prosternal process and about as wide as antennal club, moderately elevated laterally.

Legs well developed. Tibiae slightly widened, all with almost straight inner edge and comparable in width at apex (slightly narrower than antennal club), widest at apex, outer subapical angle of protibia slightly projecting and apices of meso- and metatibiae more or less oblique, outer edge of meso- and metatibiae with rows of extremely short setae. Femora of usual shape, all with more or less convex anterior and posterior edges, pro- and metafemora somewhat more than twice, mesofemur about twice as wide as corresponding tibiae. Tarsi of usual structure; protarsus about 2/3 as wide as tibiae, meso- and metatarsi somewhat narrower; claws simple.

Aedeagus moderately sclerotized; tegmen subparallel-sided in basal ½ and almost gradually narrowing to arcuate apex with short hairs; penis trunk about as long as tegmen, subparallel-sided in basal 2/3 and gradually narrowing to acuminate apex.

Female. Differs from male only in both pygidium and hypopygidium widely rounded at apex. Ovipositor weakly pigmented, its gonocoxites very narrow and long (about 2.5 times as long as valvifer) with simple apex and rather long styli.

Notes. Some specimens regarded here as an extreme in variability of this new species look like very different instead of that they were captured together with the more typical representatives of *M. astrocaryi* n. sp. (correspondent to the holotype), although in few cases some specimens show a clear intermediate condition in the characters. Their main differences are following. **Typical form**: body very convex and shining; pubescence sparser, subrecumbent, rather yellowish golden and extremely conspicuous; dorsal puncturation comparatively coarse, distinct, much sparser and interspaced by more or less smoothed integument; pronotum rather subquadrangular, slightly and subequally narrowing both anteriorly and posteriorly, very convex and with very steeply sloping sides canalicular at edges; antennae short and with subcircular club in both sexes (without sexual dimorphism); male anterior part of head as narrow as that in female; penis trunk with very acute apex. **Aberrant form**: body moderately convex and nearly mat; pubescence denser, recumbent, rather yellowish (not clearly golden) and moderately conspicuous; dorsal puncturation comparatively fine, indistinct, rather dense and interspaced by more or less densely microreticulated integument; pronotum widest at base and arcuately narrowing anteriorly, moderately convex and with gently sloping sides moderately subexplanate at edges; antennae longer, with elongate club and with somewhat expressed sexual dimorphism; male anterior part of head markedly wider than that in female; penis trunk frequently subacute to blunt at apex.

Description of aberrant form. Elongate oval, moderately convex dorsally and ventrally; subunicolorous straw-reddish; body with a slight shine; dorsum with rather conspicuous and subrecumbent yellowish golden hairs, about 2.5 times as long as distance between their insertions. Head with very indistinct, very shallow and very slightly traceable punctures, interspaces between them alutaceous to microreticulated. Pronotum with very shallow and not quite distinct but traceable punctures somewhat smaller than eye facets in diameter, interspaces between them narrower than a puncture diameter, very finely and very densely microreticulated. Elytra at base and along suture with puncturation and sculpture rather similar to those on pronotum, but punctures slightly more distinct and slightly deeper, interspaces between them somewhat less than 1/2 of puncture diameter, smoothly microreticulated, although at sides and towards elytral apices punctures becoming less distinct to obsolete and microsculpture more expressed. Pygidium with dense and very small punctures, dense and somewhat smoothed microreticulation, simultaneously looking like microtuberculation. Prosternum without puncturation, finely and densely alutaceous to microreticulate. Metaventrite about as sculptured as prosternum, with some sparse punctures in the middle. Abdominal ventrites about as punctured and sculptured as pygidium, but not so densely. Antennae about 1 and 2/3 as long as width of head across eyes; scape nearly 3 times as long as wide and about as long as club, somewhat wider than 6 following ones; antennomeres 2-5 subconical and about 3/5 as long as scape; antennomeres 6-8 slightly shorter and wider than antennomeres 2–5; club comprising almost 1/5 of total antennal length, oval, compact, almost symmetrical with longest antennomere 9; antennomeres 5-11 with not long and rather sparse setae. Pronotum widest in posterior fourth, about 1.5 times as wide as long in the middle; its anterior edge nearly straight to shallowly emarginate, not bordered; sides gently arcuate, narrowly subexplanate; posterior edge slightly convex in the middle and shallowly emarginate at each posterior angle, distinctly bordered; both anterior and posterior angles widely rounded; disk slightly convex and sides gently sloping. Elytra

widest at their midlength, about 1 and 1/8 as long as wide combined, suboblique at apices and longest at suture. Mentum very short, more than 3 times as wide as long, subrectilinearly narrowing anteriorly and nearly straight at anterior edge.

Variations and sexual dimorphism. Length of body 1.5–2.1, width 0.6–0.8 mm. Sexual dimorphism in most cases is expressed only in the outline of posterior edges of sclerites of the last abdominal segment, however, some aberrant males with a clear sexual dimorphism in the anterior part of head and antennae. Besides, females of the aberrant form show a tendency to have somewhat more acute elytral apices (reminiscent of females of *M. kahni* **n. sp.** and *M. squamae* **n. sp.**). Pronotum is rather variable: some paratypes are with not so strongly convex pronotum and with most width close to posterior edge (particularly in aberrant specimens).The puncturation and microsculpture show a rather wide variability, although most specimens are punctured and sculptured as the holotype; in extreme cases the head and pronotum are with distinct punctures slightly smaller than eye facets in diameter, interspaces between them ¼–1/2 puncture diameter, rather smooth, while the elytra with punctures are similar to those on head and pronotum and becoming finer and sparser apically, interspaces between them are more or less finely alutaceous, becoming densely and finely microreticulated in aberrant specimens. Antennal club is quite characteristic of the typical specimens, but sometimes it slightly oval rather than subsemicircular and in the aberrant specimens becoming rather elongate. The submetacoxal line sometimes is obsolete. Length of mentum is variable and its anterior angles sometimes are rather thin and can be declined to the mouth orifice. Besides it, some variability is observed in pubescence (see description of aberrant form).

Some specimens from French Guyana show an intermediate combination of characters between the typical and aberrant forms: they have the rather convex body with pronotum and pubescence as those in the typical form, quite distinct and sparse puncturation, rather smooth integument, very acute apex of penis trunk, but with male elongate antennal club bearing long setae and sexual dimorphism as those in the aberrant form.

Diagnosis. This new species has two forms frequently looking like very different. Therefore, it is here regarded in the composition of both provisional species group 3 and 6 (see above). The typical form is well characterized by the very convex and subparallel-sided body with subquadrate pronotum, sparse but very conspicuous dorsal pubescence, comparatively short antennae with small oval club and long hairs on antennomeres, deeply excised anterior edge of head with long exposed labral lobes. Among the species formerly described it is somewhat similar to *M. centralis*, however, differs from the latter in the more slender body with more conspicuous dorsal pubescence, sparser and much coarse dorsal puncturation, deeply excised anterior edge of head, long labral lobes, smooth or nearly smooth integument, less distinct and convergent antennal grooves, shorter antennal club and genitalia of both sexes. A very similar species to the members of this group (group 3) is *M. heterocera* (from group 5 – see above), which is quite distinct from the new species under consideration in the strongly convex, much more robust and subquadrate body, well expressed sexual dimorphism in antennae, markedly sparser and more distinct dorsal puncturation (particularly in males), alutaceous integument between punctures, much longer pubescence, including markedly longer hairs on the male antennomeres, elongate oval antennal club in both sexes with some sexual dimorphism, distinct antennal grooves, not so deep excision of anterior edge of frons, anterior angles of mentum not projecting anteriorly, more narrowly separated mesocoxae (in *M. heterocera* the distance between them about twice as great as that between procoxae).

The aberrant specimens, rather similar to the representatives of the provisional species group 5 (see above), can be diagnosed from the rest members of this group according to the following differences:

- from typical *M. beserrai* **n. sp.** due to the more slender and much more convex body, larger eyes, shorter male antennae with not so dilated antennomeres 4–8, pronotum less narrowing anteriorly and nearly straight or only very slightly emarginate anterior edge, distinct subparamental grooves;

- from aberrant *M. beserrai* **n. sp.** due to the not so narrow antennal club in both sexes, larger eyes with more coarse facets, not so dilated antennomeres 4–8 in male antennae, peculiarities of puncturation and microsculpture of integument, usually somewhat narrower tibiae, usually shorter and narrower mentum, distinct subparamental grooves;

- from *M. bondari* due to the much smaller, more slender and lighter body; larger eyes with coarser facets; much sparser, much shorter and less conspicuous pubescence; peculiarities of puncturation and sculpture; narrowly rounded lateral angles of frons; shorter labral lobes; less developed mandibles in both sexes; rounded apex of male pygidium (in *M. bondari* it is bilobed with a comparatively deep excision); shorter setae on lobes of male tarsomeres 1–3 and also in the lack of long hairs on dorsum and legs of males;

- from *M. debilis* due to the smaller, more convex and more robust body with much larger eyes, rather clear dorsal puncturation, much less expressed sexual dimorphism in body size and all organs (size and shape of head and pronotum, length of antenna, length of palpi etc.) and also in the deeply excised anterior edge of frons and longer tarsomere 5; and also in the shorter setae on lobes of the male tarsomeres 1–3, lack of long hairs on dorsum and legs of males (from the var. *luteola*);

- from *M. delgadoi* due to the smaller, more convex and more robust body with much larger eyes, much more clear dorsal puncturation, widely and separately rounded elytral apices, much less expressed sexual dimorphism in body size and all organs (size and shape of head and pronotum, length of antenna, shape of mentum, length of palpi etc.) and also in the deeply excised (not truncate) anterior edge of frons and longer tarsomere 5; and also due to the lack of long hairs on dorsum and legs of males (from the var. *luteola*);

- from *M. heterocera* due to the much slender and less convex body, narrower head with significantly larger and coarcely facetted eyes, longer elytra, longer labral lobes exposed from under frons, less widely separated mesocoxae, shorter hairs, denser and less distinct puncturation in males, markedly narrower male tibiae (particularly male mesotibia) and distinct antennal grooves;

- from *M. komissari* **n. sp.** due to the much smaller, more slender and lighter body, much shorter male antennae, peculiarities of puncturation (punctures usually larger, but less distinct) and microsculpture of integument, usually markedly narrower tibiae, shape of mentum, lack of antennal grooves, but presence of subparamental grooves, more widely separated meso- and metacoxae;

- from *M. lucanoides* due to the smaller, more convex and more robust body in males and more slender in females with much larger and coarcely facetted eyes, longer and more conspicuous pubescence, less clear and denser dorsal puncturation, deeply excised anterior edge of frons, well raised adsutural lines along the whole length, much shorter male antennae, shorter male mandibles and, palpi, much less expressed sexual dimorphism in body size and most organs (size of head and pronotum, length of antenna, length of palpi etc.) and longer elytra;

- from *M. pectoralis* **n. sp.** due to the much smaller and more slender body, larger eyes with more coarse facets, much shorter male antennae, shorter pronotum in both sexes, evenly convex middle of prosternum in both sexes, peculiarities of puncturation and microsculpture of integument, usually narrower tibiae, shape of mentum, lack of antennal grooves, but distinct subparamental grooves, more widely separated meso- and metacoxae.

Differentiated diagnosis of the species associated with *Astrocaryum* palms. *Mystrops astrocaryi* **n. sp.** can occur on the same inflorescences of *Astrocaryum* palms together with *M. kahni* **n. sp.** and *M. squamae* **n. sp.** and these species can be distinguished each other from by the following characters:

M. astrocaryi **n. sp.**: **I. typical form**: - body rather subparallel-sided and strongly convex; - pronotum strongly convex, about 1.5 times as wide as long and slightly narrowing both anteriorly and posteriorly; - female elytral apices as separately rounded as those in male, scarcely longer than wide combined; - punctures distinct, comparatively coarse and rather sparse, integument between them smooth; - antennae without sexual dimorphism; - lack of antennal grooves, but presence of subparamental grooves; - dorsal hairs yellowish golden, very conspicuous, not dense and uniform on all sclerites, about as long as distance between their insertions or slightly longer; **II. aberrant form**: - body less subparallel-sided and moderately convex; - pronotum moderately convex, slightly less than twice as wide as long and somewhat narrowing both anteriorly and posteriorly; - female elytral apices as separately rounded as those in male, distinctly longer than wide combined; - punctures indistinct, moderately fine and dense, integument between them more or less microreticulated; - antennae with sexual dimorphism; - lack of antennal grooves, but presence of subparamental grooves; - dorsal hairs yellowish, moderately conspicuous, rather dense and uniform on all sclerites, at least twice as long as distance between their insertion.

M. kahni **n. sp.**: - body elongate oval rather than subparallel-sided and subflattened;

- pronotum subflattened, much less than twice as wide as long and somewhat narrowing both apically and posteriorly; - female elytral apices acuminate and much longer than those in male and completely covering abdomen, while male elytral apices oblique and with maximal length at suture; - head and pronotum with very dense and very fine microsculpture, but without distinct punctures; elytra with distinct punctures, comparatively coarse and rather sparse, integument between them smoothed; - antennae with very slight sexual dimorphism and with slightly more elongate antennal club in male; - presence of antennal grooves, but lack of subparamental grooves; - head and pronotum with fine and comparatively sparse yellowish hairs, while elytra with yellowish golden scales, very conspicuous, about as long as distance between their insertions.

M. squamae **n. sp.**: - body elongate oval and subflattened; - pronotum subflattened, about twice as wide as long and somewhat narrowing apically; - female elytral apices acuminate and slightly longer than those in male and usually not covering apex of abdomen, while male elytral apices usually widely and separately rounded; - head and pronotum with very dense and very fine microsculpture, but without distinct punctures; elytra with distinct punctures, comparatively coarse and rather sparse, integument between them smoothed; - antennae with very slight sexual dimorphism and with slightly more elongate antennal club in male (although sometimes male antennae rather long); - presence of antennal grooves, but lack of subparamental grooves; - head and pronotum with fine and comparatively sparse yellowish hairs, while elytra with yellowish golden scales, very conspicuous, about as long as distance between their insertion.

Etymology. The species epithet is formed from the generic name of palm species, inflorescences of which are inhabited by this species.

Bionomy. Adults insects were collected on inflorescences in anthesis of *Aiphanes ulei* (Dammer) Burrett 1932, *Astrocaryum javarense* (Trail) ex Drude 1881, *A. huicongo* Dammer ex Burrett 1934, *A. macrocalyx* Burrett 1934, *A. urostachys* Burrett 1934 and *Elaeis guineensis* Jacquin 1763 in natural and degraded areas.

Distribution. Map fig. 209. Ecuador, French Guyana, Peru. Amazonian rainforest and Pacific Coast of Ecuador.

Mystrops atrata n. sp. (Figs 25–36; 170)

Material. **Holotype** (CMN), male & 12 **paratypes** (CMN, ZIN), **Ecuador**: 'Napo, 250 m, Limoncocha [0°24'0"S 76°37'0"W], 21-28.VI.76, S. Peck', 'palm flowers (male ?)'; other **paratypes**: 3 (CNC, ZIN), 'Napo, 250 m, Limoncocha 26.VI.76, S. Peck','palm flowers'; 13 (BMNH, NMHN, ZIN, UNALM), **Peru**: 'Loreto, Jenaro Herrera [4°54'14"S 73°40'5"W], 7.X.91, G. Couturier', 'sur inflorescence mâle *Phytelephas macrocarpa*, Palmae'; 26 (MNHN, ZIN), 'Loreto, caserio Jaldar, rio Yarapa, near Puerto Miguel, rio Ucayali, 20.IX.2009, G. Couturier & C. Delgado', '4°29'21S 73°23'13W, ex larva on inflorescence ♂ in anthesis *Phytelephas* cf. *tenuicaulis*'.

Description of holotype (male). Length of body 2.6, width 1.2, height 0.6 mm. Elongate oval, moderately convex dorsally and ventrally; reddish brown with darker lateral and apical parts of elytra (upto blackish); body with a slight shine; dorsum with rather conspicuous and suberect yellowish golden hairs (more conspicuous on elytra and uncovered tergites), more than 4 times as long as distance between their insertions on head and pronotum and more than 5 times as long as distance between their insertions on elytra and uncovered tergites; underside with somewhat finer and more recumbent hairs than those on dorsum; lateral edges of pronotum and elytra fringed, at posterior angles pronotal base with 'false angles' forming by rather longer hairs somewhat projecting posteriorly.

Head with quite distinct small punctures about 1/3 as large as eye facets in diameter, interspaces between them about as great as a puncture diameter, finely and smoothly microreticulated.

Pronotum with coarser punctures than those on head, about ½ as large as eye facets in diameter, interspaces between them somewhat narrower than a puncture diameter, very finely and very densely microreticulated. Elytra at base with punctures about as large and dense as those on head, but markedly shallower and distally becoming obsolete, interspaces between them somewhat greater than a puncture diameter, very finely and very densely microreticulated. Pygidium and previous tergite with dense and very shallow punctures, interspaces between them rather reliefly, finely and densely microreticulated. Prosternum with distinct, very fine and very dense punctures (about ¼ as great as eye facets in diameter), interspaces between them more or less greater than a puncture diameter, finely and densely smoothly microreticulated in anterior part and completely smooth on prosternal process. Metaventrite in the middle with punctures as large and distinct as those on prosternum, interspaces between them 2-4 puncture diameters and completely smooth, but at sides interspaces bearing some fine and dense microreticulation. Basal abdominal ventrites as punctured and sculptured as anterior part of prosternum, distally puncturation becoming less distinct and microsculpture becoming more relief (hypopygidium about as sculptured as tergites uncovered by elytra).

Head somewhat shorter than distance between comparatively small eyes, slightly convex at base and flattened anteriorly, with a rather distinct transverse ('fronto-clypeal') line, lateral edges above insertions of antennae scarcely elevated, anterior edge of frons unbordered and deeply angularly excised; eyes broadly convex, moderately facetted; temples absent, with a transverse line at anterior edge of pronotum. Labrum with rather far projecting lobes (nearly 3/5 as long as scape), with oblique apices and a deep and wide V-shaped median excision. Mandibles moderately exposed from under frons. Antennae about 1 and 1/2 as long as head width across eyes; scape nearly 3 times as long as wide and about 2/3 as long as club, somewhat wider than 7 following antennomeres; antennomeres 2–8 subconical to bead-shaped and about 1/2 as long as scape (although antennomeres 2 and 5 longest and narrowest); club comprising somewhat less than 1/4 of total antennal length, elongate, compact, almost symmetrical, its segments comparable in width (about 1 and 1/3 as wide as scape) and with longest antennomere 11; antennomeres 2–11 with not long and moderately sparse setae. Pronotum widest at posterior fourth and very slightly narrowing to posterior angles, somewhat less than twice as wide as long in the middle; its anterior edge almost regularly emarginate, and distinctly bordered; sides gently arcuate and not (sub) explanate; posterior edge slightly convex in the middle and shallowly emarginate at each posterior angle, distinctly bordered; anterior angles widely rounded and posterior angles almost with a distinct top and very obtuse; disk rather convex and sides moderately sloping. Scutellum large, subtriangular and with subrounded apex. Elytra widest at base, very slightly longer than wide combined, separately and widely rounded to subtruncate at apices, forming very obtuse sutural angle, leaving uncovered whole pygidium and most part of previous tergite; their lateral edges subparallel-sided, just visible simultaneously from above, adsutural lines slightly expressed along distal 4/5. Pygidium slightly convex and subtruncate to very shallowly emarginate at apex. Arcuate and flattened apex of anal sclerite well exposed.

Mentum short, about 3 times as wide as long, widest at base and with anterior angles widely rounded and nearly straight anterior edge. Ultimate maxillary palpomere subcylindrical to slightly narrowing apically, about 5 times as long as thick. Ultimate labial palpomere elongate and slightly narrowing apically, about 2.5 times as long as thick. Antennal grooves with slightly expressed and convergent at inner edge and subparamental grooves quite distinct. Prosternum moderately convex along the middle and with process narrow, medially convex, not curved along coxae, but just behind the level of coxae it sharply sloping posteriorly and laterally, its apex strongly widened before subtruncate to subangular and thickly bordered posterior edge, with maximal width considerably greater than width of antennal club, its outer apical angles nearly pointed. Ratio of distances between pro-, meso- and metacoxae about as 1:1:4. Metaventrite broadly flattened along the middle and with a distinct median line in distal 2/3, its posterior edge between coxae very shallowly emarginate. Submetacoxal line very well expressed and reached the posterior edge of abdominal ventrite 1 and at the middle of posterior edge of coxal cavity, then it is returning of this line and further following along edge of cavity externally. Abdominal ventrite 1 markedly longer than hypopygidium and somewhat shorter than ventrites 2 and 3 combined; hypopygidium subtruncate at posterior edge. Epipleura at base slightly narrower prosternal process and about 1.5 times as wide as antennal club, moderately elevated laterally.

Tibiae rather widened apically and comparable in width (about twice as wide as antennal club and mesotibia even wider than twice), protibia with almost straight inner edge and meso- and metatibiae with distinctly convex inner edge; outer subapical angle of protibiae distinctly projecting and apices of meso- and metatibiae more or less oblique; outer edge of meso- and metatibiae with sparse rows of rather short and stout setae and that of metatibia with rows of fine setae, scarcely different from hairs. Femora rather wide but of almost usual shape, with more or less convex anterior and posterior edges, but anterior edge profemur and posterior edge metafemur almost straight, pro- and mesofemora nearly 2 times, metafemur nearly 3 times as wide as corresponding tibiae. Tarsi of usual structure; protarsus about 3/5 as wide as protibia, meso- and metatarsi somewhat narrower; claws simple.

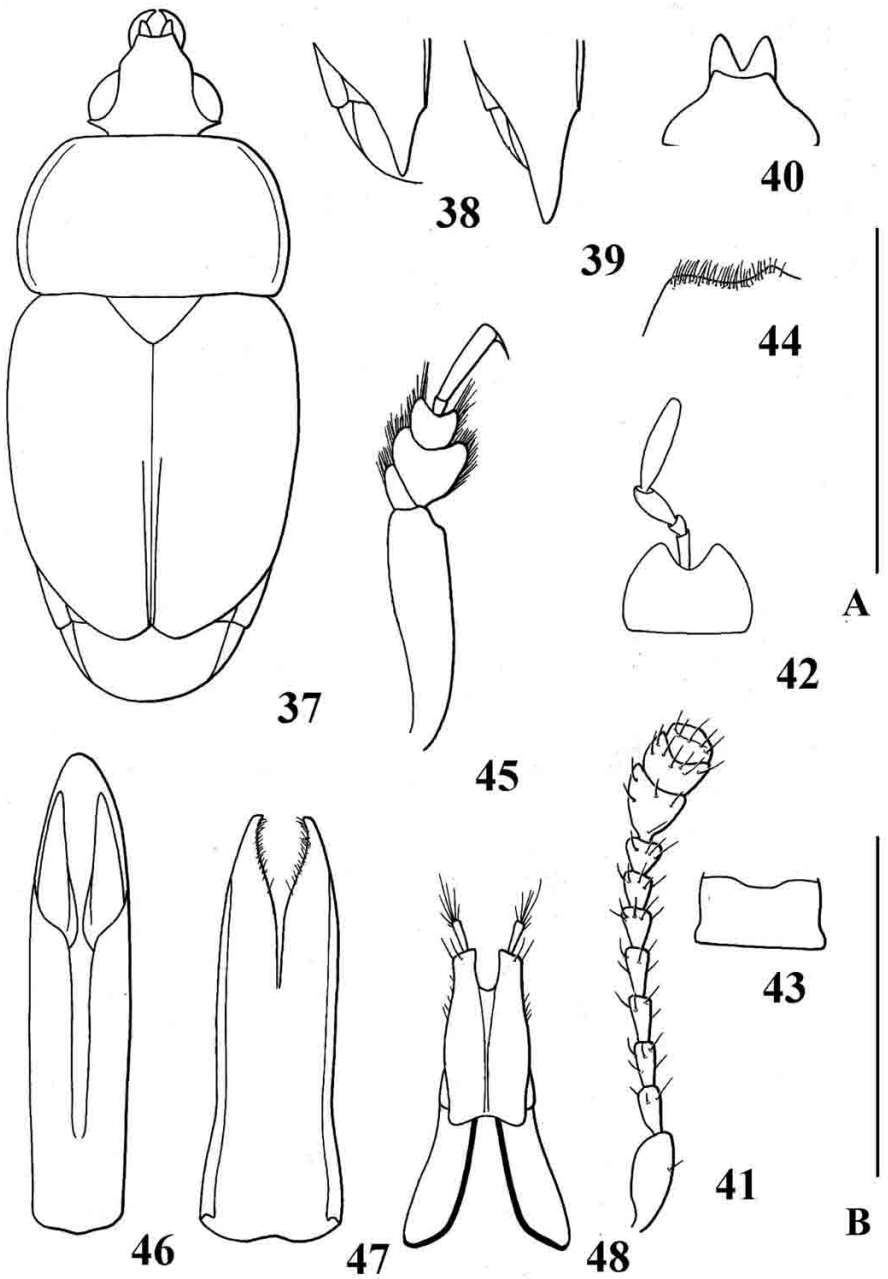
Aedeagus well sclerotized; tegmen subparallel-sided in basal 2/3 and almost gradually narrowing to subtruncate apex with moderately long hairs; penis trunk about as long as tegmen, subparallel-sided in basal 2/3 and gradually narrowing to rather acuminate apex; inner sac of penis with some well sclerotized spicules.

Female. Differs from male in the somewhat shorter antennae (about 1 and 1/3 as long as head width across eyes) with somewhat less elongate club, more usual shape of prosternal process (slightly curving along coxae and frequently gradually approaching to the plane of mesoventrite), narrowly rounded apex of pygidium and widely rounded apex of hypopygidium, metaventrite less broadly flattened along the middle, all tibiae slightly narrower, protarsi about 2/5 as wide as protibia. Ovipositor weakly pigmented, with simple apex and rather long styli.

Variations and sexual dimorphism. Length of body 2.0–2.6, width 1.2–1.3 mm. The dorsal coloration varies from subunicolorous light brownish to reddish dark brownish with darked sides and apices of elytra. The sexual dimorphism in shape of sclerites of ultimate abdominal segment and tarsi is rather stable, however, antennal club, metaventrite and other

structures show a variability not allowing to determine the sex of specimens. Rather frequently elytra remain uncovered not only the entire pygidium, but also the most part of the previous tergite. The puncturation, pubescence and microsculpture of integument show some variability; some paratypes have subuniform dorsal pubescence.

Diagnosis. The combination of the dark coloration of body and particularly elytra, shape of mentum, male prosternal process, dense puncturation and pubescence, narrow and long antennal club, rather wide tibiae and femora as well as the subtruncate elytral apices of this new species makes discrimination of this species among other congeners rather easy (although some undescribed species of the genus, known to the authors, are rather similar to this new species). This species is included in



Figures 37–48
Mystrops bactrii: **37,** male body, dorsally; **38, 39,** female elytral apices, dorsally; **40,** anterior part of frons and labrum, antero-dorsally; **41,** male antenna, dorsally; **42,** male mentum and labial palpus, ventrally; **43,** female mentum, ventrally; **44,** male hypopygidium, ventrally; **45,** male protibia and tarsus, dorsally; **46,** tegmen, ventrally; **47,** penis trunk, dorsally; **48,** ovipositor, ventrally. Scales: A to figs 37-39, bar = 2.0 mm; B to figs 40–48, bar = 1.0 mm.

the provisional group 2 (because of dark coloration of oval and not strongly convex body; pronotum not or slightly narrowed at base; with very slightly expressed dimorphism in antennae; dorsal pubescence moderately long and subrecumbent/suberect), containing also *M. rufidens* **n. comb.** and *M. teapensis* (known only after females). It differs from both in the considerably darker elytra (in *M. rufidens* they are lighter than the rest body), deeply excised anterior edge of frons, narrower and longer labral lobes, more elongate (not oval) antennal club; and also from the first in the shape of mentum, most width of pronotum just at posterior angles, elytral apices not covering both pygidium and previous tergite; and from the second in the much wider tibiae, wider pronotum with more distinct posterior angles. The genitalia of both sexes in this new species are very different from those in *M. rufidens*, but ovipositor of it is rather similar to that in *M. teapensis.*

Etymology. The epithet of this new species is formed from the Latin '*atra*' (black, blackish) referring to its very dark elytra.

Bionomy. Adults on male inflorescence in anthesis of *Phytelephas macrocarpa* and *P.* cf. *tenuicaulis*' in Amazonian rain forest.

Distribution. Map fig. 210. Ecuador, Peru.

Mystrops bactrii n. sp. (Figs 37–48; 171–172)

Material. **Holotype** (MNHN), male & 60 **paratypes** (BMNH, CIRAD, MNHN, NMP, USNM, ZIN, ZMB, PUCE), **Ecuador**: 'Napo, Tena [0°59'0"S 77°49'0"W], 06.IX.1999, L. Reynaud & I. Suarez", 's/inflorescence *Bactris gasipaes*, Arecaceae'; other **paratypes**: 12 (MNHN), 'Napo, Rio Hollin Loreto, 3.XII.2003, 0º13'S, 77º45'W, G. Couturier', 'on inflorescence *Bactris gasipaes*, Arecaceae'; **Bolivia**: 2 (Museum of Natural History at the Oxford University), 'Bolivia, Cochabamba, Villa Tunari, Hotel en Selva el Puenta, 370 m, 18°19'02"S 65°24'25"W, ground of hotel near river, blue light, Mann, Hammel & Simmons'.

Description of holotype (male). Length of body 3.8, width 1.8, height 1.1 mm. Elongate oval, moderately convex dorsally and slightly convex ventrally; subunicolorous straw reddish; body with a slight shine; dorsum with very dense, rather conspicuous and recumbent yellowish golden hairs, about 6 times as long as distance between their insertions; underside with finer, shorter, less conspicuous and recumben hairs than those on dorsum; lateral edges of pronotum and elytra fringed with dense recumbent hairs becoming longer at posterior pronotal angles, making up „false angles" projecting posteriorly; besides apices of sclerites of ultimate abdominal sclerites and anal sclerite with sparse very long hairs oriented posteriorly.

Head and pronotum with very small and distinct punctures 1/3–1/2 as large as eye facets in diameter, interspaces between them 1/3–2/3 of puncture diameter, completely smooth and shining; pronotum with a narrow and shining smooth stripe without pubescence along its anterior edge. Elytra with punctures almost indistinct and shallower than those on pronotum and interspaces between them somewhat alutaceous to microreticulated, surface becoming almost uniformly microgranulate apically. Pygidium as sculptured as elytral apices. Prosternum and mesoventrite obsoletely punctured, finely and densely alutaceous. Metaventrite and abdominal ventrite 1 about as punctured and sculptured as head and pronotum. Ventrites 2–5 with indistinct punctures and densely alutaceous to microreticulated.

Head slightly longer than distance between eyes, subflattened, with a rather weak transverse ("fronto-clypeal") line, lateral edges above insertions of antennae moderately elevated, anterior edge of frons unbordered and shallowly emarginate; eyes broadly convex, very coarsely facetted; temples converging posteriorly and very short. Labrum with rather far projecting lobes, separately arcuate to subacute at apex, with a deep and wide V-shaped median excision. Mandibles moderately exposed from under frons. Antennae about 1 and 2/3 as long as width of head across eyes; scape nearly 2.5 times as long as wide, wider than 6 following ones; antennomeres 2 subconical to subcylindrical and about as long as each of antennomeres 3–5, antennomeres 3–5 subconical, each nearly twice longer than wide; antennomeres 6–8 oval, shorter and wider preceding ones, club comprising about ¼ of total antennal length, oval, nearly compact, slightly asymmetrical with longest and widest antennomere 9; antennomeres 4–11 with comparatively short and rather sparse setae. Pronotum widest at basal third, about 1 and ½ as wide as long in the middle; its anterior edge nearly straight, distinctly bordered; sides broadly arcuate, narrowly explanate-canalicular anteriorly, explanate stripe about 1.5 times as wide as eye facets in diameter at anterior angles and becoming wider posteriorly; posterior edge slightly convex in the middle and shallowly emarginate at each posterior angle, indistinctly bordered; both anterior and posterior angles widely rounded; disk rather and gently convex and sides gently sloping. Scutellum large, subtriangular and with subacute apex. Elytra widest before their midlength, about 1 and ¼ as long as their combined width, broadly and separately rounded apically; their lateral edges broadly arcuate, not explanate, just visible simultaneously from above, adsutural lines expressed in distal 2/3. Pygidium rather convex and subtruncate at apex. Widely rounded apex of anal sclerite far exposed both dorsally and ventrally, and also it is quite high with subvertical posterior surface.

Mentum somewhat less than twice as wide as long, arcuate at sides and deeply excised at anterior edge. Ultimate maxillary palpomere subcylindrical to slightly narrowing apically, about 6 times as long as thick. Ultimate labial palpomere subcylindrical to slightly narrowing apically, about 5 times as long as thick. Antennal grooves and subparamental grooves (stria) not expressed. Prosternum slightly convex along the middle and with process narrow, medially subflattened, longitudinally curved along coxae, its apex slightly widened before subtruncate posterior edge and with narrowly rounded outer angles. Ratio of distances between pro-, meso- and metacoxae about as 1:1:3. Metaventrite medially flattened but somewhat depressed at mesocoxae, its posterior edge between coxae shallowly emarginate. Submetacoxal line not deviating from posterior edge of cavity. Abdominal ventrite 1 much longer than hypopygidium and about as long as ventrites 2 and 3 combined; hypopygidium widely emarginate at posterior edge with a prominent median projection. Epipleura at base nearly twice as wide as prosternal process and moderately elevated laterally.

Tibiae slightly widened, comparable in width at apex, somewhat narrowed in distal 1/5, inner edge of pro- and metatibiae straight, inner edge of mesotibia emarginate, outer edge of meso- and metatibiae with rows of short setae. Femora of usual shape, all with more or less convex anterior and posterior edges,

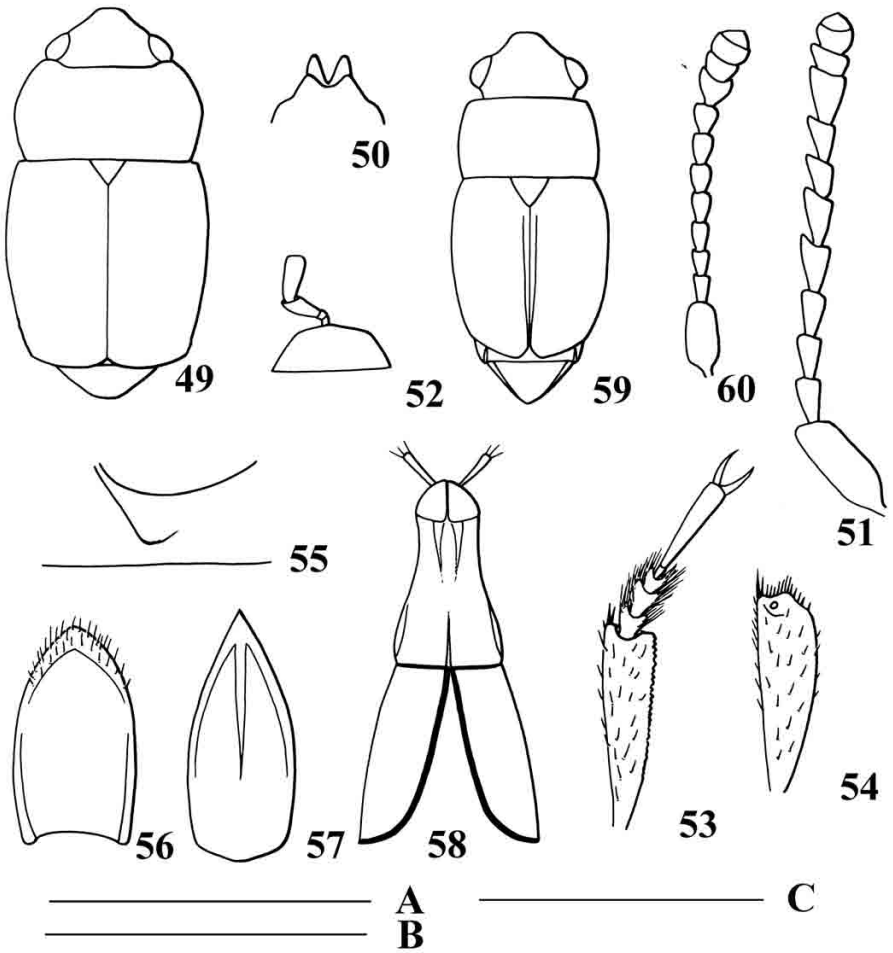
pro- and mesofemora about twice, metafemur about 2.5 times as wide as corresponding tibiae. Tarsi with unusually elongate tarsomere 1; protarsus about subequal in width to tibiae, meso- and metatarsi only slightly narrower; tarsomere 3 with a pair of narrow brushes of very long hairs; claws simple and narrow.

Aedeagus well sclerotized; tegmen in basal half parallel-sided and slightly narrowing before deeply excised apex; penis trunk subparallel-sided and gradually narrowing to narrowly rounded apex.

Female. Body in general more slender. Antennae shorter, not reaching posterior angles of pronotum, with oval 3-segmented club, quite similar to that in males composing of about 2/7 of total antennal length. Head about as long as distance between eyes. Elytra strongly projecting and sharply acuminate at apices. Pygidium slightly convex and widely rounded at apex. Mentum more subquadrate and some emarginate in the middle of its anterior edge. Ultimate maxillary palpomere about 5 times as long as thick. Ultimate labial palpomere slightly narrowing apically and about twice as long as wide. Hypopygidium subtruncate at apex. Tarsi with tarsomere 1 of usual shape; protarsus slightly narrower than tibiae, meso- and metatarsi yet narrower. Ovipositor weakly pigmented, with comparably short gonocoxites and forked apically.

Variations and sexual dimorphism. Length of body 3.5–3.8, width 1.2–1.8 mm. The sexual dimorphism is rather stable, although the smaller males have tarsi not so long as in the holotype. The females in general are more slender and with elytral apices more or less far projecting posteriorly (frequenly much extending behind abdominal apex). The paramedian striae at the pronotal base are sometimes are scarcely expressed.

Diagnosis. This new species belongs to the provisional species group 1 (see above), except for the quite peculiar genital structures, it is distinct from other members of this group in the much larger body, very dense and longer dorsal pubescence, widely rounded posterior angles of the pronotum, much longer labral lobes, more elongate antennal club with longest



Figures 49–60
Mystrops beserrai, typical form (49–58): **49,** male body, dorsally; **50,** anterior part of frons and labrum, antero-dorsally; **51,** male antenna, dorsally; **52,** male mentum and labial palpus, ventrally; **53,** submetacoxal line, ventrally; **54,** male protibia and tarsus, dorsally; **55,** male mesotibia, dorsally; **56,** tegmen, ventrally; **57,** penis trunk, dorsally; **58,** ovipositor, ventrally; aberrant form (59–60): **59,** male body, dorsally; **60,** male antenna. Scales: A to figs 49, 59, bar = 1.0 mm; B to figs 50–55, 60, bar = 0.5 mm; C to figs 56–58, 33–36, bar = 0.25 mm.

antennomere 9, shape of mentum, as well as in the shape of the male protibia and protarsus, and much longer acuminate apices of the female elytra. Besides, it is also characterized by the pronotum with smooth and bordered stripe without pubescence along its anterior edge and paramedian striae at scutellum, apical brushes of long hairs on the lobes of tarsomere 3 and male anal sclerite rather large and well exposed, showing a considerable resemblance to that in the genus *Nitops* Murray 1864 (Carpophilinae). See also below the diagnoses of *M.costaricensis, M. dalmasi*, *M. kahni* **n. sp.**, *M. squamae* **n. sp.** and *M. vasquezi* **n. sp.**

Etymology. The species epithet is formed from the generic name of palm species, inflorescences of which are inhabited by this species.

Bionomy. Adults on inflorescence in anthesis of *Bactris gasipaes* Kunth 1816 in cultivated areas.

Distribution. Map fig. 208. Ecuador, Bolivia.

Mystrops beserrai n. sp. (Figs 49–60; 173–175)

Material. **Holotype** (MNHN), male and 72 **paratypes** (BMNH, MNHN, NMP, PUCE, ZIN,), **Ecuador:** 'Morona, Santiago, Taisha, 02°22'S, 77°29'W, 17.X.2002, P. Beserra & G. Couturier', 'on inflorescence of *Elaeis oleifera*, anthesis 100%' (18.X.2002); other **paratypes**: **aberrant form**: 15 (MNHN, ZIN), **Ecuador**: 'Mor., Sant. Puerto Morona [2°56'0" S 77°42'0"W], 19.XII.1999, F. Kahn', 's/inflorescence of *Elaeis oleifera*, Palmae – herbier, F. Kahn'; 19 (MNHN), **Brazil**: '(Amaz), Rio Negro – Com. Terra Preta [2°30'40S 60°52'34"W], 3.XII.2000, P. Beserra', 'inflorescencia male plena antese *Elaeis oleifera* (Arecaceae)'; 128 (INPA, MNHN, MPEG, NMP, ZIN), 'Manaus, 19.XI.1991, G. Couturier', 'Embrapa "Rio Urubu" [2°06'0"S 60°02'0"W], on palm plantation, on inflorescence male *Elaeis oleifera*'; 104 (BMNH, CIRAD,INPA, MNHN, MNRJ, USNM, ZIN, ZMB), 'Manaus, 13.X.1994, G. Couturier', 'Plantation Palmiers à huile Embrapa, Rio Urubu, Rodovia Itacoatiara' [3°08'34"S 58°26'33"W], 'inflorescence male *Elaeis oleifera* x *E. guineensis*'; 7 (CIRAD), 'Amazonas, Rio Solimoes (Tefe) [3°21'21"S 64°43'8"W], fleurs mâle *Elaeis* M., VI.1983, F. Lucchini'; 9 (MNHN), 'Para, Belem [1°27'21"S 48°30'16"W], 10.IX.97, P. Beserra M.', 'Embrapa Am. Or. Hibrido *E. guineensis* x *E. oleifera*', 'inflorescencia masculina, en antese'; 45 (MNHN, ZIN), **Peru**: 'Loreto, Rio Maniti- Villa Maria [12°09'36"S 76°56'26"W], 6.X.2006, G. Couturier & C. Delgado', 'en inflorescencias en antesis de *Oenocarpus mapora*, bacabinha (Arecaceae)'; 39 (MNHN, ZIN), ibid. 'en inflorescencias en antesis de *Oenocarpus multicaulis*, sinamillo (Arecaceae)'.

Description of holotype (male). Length of body 2.2, width 1.1, height 0.5 mm. Oval, slightly convex dorsally and ventrally; unicolorous straw yellowish; dorsum and abdominal ventrites with a slight shine and thoracic ventrites rather shining; dorsum with moderately conspicuous and subrecumbent yellowish golden hairs, about 3 times as long as distance between their insertions; thoracic ventrites with somewhat finer and shorter hairs and abdomen as pubescent as dorsum; pronotum and elytra fringed with dense recumbent hairs becoming somewhat longer at posterior pronotal angles, making up 'false angles' rather projecting posteriorly.

Head with quite distinct small punctures about 1/3 as large as eye facets in diameter, interspaces between them about as great as a puncture diameter, finely and densely cellularly microreticulated. Pronotum with slightly coarser punctures than those on head, about ½ as large as eye facets in diameter, interspaces between them subequal to or somewhat less than a puncture diameter, very finely, densely and somewhat smoothly microreticulated. Elytra with much smaller punctures than those on pronotum, markedly shallower and distally becoming nearly obsolete, interspaces between them somewhat greater than a puncture diameter, very finely and very densely microreticulated. Pygidium, previous tergite and abdominal ventrites with dense punctures, interspaces between them rather reliefly, finely and densely microreticulated. Prosternum with indistinct, very fine and very dense punctures, interspaces between them much greater than a puncture diameter, smoothly microreticulated. Metaventrite in the middle with punctures as large as those on prosternum, but interspaces between them with more distinct microreticulation, laterally punctures becoming larger and microreticulation more relief.

Head somewhat longer than distance between eyes, slightly convex at base and rather depressed between antennal depressions, with a very distinct transverse ('fronto-clypeal') line, lateral edges above insertions of antennae rather elevated, anterior edge of frons unbordered and deeply angularly excised; eyes broadly convex, moderately to coarsely facetted; temples strongly narrowing, without a transverse line at anterior edge of pronotum. Labrum slightly projecting lobes, with narrow apices and a deep and very wide V-shaped median excision. Mandibles moderately exposed from under frons. Antennae about 2.5 times as long as head width across eyes; scape nearly 3 times as long as wide and slightly shorter than club, only slightly wider than 7 following antennomeres; antennomeres 2 and 3 subconical to slightly compressed and somewhat less than ½ as long as scape, antennomeres 4-8 subtriangular and compressed, antennomeres 4–7 somewhat longer and antennomere 8 subequal in length to antennomeres 2 and 3; club comprising about 1/5 of total antennal length, elongate, compact, almost symmetrical, its segments comparable in width about as wide as scape and with longest antennomere 9; antennomeres 2–11 with moderately long and sparse setae. Pronotum widest in posterior 2/5, very slightly narrowing posteriorly and moderately strongly anteriorly, somewhat less than twice as wide as long in the middle; its anterior edge distinctly subtrapezium-likely excised and indistinctly bordered; sides arcuate and narrowly canalicular at edge; posterior edge slightly convex to straight in the middle and very shallowly emarginate at each posterior angle, distinctly bordered; anterior angles widely rounded and posterior angles with almost distinct top and very obtuse; disk slightly convex and sides moderately sloping. Scutellum large, subtriangular and with rounded apex. Elytra widest at base, about as long as wide combined, suboblique to subtruncate at apices, forming very obtuse sutural angle, leaving uncovered most part of pygidium; their lateral edges subrectilinear in most length, just visible simultaneously from above, adsutural lines slightly expressed along whole length. Pygidium slightly convex and widely rounded at apex. Arcuate and flattened apex of anal sclerite scarcely exposed.

Mentum short, almost 3 times as wide as long, subpentagonal and widest at base and with angularly projecting anterior edge. Ultimate maxillary palpomere subcylindrical to slightly narrowing apically, about 5 times as long as thick. Ultimate labial palpomere elongate and subparallel-sided apically, about

2.5 times as long as thick. Antennal grooves very slightly expressed and convergent at inner edge, but subparamental grooves (lines) not expressed. Prosternum moderately convex along the middle and with process narrow, medially convex, noderately curved along coxae before roof-shared and not bordered apex, with maximal width comparable with antennal club, its outer apical angles widely rounded and posterior edge rounded. Ratio of distances between pro-, meso- and metacoxae about as 1:1.5:3. Metaventrite gently convex along the middle and with a distinct median line in distal 2/3, its posterior edge between coxae very shallowly emarginate. Submetacoxal line very well expressed and not reaching the posterior edge of abdominal ventrite 1 and turning anteriorly. Abdominal ventrite 1 about as long as hypopygidium and somewhat shorter than ventrites 2–4 combined; hypopygidium widely rounded to subtruncate at posterior edge. Epipleura at base slightly wider than prosternal process and about 1.5 times as wide as antennal club, moderately elevated laterally.

Legs moderately narrow. Tibiae moderately widened apically and comparable in width (pro- and metatibiae slightly narrower and mesotibiae slightly wider than antennal club), all with almost straight inner edge, apex of protibia subtruncate, but apices of meso- and metatibiae more or less oblique, outer edge of meso- and metatibiae with rows of rather small and fine setae. Femora rather wide, but of almost usual shape, with more or less convex anterior and posterior edges, although anterior edge profemur and posterior edge metafemur almost straight; pro- and mesofemora nearly 2.5 times, metafemur nearly 3.5 times as wide as corresponding tibiae. Tarsi almost of usual structure; protarsus about 1/2 as wide as protibia, meso- and metatarsi somewhat narrower; tarsomere 5 longer than tarsomeres 1–4 combined; claws simple.

Aedeagus weakly sclerotized; tegmen with somewhat arcuate sides and narrowing to subacute apex, bearing very short and sparse hairs; penis trunk somewhat longer than tegmen, subparallel-sided at base and narrowing to acute apex along most length, lobes of its orifice very long.

Female. Differs from male only in the somewhat shorter antennae (about 1 and 2/3 as long as head width across eyes) with somewhat less elongate club, not clearly compressed and less widened apically antennomeres 4–8, and slightly depressed head between antennal insertions. Ovipositor weakly pigmented, with simple apex and rather long styli.

Variations and sexual dimorphism. Length of body 2.0–2.5, width 1.1–1.2 mm. The sexual dimorphism in shape of antennomeres is rather variable, therefore sex of specimens can be deternimed only due to the anal sclerite of the male usually exposed. Sides of pronotum in some paratypes are not arcuate but subrectilinear or even almost subparallel in basal ½. The length of sparse setae on antennomeres is very variable, and sometimes it is not more than short hairs on other segments. The puncturation, pubescence and microsculpture of integument show some variability: not infrequently elytra with punctures about as large as those on pronotum. Labrum can be with rather far projecting lobes (nearly 2/5 as long as scape). Pronotum of many males is widest in posterior 2/5, but narrowing to both posterior and anterior angles. Some male paratypes have the pro- and metatibiae slightly wider and mesotibiae about 1.5 times as wide as antennal club.

Aberrant form (looking as quite different species, although the specimens collected on 3.X.2000 clearly show an intermediate shape of pronotum and male antennae): Length of body 1.2–1.8, width 0.6–0.8 mm. Differs from the typical form in the usually somewhat darker, slender, more convex and smaller body; its pronotum widest at base and gradually narrowing anteriorly; elytral apices rather oblique and without clear sutural angle than widely rounded to subtruncate apices forming a distinct sutural angle; male antennomeres 4–8 quite narrow (as in many other species of the genus), i.e. not subtriangularly dilated; dorsal puncturation very fine and extremely dense and microsculpture between punctures very dense and relief; not depressed frons between antennal insertions (including that in males).

Diagnosis. The typical form of this new species is distinct from all congeners in the peculiar shape of pronotum, very narrow labral lobes, compressed and subtriangular antennomeres 4-8. It can be regarded in a composition of the provisional group 5 (see above), however, in addition to the mentioned characters and structures of genitalia of both sexes, it differs also:

- from the abberrant forms *M. astrocaryi* **n. sp.** in the characters mentioned in the diagnosis of the latter: more convex body, smaller eyes, narrower antennal club in both sexes, very depressed frons between antennal insertions (particularly in males), longer and far projecting labral lobes, depressed frons between the antennal insertion (particularly in males), somewhat longer and subpentagonal mentum as well as in the longer ultimate labial palpomere;

- from *M. bondari* in the much smaller, more slender and lighter body; much sparser, much shorter and less conspicuous pubescence; peculiarities of puncturation and sculpture; narrowly rounded lateral angles of frons; less developed mandibles; presence of antennal grooves, lack of traceable subparamental grooves (lines); widely rounded apex of male pygidium, shorter setae on lobes of male tarsomeres 1-3 and also in the lack of long hairs on dorsum and legs of males;

- from *M. debilis* in the less convex body, shorter pronotum with emarginate to excised anterior edge and more distinct posterior angles, somewhat longer elytra, shorter male antennae with the almost symmetric club, shape of mentum, thicker ultimate labial palpomere, presence of antennal grooves, lack of traceable subparamental grooves (lines), much longer tarsomere 5, deeply excised anterior edge of frons, shorter setae on lobes of the male tarsomeres 1–3 and not so strong sexual dimorphism in general;

- from *M. delgadoi* in the lighter and less convex body, shorter pronotum with emarginate to excised (not truncate) anterior edge, coarser eye facets, shape of mentum, thicker ultimate labial palpomere, presence of antennal grooves, lack of traceable subparamental grooves (lines), much longer tarsomere 5, deeply excised anterior edge of frons and not so strong sexual dimorphism in general with male antennomere 9 not so long;

- from *M. heterocera* in the much slender and less convex body, narrower head, longer elytra, longer labral lobes exposed from under frons, less widely separated mesocoxae, shorter hairs, denser and less distinct puncturation in the males, markedly narrower male tibiae (particularly male mesotibia), distinct antennal grooves;

- from *M. komissari* **n. sp.** in the less convex, wider and lighter body, shorter male antennae, shape of mentum, weak expression of the short antennal grooves, lack of traceable subparamental lines, much longer tarsomere 5, submetacoxal lines less distinct, prosternal process not so strongly curved along coxae and without distinct border along the posterior edge, not so strong

sexual dimorphism in general;

- from *M. lucanoides* in the smaller body (more slender in females), much denser and less distinct puncturation, very slight shine on the dorsum, more conspicuous pubescence, much smaller and narrower male head, presence of antennal grooves, lack of traceable subparamental grooves (lines), much shorter male antennae, much shorter male mandibles, shape of mentum, shorter and thicker ultimate labial and shorter ultimate maxillary palpomeres, narrower border of anterior and posterior edges of male pronotum, more deeply excised anterior edge of frons, far projecting labral lobes, not so strong sexual dimorphism in general;

- from *M. pectoralis* **n. sp.** in the smaller and less convex body, somewhat longer elytra, much narrower antennal club in both sexes, lack of transverse elevation on the male prosternum, shape of mentum, slightly longer tarsomere 5 (in *M. pectoralis* n. sp. they are about as long as tarsomeres 1-4 combined), not so strongly curved prosternal process along the coxae and not so strong sexual dimorphism in general;

The aberrant form of this new species is distinct from the congeners of the provisional group 6 (see above) and *M. luteola* from the group 5 in the most slender body and pronotum with the most width at its base, and also:

- from the aberrant forms *M. astrocaryi* **n. sp.** in the much denser and finer dorsal puncturation, usually longer male antennae and much narrower antennal club in both sexes, somewhat longer subpentagonal mentum, presence of antennal grooves, lack of traceable subparamental grooves (lines) and longer ultimate labial palpomere;

- from *M. bondari* in the much smaller, more slender and lighter body; much sparser, much shorter and less conspicuous pubescence; peculiarities of puncturation and sculpture; narrowly rounded lateral angles of frons; less developed mandibles; presence of antennal grooves, lack of traceable subparamental grooves (lines); widely rounded apex of male pygidium; shorter setae on lobes of male tarsomeres 1–3 and also in the lack of long hairs on dorsum and legs of males;

- from *M. debilis* in the usually much smaller and somewhat more convex body, somewhat longer elytra, shorter male antennae with almost symmetric club, shape of the mentum, thicker ultimate labial palpomere, presence of antennal grooves, lack of traceable subparamental grooves (lines), much longer tarsomere 5, deeply excised anterior edge of the frons, shorter setae on lobes of male tarsomeres 1–3 and not so strong sexual dimorphism in general;

- from *M. delgadoi* in the lighter, usually much smaller and more convex body, shorter male antennae with not so long antennomere 9, shape of the mentum, presence of antennal grooves, lack of traceable subparamental grooves (lines), much longer tarsomere 5, deeply excised (not truncate) anterior edge of the frons and not so strong sexual dimorphism in general;

- from *M. heterocera* in the much slender and less convex body, narrower head, longer elytra, longer labral lobes exposed from under frons, less widely separated mesocoxae, shorter hairs, denser and less distinct puncturation in males, markedly narrower male tibiae (particularly male mesotibia) and distinct antennal grooves;

- from *M. komissari* **n. sp.** in the larger, less convex, wider and lighter body, much shorter male antennae, shape of mentum, weak expression of the antennal grooves, lack of traceable subparamental grooves (lines), much longer tarsomere 5, less distinct submetacoxal lines, prosternal process not so strongly curved along the coxae and without distinct border along the posterior edge and not so strong sexual dimorphism in general;

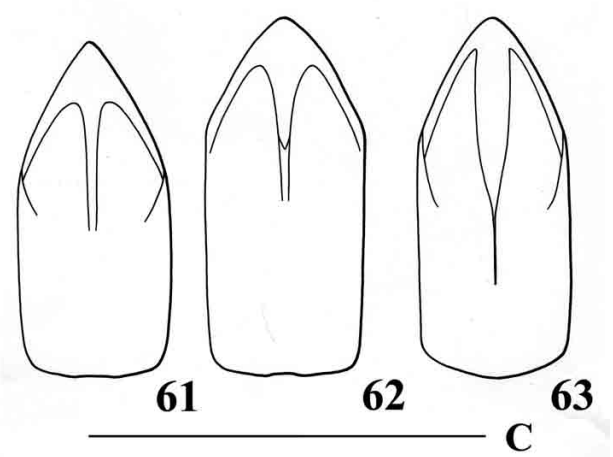
- from *M. lucanoides* in the smaller body (more slender in females), much denser and less distinct puncturation, very slight shine on the dorsum, much more conspicuous pubescence, presence of antennal grooves, lack of traceable subparamental grooves (lines), much smaller and narrower male head, much shorter antennae in males, much shorter male mandibles, shape of the mentum, shorter and thicker ultimate labial and shorter ultimate maxillary palpomeres, narrower border of the anterior and posterior edges of male pronotum, more deeply excised anterior edge of frons, far projecting labral lobes and not so strong sexual dimorphism in general;

- from *M. pectoralis* **n. sp.** in the less convex body, somewhat longer elytra, much narrower antennal club, lack of transverse elevation on the male prosternum, shape of mentum, shorter ultimate labial palpomere, more deeply depressed frons between the antennal insertions, slightly longer tarsomere 5 (in *M. pectoralis* n. sp. it is about as long as tarsomeres 1–4 combined), not so strongly curved prosternal process along the coxae, rounded apex of the male hypopygidium and not so strong sexual dimorphism in general.

Etymology. The species epithet is devoted to P. Beserra, entomologist and specialist in cultivation of palms in South America, who collected many specimens for this study.

Bionomy. Adults have been found on inflorescences of *Elaeis oleifera* (Kunth) Cortes 1897, hybrid *Elaeis oleifera* X *E. guineensis*, *Oenocarpus mapora* H. Karsten 1857 and *O. multicaulis*, in cultivated and preserved areas.

Distribution. Map fig. 211. Brazil, Ecuador, Peru.



Figures 61–63
Mystrops costaricensis (61–63): *M. costaricensis costaricensis*, paratype: **61,** penis trunk, dorsally; *M. c. orientalis*, paratype: **62,** penis trunk, dorsally; *M. c. pacifica*, paratype: **63,** penis trunk, dorsally. Scales: A to figs. 61–63, bar = 0.25 mm.

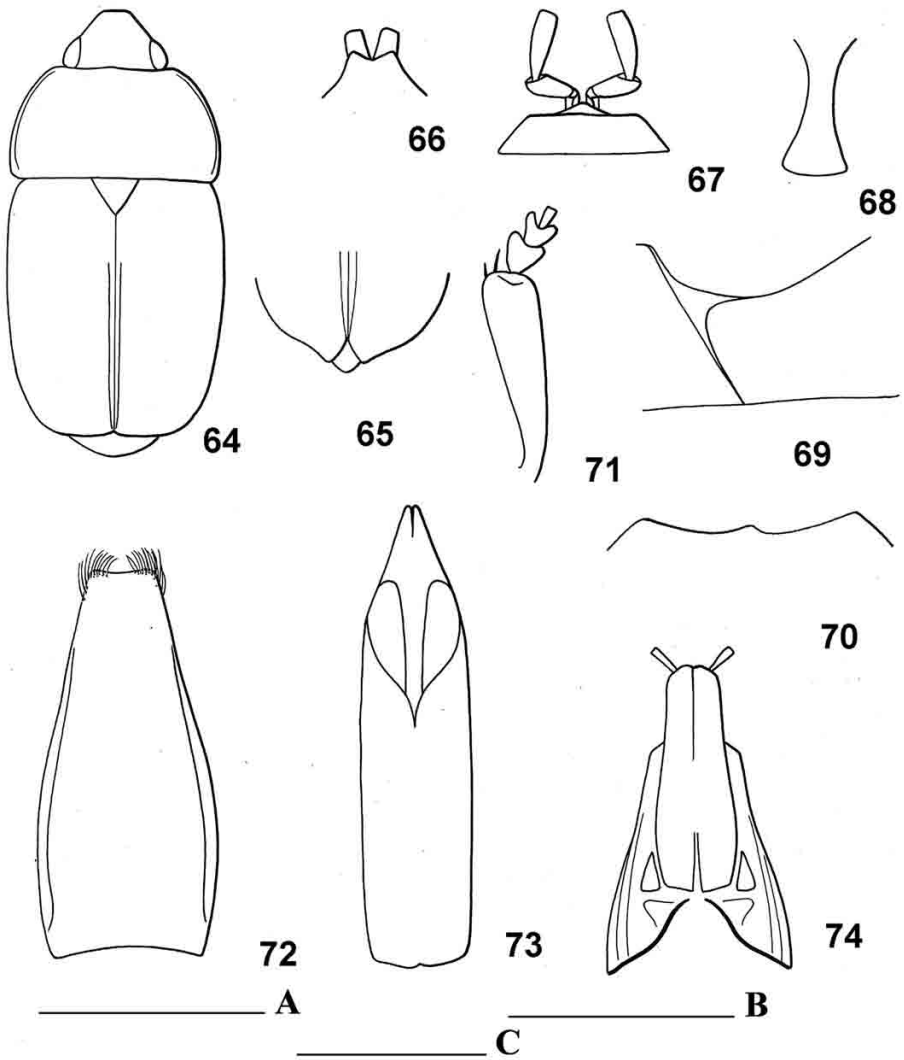
Mystrops costaricensis Gillogly 1972 (Figs 61–63; 176–178)

Mystrops costaricensis Gillogly 1972: 118;

Mystrops costaricensis pacificus Genty, Garson, Lucchini & Delvare 1986 **n. syn.**: 103;

Mystrops costaricensis orientalis Genty, Garson, Lucchini & Delvare 1986 **n. syn.**: 103.

Material. 22 **paratypes** of *M. costaricensis* (USNM), **Costa Rica**: 'Guápiles [N 10° 13' 0" W 83° 47' 0"], 16.XI.68', '*Elaeis guineensis*', 'L.R. Gillogly'; **lectotype** *M. costaricensis orientalis* (CIRAD), here designated, male, **Colombia**: 'San Alberto [N 7° 45' 9" W 73° 23' 21"], XI.1982, palmier à huile, Genty', '*Mystrops costaricensis* ssp. *orientalis* G. Delvare det. 20'; 8 **paralectotypes** of *M. c. orientalis* (CIRAD) with labels mentioned in the description; **lectotype** of *M. costaricensis pacificus* (CIRAD), here designated, male, **Ecuador**: 'Quininde, Palmeras de Los Andes [N 0° 20' 0" W 79° 28' 0"], XII.19823', 'Palmier à huile (pollinisateur), Genty (irho)', '*Mystrops costaricensis* ssp. *pacificus* G. Delvare det. 20'; 7 **paralectotypes** of *M. c. pacificus* (CIRAD) with labels mentioned in the description and 11 **paralectotypes** of *M. c. pacificus* (BMNH) with labels mentioned in the description and also with labels, '*Mystrops costaricensis* Gillogly, R.J.W. Aldredge det. 1985' and '*Mystrops costaricensis*, Lyal det. 1987"); 1 slide with dissected specimen (CIRAD), 'sur fleurs *Elaeis guineensis*, Quininde, 6.XII.1983, REF. Faunistic GERDAT, 3942, P. Genty', '*Mystrops costaricensis* Gillogly ssp. *pacificus* Delvare, G. Delvare det. 1984'; 3 (CIRAD), **Honduras**: 'San Alejo [15°41'0"N 87°33'0"W], IV.1983, fleurs mâle



Figures 64–74
Mystrops dalmasi: **64,** male body, dorsally; **65,** female elytral apices, dorsally; **66,** anterior part of frons and labrum, antero-dorsally; **67,** male mentum and labial palpus, ventrally; **68,** prosternal process, ventrally; **69,** submetacoxal line, ventrally; **70,** male hypopygidium, ventrally; **71,** male protibia and tarsus, dorsally; **72,** tegmen, ventrally; **73,** penis trunk, dorsally; **74,** ovipositor, ventrally. Scales: A to figs 64, 65, bar = 1.0 mm; B to figs 66–68, bar = 0.5 mm; C to figs 69–74, bar = 0.25 mm.

palmier africain, P. Genty‘ (named Delvare as *M. costaricensis* ssp. *costaricensis*); 4 (BMNH), ‘Caicesa Mts. [15°47’0”N 87°27’0”W], 13.IV.1985‘, ’G. Vallago, on oil palm‘ (named by R.D. Madge as *M. costaricensis*); 6 (BMNH), ‘Lalima [?], on oil palm ?, 30.VIII.1977‘, ’G. Evers‘ (named by R.D. Madge as *M. costaricensis*); 1 (CIRAD), **Mexico**: ‘Chiapas [16°30’0”N 92°30’0”W], IV.1983, P. Genty, fleurs de palmier‘ (named Delvare as *M. costaricensis* ssp. *costaricensis*); 1 (ZMB) – ‘E Cora [21°25’0”N 105°06’0”W], Tepic, Ad. Lüdecke‘; 2 (BMNH), **Costa Rica**: ‘Goltito [8°39’0”N 83°09’0”W], VIII.1982, Dr. Revelo‘; 4 (BMNH), **Colombia**: ‘Coldesa-Turbo [08°00’0”N 76°35’0”W], 1967, on oil palm flowers‘ (named by J. Jelínek as *M. costaricensis*); 8 (BMNH), ‘San Alberto‘ [7°45’9”N 73°23’21”W], ’IX.1983, on *Elaeis guineensis*” (named by R.D. Madge as *M. costaricensis*); 2 (BMNH), ‘Tumaco NAR [1°47’55”N 78°48’56”W], 16.II.1984‘, ’E. Peña, on Palma africana‘ (named by R.D. Madge as *M. costaricensis*); 10 (BMNH, ZIN), ’on male inflorescence of African oil palm‘, ’Las Brisas, Puerto Wilches [7°35’0”N 73°40’0”W], 28.X.1981, John W. Lowe‘; 18 (CMNO, FMNH, ZIN), ‘N de S., 1300m. 2 km E Gramalote [7°55’0”N 72°45’0”W], 11.V.1974, H. & A. Howden‘, ‘palm flowers‘; 1 (BMNH), **Ecuador**: ‘Santo Domingo de Los Colorados [0°15’0”S 79°09’0”W], on oil palm inflorescence’, ’2.VI.82, F.D. Bennett‘; 24 (CMNO, ZIN), ‘Esmer, 11 km SE S. Lorenzo [1°17’0”N 78°50’0”W], La Hiquita, 3-10.VI.1975, S. & J. Peck‘, ‘palm flower‘; 3 (CMNO, ZIN), ‘Cotopaxi Prov. [0°50’0”S 78°50’0”W], Los Pampas, 20 km S. la Union de Toachi, 1400 m, 11.I.1992, Carlton & Leschen, Ivory Palm flowers‘;1 (USNM), ‘Pichincha [0°13’47”S 78°31’29”W], 3.VI.1966, G. Bjdrano‘, ‘*Elaeis guineensis* flowers‘, ‘*Mystrops heterocera* det. L.G. Gillogly‘; 8 (USNM), **Paraguay**: ‘flowers *Cocos australis*, S. Bernardino [25°16'12"S 57°19'12"W], Fiebrig, IX.1920‘; 10 (USNM, ZIN), ‘S. Bernardino‘, ‘K. Fiebrig Collection‘.

Notes. Length of body 1.1–1.4 mm. Specimens recorded as representatives of both non-nominative subspecies of *M. costaricensis* were mentioned in the original description without any proper indication of the holotype designation (Genty *et al*., 1986) and also they were not designated in the collection. Therefore the specimens, which were received for re-examination from CIRAD after study by G. Delvare and his colleagues, should be regarded as syntypes. The specimens from BMNH with the same labels, which have the specimens from CIRAD, could be also regarded as syntypes, because they were sent by the authors of the description to BMNH in order to compare these specimens with other species of the genus, however, they should be regarded as type specimens with question, as it is impossible to be sure if they were sent after preparation of the description or before.

All series of specimens examined include the females with markedly longer elytral apices than it was indicated in the original description (Gillogly 1972).

Diagnosis. This species is very similar to *M. kahni* **n. sp.**; *M. squamae* **n. sp.**; *M. vasquezi* **n. sp.** from the provisional species group 1 (see above), but differs from them in the shallowly emarginate anterior edge of frons; besides, from two first species also in the simple hairs on dorsum (without scales in pubescence of the dorsum), more clear puncturation and rather shining integument; and from the latter in the more oval body (not elongate) and not so acute apex of the penis trunk. Elytral length of these species has the following mean proportions (ration elytral length to their combined width):

M. costaricensis: male – 1:1, female – 1.3:1;

M. kahni **n. sp.**: male – 1.2:1, female – 1.3:1;

M. squamae **n. sp.**: male – 1:1, female – 1.2:1;

M. vasquezi **n. sp.**: male – 1.2:1, female – 1.5:1.

Two other species of this group (*M. bactrii* **n. sp.** and *M. dalmasi*) are much larger, with denser puncturation, relief microsculpture and with denser and longer hairs. See also the diagnoses of both species lastly mentioned.

Bionomy. This species is certainly not native pollinator of *Elaeis guineensis*, why this palm species was introduced to America. Its origin must be searched among Neotropical palms. Genty *et al*. (1986) recorded this *Mystrops* species also from *Elaeis melanococca* (now regarded as synonym of *E. oleifera*). This fact seems to show that the original host plant of *M. costariciensis* is *E. oleifera* from Western Amazonia and eastern part of the Andes. However, it became rather characteristic of *Elaeis guineensis*. Some specimens have been collected on “ivory palm flowers” in Ecuador (*Phytelephas* sp.) and “*Cocos australis*“ (which is now treated as *Syagrus romanzoffiana* (Chamisso) Glassman 1968) in Paraguay.

Distribution. Map fig. 211. See Gillogly 1972; Genty *et al.* 1986. Mexico, Honduras, Costa Rica, Ecuador, Colombia, ’Costa atlantica‘ [?], Paraguay.The recent distribution seems to coincide with the area of cultivation of *Elaeis guineensis.*

Mystrops dalmasi (Grouvelle 1902), n. comb. (Figs 64–74; 183–184)

Cryptoraea dalmasi Grouvelle 1902: 462.

Material. **Lectotype** (MNHN), here designated, male, **Venezuela**: ‘Bugrion‘ [?], ’Type‘, ’*Cryptoraea dalmasi* Ty. Grouv.’ (written by A. Grouvelle); 21 (MNHN), **French Guyana**: ’Nouveau Chantier [?], Collection Le Moult‘, ’*Cryptoraea cayenensis* n. sp.’ (written by A. Grouvelle, but never published); 1 (MNHN), ’St. Laurent du Maroni‘ [5°30’0”N 54°02’0”W], ’Coll. Le Moult‘; 12 (ZIN), ’Mt. de Kaw, 2 km SO Camp Caimans, 300 m, 4º34’N 52º12’W, V. Gusarov, 25.VI.1995‘; more than 1000 (MNHN, UNALM, ZIN), **Peru**: ‘Loreto, Jenaro Herrera [4º55’0”S 73º40’0”W], 26.X. 89, K. Mejia‘, ’sur inflorescences *Mauritia flexuosa*, Palmae‘ (25.X.1989); 162 (MNHN, MPEG, ZIN), ‘Loreto, Iquitos [3°44’53”S 73°14’50”W], 31.X.1991, K. Mejia‘, ’Carretera, Iquitos – Nauta [4°32’0”S 73°33’0”W]‘, ’Host plant *Mauritia carana*, Palmae‘; 64 (CIRAD, INPA, MNHN, UNALM, USNM, ZIN, ZMB), ‘Loreto, Iquitos, I.2002, J. Vasquez B.’, ’*Mauritia flexuosa*, Arecaceae, inflorescence’; 9 (MNHN), ‘Loreto, Iquitos, X.1992, J. Vasquez B.’, ’on inflorescence‘, “Host plant *Mauritia carana*, Palmae”; 34 (USNM, ZIN), ‘Madre de Dios [12°36’0”S 69°10’59”W], Rio Tambopata Res., 30 km (air) sw Pto., Maldonado, 290 m, 12º50’S 069º20’W‘, ’Canopy Fogging Project, T.L. Erwin *et al*., 07.XI.83‘ (08.XI.83, 09.XI.83, 10.XI.83, 28.II.84, 2.III.84, 2.V.84); 13 (ZISP), ‘50 km S from Iquitos, Panguana Camp [03°58’S 73°11’W], 28-30.I.1997, A. Petrov’; 18 (MNHN, ZIN), ‘Loreto-carretera

Iquitos-Nauta [4°32'0"S 73°33'0"W], km 7, 7.X.2006, G. Couturier & C. Delgado', 'en inflorescencias en antesis de *Mauritia flexuosa* ♂ "aguaje" (Arecaceae)'; 20 (MNHN, ZIN), 'Loreto-Nauta"Buen Retiro", 7.X.2006, G. Couturier & C. Delgado', 'en inflorescencias ♂ comienzo de antesis *Mauritia flexuosa* "aguaje" (Arecaceae)'; 22 (INPA, MNHN, ZIN), **Brazil**: 'Manaus, 19.V.96, G. Couturier & F. Kahn', 'Br. 134, Rodovia Boa Vista, km 130'[1°58'S 60°11'W], '*Mauritia flexuosa*, Palmae, sur inflorescence mâle'.

Redescription of lectotype (male). Length of body 2.2, width 1.1, height 0.6 mm. Elongate oval, moderately convex dorsally and slightly convex ventrally; subunicolorous straw reddish; dorsum with a slight shine and underside moderately shining; dorsum with rather conspicuous and subrecumbent yellowish golden hairs, 2–3 times as long as distance between their insertions; underside with finer, shorter, less conspicuous and recumbent hairs than those on dorsum; lateral edges of pronotum and elytra not fringed, although at posterior pronotal angles with 'false angles' forming by longer hairs projecting posteriorly.

Head and pronotum with very small and distinct punctures 1/3–1/2 as large as eye facets in diameter, interspaces between them about a puncture diameter or greater, somewhat smoothly microreticulated. Elytra with punctures somewhat smaller, less distinct and shallower than those on pronotum and microreticulation between them more reliefly microreticulated. Pygidium without clear punctures and very relief microreticulation. Underside with rather small to indistinct punctures and densely alutaceous to smoothly microreticulated.

Head slightly shorter than distance between eyes, slightly convex, with a rather weak transverse ('fronto-clypeal') line, lateral edges above insertions of antennae slightly elevated, anterior edge of frons unbordered, angularly excised and with rounded lateral angles; eyes broadly convex, very coarsely facetted; temples absent. Labrum with rather far projecting lobes, separately obliquely abrupt, with a deep and wide V-shaped median excision. Mandibles well developed, with bidentate apices and moderately exposed from under frons. Antennae about 1.5 times as long as head width across eyes; scape nearly 2.5 times as long as wide, wider than 6 following ones; antennomeres 2 subconical to subcylindrical and about as long as each of antennomeres 3–5, antennomeres 3–5 subconical, each nearly twice longer than wide; antennomeres 6–8 oval, shorter and wider preceding ones, club comprising somewhat less than ¼ of total antennal length, oval, nearly compact, slightly asymmetrical with longest and widest antennomere 9; antennomeres with moderately long and rather sparse setae. Pronotum widest nearly at base, about 1 and 3/4 as wide as long in the middle; its anterior edge nearly straight, distinctly bordered; sides broadly arcuate, narrowly explanate-canalicular anteriorly, explanate stripe about 1.5 times as wide as eye facets in diameter at anterior angles and becoming wider posteriorly; posterior edge slightly convex in the middle and shallowly emarginate at each posterior angle, indistinctly bordered; both anterior and posterior angles widely rounded; disk gently convex and sides gently sloping. Elytra widest before their midlength, about 1 and 1/5 as long as their combined width, longest at suture; their lateral edges broadly arcuate, not explanate, just visible simultaneously from above, adsutural lines expressed along the entire length. Pygidium rather convex and widely rounded at apex. Widely rounded to subtruncate and flattened apex of anal sclerite very slightly exposed.

Mentum markedly less than 3 times as wide as long, subrectilinear at sides and at anterior edge. Ultimate maxillary palpomere subcylindrical to slightly narrowing apically, about 6 times as long as thick. Ultimate labial palpomere sybcylindrical to slightly narrowing apically, 4–5 times as long as thick. Antennal grooves with well expressed and convergent at inner edge. Subparamental lines very narrow. Prosternum slightly convex along the middle and with process narrow, medially flattened, scarcely curved along coxae, its apex rather widened before subtruncate posterior edge and with narrowly rounded outer angles. Ratio of distances between pro-, meso- and metacoxae about as 1:1:4. Metaventrite medially flattened and with a distinct median line, its posterior edge between coxae very shallowly emarginate. Submetacoxal line very distinct and reaching posterior edge of abdominal ventrite 1. Abdominal ventrite 1 about 1.5 times as long as hypopygidium and somewhat longer than ventrites 2 and 3 combined; hypopygidium widely emarginate at posterior edge. Epipleura at base more than twice as wide as prosternal process and moderately elevated laterally.

Legs well developed. Tibiae slightly widened, all with almost straight inner edge and comparable in width at apex (although mesotibia slightly wider than pro- and metatibiae), widest at apex, all apices more or less oblique, outer edge of meso- and metatibiae with rows of short setae. Femora of usual shape, all with more or less convex anterior and posterior edges, profemur somewhat more than twice, mesofemur about 2.5 times, metafemur almost 3 times as wide as corresponding tibiae. Tarsi of usual structure; protarsus about 2/3 as wide as tibiae, meso- and metatarsi only somewhat narrower; tarsomere 3 with a pair of narrow brushes of very long hairs; claws slightly dentate at base.

Aedeagus well sclerotized; tegmen almost gradually narrowing to transverse apex with rather long hairs; penis trunk very long and subparallel-sided and in apical ¼ gradually narrowing to acuminate apex.

Female. Antennae somewhat shorter than in male, with antennomeres 4 and 5 markedly shorter than antennomeres 2 and 3, with 3-segmented club, as shaped as that in males; composing of about 2/7 of total antennal length. Elytral apices more or less acuminate. Pygidium and hypopygidium widely rounded at apex. Tarsi somewhat narrower than in the male, protarsus about ½ as wide as tibiae. Ovipositor weakly pigmented, with simple apex and moderately long styli.

Variations and sexual dimorphism. Length of body 1.6–2.8, width 0.8–1.2 mm. The sexual dimorphism is rather stable, although some females (mostly small ones) show no clear sexual dimorphism in elytral apices. The elytra of small males are sometimes leaving uncovered not only pygidium, but also a part of previous abdominal segment. The male hypopygidium in some cases are shallowly emarginate (without median protuberance). Some variability is observed in coloration: most specimens straw reddish, but few specimens are darker up to almost brownish. The hairs on apex of the tegmen are rather variable in density and length as the extremes of variability could look very different, because in case of long and dense hairs the apex of tegmen looks like emarginate rather than truncate.

Diagnosis. This species is well characterised by the subelliptic shape of body, very slight sexual dimorphism in antennal structures and very distinct dimorphism in the outline of elytral apices, and particularly by the very distinct aedeagal structures.

A similar type of sexual dimorphism in the elytra is present also in *M. bactrii* **n. sp.**, *M. costaricensis*, *M. kahni* **n. sp.**, *M. squamae* **n. sp.** and *M. vasquezi* **n. sp.** (preliminary species group 1), however, this species differs (in addition to quite characteristic genital structures in both sexes):

- from *M. bactrii* **n. sp.** in the markedly smaller, more ellipsoid and not so convex body, denser and much longer yellowish golden (but not silvery golden) dorsal hairs, longer anterior part of the head, excised anterior edge of the frons, antennomere 9 longest in the club of both sexes, much longer ultimate labial palpomeres, presence of antennal grooves and subparamental lines, and also not truncate apex of the male pygidium;

- from *M. costaricensis* in the much larger and somewhat darker body with much denser and not so conspicuous dorsal pubescence, smaller eyes, deeper excision of anterior edge of head, pronotum with the emarginate anterior edge, more narrowly explanate sides and not narrowing posteriorly, less smoothed integument of the dorsum, presence subparamental lines, outline of elytral apices in both sexes and shape of the mentum;

- from *M. kahni* **n. sp.** and *M. squamae* **n. sp.** in the much larger, darker and more convex dorsally body with not so conspicuous dorsal pubescence (without scales on elytra), pronotum with emarginate anterior edge, more narrowly explanate sides and not narrowing posteriorly, outline of elytral apices in both sexes, presence subparamental grooves lines, more distinct puncturation and not so relief microsculpture on pronotum, wider femora, simple structures of tibiae (not narrowed before apex), and prosternal process only very slightly curved along coxae;

- from *M. vasquezi* **n. sp.** in the larger, les convex dorsally and markedly wider body with the markedly shorter elytra, pronotum with the emarginate anterior edge, more narrowly explanate sides and not narrowing posteriorly, much smaller eyes, .

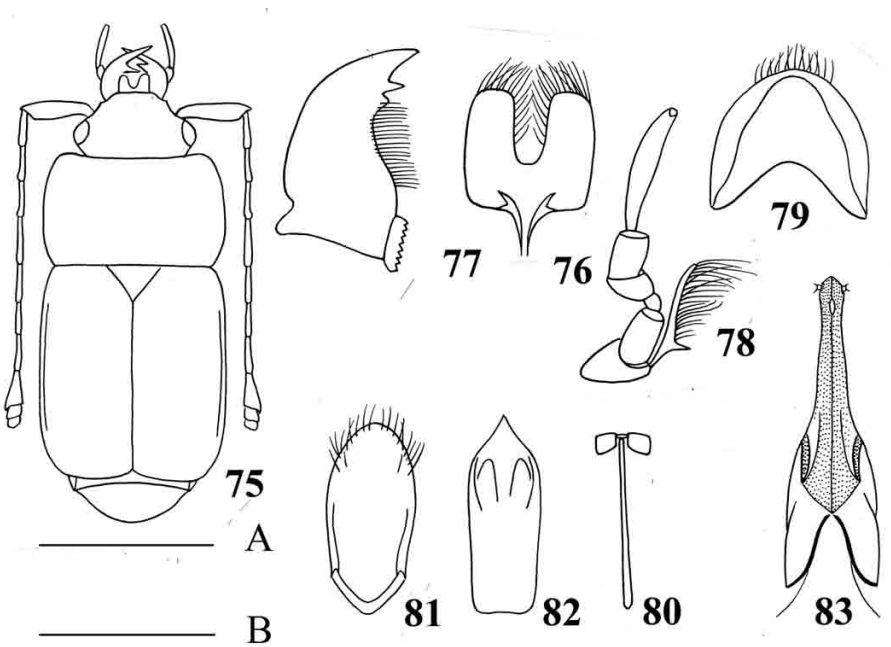
Bionomy. Adults have been collected on inflorescences in anthesis of male and femelle palms *Mauritia carana* Wallace ex Archer 1855 and *M. flexuosa* L. fil. 1781 in Amazonian rainforest, in natural and degraded areas.

Distribution. Map fig. 212. Brazil, French Guyana, Peru, Venezuela (Grouvelle 1902).

Mystrops debilis Erichson 1843 (Figs 75–93; 185–186)

Mystrops debilis Erichson 1843: 235;
Mystrops flavicans Murray 1864: 413, **n. syn.**;
Priops mexicanus Reitter 1873: 168, **n. syn.**;
Mystrops insularis Grouvelle 1898: 352, **n. syn.**;
Mystrops palmarum Bondar 1940: 212 (including larva), **n. syn.**;
Mystrops luteolus Jelínek 1969: 370, **n. syn.**;
Mystrops gilloglyi Connell 1974: 105, **n. syn.**

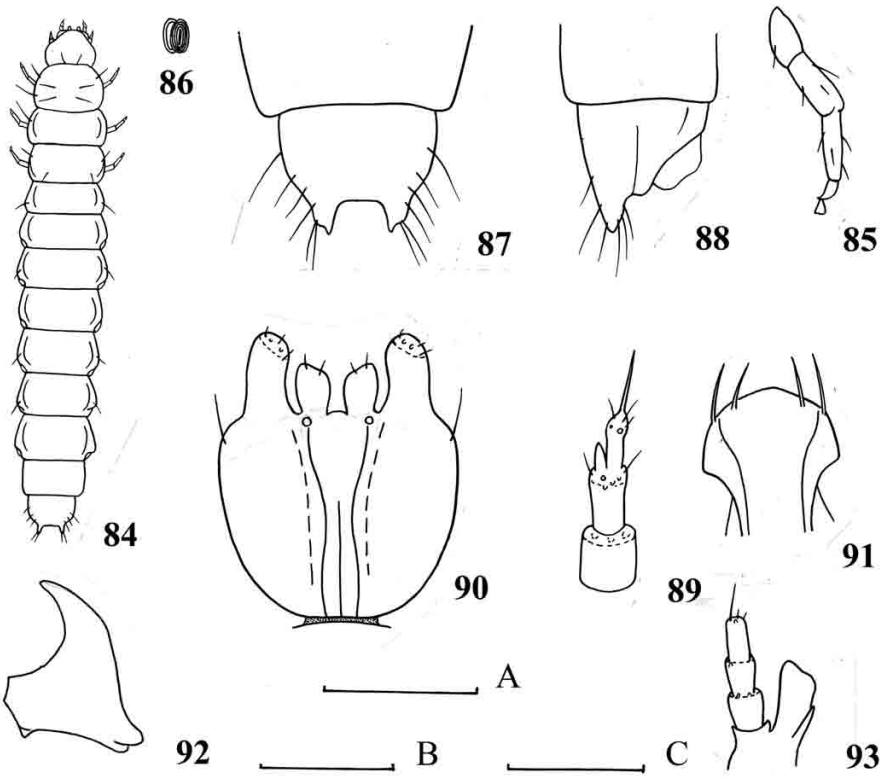
Material. **Lectotype** of *M. debilis* (ZMB), here designated (designated by Jelínek in collection), female, and 1 **paralectotype** (ZMB), female, **Brazil**: '*debilis* Er., Caasap. [?] Sellow', '8415'; **lectotype** of *M. flavicans* (BMNH), here designated (designated in collection by J. Jelínek), male without abdomen, posterior legs and distal part of right elytron, and 3 **paralectotypes** (BMNH),'Type', '68/106', '*flavicans*'; **lectotype** of *M. mexicana* (NMW), here designated, male on



Figures 75–83
Mystrops debilis (after Kirejtshuk 1996), adult: **75,** male body, dorsaly; **76,** labrum, ventrally; **77,** mandible, dorsally; **78,** maxilla, dorsally; **79,** male anal sclerite, ventrally; **80,** spiculum gastrale and ventral plate of male, ventrally; **81,** tegmen, ventrally; **82,** penis trunk, ventrally; **83,** ovipositor, ventrally. Scales: A to fig. 75, bar = 1.0 mm; B to figs 76–83, bar = 0.25 mm.

the pin with a small black quadrangle, **Mexico**: '617 1/2', '*Priops mexicanus* Rtt.', '*Mystrops pallidulus* D.S. Schereth det. compar.', '*mexicanus* Reitt., Mexico' [?19°25'42"N 99°7'39" W]; **lectotype** of *M. insularis* (BMNH), here designated, male and 1 **paralectotype** (BMNH), female, '31000', 'Antilles, **Trinidad**'[10°25'N 61°10'W], 'Coll. Fry, 1905-100', '*Mystrops insularis* ty. Grouv.' (written by A. Grouvelle); **paratypes** of *M. gilloglyi*; (USNM, ZIN), **Brazil**: 'Pernambuco [08°47'S 36°58'W], V.1969, G.P. de Arruda'; 26 **paratypes** of *M. palmarum* (BMNH), 'Bahia [11°25'S 41°16'W], 1939, Dr. G. Bondar, larva on *Cocos nucifera* & *C. coronata*', '*Mystrops palmarum* Bond., n. sp.'; 1 (BMNH), '68.106', '*debilis*'; 2 (BMNH), 'Fry, Rio Jan.' [22°54'S 43°12'W], 'Fry Coll. 1905-100'; 4 **paratypes** of *M. luteola* (BMNH, ZIN), **Paraguay**: 'Reimoser, San Luis'[27°05'S 56°36'W]; 101 (BMNH, MPEG, MNHN, ZIN, INPA, MNRJ), **Brazil**: 'Bahia, Ilhéus [14°47'S 39°21'W], 5.II.1993, Couturier, Delabie & Silva', 'on male inflorescence *Attalea funifera*, Arecaceae'; 26 (FMNH, SNMS, ZIN, ZMB), 'Bahia: Miguel Calmon (18-20 km E), Fazenda Carnaúba, 700-900 m, 11°25'S 40°36'W', '15.VI.1986, on inflorescence of *Attalea pindobassa* Bondar (Palmae), L.R. Noblick'; 6 (FMNH, ZIN), 'Bahia, Itabuna [14°47'S 39°16'W], 1977, CEPLAC', 'suction trap, dense forest'; 9 (FMNH, SMNS, ZIN), 'Bahia: Miguel Calmon (21 km W), Serra de Tombador, 600-800 m, 11°19'S 40°46'W', '13.III.1986, on inflorescence of *Attalea pindobassa* Bondar (Palmae), L.R. Noblick, # 4532'; 20 and 4 mature larvae (FMNH, ZIN), 'Bahia: Mun. lacu (2-3 km N Lajedo Alto [12°42'00"S 39°51'4"W]), 300-400 m, 16.I.1986, on', 'inflorescence of *Syagrus coronata* (Mart.) Becc., L.R. Noblick'; 2 (ZIN), **Mexico**: '31, *Mystrops flavicans*, Reitter, 86'; 2 (BMNH), '**Paraguay**, 1917-40', '*Mystrops lividus* Grouv.' (written by Grouvelle); 14 (USNM, ZIN), 'S. Bernardino [25°16'S 57°19'W] ', 'K. Fiebrig Collection'; 110 (USNM, ZIN), 'flowers *Cocos australis*, S. Bernardino, Fiebrig, X.1920"; 15 (CMN, ZIN), **Colombia**: 'N. de S., 1300 m, 2 km E Gramalote [07°53'N 72°48'W], 11.V.1974, H. & A. Howden', 'palm flowers'.

Addition to description. Length of body 1.4–2.4 mm (females in general somewhat smaller), width 0.6–1.0, height 0.4–0.6 mm. Elongate oval, moderately convex dorsally and ventrally; subunicolorous straw reddish; moderately shining; dorsum with rather conspicuous and recumbent yellowish hairs, about 1.5 times as long as distance between their insertions; underside with somewhat thinner, shorter and denser hairs than those on dorsum; lateral edges of pronotum and elytra fringed with dense recumbent hairs becoming longer at posterior pronotal angles, making up 'false angles' projecting posteriorly; most males in addition to short recumbent hairs very frequently with long and suberect hairs on dorsum and legs (although sometimes these longer hairs nearly as long as recumbent hairs or all dorsal hairs of some males rather long and suberect to subrecumbent); besides, apices of sclerites of ultimate abdominal sclerites and



Figures 84–93
Mystrops debilis (after Kirejtshuk 1996), mature larva: **84,** body, dorsally; **85,** anterior leg, dorsally; **86,** abdominal spiracle; **87,** abdominal apex, dorsally; **88,** idem, laterally; **89,** antenna, dorsally; **90,** median part of head underside, ventrally; **91,** epipharengeal surface, from inside; **92,** mandible, dorsally; **93,** maxilla, dorsally. Scales: A to figs 84, bar = 1.0 mm; B to figs 50–55, 60, bar = 0.5 mm; C to figs 56–58, 33–36, bar = 0.25 mm.

anal sclerite of male with very long hairs oriented posteriorly.

Head, pronotum and elytra with quite distinct small punctures more or less smaller than eye facets in diameter, interspaces between them about as great as a puncture diameter or somewhat greater, finely and smoothly microreticulated. Pygidium and previous tergite with smaller punctures and more microreticulated interspaces. Prosternum and metaventrite with rather small and sparse not quite distinct punctures, interspaces between them greater than a puncture diameter and rather smoothly alutaceous. Abdominal ventrites with puncturation and microsculpture similar to those of thoracic ventrites, but with punctures more distinct.

Head somewhat shorter than distance between eyes, with a slightly traceable transverse ('fronto-clypeal') line, lateral edges above insertions of antennae rather elevated and interantennal space distinctly depressed, its anterior edge not bordered, shallowly and subangularly excised and with rounded lateral angles; eyes broadly convex, coarsely facetted; temples absent. Labrum with rather far projecting lobes. Mandibles rather large and far projecting from under frons. Antennae of females 1 and 1/3–3/4 as long as width of head across eyes; scape about 2/3 as long as club; club almost symmetric, comprising 2/7 of total antennal length with antennomere 9 longest. Antennae of males 1 and 1/3 to 4 and 1/2 as long as width of head across eyes; scape 2/3 to 1 and 2/3 as long as club; club about as that in females to very elongate, asymmetrical, antennomere 9 sometimes twice longer than antennomeres 10 and 11 combined; antennomeres 2–11 with variable and comparatively dense setae. Pronotum widest at the base in females and near the middle in males and arcuately narrowing both posteriorly and anteriorly, almost twice as wide as long in the middle in females and usually longer in males. Elytra widest at midlength, about as long as wide combined or somewhat longer, separately and widely rounded to suboblique at apices, forming very obtuse sutural angle, leaving uncovered the whole pygidium and apex or entire previous segment; adsutural lines slightly expressed at least along distal 4/5. Pygidium slightly convex and subtruncate to very shallowly emarginate at apex in females and truncate in males. Males with arcuate and flattened apex of anal sclerite well exposed from under pygidial apex.

Mentum 2 to 2.5 times as wide as long, subpentagonal and with emarginate apex. Ultimate maxillary palpomere subcylindrical to slightly narrowing apically, 6-10 times as long as thick. Ultimate labial palpomere elongate and slightly narrowing apically, 3–6 times as long as thick. Antennal grooves unexpressed and slightly convergent and rather narrow subparamental grooves. Prosternal process strongly widened before transversely truncate apex. Ratio of distances between pro-, meso- and metacoxae about as 1:2:4. Metaventrite broadly convex and with a distinct median line in distal 2/3, its posterior edge between coxae very shallowly emarginate. Submetacoxal line very well expressed and reached the posterior edge of abdominal ventrite 1 at the middle of posterior edge of coxal cavity. Epipleura at base about as wide as prosternal process and slightly narrower than antennal club, moderately elevated laterally.

Tibiae narrow and comparable in width (somewhat narrower than antennal club), all with almost straight inner edge, oblique to rounded at apex, outer edge of meso- and metatibiae with rows of rather short and moderately sparse setae. Femora moderately wide, with more or less convex anterior and posterior edges. Male tarsomeres 1–3 almost as wide as antennal club and with rather long setae; tarsomere 5 about as long as tarsomeres 1-4; claws simple and comparatively long. Female tarsi of usual structure, comparatively narrow and tarsomeres 1–3 with moderately long setae.

Aedeagus weakly sclerotized and rather short; tegmen subparallel-sided at base and gently narrowing to narrowly rounded apex with rather long and sparse hairs; penis trunk somewhat longer than tegmen, subparallel-sided in most its length and gradually narrowing to pointed apex. Ovipositor weakly pigmented, with simple and slightly widened apex, bearing rather long styli.

Mature larva. Studied examples have an elongate and moderately convex both dorsally and ventrally, very soft creamy-white body with very weakly sclerotized epicranium, except reddish mandibules and moderately large 3 oceli forming an angle on either side of epicranium; covered with very sparse and rather long setae (1 pairs along each lateral side and 2 pairs of paramedian setae on prothorax; 1 lateral seta on each side of the rest thoracic and 8 abdominal segments; 5–6 setae along each sides of segment 9), with scarcely raised tubercle, but without visible capitate setae; abdominal segments (except 9th one) very slightly lobed laterally. Body length 4.0–4.2.5 mm.

Epicranium depressed, partly retracted into protoracic segment. Cephalic margin of clypeal region slightly convex with 4 setae, labroclypeal epipharyngeal surface without clear armature. Frontal sutures rather short and frontoclypeal sutures not traceable. Antennae with subequal length of antennomeres 1–3, antennomere 2 with 2 short setae and comparatively long sensory appendix, antennomere 3 with 3 short and 1 long setae. Mandible simple, with slight sclerotization along molar edge, but without teeth and prostheca. Maxillary palpus 3-segmented and with ultimate palpomere longest and bearing 2 short and 1 long setae at apex. Membraneous elongate mala with a long membraneous "uncus" at inner side of base. Short labium with short transverse mentum and very small elongate 1-segmented palpi. Hypopharengeal sclerome indistinct. Terga without any trace of secluded sclerite. Legs well developed and with short setae; tarsungulus with a membraneous vesicle. Tergite 9 with rather long membraneous urogomphi narrowed along outer edge and pointed at apices. 10th abdominal segment scarcely appeared from 9th one and produced ventro-posteriorly.

Notes. The proposed synonymy was established due to examination of the type specimens and some hundreds of specimens (see above). This species is rather variable in many characters, including development of long suberect hairs on male dorsum and legs, however, even the type specimens of *M. flavicans* include both males, with long hairs and without. Other characters are also variable, including antennae, shape of head, pronotum and elytra, pubescence, degree of development of mandibles and mouthparts. The range of variability was examined on the specimens from Brazil collected on '5.II.1993' by G. Couturier with collaborators (see above).

Diagnosis. The most characteristic features of this species are longest 1st antennomere in 3-segmented antennal club of both sexes. This segment is nearly as long as 2 following ones combined in females and usually more or less longer than 2 following ones in males. The ultimate antennomere of males is usually considerably smaller than penultimate one.

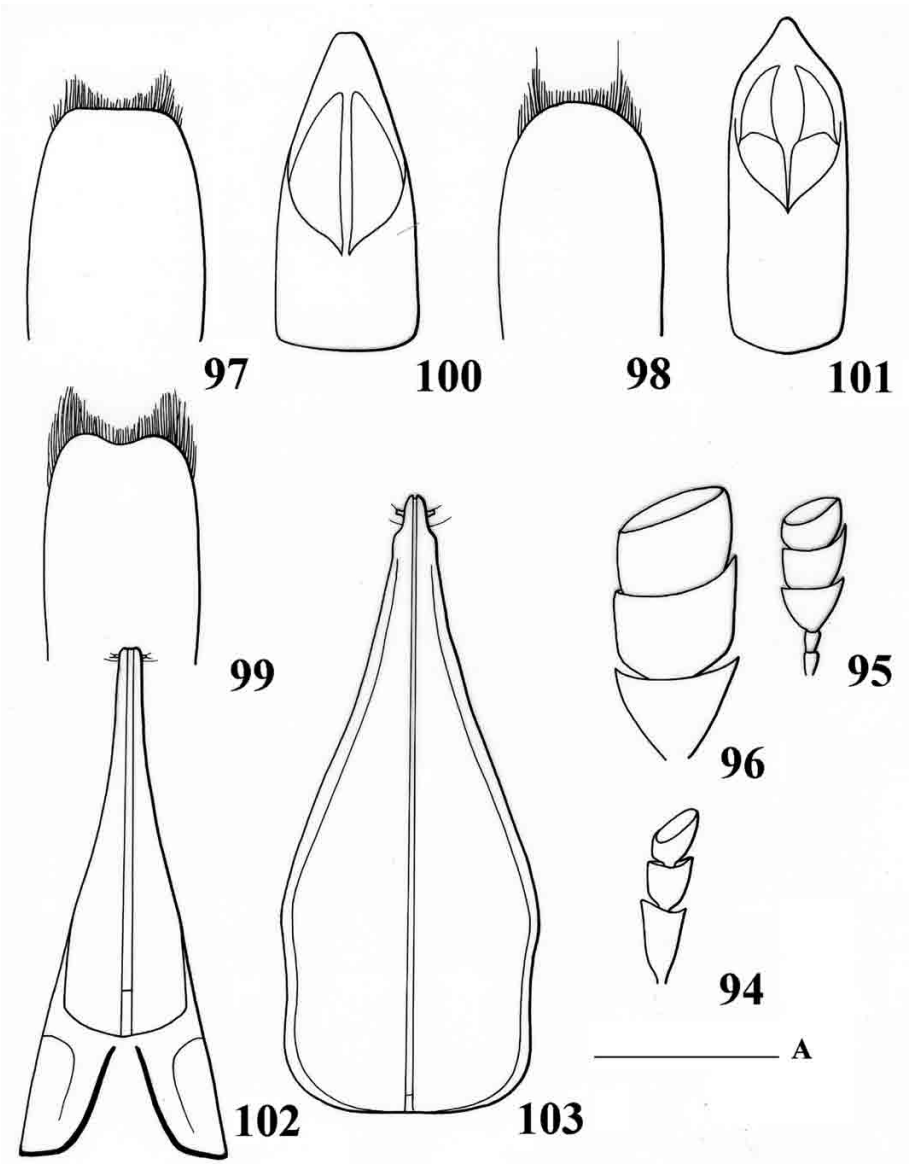
This species differs from another member of the provisional species group 5 (see above) with long hairs on dorsum and legs of males, *M. bondari*, in the smaller, more slender, lighter and unicolorous body, pronotum with rounded posterior angles and

narowing both anteriorly and posteriorly, narrower tibiae and narrower antennal club in both sexes. The longer and suberect hairs on its male body in contrast to those in *M. bondari* are not so dense and not so conspicuous, and only few such hairs disposed on tibiae (although not infrequently male legs without longer hairs at all).

Females and males without long suberect hairs and with short antennae of this species are rather similar to those of the abberant form of *M. astrocaryi* **n. sp.**, but they can be distingished from the latter mostly due to the arcuately and not so deeply excised anterior edge of frons, much longer labral lobes, much larger mandibles, very long last maxillary palpomeres.

Finally, the males without long suberect hairs and long antennae are similar to those of species from the provisional group 6 (see above), but differs in longer setae on male tarsomeres 1–3, and also differ:

- from aberrant *M. astrocaryi* **n. sp.** in the larger, less convex and more slender body with the smaller eyes, more clear dorsal puncturation, more expressed sexual dimorphism in the body size and all organs (size of head and pronotum, length of



Figures 94–103
Mystrops discoidea: **94,** male antennal club of specimen from Bahia ("Passagem de Pedra"); **95,** female antennal club of specimen from Bahia ("Passagem de Pedra"); **96,** male antennal club of specimen from Panama ("Canal Zone, Colorado Isl."); **97,** tegmen of specimen from Para ("Belem"), ventrally; **98,** tegmen of specimen from Bahia ("Passagem de Pedra"), ventrally; **99,** tegmen of specimen from Panama ("Canal Zone, Colorado Isl."), ventrally; **100,** penis trunk of specimen from Para ("Belem"), dorsally; **101,** penis trunk of specimen from Bahia ("Passagem de Pedra"), dorsally; **102,** ovipositor Para ("Belem"), ventrally; **103,** ovipositor gonocoxites of specimen from Ecuador ("Rio Palenque, 47 km S St. Domingo"), ventrally. Scale A to figs 94–103, bar = 0.5 mm.

antenna, length of palpi etc.) and also in the shallowly excised anterior edge of frons and shorter tarsomere 5 and long setae on lobes of male tarsomeres 1–3;

- from *M. beserrai* **n. sp.** in the somewhat larger body with shorter elytra, more conspicuous pubescence, nearly straight anterior edge of pronotum, not dilated male flagellomeres and wider and shorter asymmetric antennal club, much longer palpomeres, lack of antennal grooves, shorter tarsomere 5, shallowly excised anterior edge of the frons, long setae on lobes of male tarsomeres 1–3 and stronger sexual dimorphism in general;

- from *M. bondari* in the somewhat smaller, more slender and lighter body; much sparser, usually shorter and less conspicuous pubescence; peculiarities of puncturation and sculpture; shallowly excised anterior edge, narrowly rounded lateral angles of frons and widely rounded to subtruncate apex of male pygidium;

- *M. delgadoi* in the somewhat more slender body; sparser and less conspicuous dorsal pubescence; longer labral lobes; posterior angles of pronotum projecting posteriorly; widely rounded elytral apices, shape of mentum and apex of prosternal process; less clear subparamental grooves and wider tibiae;

- from *M. heterocera* in the much slender and less convex body, narrower head, longer labral lobes exposed from under frons, less widely separated mesocoxae, denser hairs, denser and less distinct puncturation in males, markedly narrower male tibiae (particularly male mesotibia) and long setae on lobes of male tarsomeres 1–3, slightly expressed antennal grooves;

- from *M. komissari* **n. sp.** in the more dull body coloration, smaller eyes, more conspicuous pubescence, shallowly excised anterior edge of the frons, longer and narrower ultimate palpomeres, lack of antennal grooves, narrower antennal club, shorter elytra with transversely subtruncate apices;

- from *M. lucanoides* in the much denser and less distinct puncturation; less shining dorsum; longer, denser and more conspicuous pubescence (particularly in males), somewhat smaller and narrower male head, more slender female body, markedly shorter male head and shorter male mandibles;

- from *M. pectoralis* **n. sp.** in the less convex body, usually longer and narrower ultimate palpomeres, much narrower antennal club in both sexes, lack of transverse elevation on the male prosternum and much shorter male pronotum, shape of mentum, lack of antennal grooves, presence of subparamental lines, not so strongly curved prosternal process along the coxae and long hairs on lobes of male tarsomeres 1–3.

Bionomy. *M. debilis* has been collected in inflorescences of *Attalea funifera* Martius 1826 in the Bahia State (Brazil) in natural or degraded areas with different landscape. It was the only species present, with larvae, in number of some thousands per inflorescence. This species seems to be usual also on *Attalea pindobassa* Bondar 1942. Voeks (2002) reports *Mystrops* sp. as pollinator of this palm in this area (Atlantic Coastal rain forest, Bahia, Brazil) and therefore it certainly concerns this species. Bondar (1940) reported that the adults of *M. palmarum* are polinophagous and larvae develop into the male flowers before opening of the latter. He report that *M. palmarum* is frequent on *Cocos coronata* (Martius) Beccari 1916 (= *Syagrus coronata*) and rare on *Cocos nucifera* L. 1793.

Distribution. Map fig. 213. Mexico (Reitter 1873, Sharp 1898), Panama (Sharp 1889), Columbia, Brazil (Erichson 1843, Murray 1864, Bondar 1940, Connell 1972), Antilles (Grouvelle 1898), Paraguay (Jelínek 1969).

Mystrops discoidea Murray 1864 (Figs 94–103; 181–182)

Mystrops discoideus Murray 1864: 412.

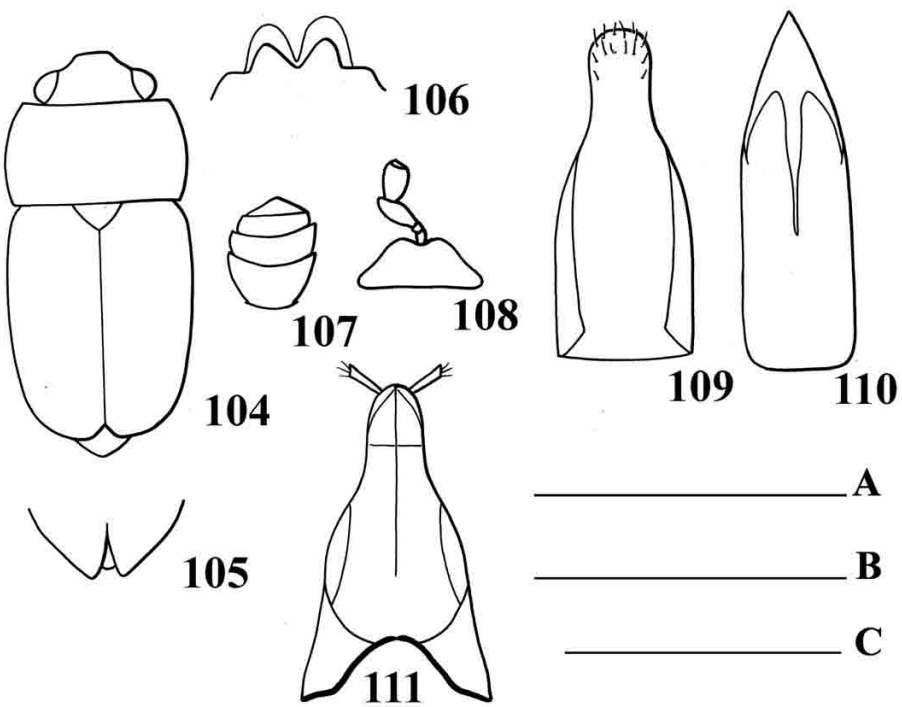
Material. **Lectotype**, male, here designated (BMNH) & 1 **paralectotype**, female (BMNH), **Brazil**: 'Type', '68.106', 'Murr.', '*discoideus*'; 6 **paralectotypes** (BMNH), 'Type', 'ex Mus. Murray', 'Amazon [?], Bates', '*discoideus*', 'Fry Coll. 1905-100'; 4 **paralectotypes** (BMNH) and dorsal part head with dissected mouthparts, 'Ega' [3°21'15"S 64°42'41"W], '*discoideus*', '68.106'; 6 **paralectotypes** (BMNH), '20815', 'Para' [?1°27'21"S 48°30'16"W], 'Fry Coll. 1905-100'; 3 **paralectotypes** (NRS), 'Cafraria' [22°54'S 43°12'W], 'G. Lewis, 1910-248','*Athonea longicornis* ? Cafraria'; 2 **paralectotypes** (NRS), 'Epoja' [?], 'Murray', 'Type'; 2 (BMNH) – 'Para','G. Lewis, 1910-248'; 3 (BMNH), 'Para'; 1 (ZIN) – '745', '*flexuosus* Motsch. Bras.', '*Mystrops durus* Erichs., Brasil'; 1 (ZIN), 'Santarem' [2°02'S 54°08'W], '53/72'; 98 (CIRAD, INPA, MPEG, MNHN, NMP, USNM, ZIN, ZMB), 'Pará, Bélem [01°26'S 48°24'W], 23.V.1998, P. Beserra and G. Couturier','Embrapa Am. Or. BAG, km 15, *Astrocaryum vulgare* – Palmae', 'sur inflorescence, en anthèse'; 1 (CNC), 'Reserva Ducke, km 26 Manaus-Itacoatiara Highway [02°58'S 59°55'W], 18-23.V.1972, E.G.I. & E.A. Munroe' (named by O. Marek); 11 (FMNH, ZIN), 'Bahia, Mun. Caetité, 9 km S Passagem de Pedra, 14º04'S 42º30'W, 26.V.1985, 1000 m, on inflorescence of *Astrocaryum campestre* Mart. (Palmae, L.R. Noblick, #3789'; 2 (CMN, ZIN), 'Para, Faz [? 16°54'6"S 56°36'28"W], Taperina, 16-18.XI.1969, J.M. & B.A. Campbell'; 1 (ZMB), **Columbia**: '1.97, Villavicencio [04°09'N 73°37'W], 440 m, Bürger S.' (named by J. Jelínek); 2 (FMNH), 'Putumayo; Santa Rosa de Sucumbios, Rio San Miguel [0°22'N 77°07'W], 400 m, 25-31.III.1971, B. Malkin'; 1 (FMNH), **Panama**: 'Bocas del Toro, Almirante [9°18'0"N 82°24'0"W], trail to dam on Nigua Creek, 27.III.1959, H.S. Dybas'; 1 (FMNH), 'Canal Zone, Barro Colorado I. [09°09'N 79°08'W], 16.I.1959, H.S. Dybas'; 1 (FMNH), 'Barro Colorado Is., C.Z., XII.07.38, O. Park','Catun Lake, Orlando Parl General Collection'; 12 (USNM, SMNS, ZIN), 'Barro Colo, CZ #Z-4691, IX-X.1940','J. Zetek Collector','at light'; 4 (USNM), 'Barro Colo I., CZ IX.41','Jas Zetek N4879','Lot N 41-20624'; 1 (USNM), 'Barro Colo Isl., CZ 23.VI.1948'; 1 (USNM), 'Barro Colo, CZ Pan.', 'at light, J. Zetek, VII.1924'; 1 (USNM), 'BCl, CZ, 14/II, K.W. Cooper'; 1 (USNM), 'Porto Bello, Pan Mer [09°33'N 79°39'W], 14.XI, Augustus Busck';1 (USNM), 'Cabima [09°07'N 79°31'W], Pan., 21.V.1911, Augustus Busck'; 1 (USNM), 'Summit [9°4'0"N 79°39'0"W], C.Z., X.1946','N.L.H. Krauss'; 1 (ZIN), 'Mojinga Swamp [9°18'11"N 79°57'53"W], Ft Sherman CZ, 15.VIII.1951','F.S. Blanton Collector'; 1 (USNM), 'Ciricito, CZ, 27.VII.1931, T.O. Zschokke','Blackwelder Collection'; 1 (USNM), 'Ciricito [8°47'0"N 80°5'0"W], Canal Zone, 8.VIII.1931', 'Blackwelder Collection'; 13 (USNM, ZIN),

'Rio India [08°46'N 80°08'W], Canal Zone, 23.II.1911, Goldman'; 17 (USNM, ZIN), 'CANAL ZONE: 100 m, 5.0 mi NW Gamboa, 09º10'00" N 079º45'00" W, 23-24.X.1975', 'Canopy fogging experiment in *Luehea seemannii*, Pyrethrin fog', 'Sample 8A, 24.X.1975'; 2 (USNM), 'Pearl Is. [8º33'33"N 79º11'67"W], San Jose', 'Morrison, JPE, 12.VIII.1944', 'at light'; 1 (ZIN), 'El Real [8°8'0"N 77°43'0"W], 6.VIII.1952, F.S. Blanton'; 26 (CMN, ZIN), 'Canal Zone, Barro Colorado Isl., 8.X.1961, J.M. Campbell'; 1 (CMN), 'Cerro, Campana [? 8°41'0"N 79°55'0"W], 2900', 30.VII.1970, J.M. Campbell'; 1 (FMNH), **Costa Rica**: 'Heredia; OTS, La Selva Field Sta., Puerto Viejo de Sarapiqui, Rio Puerto Viejo, 5-11.III.1973', '10º26'N, 83º59'W, J. Wagner & J. Kethley'; 2 (FMNH), **Ecuador**: 'Pastaza Cusuimi, Rio Cusuimi, 150 km, SE of Puyo [02°21'S 77°02'W], 15-31.V.1971, B. Malkin','at light'; 1 (CMN), 'Napo, Limoncocha [0°24'S 76°37'W], 250 m, 9-16.III.1976, J.M. Campbell'; 4 (ZIN), **Peru**: '30 km S of Iquitos, Panguana Camp [03°58'S 73°11'W], 28-30.I.1997, Petrov A.' ('31.I.1997'); 31 (MNHN), 'Loreto-Iquitos-Rio Nanay [03°39'S 73°15'W], 24.X.2006, G. Couturier & C. Delgado','en inflorescencias en antesis de *Astrocaryum jauari* Martius 1824 "huiririma" (Arecaceae)'.

Addition to description. Length of body 2.3–4.4 (lectotype – 2.8), width 1.2–1.9 (lectotype 1.3), height 0.9–1.3 mm. Elongate oval, moderately convex dorsally and ventrally; subunicolorous straw yellowish to completely blackish (usually straw yellow with elongate infuscation on disk of pronotum, darkened base of elytra and antennal clubs); dorsum with a more or less slight shine to completely mat; head with slightly conspicuous, subrecumbent, rather fine yellowish hairs slightly longer than distance between their insertions; underside with somewhat denser hairs; lateral edges of pronotum and elytra not fringed, although at posterior pronotal angles with very slight 'false angles' forming by longer hairs projecting posteriorly.

Head with small and distinct punctures 0.5–1.0 time as great as eye facets in diameter, interspaces between them 4–6 puncture diameters, densely and smoothly microreticulated. Pronotum and elytra sometimes as punctured and sculptured as head but frequently with somewhat larger and denser punctures, interspaces between them more frequently quite distinctly microreticulated. Underside with rather small but distinct punctures, interspaces between them densely alutaceous to smoothly microreticulated; although metaventrite with very large punctures (much larger than eye facets) and interspaces between them more or less smaller than a puncture diameter.

Head markedly longer than distance between eyes, flattened, with a distinct transverse ('fronto-clypeal') line, lateral edges above insertions of antennae not elevated, anterior edge of frons unbordered and transversely truncate; eyes finely facetted. Labrum with rather far projecting lobes. Mandibles well exposed from under frons. Antennae 2–4 times as long as width of head across eyes in males, but 1.5–2.5 times in females; scape 5–8 times as long as thick in males and 4–5 times in females; club comprising 1/8–1/6 of total antennal length in females and 1/9–1/7 in males, asymmetrical with longest and widest antennomere 9. Pronotum with sides broadly arcuate, narrowly explanate; anterior edge nearly straight or very shallowly emarginate. Elytra arcuate at apices and forming



Figures 104–111
Mystrops kahni: **104,** male body, dorsal; **105,** female elytral apices, dorsal; **106,** anterior part of frons and labrum, antero-dorsally; **107,** male antennal club; **108,** male mentum and labial palpus, ventrally; **109,** tegmen, ventrally; **110,** penis trunk, dorsally; **111,** ovipositor, ventrally. Scales: A to fig. 104, bar = 1.0 mm; B to figs 105–108, bar = 0.5 mm; C to figs 109–111, bar = 0.25 mm.

a comparately deep sutural angle; adsutural lines unexpressed. Pygidium not covered by elytral apices, rather convex and subtruncate at apex. Widely rounded and rather vaulted apex of anal sclerite well exposed from under apex of pygidium (as that in *M. bactrii* **n. sp.**). Mentum subtriangular and about 3 times as wide as long. Antennal grooves not expressed and subparamental grooves quite distinct, narrow and rectilinear. Ratio of distances between pro-, meso- and metacoxae about as 1:1.5:1.5. Metaventrite with posterior edge between coxae very shallowly emarginate. Submetacoxal line not expressed.

Tibiae slightly widened, all with almost straight inner edge (although in many males pro- and mesotibiae before apex more or less widened along inner edge), widest at apex, all apices more or less oblique, outer edge of meso- and metatibiae with rows of short setae. Femora of usual shape. Tarsi of usual structure; male protarsus 2/3–3/4 as wide as tibiae, meso- and metatarsi only somewhat narrower; claws slightly dentate at apex.

Aedeagus well sclerotized and variable, penis trunk more or less subacute at apex.

Ovipositor heavily sclerotized and rather variable, its gonocoxites not divided into inner and outer lobes; styli comparatively short and subapical.

Diagnosis. This species is clearly different from the another described member of the provisional species group 7 (see above) - *M. dura* – in the lighter body with the characteristic pattern on elytra, dorsum with finer and sparser puncturation and with not smoothed microreticulation, narrower antennal club in both sexes; narrower prosternal process convex along the middle (not flattened as that in *M. dura*), moderately separated meso- and metacoxae (not widely separated as those in *M. dura*), posterior edge of metaventrite between coxae shallowly emarginate (not straight as that in *M. dura*), usually strongly widened male pro- and mesotibiae.

Bionomy. Adults collected on inflorescences of *Astrocaryum campestre* Martius 1824, *A. jauari* and *A. vulgare* Martius 1824 mostly in Amazonian rainforest**.**

Distribution. Map fig. 207. Costa Rica, Panama, Ecuador, Colombia, Brazil, Peru.

Mystrops kahni n. sp. (Figs 104–111; 187)

Material. **Holotype**, male (ZISP), **Peru**: '50 km S from Iquitos, Panguana Camp [03°58'S 73°11'W], 28-30.01.1997, A. Petrov'; 321 **paratypes** (BMNH, CIRAD, MNHN, MPEG, NMP, USNM, ZIN, ZMB, INPA, UNALM), 'Loreto, Iquitos, 29.01.1992, G. Couturier & F. Kahn', 'Station Alpahuayo' [03°50'S 73°25'W], '*Astrocaryum macrocalyx*, Palmae, sur inflorescence femelle en anthèse'; 26 **paratypes** (MNHN, ZIN), 'Loreto, Rio Maniti-Villa Maria [03°36'S 72°57'W], 6.10.2006, G. Couturier & C. Delgado', 'en inflorescencias en antesis de *Astrocaryum javarense*, "huicongo" (Arecaceae)'.

Description of holotype (male). Length of body 1.6, width 0.7, height 0.2 mm. Elongate oval, slightly convex dorsally and ventrally; subunicolorous straw reddish; dorsum with a very slight shine and underside moderately shining; head with rather conspicuous, subrecumbent, somewhat squamose yellowish golden hairs, but not very dilated, subparallel-sided and blunt at apices, markedly longer than distance between their insertions; pronotum and scutellum with slightly conspicuous, subrecumbent, rather fine yellowish hairs, not dilated and with acute apices, about as long as distance between their insertions; elytra with extremely conspicuous, subrecumbent, distinctly squamose yellowish golden hairs, very dilated, subtriangular and blunt at apices (with most width at apices), slightly longer than distance between their insertions; underside with fine, moderately long, moderately conspicuous and recumbent yellowish hairs, about twice as long as distance between their insertions; lateral edges of pronotum and elytra not fringed, although at posterior pronotal angles with very slight 'false angles' forming by longer hairs projecting posteriorly.

Dorsum with extremely small and indistinct punctures and extremely relief fine and dense microreticulation. Underside with rather small to indistinct punctures and densely alutaceous to microreticulated.

Head slightly longer than distance between eyes, slightly convex, with a rather weak transverse ('fronto-clypeal') line, lateral edges above antennal insertions not elevated, its anterior edge unbordered, angularly excised and with rounded lateral angles; eyes broadly convex, very coarsely facetted; temples absent. Labrum with rather far projecting lobes, separately rounded, with a deep and wide V-shaped median excision. Mandibles moderately exposed from under frons. Antennae about 1.5 times as long as width of head across eyes; scape less than twice as long as wide, wider than 6 following antennomeres; antennomeres 2-5 subconical and each about 2/3 as long as scape, antennomeres 6-8 also subconical but somewhat shorter than antennomeres 2-5, each slightly longer than wide; club comprising somewhat less than ¼ of total antennal length, oval, nearly compact, nearly symmetrical with longest and widest antennomere 9; antennomeres with moderately long and rather sparse setae. Pronotum widest slightly behind the middle and narrowing both anteriorly and posteriorly, about 1 and 3/4 as wide as long in the middle; its anterior edge nearly straight to slightly emarginate, distinctly bordered; sides broadly arcuate, extremely narrowly canalicular anteriorly; posterior edge slightly convex in the middle and shallowly emarginate at each posterior angle, indistinctly bordered; both anterior and posterior angles with almost distinct tops; disk rather and gently convex and sides gently sloping. Scutellum large, subtriangular and with rounded apex. Elytra widest before their midlength, about as long as their combined width, longest at suture, but forming a small sutural angle by oblique apices; their lateral edges broadly arcuate, not explanate, just visible simultaneously from above, adsutural lines expressed along entire length. Pygidium partly not covered by elytral apices, rather convex and widely rounded at apex. Widely rounded to subtruncate and flattened apex of anal sclerite very slightly exposed from under pygidial apex.

Mentum markedly less than 3 times as wide as long, widest at base and subrectilinearly narrowing anteriorly. Ultimate maxillary palpomere subcylindrical and narrowing from the middle apically, more than 3 times as long as thick. Ultimate labial palpomere oval and narrowing apically, less than twice as long as thick. Antennal grooves well expressed and somewhat arcuate at inner edge. Subparamental grooves not expressed. Prosternum slightly convex along the middle and process narrow, medially convex, moderately curved along coxae, its apex somewhat widened before widely rounded posterior edge and with narrowly rounded outer angles. Ratio of distances between pro-, meso- and metacoxae about as 1:1.5:4. Metaventrite medially subflattened and and with a distinct median line, its posterior edge between coxae very shallowly emarginate.

Submetacoxal line very distinct and reaching posterior edge of abdominal ventrite 1. Abdominal ventrite 1 about 1.5 times as long as hypopygidium and somewhat longer than ventrites 2 and 3 combined; hypopygidium widely rounded at posterior edge. Epipleura at base about 1.5 times as wide as prosternal process and moderately elevated laterally.

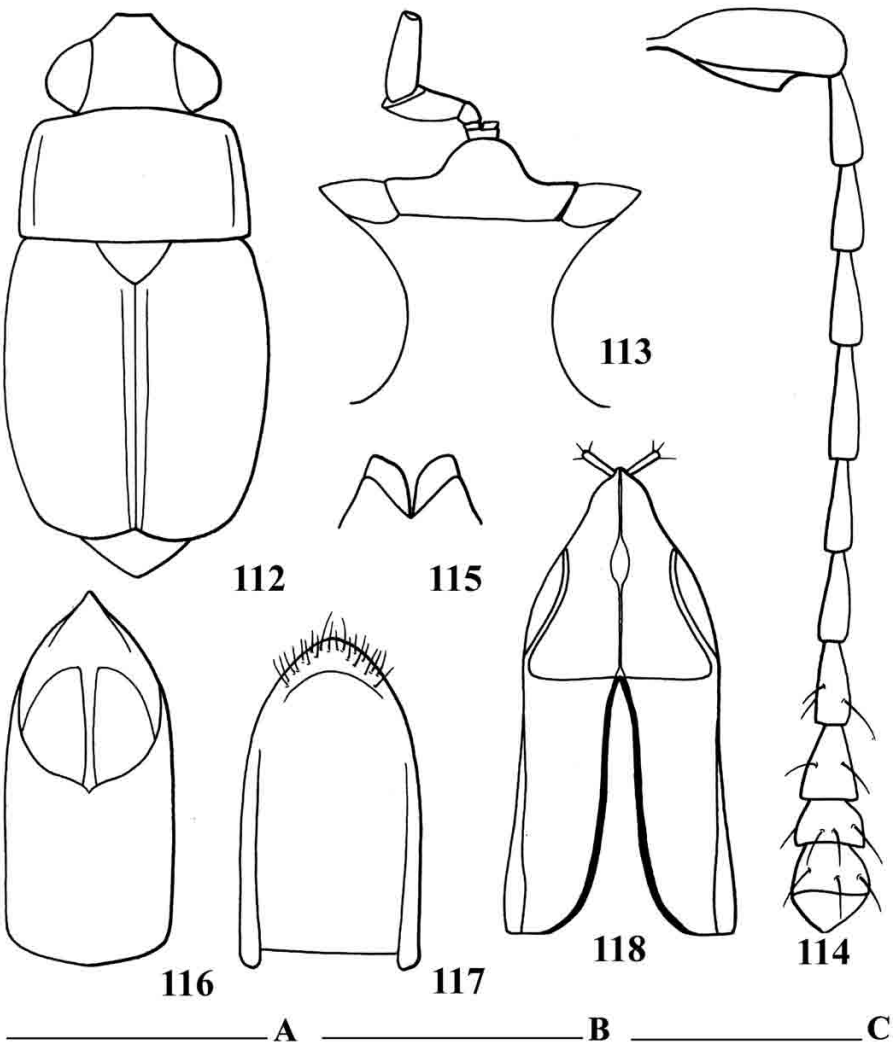
Tibiae slightly widened, all with almost straight inner edge and comparable in width at apex (although mesotibia slightly wider than pro- and metatibiae), widest at apex, all apices more or less oblique, outer edge of meso- and metatibiae with rows of short setae. Femora of usual shape, all with more or less convex anterior and posterior edges, about 3.0–3.5 times as wide as corresponding tibiae. Tarsi of usual structure; protarsus about 2/3 as wide as tibiae, meso- and metatarsi only somewhat narrower; claws simple.

Aedeagus moderately sclerotized; tegmen almost gradually narrowing before projecting and somewhat vaulted apex with short hairs; penis trunk very long and subparallel-sided and in apical ¼ gradually narrowing to acuminate apex.

Female. Very similar to male. Differs from it in the longer elytral apices completely covering pygidium. Ovipositor weakly pigmented, with simple apex and moderately long styli.

Variations and sexual dimorphism. Length of body 1.4–1.8 mm. Some variability is observed in pubescence, although general character of it as that in the holotype.

Diagnosis. This new species is similar to the species from the provisional species group 1 (see above) characterized by the sexual dimorphism in elytral apices: acuminate in female and not acuminate in males. The character of dorsal pubescence of this new species is quite peculiar and can be compared only



Figures 112–118
Mystrops komissari: **112,** male body, dorsally; **113,** anterior part of frons and labrum, antero-dorsally; **114,** male antenna, dorsally; **115,** male mentum, antennal grooves and labial palpus, ventrally; **116,** tegmen, ventrally; **117,** penis trunk, dorsally; **118,** ovipositor, ventrally. Scales: A to fig. 112, bar = 1.0 mm; B to figs 113–115, bar = 0.5 mm; C to figs 116–118, bar = 0.25 mm.

with that in *M. squamae* **n. sp.**, however *M. kahni* **n. sp.** differs from the latter in the particular structure of aedeagus and also in the somewhat longer pronotum, which is not narrower than elytra, and stronger sexual dimorphism in elytral apices. The abdominal apex completely covered with elytra in female of *M. kahni* **n. sp.**, while that usually exposed in females of *M. squamae* **n. sp.** See also diagnoses to *M. astrocaryi* **n. sp.**; *M. bactrii* **n. sp.**; *M. costaricensis*; *M. dalmasi* **n. comb.** and *M. vasquezi* **n. sp.**

Etymology. The epithet of this new species is devoted to F. Kahn, botanist at IRD, specialist of neotropical palms.

Bionomy. Adults collected on inflorescences of *Astrocaryum javarense* and *A. macrocalyx* in Amazonian rainforest and in degraded areas.

Distribution. Map fig. 211. Peru.

Mystrops komissari n. sp. (Figs 112–118; 188–189)

Material. **Holotype**, male (MNHN) and 11 **paratypes** (BMNH, MNHN, UNALM, ZIN), **Peru**: '4°55'S 73°40'W, Jenaro Herrera, 27.08.1978, G. Couturier & F. Kahn', 'dans fleurs mâle *Bactris* cf. *monticola* (Palmae) Kahn'; other **paratypes**: 3 (MNHN, ZIN), 'Iquitos, Jenaro Herrera, 3.11.1986, F. Kahn', 'sur inflorescence *Bactris maraja*, Palmaceae'.

Description of holotype (male). Length of body 2.3, width 1.0, height 0.4 mm. Elongate oval, moderately convex dorsally and ventrally; subunicolorous straw reddish; moderately shining; dorsum with rather conspicuous and subrecumbent yellowish golden hairs, 1.5–2.0 times as long as distance between their insertions; underside with much finer, shorter, less conspicuous and recumbent hairs than those on dorsum; lateral edges of pronotum and elytra fringed, at posterior pronotal angles with 'false angles' forming by longer hairs somewhat projecting posteriorly.

Head with more or less distinct punctures, about 1/3 as large as eye facets in diameter, interspaces between them about twice as great as a puncture diameter, alutaceous to microreticulated. Pronotum about as punctured and microsculptured as head, but interspaces between punctures 1.5–2.0 puncture diameters. Elytra with much shallower and indistinct puncturation and dense, fine and rather relief microsculpture. Pygidium densely microreticulated and simultaneously with microreticulation tuberculose. Prosternum and most abdominal ventrites with distinct punctures or with very small and scarcely visible punctures, finely and densely alutaceous to microreticulated on prosternum and densely microreticulated on abdominal ventrites. Metaventrite about as sculptured as pronotum, but with shallower and less distinct punctures.

Head markedly longer than distance between eyes, slightly convex at base and transversely depressed at anterior edge, with a rather distinct transverse ('fronto-clypeal') line, lateral edges above insertions of antennae moderately elevated, anterior edge of frons unclearly bordered, deeply angularly excised and with rounded lateral angles; eyes broadly convex, very coarsely facetted; temples absent. Labrum with moderately projecting lobes, with arcuate to oblique outline, with a deep and narrow V-shaped median excision. Mandibles moderately exposed from under frons. Antennae about 2.5 times as long as width of head across eyes (nearly reaching posterior edge of abdominal ventrite 1); scape nearly 3 times as long as wide and about as long as club, somewhat wider than 7 following ones, its underside with a fold, forming a clear angle at apex; antennomeres 2–7 subconical and about 1/2 as long as scape; antennomere 8 slightly shorter and wider than antennomeres 2–7; club comprising almost 1/5 of total antennal length, elongate oval, compact, almost symmetrical with comparably long antennomeres 9 and 11 and shortest antennomere 10; antennomeres 5–11 with not long and rather sparse setae. Pronotum widest at base, somewhat less than twice as wide as in the middle long; its anterior edge nearly straight to somewhat convex, not bordered; sides subrectilinear, moderately subexplanate (about as widely explanate as base of antennomeres 2–7); posterior edge slightly convex in the middle and distinctly emarginate at each posterior angle, distinctly bordered (except the middle of anterior edge); anterior angles widely rounded and posterior angles almost with a distinct top; disk slightly convex and sides gently sloping. Scutellum large, subtriangular and with rounded apex. Elytra widest before their midlength, about as long as wide combined, suboblique at apices and longest at suture, leaving uncovered pygidium and apical part of preceding tergite; their lateral edges broadly subangularly arcuate, just visible simultaneously from above, sutural lines slightly expressed along most length. Pygidium slightly convex and very widely rounded to subtruncate at apex. Arcuate and flattened apex of anal sclerite very slightly exposed from under pygidial apex.

Mentum subrecrilinearly widened to anterior angles, somewhat less than 3 times as wide as long and with very projecting and arcuate anterior edge. Ultimate maxillary palpomere subcylindrical to slightly narrowing apically, more than 5 times as long as thick. Ultimate labial palpomere elongate oval, more than twice as long as thick. Antennal grooves with well expressed and convergent at inner edge before the level of posterior edge of eyes and strongly divergent posteriorly. Subparamental grooves very short and very narrow. Prosternum slightly convex along the middle and process narrow, medially flattened along the whole length, slightly curved along coxae, its apex somewhat widened before rounded posterior edge, with maximal width about ½ of width of antennal club and with rounded outer angles. Ratio of distances between pro-, meso- and metacoxae about as 1:1:3. Metaventrite medially slightly flattened and with a distinct median line, its posterior edge between coxae nearly straight. Submetacoxal line very slightly expressed and reaching the posterior edge of abdominal ventrite 1. Abdominal ventrite 1 about 3 times as long as hypopygidium and about as long as ventrites 2–4 combined; hypopygidium widely rounded at posterior edge. Epipleura at base about 1.5 times as wide as prosternal process and somewhat narrower antennal club, moderately elevated laterally.

Tibiae slightly widened, all with almost straight inner edge, about ¾ as wide as antennal club, outer subapical angle not projecting, but widely rounded, outer edge of meso- and metatibiae with rows of extremely short setae. Femora of usual shape, all with more or less convex anterior and posterior edges, 2.5–3.0 times as wide as tibiae. Tarsi of usual structure; protarsus about 2/3 as wide as protibia, meso- and metatarsi somewhat narrower; claws simple.

Aedeagus moderately sclerotized; tegmen subparallel-sided in basal ½ and almost gradually narrowing to rounded to subangular apex with comparatively short hairs; penis trunk somewhat longer than tegmen, subparallel-sided in basal 2/3 and gradually narrowing to acuminate apex.

Female. Differs from male in the shorter antennae (about 1 and 1/3 as long as width of head across eyes) with somewhat more compact club, little bit smaller head, slightly narrower pronotum with broadly arcuate and extremely narrowly explanate sides, elytra more gently outlined, protarsi distinctly narrower. Ovipositor moderately pigmented, rather wide at coxites, with simple apex and moderately long styli.

Variations and sexual dimorphism. Length of body 1.9–2.1, width 0.8–0.9 mm. The sexual dimorphism is rather stable, although length of male antennae is rather variable. The male collected on the "3.XII.1986" has rather curved prosternal process, widely explanate pronotal and elytral sides (elytra at base almost as widely explanate as scape wide), shorter mentum, narrower and somewhat longer tibia and protarsus about as wide as protibia. The females collected at this date also have somewhat explanate pronotal and elytral sides (but not so widely as those in the male). The puncturation, pubescence and microsculpture of integument shows some variability, some paratypes with somewhat coarser puncturation, less dense pubescence and more shining.

Diagnosis. This new species is well characterized by the shape of pronotum, scape and mentum as well as by the outline of antennal grooves. In addition to the mentioned characters and the structures of genitalia, it differs also from other members of the provisional species group 5 (see above):

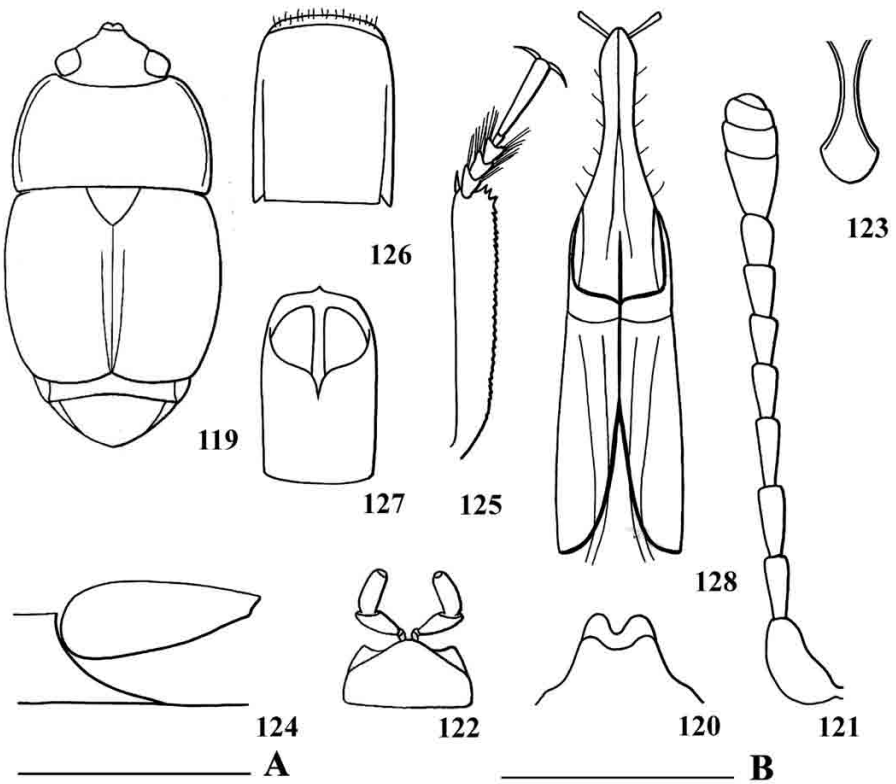
- from *M. astrocaryi* **n. sp.** (aberrant forms) in the larger, much less convex and darker (bright reddish) body, depressed interantennal space of the male head, shorter adsutural lines and more expressed sexual dimorphism in general;

- from *M. beserrai* **n. sp.** in the more arcuate elytral sides, larger eyes, shorter adsutural lines, trace of subparamental lines, more depressed interantennal space of the male head and undilated male flagellomeres, and from the typical form of it also in the darker (bright reddish) body;

- from *M. bondari* in the much smaller and lighter body; much sparser, much shorter and less conspicuous pubescence; sparser and distint dorsal puncturation, more or less smoothed integument; deeply excised anterior edge and narrowly rounded lateral angles of frons; rounded to subtruncate at apex of male pygidium; less developed mandibles; shorter setae on lobes of male tarsomeres 1–3 and also in the lack of long suberect hairs on dorsum and legs of males;

- from *M. debilis* in the bright reddish coloration of of more robust body, larger eyes, deeply excised anterior edge of the head, wider antennal club, longer elytra with oblique apices, less expressed sexual dimorphism in the body size;

- from *M. delgadoi* in the darker coloration of of more robust body, much larger head with larger eyes, deeply excised (not truncate) anterior edge of the head, shape of mentum, wider antennal club, less expressed sexual dimorphism in the body size;



Figures 119–128
Mystrops lobanovi: **119,** male body, dorsally; **120,** anterior part of frons and labrum, antero-dorsally; **121,** male antenna, dorsally; **122,** male mentum and labial palpus, ventrally; **123,** prosternal process, ventrally; **124,** submetacoxal line, ventrally; **125,** male protibia and tarsus, dorsally; **126,** tegmen, ventrally; **127,** penis trunk, dorsally; **128,** ovipositor, ventrally. Scales: A to fig. 119, bar = 1.0 mm; B to figs 120–128, bar = 0.5 mm.

- from *M. heterocera* in the more oval and much less convex body, narrower head, longer labral lobes exposed from under frons, less widely separated mesocoxae, less conspicuous pubescence, distinct antennal grooves, denser and less distinct puncturation in males, markedly narrower male tibiae (particularly male mesotibia) and longer male antennae;

- from *M. lucanoides* in the smaller and darker (bright redish) body (more robust in males and more slender in females), denser puncturation and more conspicuous pubescence, larger eyes, deeply excised anterior edge of the head, shorter male antennae and much shorter male mandibles;

- from *M. pectoralis* **n. sp.** in the less convex body, more arcuate elytral sides, longer elytra with somewhat oblique apices, larger eyes, lack of transverse elevation on the male prosternum and much shorter male pronotum, more depressed interantennal space of the male head.

Etymology. The epithet of this new species is devoted to M.V. Kommisar, friend of the senior author from the childhood, when they are spent a lot of time to in mountains and forests, observing life of wild animals, including insects.

Bionomy. Adults collected on inflorescences of *Bactris* cf. *monticola* Barbosa Rodriguez 1875 and *B. maraja* Martius 1826 in Amazonian rain forest.

Distribution. Map fig. 214. Peru.

Mystrops lobanovi n. sp. (Figs 119–128; 190–191)

Material. **Holotype** (MNHN), male and 64 **paratypes** (BMNH, CIRAD, MNHN, NMP, USNM, ZIN, ZMB, UNALM), **Peru**: 'San Martin [8°17'S 76°26'W], 29.IX.1991, G. Couturier', 'près plantation, Palmas del Espino', 's/ inflorescence *Iriartea deltoidea*, Palmae'; other **paratypes**: 2 (MNHN, ZIN), 'Loreto, Jenaro Herrera [4°55'S 73°40'W], 06.V.1987, F. Kahn & K. Mejia', 'sur inflorescence *Socratea salazarii*'.

Description of holotype (male). Length of body 2.2, width 1.1, height 0.6 mm. Oval, moderately convex dorsally and ventrally; reddish with lighter appendages; rather shining; dorsum with slightly conspicuous and recumbent yellowish golden hairs, not longer than distance between their insertions; underside with somewhat thicker and denser hairs than those on dorsum; lateral edges of pronotum and elytra not fringed.

Head with quite distinct small punctures somewhat smaller than eye facets in diameter, interspaces between them about as great as a puncture diameter, finely and smoothly

microreticulated. Pronotum with coarser punctures than those on head, about as large as eye facets in diameter, interspaces between them somewhat greater than a puncture diameter, very finely and very densely microreticulated. Elytra with distinct and very deep punctures as large as those on pronotum, but somewhat denser, much deeper, separated by about a puncture diameter or somewhat greater and looking like larger and denser because of very smooth interspaces between them. Pygidium, previous tergite and abdominal ventrites with dense and very fine punctures, interspaces between them about as great as a puncture diameter and rather reliefly, finely and densely microreticulated. Prosternum with very small and sparse punctures, interspaces between them rather smoothly alutaceous in anterior part and becoming microreticulated on prosternal process. Metaventrite in the middle with punctures rather small and distinct, interspaces between them 2–4 puncture diameters and rather smoothed, but at sides interspaces bearing some fine and dense microreticulation.

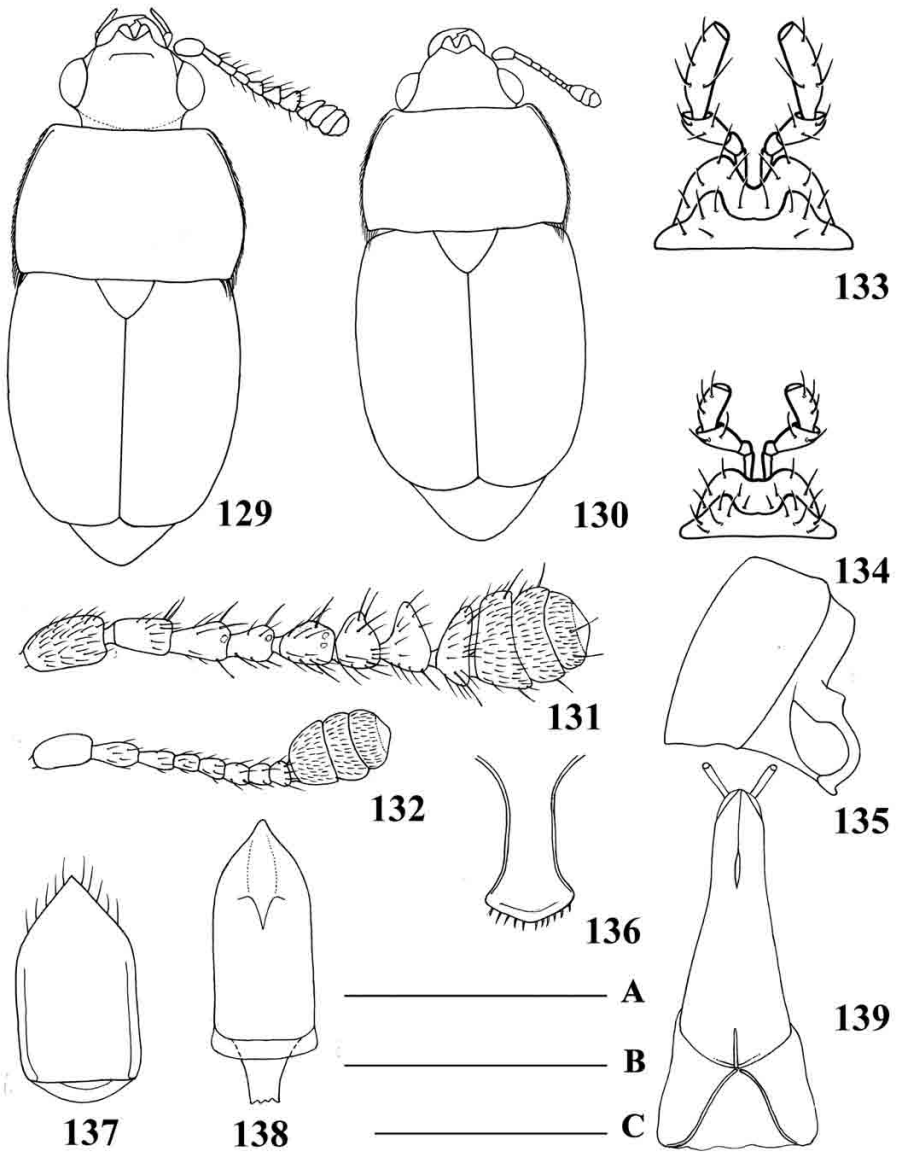
Head somewhat shorter than distance between eyes, slightly convex at base and flattened anteriorly, with a slightly traceable transverse ('fronto-clypeal') line, lateral edges above insertions of antennae rather elevated and interantennal space distinctly depressed, its anterior edge distinctly bordered, shallowly emarginate and with rounded lateral angles; eyes broadly convex, moderately facetted; temples absent. Labrum with rather far projecting lobes, with arcuate apices and a deep and wide U-shaped median excision. Mandibles moderately exposed from under frons. Antennae about 1 and 3/4 as long as width of head across eyes; scape rather curved, nearly twice as long as wide and about 3/4 as long as club, somewhat wider than 7 following antennomeres; antennomeres 2–4 subconical and about 2/3 as long as scape; antennomeres 5–8 subconical, somewhat shorter than previous ones, slightly compressed and becoming wider apically; club comprising about 2/9 of total antennal length, elongate, compact, almost symmetrical, antennomere 9 almost longer than antennomeres 10 and 11 combined; antennomeres 2–11 with rather short and comparatively dense setae. Pronotum widest at the middle and arcuately narrowing both posteriorly and anteriorly, almost twice as wide as long in the middle; its anterior edge almost regularly emarginate, and distinctly bordered; sides gently arcuate and moderately explanate (about as widely explanate as base of flagellomeres); posterior edge slightly convex in the middle and shallowly emarginate at each posterior angle, edges distinctly bordered; anterior and posterior angles almost with a distinct top and very obtuse; disk rather convex and sides moderately sloping. Scutellum large, subtriangular and with subrounded apex. Elytra widest at midlength, about as long as wide combined, separately and widely rounded at apices, forming very obtuse sutural angle, leaving uncovered the whole pygidium and apex of previous segment; their sides about as explanate as pronotal sides and with lateral edges widely arcuate, adsutural lines slightly expressed along distal 4/5. Pygidium slightly convex and subtruncate to very shallowly emarginate at apex. Arcuate and not flattened apex of anal sclerite well exposed from under pygidial apex.

Mentum short, about twice as wide as long, widest at base and with anterior angles widely rounded and anterior edge biemarginate. Ultimate maxillary palpomere subcylindrical to slightly narrowing apically, about 4 times as long as thick. Ultimate labial palpomere elongate and slightly narrowing apically, slightly more than twice as long as thick. Antennal grooves with slightly expressed and convergent at inner edge. Subparamental grooves rather distinct, narrow and following close to innet edge of antennal grooves. Prosternum moderately convex along the middle and with process narrow, subflattened between coxae and medially convex at apex, rather curved along coxae and explanate at apex, apex moderately widened before subsemicircular and not bordered posterior edge, with maximal width about as great as width of antennal club, its outer apical angles widely rounded. Ratio of distances between pro-, meso- and metacoxae about as 1:1.5:3.5. Metaventrite broadly subflattened along the middle and with a distinct median line in distal 2/3, its posterior edge between coxae very shallowly emarginate. Submetacoxal line very well expressed and reached the posterior edge of abdominal ventrite 1 at the middle of

posterior edge of coxal cavity. Abdominal ventrite 1 about twice as long as hypopygidium and somewhat longer than ventrites 2 and 3 combined; hypopygidium widely rounded at posterior edge. Epipleura at base about as wide as antennal club, moderately elevated laterally.

Tibiae narrow and comparable in width (about 2/3 as wide as antennal club), all with almost straight inner edge, oblique at apex, outer edge of meso- and metatibiae with rows of rather short and moderately sparse setae. Femora moderately wide, with more or less convex anterior and posterior edges, about 2.5 times as wide as tibiae. Tarsi of usual structure and comparatively narrow; protarsus about 1/2 as wide as protibia, meso- and metatarsi somewhat narrower, hairs of tarsomeres 1-3 very long and tarsomere 5 much longer than tarsomeres 1-4 combined; claws simple.

Aedeagus weakly sclerotized and rather short; tegmen subparallel-sided in most its length and slightly narrowing to widely rounded/subtruncate apex with very short and sparse hairs; penis trunk about as long as tegmen, subparallel-sided in most its length and slightly narrowing to truncate apex with a small median process.



Figures 129–139
Mystrops pectoralis: **129,** male body, dorsal; **130,** female body, dorsal; **131,** male antenna; **132,** female antenna; **133,** male mentum and labial palpi, ventrally; **134,** female mentum and labial palpi, ventrally; **135,** male prothorax, laterally; **136,** prosternal process, ventrally; **137,** tegmen, ventrally; **138,** penis trunk, dorsally; **139,** ovipositor, ventrally. Scales: A to figs 129, 130, bar = 1.0 mm; B to figs 131, 132, 135–139, bar = 0.5 mm; C to figs 56–58, 133, 134, bar = 0.25 mm.

Female. Differs from male in the somewhat shorter antennae (slightly longer than width of head across eyes) with uncurved scape and somewhat less elongate club, subflattened frons, rounded apex of pygidium and hypopygidium, slightly shorter hairs of tarsomeres 1–3. Ovipositor weakly pigmented, with simple apex and rather long styli.

Variations and sexual dimorphism. Length of body 2.0–2.6, width 1.1–1.3 mm. The sexual dimorphism in shape of antennomeres and interantennal depression of frons is not well expressed in all cases and does not allow to determine the sex of specimens. Male pronotum is sometimes widest at basal ½, but sometimes at the middle. On the other hand, its anterior edge can be almost as wide as posterior one, but sometimes considerably narrower. The puncturation, pubescence and microsculpture of integument show some variability, some paratypes are looking like very shining.

Diagnosis. This new species as a member of the provisional species group 11 (see above) is well characterised by the comparatively narrow male tarsi, tarsomeres 1–3 with narrow brushes of very long hairs and tarsomere 5 longer than tarsomeres 1–4 combined. It differs from another member of this group, *M. rotundula*, in the curved male scape and lack of outer projection of male mandibles, shorter antenna with 3-segmented club in both sexes, narrower male head, frons between antennal insertions weakly depressed in male and subflattened in female, shorter hairs on male protibia raised only along inner edge. The genitalia of both sexes of this new species are also quite different from those in *M. rotundula*.

Etymology. The epithet of this new species is devoted to A.L. Lobanov, closer colleague of the senior author and great enthusiast in creation of the web-site <http://www.zin.ru/Animalia/Coleoptera>.

Bionomy. Adults have been collected on inflorescences of *Iriartea deltoidea* Ruiz & Pavan 1798 and *Socratea salazarii* in Amazonian rainforest.

Distribution. Map fig. 212. Peru.

Mystrops pectoralis Kirejtshuk, Couturier & Jelínek n. sp. (Figs 129–139; 192–193)

Material. **Holotype** (NMP), male & 6 **paratypes** (NMP), **Brazil**: 'Pará, Cachimbo [8°57'0"S 54°54'0"W], VI. 1962'; other **paratypes**: 203 (BMNH, CIRAD, INPA, MNHN, MPEG, USNM, ZIN, ZMB), 'Pará, Belém [1°26'S 48°24'W], 23.V.1998, P. Beserra and G. Couturier', 'Embrapa Am. Or. BAG, km 15, *Astrocaryum vulgare* – Palmae', 'sur inflorescence, en anthèse'; 33 (MNHN; ZIN, PUCE). **Peru**: 'San Martin – Uchiza [8°17'S 76°26'W], 26.IX.1988, G. Couturier', 'near plantation, Palmas del Espino', 'on inflorescence of *Astrocaryum* sp.'; 23 (MNHN, ZIN), 'Loreto, Nauta La Circular [4°29'S 73°35'W], 8.10.2006, G.Couturier & C. Delgado', 'en inflorescencias en antesis de *Astrocaryum chambira*, "chambira" (Arecaceae)'; 35 (MNHN, ZIN), 'Loreto-Iquitos-Rio Nanay [3°39'S 73°15'W], 24.10.2006, G. Couturier & C. Delgado', 'en inflorescencias en antesis de *Astrocaryum jauari* "huiririma" (Arecaceae)'; 1 (ZISP), '50 km S from Iquitos, Panguana Camp [3°58'S 73°11'W], 28-30.01.1997, A. Petrov'; 1 (CNC), **Suriname**: 'Paramaribo [5°30'N 54°57'W], l'Hermitage, at light, 14.07.1969, N. Nieser' (male without metathorax and abdomen).

Description of holotype. Length of body 3.2, width 1.2, height 0.9 mm. Rather elongate than oval, moderately convex dorsally and slightly convex ventrally; subunicolorous straw reddish; body more or less shining, although head and pronotum somewhat dull; dorsum with rather conspicuous and subrecumbent yellowish golden hairs, 1/2–1/3 times as long as distance between their insertions; underside with finer, denser, shorter and less conspicuous recumbent hairs than those on dorsum; lateral edges of pronotum and elytra fringed with dense recumbent hairs becoming longer at posterior pronotal angles, making up 'false angles' projecting posteriorly; besides, apices of sclerites of ultimate abdominal sclerites and anal sclerite with very long hairs oriented posteriorly.

Head and pronotum with shallow and not quite distinct punctures about as large as eye facets in diameter, interspaces between them 1/3–2/3 of puncture diameter and with fine and dense cellular (isodiametrical) microreticulation (nearly microgranulate). Elytra with punctures somewhat more distinct and deeper than those on pronotum and microreticulation between them somewhat smoothed. Pygidium finely punctured and obsoletely microreticulated. Prosternum and mesoventrite indistinctly punctured, finely and densely alutaceous. Metaventrite with very fine and distinct punctures separated by several diameters, between them smooth and shining in the middle, distinctly isodiametrically microreticulated laterally. Abdominal ventrites with shallow and indistinct punctures and densely microreticulated.

Head almost 1.5 times as long as distance between eyes, subflattened, with a distinct transverse ('fronto-clypeal') line, lateral edges above insertions of antennae elevated, anterior edge of frons unbordered, arcuately excised and with rounded lateral angles; eyes broadly convex and coarsely facetted; temples converging posteriorly and very short. Labrum with moderately projecting lobes, separately arcuate at apex, with a deep and wide median excision. Mandibles well developed and moderately exposed from under frons. Antennae almost 1 and 1/2 as long as width of head across eyes; scape nearly twice as long as wide, wider than following ones; antennomeres 2 and 3 subequal, each nearly 1.5 times longer than wide; antennomeres 4 and 5 shorter; antennomeres 6–7 subtriangularly dilated inwards, antennomeres 6–7 loose, antenomere 8 close to antennal club; club comprising about ¼ of total antennal length, oval, nearly compact, rather asymmetrical with longest and widest antennomere 9; each of antennomeres 2–8 bearing several long stout outstanding setae. Pronotum widest at basal third, about 1 and ½ as wide as in the middle long; its anterior edge scarcely emarginate, indistinctly bordered; sides broadly arcuate, along lateral edges narrowly explanate-canalicular anteriorly, explanate stripe at its anterior angles about 1.5 times as wide as eye facets in diameter, gradually narrowing posteriorly and vanishing behind the midlength of pronotum; posterior edge almost straight, shallowly emarginate besides posterior angles, indistinctly bordered; both anterior and posterior angles obtuse, not prominent; surface strongly transversely convex anteriorly and sides gently sloping. Elytra widest before their midlength, about 1.1 times as long as their combined width, broadly and separately rounded apically; their lateral edges broadly arcuate, not explanate, just visible simultaneously from above, adsutural lines expressed in distal 1/6. Pygidium subflattened and rounded at apex. Anal sclerite not exposed dorsally.

Mentum about twice as wide as long and widest at base, its anterior edge deeply excised medially, consisting of heavily sclerotized base and extremely thin anterior part (the latter is

not visible at low magnification). Ultimate maxillary palpomere subcylindrical to slightly narrowing apically, about 6 times as long as thick. Ultimate labial palpomere sybcylindrical to slightly narrowing apically, about 4 times as long as thick. Antennal grooves with more or less distinct convergent inner edge. Subparamental grooves (stria) not expressed. Prosternum with posterior half abruptly elevated and separated from the anterior half by blunt transverse edge, prosternal process narrow, medially subflattened, longitudinally curved along coxae, its apex slightly widened before widely rounded posterior edge and with distinct outer angles. Ratio of distances between pro-, meso- and metacoxae about as 1:1:3. Mesoventrite rather excavated and transversely convex. Metaventrite medially subflattened to slightly convex, its posterior edge between coxae shallowly emarginate. Submetacoxal line slightly traceable and reaching posterior edge of abdominal ventrite 1. Abdominal ventrite 1 about twice as long as hypopygidium, ventrites 2-4 taken separately somewhat shorter than hypopygidium; hypopygidium widely rounded at posterior edge with a shallow median emargination, from under which apex of anal sclerite slightly exposed. Epipleura at base nearly twice as wide as prosternal process and moderately elevated laterally.

Tibiae moderately narrow, pro- and mesotibiae somewhat wider than and metsatibia subequal in width to epipleura at base, protibia subtruncate at apex and with a distinct outer apical angle, meso- and metatibiae oblique at apex and with widely rounded outer apical angle; outer edge of meso- and metatibiae shortly ciliate. Femora of usual shape, anterior edge of profemur and posterior edge of both meso- and metafemora subrectilinear, posterior edge of profemur and anterior edge of mesofemur gently convex, but anterior edge of metafemur rather convex, pro- and mesofemora about twice and metafemur nearly 3 times as wide as corresponding tibiae. Tarsi about 2/3 as long as tibiae; pro- and mesotarsi slightly narrower to subequal to width of corresponding tibiae, metatarsus distinctly narrower than metatibiae; tarsal claws moderately narrow and slightly curved.

Aedeagus moderately sclerotized; tegmen in basal half parallel-sided, in distal half with rectilinear lateral edges converging towards acute apex; penis trunk subparallel-sided, although sides in distal portion arcuately converging towards obtusely pointed apex.

Female. Antennae shorter, not reaching posterior corners of pronotum, with oval 3-segmented suboviform club, composing of about 2/7 of total antennal length, flagellomeres with shorter and spaser suberect setae. Head only slightly longer than distance between eyes. Pronotum widest at basal fourth, 1.59 times as wide as long. Pygidium subflattened and widely rounded at apex. Mentum slightly medially excised. Ultimate maxillary palpomere about 5 times as long as thick. Ultimate labial palpomere subparallel-sided and about twice as long as wide. Prosternum simple, transversely convex along the middle, without transverse elevation. Hypopygidium very widely rounded ti subtruncate at apex. Tarsi somewhat narrower than in the males with protarsi nearly ½ as wide as tibiae. Ovipositor weakly pigmented, with conspicuously short gonocoxites.

Variations and sexual dimorphism. Length of body 1.3–2.3 (male length usually not less than 1.5, female length usually not more than 2.0), width 0.6–1.1 mm. Sexual dimorphism is particularly manifested by conspicuous modifications of antennae, prosternum and hypopygidium as well as by different proportions of head and pronotum, which is comparatively longer and less narrowed anteriorly in males, shape of mentum, length of maxillary and labial palpomeres, shape of mentum and width of tarsi. The male secondary sexual characters are, like in some other *Mystrops* species, subject to allometric variation, so that in the extremely small male antennae, prosternum, pronotum and many other structures usually showing a sexual difference nearly corresponding to the conditions of these structures characteristic of females, and the true sex of these specimens is told only by the exposed anal sclerite from under the hypopygidium, the latter in males is usually more or less emarginate at apex. Pronotum of most males tends to be much longer than in females, howerer, some males have an enlarged pronotum, which is enlarged in the width rather than in length. A certain variability is observed in puncturation and sculpture of integument as well as in pubescence.

Diagnosis. The males of *Mystrops pectoralis* **n. sp.** differ from all currently known species of the genus by their unique modifications of antennae and prosternum, the form of antennae resembling conditions in males of some Meligethinae, like *Pria* Stephens 1829; *Anthystrix* Kirejtshuk 1984 etc. Females and gynomorph males resemble those of many other *Mystrops* species, but they can be recognized by their indistinctly punctured and strongly densely microreticulated pronotum and more obsoletely microreticulated elytra, which are without acuminate tops.

Except the outstanding characters in structure of the male prosternum, male antenna, comparatively longer male pronotum and rather convex underside in general, from other members of the provisional species group 5 *M. pectoralis* **n. sp.** differs:

- from aberrant *M. astrocaryi* **n. sp.** in the smaller body, comparatively smaller eyes with finer facets, comparatively shorter elytra, much more conspicuous pubescence, not so projecting labral lobes, presence of antennal grooves and lack of trace of subparamental grooves (lines);

- from *M. beserrai* **n. sp.** in the more convex body, shorter elytra, shape of mentum, somewhat shorter tarsomere 5 and stronger sexual dimorphism in general;

- from *M. bondari* in the much smaller, more slender and lighter body; much sparser, much shorter and less conspicuous pubescence; peculiarities of puncturation and sculpture; narrowly rounded lateral angles of frons; less developed mandibles; presence of antennal grooves and lack of trace of subparamental grooves; shorter setae on lobes of male tarsomeres 1-3 and also in the lack of long hairs on dorsum and legs of males;

- from *M. debilis* in the more convex body, usually shorter and wider ultimate palpomeres, shape of mentum and not so long hairs on lobes of male tarsomeres 1-3, presence of antennal grooves, lack of trace of subparamental grooves and more compact club;

- from *M. delgadoi* in the darker and more convex body, excised (not truncate) anterior edge of frons, shape of mentum and not so long hairs on lobes of male tarsomeres 1-3, presence of antennal grooves and lack of trace of subparamental grooves, shorter male antennae with more compact club;

- from *M. heterocera* in the much slender and less convex body, narrower head, longer labral lobes exposed from under frons, less widely separated mesocoxae, shorter hairs, denser and less distinct puncturation in males, markedly narrower male tibiae (particularly male mesotibia), distinct antennal grooves;

- from *M. komissari* **n. sp.** in the more convex body, less arcuate elytral sides, shorter elytra, smaller eyes, lack of trace of subparamental grooves (lines) and depressed interantennal space of the male head;

- from *M. lucanoides* in the less expressed sexual dimorphism in body size (body of *M. lucanoides* narrower in males, but smaller and more robust in females), longer and more conspicuous pubescence, less clear and denser dorsal puncturation, deeply excised anterior edge of frons, shorter male mandibles, shorter male palpi, presence of antennal grooves and lack of trace of subparamental grooves (lines).

Etymology. The epithet of this new species is the adjective in apposition, from the Latin '*pectus*' (breast), referring to the peculiar relief of the male prosternum.

Bionomy. Adults have been collected on inflorescences in anthesis of different species of *Astrocaryum* of the subgenus *Pleiogynanthus* (*A. campestre*, *A. chambira* Burrett 1934, *A. jauari*, *A. vulgare*) in Amazonian rainforest, in natural and cultivated areas.

Distribution. Map fig. 215. Brazil, Suriname, Peru.

Mystrops squamae n. sp. (Figs 140–143; 179–180)

Material. **Holotype** (MNHN), male and 54 **paratypes** (NMHN, ZIN), **Peru**: 'Loreto, Jenaro Herrera [4°55'S 73°40'W], 19.V.1987, F. Kahn & K. Mejia', 'sur inflorescences de *Aiphanes ulei*, Ref. 2 080, F.K. & K.M.'; other **paratypes**: 162 (CIRAD, MNHN, NMP, USNM, ZIN, ZMB, UNALM), '4°55'S 73°40'W, Jenaro Herrera, X.1996, K. Mejia & F. Kahn', 's/inflorescence *Astrocaryum urostachys* Burr., Arecaceae', 'P 31/A'; 23 (MNHN, ZIN), 'Loreto, rio Maniti, Santa Cecilia [3°36'S 72°57'W], 10.VIII.1993, G. Couturier', 'inflorescence en anthese *Astrocaryum javarense*, Arecaceae'; 2 (MNHN), 'Loreto, rio Maniti, Santa Cecilia, 23.X.1988, G. Couturier', 'Host Plant *Astrocaryum javarense*, Palmae', 'on male flowers of palm'; 18 (MNHN), 'San Martin, Moyobamba [6°01'S 76°58'W], 19.XI.1991, Kahn F. & Moussa F.' (18. XI.1991), '*Astrocaryum huicongo*, Palmae', 'on inflorescence'; 224 (BMNH, MNHN, ZIN, PUCE), **Ecuador**: 'Napo, Tena [0°59'S 77°48'W], 2.IX.1999, L. Reynaud & I. Suarez', 'sur inflorescence *Astrocaryum urostachys*, Palmae', 'P 31/A'; 31 (MNHN, ZIN), 'Napo, route Tena Puyo, 01°07'73"S 77°49'25"W, 28.XII.1999, F. Kahn', 's/inflorescence *Astrocaryum urostachys* Burr., Arecaceae', 'P 31/A'; 15 (MNHN), 'Napo, Coca [0°28'S 76°58'W], 13-X-1999, L. Reynaud', '*Astrocaryum urostachys*, Arecaceae, on inflorescence'.

Note. This species is very similar to *M. kahni* **n. sp.** and, therefore, some characters presented in both species are omited in the below description.

Description of holotype (male). Length of body 1.6, width 0.7, height 0.2 mm. Elongate oval, slightly convex dorsally and ventrally; subunicolorous straw reddish; dorsum with a very slight shine and underside moderately shining; head with rather conspicuous, subrecumbent and somewhat squamose yellowish golden hairs, but not very dilated, parallel-sided and blunt at apices, markedly longer than distance between their insertions; pronotum and scutellum with slightly conspicuous, subrecumbent, rather fine yellowish hairs, not dilated and with acute apices, about as long as distance between their insertions; elytra with extremely conspicuous, subrecumbent and distinctly squamose yellowish golden hairs, very dilated, subtriangular and blunt at apices (with most width at apice), slightly longer than distance between their insertions; underside with fine, moderately long, moderately conspicuous and recumbent yellowish hairs, about twice as long as distance between their insertions; lateral edges of pronotum and elytra not fringed, although at posterior pronotal angles with very slight „false angles"forming by longer hairs somewhat projecting posteriorly.

Head, pronotum and elytra with extremely small and indistinct punctures and extremely relief fine and dense microreticulation. Underside with rather small to indistinct punctures and densely alutaceous to microreticulated.

Pronotum about twice as wide as long in the middle. Elytra longest at suture, their apices forming a joint arc.

Aedeagus moderately sclerotized; tegmen almost gradually narrowing before simple subangulate apex with short hairs; penis trunk moderately long and subparallel-sided and in apical ¼ gradually narrowing to acuminate apex.

Female. Very similar to male. Differs from it in the slightly projecting elytral apices not completely covering pygidium. Ovipositor weakly pigmented, with simple apex and moderately long styli.

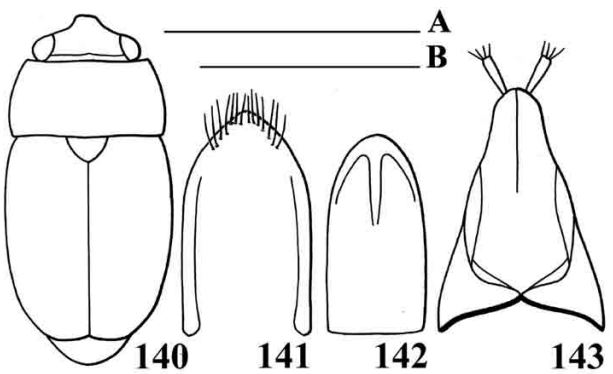
Variations and sexual dimorphism. Length of body 1.4-1.8 mm. Some variability is observed in pubescence, although general character is as in the holotype. Females from 'Jenaro Herrera, 19.05.1987' very frequently have outline of elytral apices as those in *M. kahni* **n. sp.**

Diagnosis. See the diagnosis of *M. kahni* **n. sp.**

Etymology. The species epithet of this new species means the plural from the Latin 'squama' (scale, husk, peel).

Bionomy. Adults on inflorescences in antesis of *Aiphanes ulei*, *Astrocaryum javarense*, *A. huicongo* and *A. urostachys* in Amazonian rainforest.

Distribution. Map fig. 213. Ecuador, Peru.



Figures 140–143
Mystrops squamae: **140,** male body, dorsal; **141,** tegmen, ventrally; **142,** penis trunk, dorsally; **143,** ovipositor, ventrally. Scales: A to fig. 140, bar = 1.0 mm; B to figs 141–143, bar = 0.25 mm.

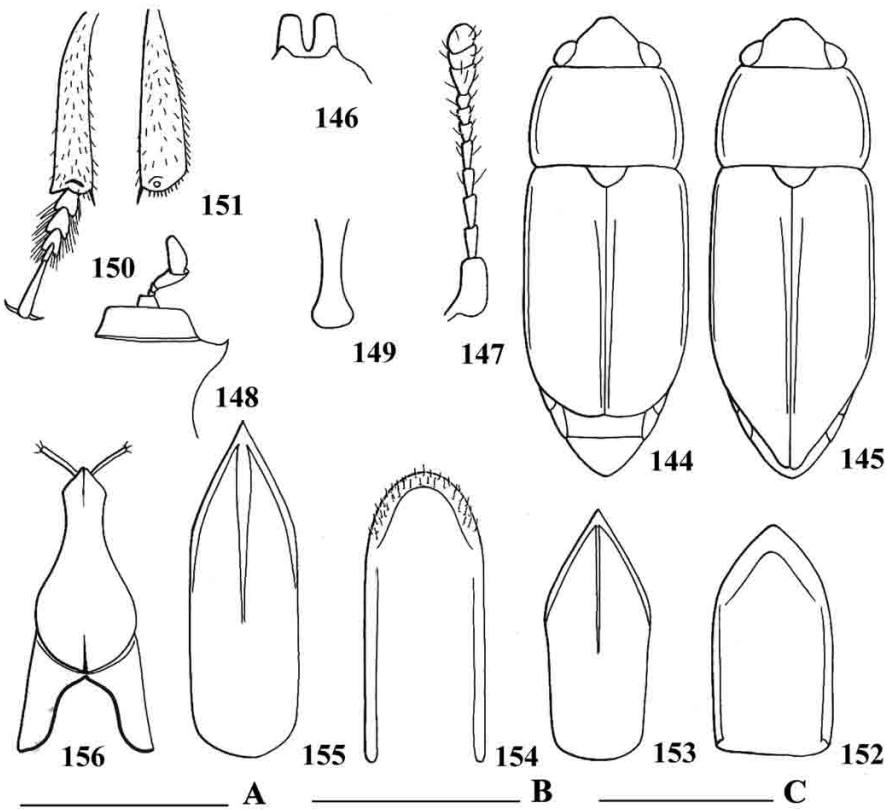
Mystrops vasquezi n. sp. (Figs 144–156, 194–195)

Material. **Holotype** (MNHN), male and 9 **paratypes** (BMNH, MNHN, PUCE, ZIN), **Ecuador**: 'Napo, Tena [0°59'S 77°48'W], 02.09.1999, L. Reynaud & Suarez', 'sur inflorescence *Jessenia bataua*, Palmae'.

Description of holotype (male). Length of body 2.2, width 0.8, height 0.6 mm. Elongate, moderately convex dorsally and slightly convex ventrally; subunicolorous straw reddish; dorsum with a slight shine and underside moderately shining; dorsum with rather conspicuous and subrecumbent yellowish hairs, 3–4 times as long as distance between their insertions; underside with very fine, short, slightly conspicuous and recumbent hairs; lateral edges of pronotum and elytra not fringed, although at posterior pronotal angles with 'false angles' forming by longer hairs projecting posteriorly.

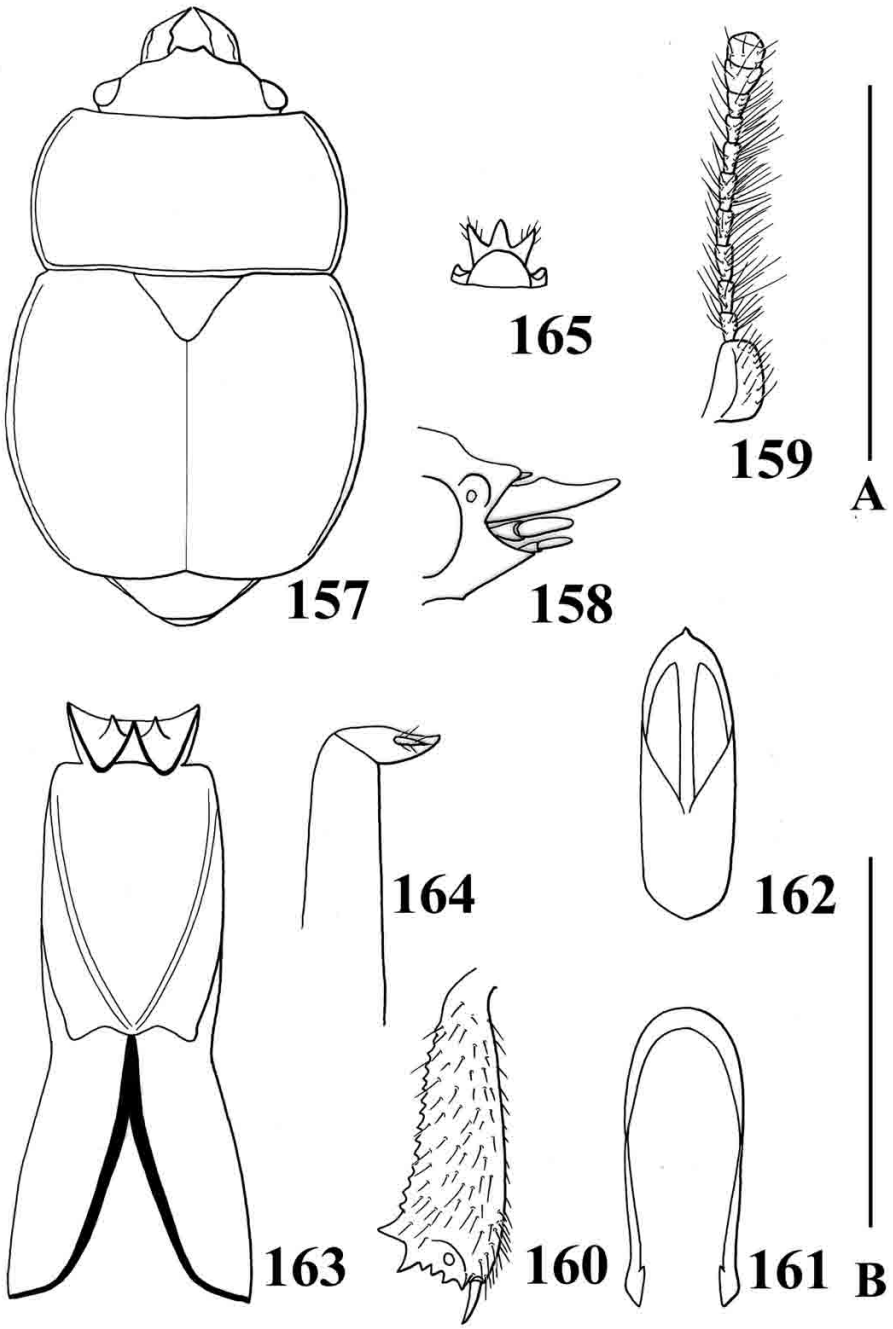
Head and pronotum with very small and distinct punctures 1/3–1/2 as large as eye facets in diameter, interspaces between them narrower than a puncture diameter, finely, densely and somewhat smoothly microreticulated. Elytra with punctures less distinct and shallower than those on head and pronotum. Pygidium and underside without clear punctures and very finely and reliefly microreticulated tro alutaceous.

Head slightly shorter than distance between eyes, subflattened, with a rather weak transverse ('fronto-clypeal') line, lateral edges above insertions of antennae not elevated, anterior edge of frons unbordered, shallowly excised, bottom of excision nearly straight and with rounded lateral angles; eyes broadly convex, very coarsely facetted; temples absent. Labrum with rather far projecting lobes, separately rounded to obliquely abrupt, with a deep and wide U-shaped median excision. Mandibles moderately exposed from under frons. Antennae somewhat more than 1.5 times as long as width of head across eyes; scape slightly curved, nearly twice as long as wide, wider than 6 following ones; antennomeres 2 and 3 subconical to subcylindrical and about 2/3 as long as scape, antennomeres 4 and 5 also subconical, but slightly shorter than previous ones; antennomeres 6–8 also subconical, but even shorter and slightly wider preceding ones, club comprising somewhat less than ¼ of total antennal length, oval, nearly compact, slightly asymmetrical with comparable width of antennomeres, antennomere 10 somewhat shorter than both antennomeres 9 and 11; antennomeres with rather sparse setae. Pronotum widest slightly before base, about 1 and 3/4 as wide as long in the middle; its anterior edge nearly straight, not bordered; sides broadly arcuate, narrowly explanate-canalicular, explanate



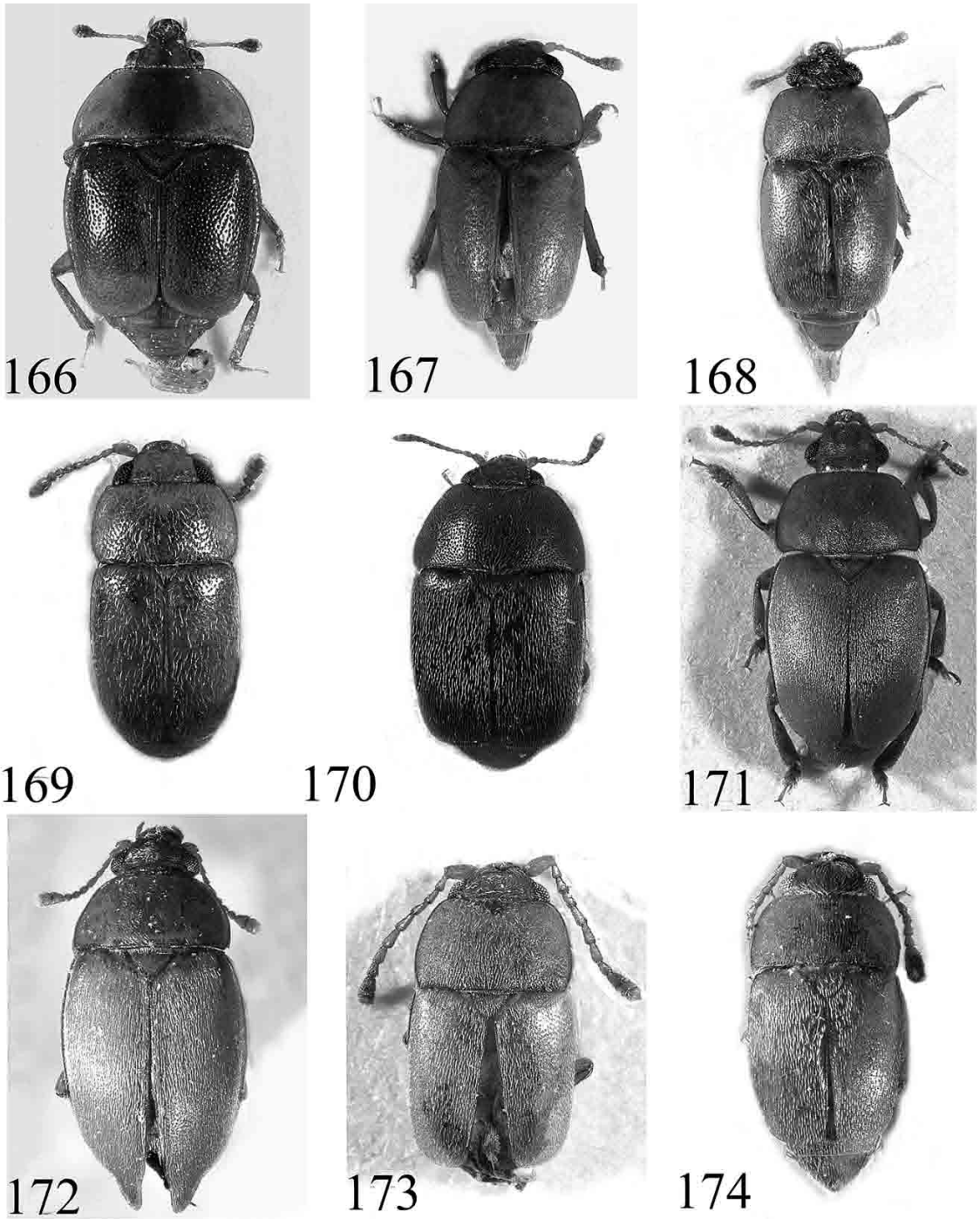
Figures 144–156
Mystrops vasquezi: **144,** male body, dorsally; **145,** male body, dorsally; **146,** anterior part of frons and labrum, antero-dorsally; **147,** male antenna, dorsally; **148,** male mentum, antennal grooves and labial palpus, ventrally; **149,** prosternal process, ventrally; **150,** male protibia and tarsus, dorsally; **151,** male mesotibia, dorsally; **152,** tegmen of holotype, ventrally; **153,** penis trunk of holotype, dorsally; **154,** tegmen of paratype, ventrally; **155,** penis trunk of paratype, dorsally; **156,** ovipositor, ventrally. Scales: A to figs 144, 145, bar = 1.0 mm; B to figs 146–151, bar = 0.5 mm; C to figs 152–156, bar = 0.25 mm.

stripe about twice as wide as eye facets in diameter; posterior edge slightly convex in the middle and shallowly emarginate at each posterior angle, indistinctly bordered; anterior angles widely rounded and posterior ones with almost distinct top; disk rather and gently convex and sides gently sloping. Scutellum large, subtriangular and with rounded apex. Elytra subparallel-sided at most length, more than 1.5 times as long as their combined width, longest at suture; sides very narrowly explanate, well visible simultaneously from above, sutural lines expressed along most length. Pygidium rather convex and widely rounded at apex. Widely rounded to subtruncate and not very flattened apex of anal sclerite well exposed.



Figures 157–165
Platychorodes adentatus: **157,** male body, dorsally; **158,** anterior part of head, laterally; **159,** male antenna, dorsally; **160,** male protibia, dorsally; **161,** tegmen, ventrally; **162,** penis trunk, dorsally; **163,** ovipositor, ventrally; **164,** apex of ovipositor, laterally; **165,** idem, posteriorly. Scales: A to fig. 157, bar = 2.0 mm; B to figs 158–165, bar = 1.0 mm.

Mentum somewhat more than 3 times as wide as long, subrectilinear at sides and with a median projection at anterior edge. Ultimate maxillary palpomere subcylindrical to slightly narrowing apically, about 5 times as long as thick. Ultimate labial palpomere thickest at base to slightly narrowing apically, about twice as long as thick. Antennal grooves with moderately expressed and convergent behind mentum and divergent at level of posterior edge of eyes. Subparamental lines very short



Figures 166–174
Habitus. **166,** *Anthocorcina subcalva;* **167,** *Anthepurops depressa*, male; **168,** *A. depressa*, female; **169,** *Mystrops astrocaryi* male; **170,** *M. atrata*; **171,** *M. bactrii*, male; **172,** *M. bactrii,* female; **173,** *M. beserrai,* male; **174,** *M. beserrai*, aberrant male.

and fine. Prosternum slightly convex along the middle and process narrow, medially convex to nearly roof-like, slightly curved along coxae, its apex moderately widened before very widely rounded to subtruncate posterior edge and with narrowly rounded outer angles. Ratio of distances between pro-, meso- and metacoxae about as 1:1:3. Metaventrite medially subflattened and with a distinct median line, its posterior edge between coxae very shallowly emarginate. Submetacoxal line very distinct and almost reaching posterior edge of abdominal ventrite 1. Abdominal ventrite 1 slightly shorter than hypopygidium and markedly longer than ventrites 2 and 3 combined; hypopygidium widely rounded at posterior edge. Epipleura at base about as wide as prosternal process and moderately elevated laterally.

Tibiae with almost straight inner edge; pro- and mesotibiae subtriangular and slightly wider, while metatibia about as wide as antennal club, apex of protibia subtruncate and apices of meso- and metatibiae suboblique, outer edge of meso- and metatibiae with rows of short setae. Femora of usual shape, all with more or less convex anterior and posterior edges, profemur somewhat more than twice, mesofemur about 1.5 times, metafemur almost 3 times as wide as corresponding tibiae. Tarsi of usual structure, although tarsomeres 2 and 3 somewhat longer; protarsus about 2/3 as wide as tibiae, meso- and metatarsi only somewhat narrower; tarsomeres 1-3 with very long hairs; claws simple.

Aedeagus moderately sclerotized; tegmen subparallel-sided at proximal 2/3 and gradually narrowing to a narrowly rounded apex with very short hairs; penis trunk somewhat longer than tegmen and in apical 1/3 gradually narrowing to acuminate apex.

Female. Very similar to male. Antennae somewhat shorter. Elytral apices very acuminate and strongly projecting, completely covering abdominal apex. Pygidium and hypopygidium widely rounded at apex. Tarsi somewhat narrower than in male, width of protarsi about ½ as wide as protibia. Ovipositor weakly pigmented, with simple apex and moderately long styli.

Variations and sexual dimorphism. Length of body 2.2–2.4 mm. The sexual dimorphism in the shape elytral apices is rather stable. Some variability is observed in the microsculpture of integument and pubescence. The shape and length of tegmen and penis trunk are somewhat different in another examined male (paratype).

Diagnosis. Antennal grooves of this new species are almost like those in *M. komissari* **n. sp.** The medially convex prosternal process is characteristic of this new species. It should be regarded as a member of provisional group 1, differning from smaller members of it (*M. costaricensis*, *M. kahni* **n. sp.** and *M. squamae* **n. sp.**) in addition to the mentioned above characters, also in the markedly longer and subparallel-sided elytra, nearly straight bottom of anterior edge of frons, rather long labrum, comparatively longer male tarsomeres 2 and 3, rather long and dense yellow hairs (not golden hairs as in *M. costaricensis* and not scales as in *M. kahni* **n. sp.** and *M. squamae* **n. sp.**) markedly longer acumination of female elytra. See also the diagnoses of the rest members of the group: *M. costaricensis*, *M. bactrii* **n. sp.**, *M. dalmasi*, **n. comb.**, *M. kahni* **n. sp.** and *M. squamae* **n. sp.**

Etymology. The epithet of this new species is devoted to J. Vasquez, entomologist at the Instituto de Investigaciones de la Amazonia peruana (Iquitos).

Bionomy. Adults on inflorescences of *Oenocarpus bataua* Martius 1823 in Amazonian rain forest.
Distribution. Map fig. 215. Ecuador.

Genus *Platychorodes* Reitter, 1884

Type species. *Platychorodes plumicornis* Reitter 1884, by monotypy

Diagnosis. This genus is very distinct from all taxa of the tribe in the vertically abrupt prosternal process, very stout and wide all tibiae with dentate outer edge and strongly modified ovipositor with the isolated and dorsally deflected apex . Besides, it is characterized by the rather short head, very transverse pronotum, suberected long and dense hairs on dorsum and ciliate pronotal and elytral sides, strongly pubescent antennae (particularly in males), comparatively widely separated coxae in all pairs, sexual dimorphism in shape of scape and antennal club.

Platychorodes adentatus n. sp. (Figs 157–165; 196–197)

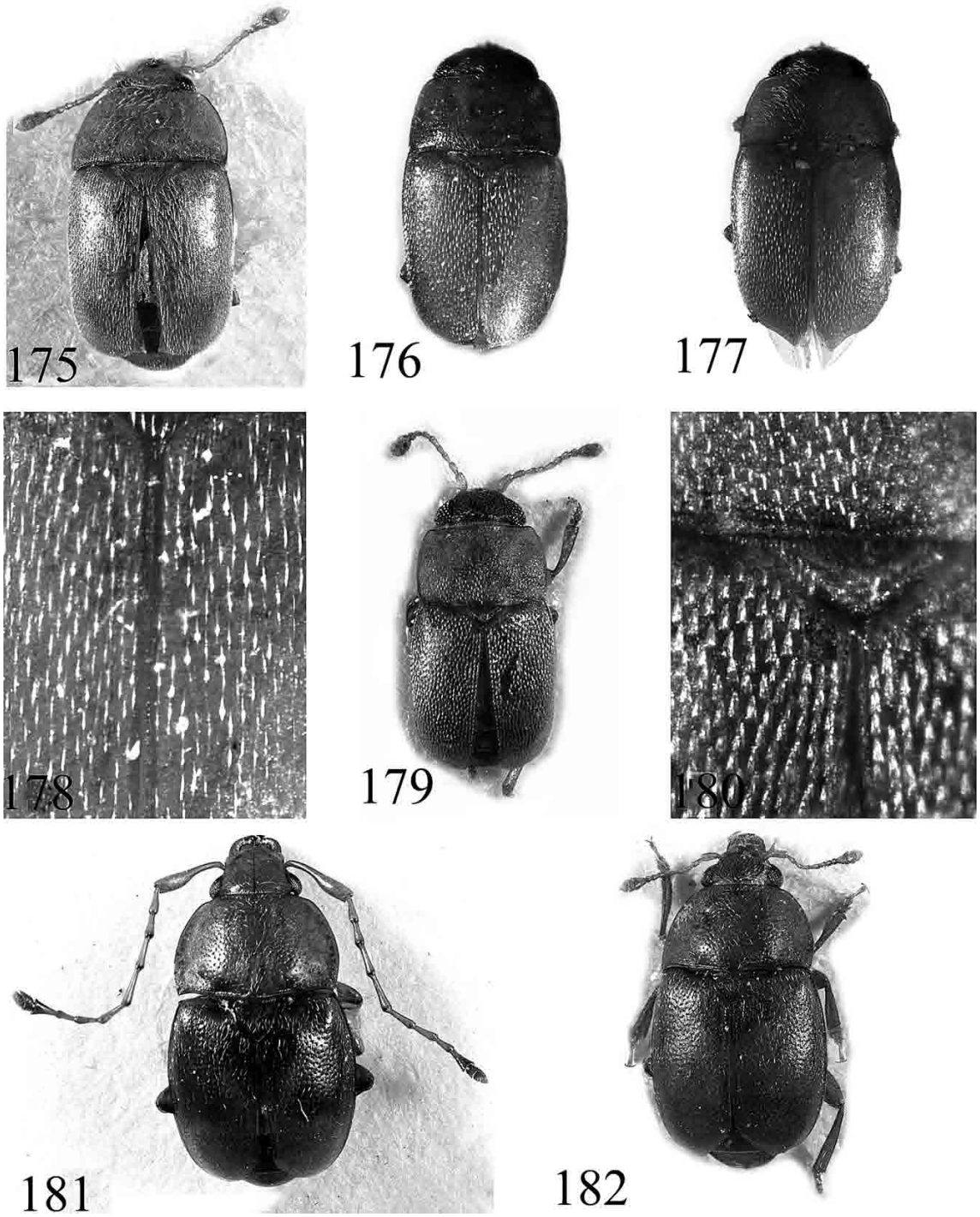
Material. **Holotype** (MNHN), male and more than 500 **paratypes** (BMNH, CIRAD, INPA, MNHN, MPEG, NMP, UNALM, USNM, ZIN, ZMB,), **Peru**: 'Loreto, Jenaro Herrera [4°55'S 73°35'W], 7.X.1991, G. Couturier',‘sur inflorescence mâle *Phytelephas macrocarpa*, Palmae'; other **paratypes:** 30 (MNHN, ZIN), 'Loreto, caserio Jaldar, rio Yarapa, near Puerto Miguel, rio Ucayali, 20.IX.2009, G. Couturier & C. Delgado', '73°23'13"W 4°29'21"S, ex larva on inflorescence ♂ in anthesis *Phytelephas* cf. *tenuicaulis*'; 12 (CNC, ZIN), **Ecuador**: 'Napo., 250 m, Limoncocha [0°24'S 76°37'W], 26.VI.1976, S. & J. Peck, ex: palm flower'; 6 (CNC, ZIN), 'Napo. Prov., 5 km W. Tena [0° 59'S 77°48'W], 500 m, 6.VII.1976, S. & J. Peck, ex: male palm flower',‘19 (NMP), Napo, Jatun Sacha Biological Station, 01°04'S, 77°36'W, 29.II.1993, Finn Ervik lgt., male inflorescence of *Phytelephas macrocarpa*' (28.II.1994, 29.V.1994, 30.V.1994).

Description of holotype (male). Length of body 3.6, width 2.3, height 1.0 mm. Oval, moderately convex dorsally and ventrally; dorsum black, underside dark brown, with reddish to yellowish appendages; rather shining; dorsum with very long and rather conspicuous erect dark to blackish hairs, 3–5 times as long as distance between their insertions, besides between longer hairs there are situated 2–3 times shorter suberect to subrecumbent hairs (although pygidium only with long hairs, which are very dense); underside with fine and very dense, subrecumbent and rather conspicuous hairs; legs also with 2 types of hairs (as those on dorsum); lateral edges of pronotum and elytra sparsely fringed by hairs as long as longer hairs on dorsal sclerites, but without 'false angles' at posterior pronotal angles.

Head with few large punctures at base and on the rest surface with smoothed tubercles more or less larger than eye facets in diameter, interspaces between them about as great as a puncture diameter and smooth. Pronotum with coarser and irregular punctures, 2–3 times as large as eye facets in diameter, interspaces between them somewhat narrower than a puncture diameter and smooth. Elytra about as punctured and sculptured as pronotum, but punctures much sparser, separated by about a puncture diameter or even somewhat more. Pygidium, sparsely microtuberculate and also rather reliefly, finely and densely microreticulated. Median parts of thoracic ventrites with very

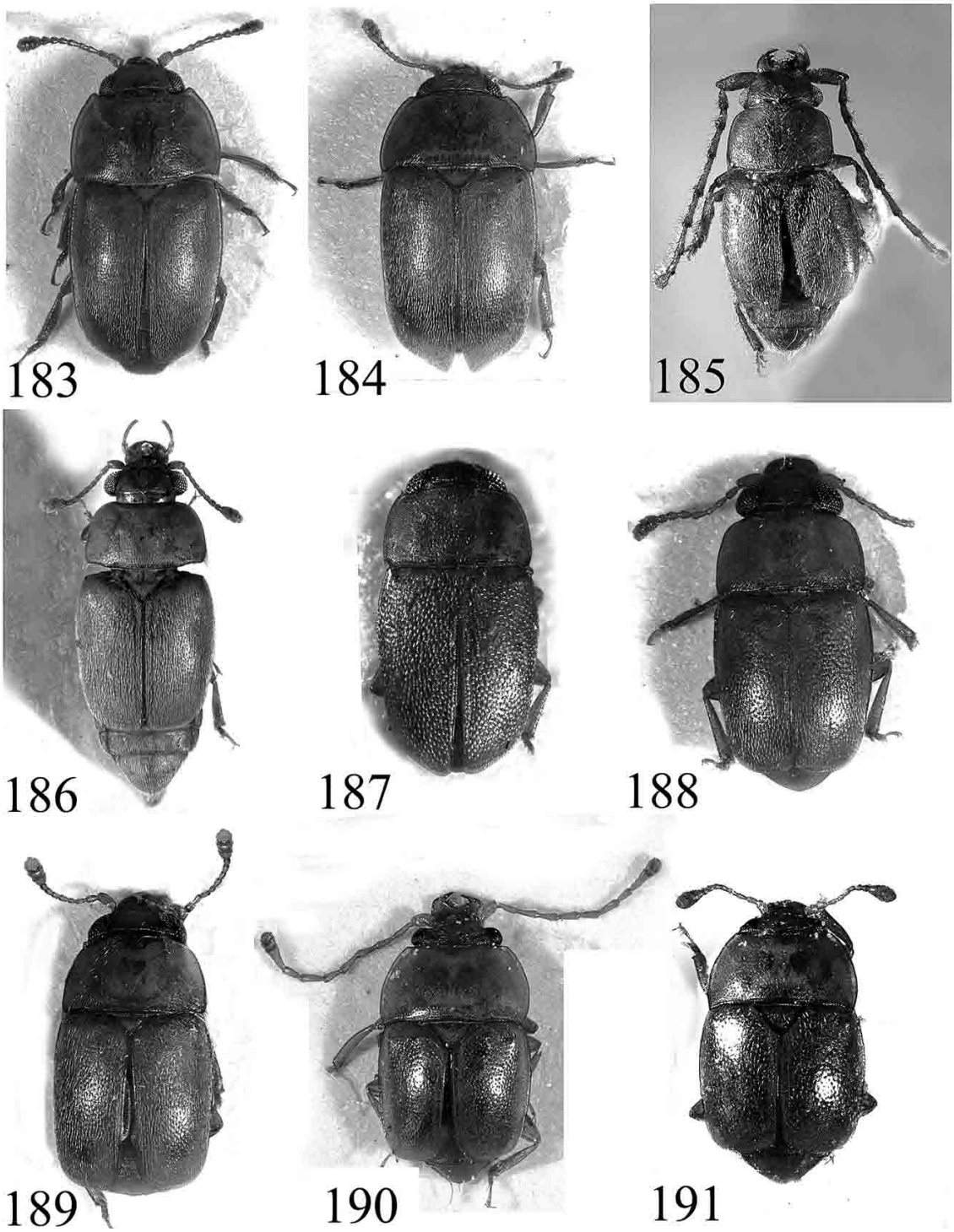
small and distinct punctures much smaller than eyes facets in diameter, interspaces between them 4–7 puncture diameters and smooth.

Head nearly half as long as distance between eyes, slightly convex at base and deeply subtriangularly depressed between antennal insertions, with a well visible transverse ('fronto-clypeal') line,



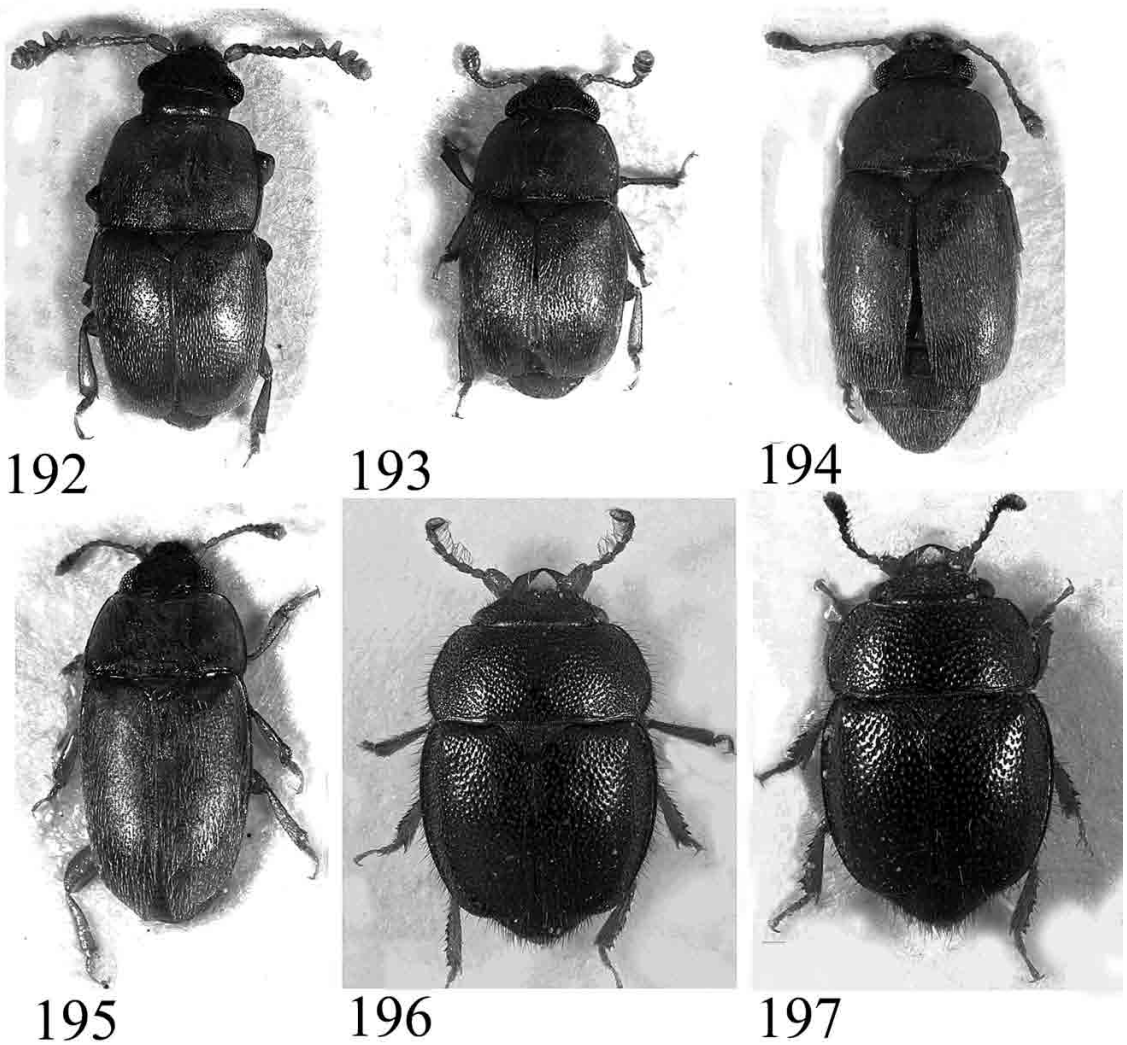
Figures 175–182
Habitus. **175,** *M. beserrai,* female; **176,** *M. costaricensis*, male; **177,** *M. costaricensis*, female; **178,** *M. costaricensis*, hairs; **179,** *M. squamae*, male; **180,** *M. squamae*, scales; **181,** *M. discoidea*, male; **182,** *M. discoidea*, female.

lateral edges above insertions of antennae moderately elevated, its anterior edge not bordered, shallowly emarginate and with widely rounded lateral angles; eyes moderately developed and moderately facetted; temples absent. Labrum with rather

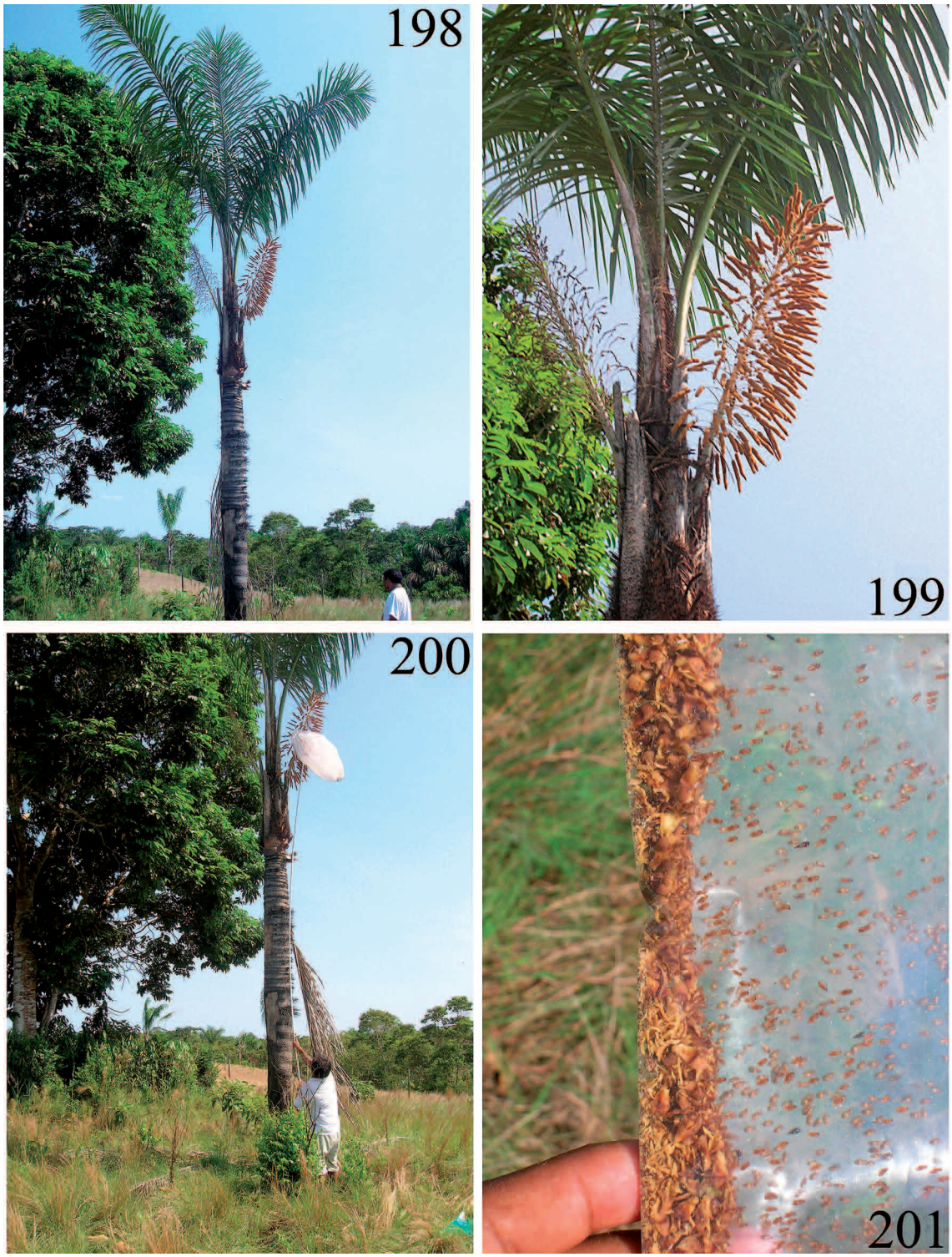


Figures 183–191
Habitus. **183,** *Mystrops dalmasi*, male; **184,** *M. dalmasi*, female; **185,** *M. debilis*, male; **186,** *M. debilis*, male, aberrant; **187,** *M. kahni*, female; **188,** *M. komissari*, male; **189,** *M. komissari*, female; **190,** *M. lobanovi*, male; **191,** *M. lobanovi*, female.

far projecting lobes, with subsemicircular apices and a deep and rather narrow U-shaped median excision. Mandibles far projecting from under frons, gently curved laterally and with a dorsal tubercle at the middle of outer edge. Antennae about 1 and 1/2 as long as width of head across eyes; scape subovoid with wider edge at base, about 1.5 times as long as wide and somewhat longer than club, more than twice as wide as each of 7 following antennomeres; suboval antennomere 2 markedly shorter and somewhat wider than subcylindrical antennomeres 3–6; subconical antennomeres 7–8 about as long as antennomere 2; club comprising about 1/6 of total antennal length and about 1.5 times as long as wide, oval, compact, symmetrical, antennomere 9 almost longer than antennomeres 10 and 11 combined and antennomere 11 very small and partly retracted in antennomere 10; antennomeres 2–9 with rather long and rather dense straw yellowish setae oriented mostly externally, scape and antennomeres 10 and 11 with somewhat shorter setae. Pronotum widest slightly behind the middle and arcuately narrowing both posteriorly and anteriorly, almost 3 times as wide as long in the middle; its anterior edge almost regularly emarginate, and distinctly bordered; sides gently arcuate and not explanate; posterior edge subrectilinear and distinctly bordered; anterior and posterior angles very widely rounded; disk rather convex and sides moderately sloping. Scutellum large, subtriangular and with subangular apex. Elytra widest before midlength, about 11/14 as long as wide combined, separately and widely rounded to subtruncate at apices, forming a very obtuse sutural angle and leaving uncovered the most part pygidium; their sides about as explanate as antennal flagelli thick and with lateral edges widely arcuate, adsutural lines slightly expressed along distal 1/2. Pygidium slightly convex and subtruncate to very shallowly emarginate at apex. Arcuate and not quite flattened apex of anal sclerite well exposed from under pygidial apex.



Figures 192–197
Habitus. **192,** *M. pectoralis*, male; **193,** *M. pectoralis*, female; **194,** *M. vasquezi*, male; **195,** *M. vasquezi*, female; **196,** *Platychorodes adentatus*, male; **197,** *P. adentatus*, female.



Figures 198–201
Astrocaryum chambira at Nauta, Department of Loreto, Peru, october 2006. **198,** general view of the palm; **199,** inflorescence; **200,** method of collecting with a net; **201,** insects in a plastic bag.

Mentum short, about twice as wide as long, subparallel-sided, posterior and anterior straight and with anterior angles widely rounded. Ultimate maxillary palpomere subcylindrical, about 2.5 times as long as thick. Ultimate labial palpomere elongate and slightly narrowing apically, about 2.5 times as long as thick. Antennal grooves and subparamental striae not expressed. Prosternum slightly convex along the middle and with process rather wide, subflattened and not curved between coxae and medially flat at apex, apex rather widened at posterior part of coxae and narrowed before subtruncate and bordered posterior edge, with maximal width about 2.5 times as great as width of antennal club, its outer subapical angles angular. Ratio of distances between pro-, meso- and metacoxae about as 1:1.5:2. Metaventrites broadly subflattened along the middle and with a distinct median line in distal 2/3, its posterior edge between coxae very shallowly emarginate. Submetacoxal line following closely posterior edge of coxal cavity. Abdominal ventrite 1 almost twice as long as two of ventrites 2–4 combined (latter subequal in length); hypopygidium subtruncate at posterior edge. Epipleura at base about 1 and 1/3 as wide as antennal club, moderately elevated laterally.

Tibiae somewhat widened apically; protibia almost as wide as antennal club, meso- and metatibiae narrower, all with almost straight inner edge, protibia subtriangular and with 2 subapical prominent teeth at apex, outer edge of meso- and metatibiae with rounded subapical angle and 9 very long and subacute processes, on top of which there is a very stout and short seta. Femora moderately wide, with more or less convex anterior and posterior edges (although anterior edge of profemur and posterior edge of mesosfemur nearly straight), profemur about 1.5 times, mesofemur about twice and metafemur about 2.5 times as wide as corresponding tibiae. Tarsi of usual structure and comparatively narrow; protarsus somewhat less than 1/4 as wide as protibia, meso- and metatarsi narrower, hairs of tarsomeres 1–3 moderately long and tarsomere 5 markedly shorter than tarsomeres 1–4 combined; claws with wide and not very strong tooth.

Aedeagus well sclerotized and rather short; tegmen subparallel-sided in most its length and slightly narrowing to rounded apex with very short and sparse hairs; penis trunk about as long as tegmen, subparallel-sided in most its length and slightly narrowing to acuminate apex.

Female. Differs from male in the somewhat shorter and shortly haired antennae (slightly longer than width of head across eyes) with oval scape (somewhat shorter than club), subflattened and shorter frons, outer edge mandible gently curved (without a trace of dorsal tubercle), rounded apex of pygidium and hypopygidium. Ovipositor well pigmented, with 3-toothed apex and rather long styli.

Variations and sexual dimorphism. Length of body 2.6–4.0, width 1.9–2.4 mm. The sexual dimorphism is more or less stable in all organs. The body coloration is rather variable, although head, pronotum, scutellum and elytra are always dark (dark brown to black), but the remainder can be very light (up to straw yellowish). The puncturation, pubescence and microsculpture of integument show some variability, but all studied specimens have coarse punctation and more or less shining interspaces on dorsal sclerites.

Diagnosis. This new species differs from another member of the genus (*Platychorodes plumicornis* Reitter 1884 from Brazil) in the characters of sexual dimorphism in scape and mandibles, surface of head and structures of genitalia. New species has the markedly shorter and thicker scape of oval shape and mandibles with a small outer projection (visible only laterally and without trace of membraneous foramen), while *P. plumicornis* has the scape at least twice as long as wide and subcylindrical, and mandibles with very long process oriented upwards [it is important to note that apex of this process with a large oval membraneous foramen]. Aedeagus of the new species is narrower and with more acute apex of penis trunk, and isolated part of ovipositor usually is markedly longer and, finally, the dorsal surface of head in *P. adentatus* **n. sp.** is not so microtuberculate, with some punctures at base and with more or less smoothed interspaces between punctures, while that in *P. plumicornis* looking like microtuberculate and with alutaceous to microreticulated interspaces between tubercles.

Note. The authors studied some variations of the genus *Platychorodes* from different areas distinguished mostly in the shape of mandibles, characters of pucturation and scuptures of dorsal integument, pubescence and some peculiarities of the outline of apex of the penis trunk. They seem to represent different species, however, some further studies are needed to define discrimination of them.

Etymology. Epithet of the new species consists of the Latin '*a*' (negative particle) and adjective '*dentatus*' (toothed, notched).

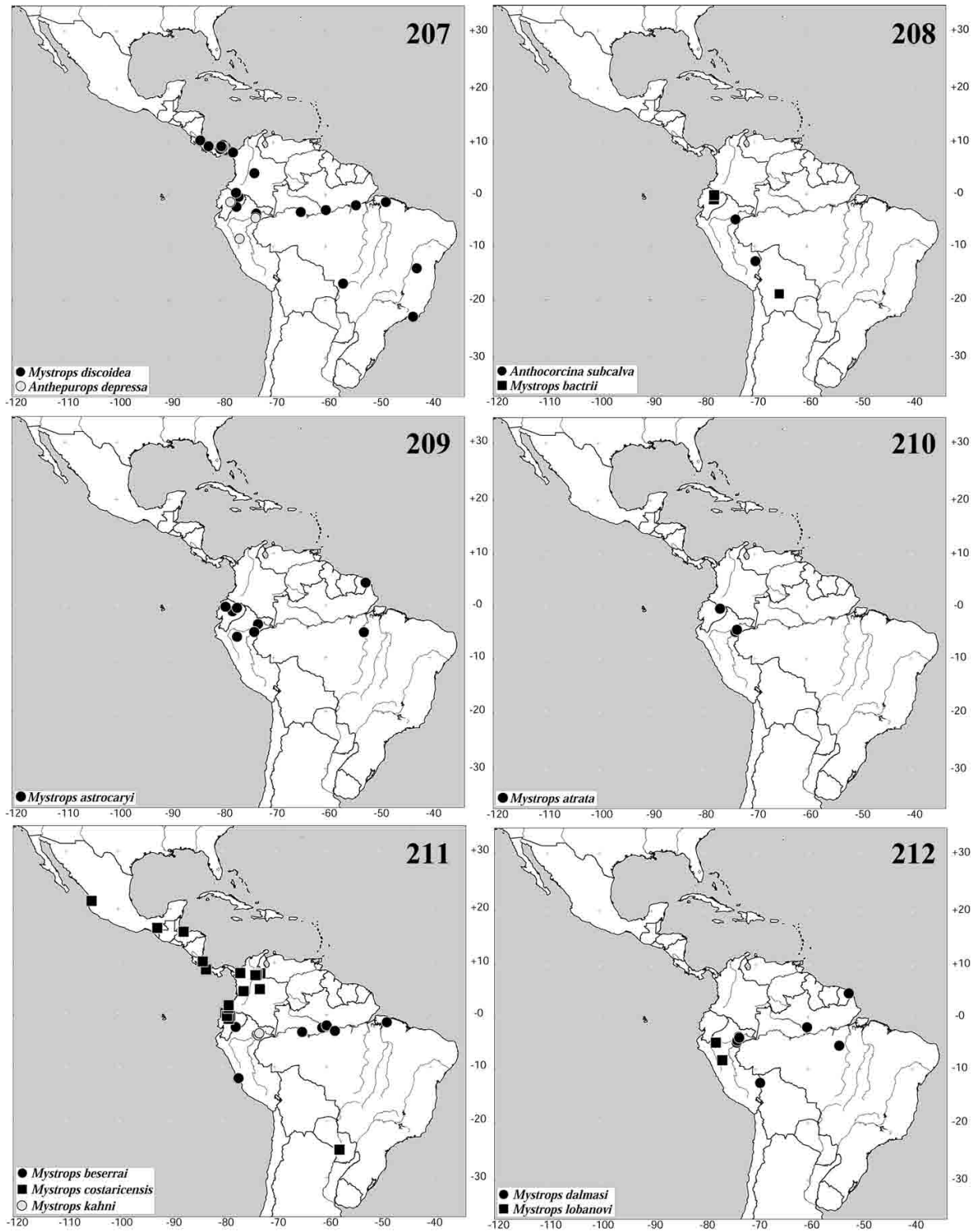
Bionomy. Adults on male flowers of *Phytelephas macrocarpa* and *P.* cf. *tenuicaulis,* in Amazonian rainforest.

Distribution. Map fig. 216. Ecuador, Peru.

Discussion on the specific relations between palms and Mystropini

The most part of the palms sampled in our study show the presence of one or more species of Mystropini. However, some other palms have been sampled without success: they are *Euterpe oleracea* Martius 1824 in Belem, Brasil, *E. precatoria* Martius 1847 and *E. oleracea* in Iquitos, Peru. As to weevils from the tribe Derelomini Lacordaire 1866 (Curculionidae), also specialized on palms, they seem not to be attracted by the mentioned palms due to the fact that their larvae cannot develop into their inflorescences because of the structure of rachillae (arrangement of flowers at wide intervals, on the rachillae does not allow the installation of larvae). Nevertheless, the habitat of larvae and adults of Mystropini on palms is very similar to that of Derelomini. Many species of the latter live and develop on the inflorescences, such as *Couturierius carinifrons* O'Brien, Beserra & Couturier 2004; *C. constrictirostris* O'Brien, Beserra & Couturier 2004; *Grasidius hybridus* O'Brien, Beserra & Couturier 2004; and also species of the genus *Phyllotrox* Schönherr 1843 and *Derelomus* Schönherr 1825 (O'Brien *et al*. 2004; Mora Urpi 1982) for neotropical palms, while in Africa species of the genus *Elaeidobius* Kuschel 1952, with 7 species, participate in pollination of *Elaeis guineensis,* some of these species have been introduced in Central and South America to reach a greater effect in pollination (Mariau & Genty 1988).

Figures 202–206
202–204, *Elaeis oleifera* at Taisha, Morona Santiago Province, Ecuador, october 2002. 202, palm in forest; **203,** male inflorescence before anthesis; **204,** male inflorescence partially decayed. **205–206,** *Mauritia flexuosa* at Iquitos, Department of Loreto, Peru, November 2006; **205,** part of a male inflorescence (raquillae); **206,** part of a raquilla with details of male flowers.



Figures 207–212
Distribution maps of **207,** *Anthepurops depressa* and *Mystrops discoidea*; **208,** *Anthocorcina subcalva* and *Mystrops bactrii*; **209,** *Mystrops astrocaryi*; **210,** *Mystrops atrata*; **211,** *Mystrops beserrai, M. costaricensis* and *M. kahni*; **212,** *Mystrops dalmasi* and *M. lobanovi*.

Nitidulidae are common visitors of palm inflorescences. Among them representatives of different groups have been found. They are members of the genera *Carpophilus* Stephens 1830 (Carpophilinae); *Lasiodactylus* Perty 1830; *Psilotus* Fischer von Waldheim 1829; *Stelidota* Erichson 1843 (Nitidulinae: Nitidulini); *Colopterus* Erichson 1842 (Cillaeinae). However the species of Mystropini have the most regular and abundant representation in these habits. All Mystropini are associated with palms in their larval development and imaginal feeding. They are distributed in Central and South America and it is thought that their origin was in this area and comparatively recently (Kirejtshuk 1996, 1997). True representatives of *Mystrops* are known from Dominican amber (Kirejtshuk & Poinar 2007) and Kirejtshuk (1996) supposed that the appearance of this tribe could be arisen at the boundary of the Palaeogene and Neogene.

Distribution of the considered Mystropini on host palms is shown on the Tab. 1. Some studied species have a rather narrow specialization. *Anthepurops depressa* and *Mystrops atrata* **n. sp.** seem to be characterized by a comparatively restricted range and up till now they have been found only in the Western Amazonia (Department of Loreto), both were registered only on inflorescences of *Phytelephas macrocarpa*. *Mystrops bactrii* **n. sp.** spreads only on *Bactris gasipaes* in the Eastern Amazonia (Ecuador). The latter palm is the alone domesticated palm in the Neotropics since the pre-Columbian time (Couvreur *et al*. 2006 etc.). It has

Table 1. Species of Mystropini studied and their host palm species.

Mystropini	**Species, subgenus or genus of palm host**
	On inflorescences of one species of palm:
Anthepurops depressa Kirejtshuk 1996	*Phytelephas macrocarpa* Ruiz & Pavan 1798, *P.* cf. *tenuicaulis* (Barfod) A.J.Henderson 1995
Anthocorcina subcalva Kirejtshuk & Jelínek 2000	*Socratea salazarii* H.E. Moore 1963
Mystrops atrata **n. sp.**	*Phytelephas macrocarpa*, *P.* cf. *tenuicaulis*
Mystrops costaricensis Gillogly 1972	*Elaeis guineensis* Jacquin 1763
Mystrops delgadoi Kirejtshuk & Couturier 2009	*Ceroxylon quindiuense* (Karsten) H. Wendl 1860
Mystrops hisamatsui Kirejtshuk & Couturier 2009	*Ceroxylon quindiuense*
Mystrops neli Kirejtshuk & Couturier 2009	*Ceroxylon quindiuense*
Mystrops pulchra Kirejtshuk & Couturier 2009	*Ceroxylon quindiuense*
Mystrops rotundula Sharp 1889	*Ceroxylon quindiuense*
Mystrops vasquezi **n. sp.**	*Oenocarpus bataua* Martius 1823 (=*Jessenia bataua*)
Platychorodes adentatus **n. sp.**	*Phytelephas macrocarpa*, *P.* cf. *tenuicaulis*
	On inflorescences of several species of palm of the same genus or sub genus:
Mystrops discoidea Murray 1864	*Astrocaryum subg. Pleiogynanthus: A. campestre* Martius 1824, *A. Jauari* Martius 1824, *A. vulgare* Martius 1824
Mystrops kahni **n. sp.**	*Astrocaryum subg. Monogynanthus: A. javarense* (Trail) ex Drude 1881, *A. macrocalyx* Burrett 1934
Mystrops komissari **n. sp.**	*Bactris maraja* Martius 1826, *B.* cf. *monticola* Barbosa Rodriguez 1875
Mystrops pectoralis **n. sp.**	*Astrocaryum subg. Pleiogynanthus: A. campestre, A. chambira* Burrett 1934, *A. jauari, A. vulgare*
Mystrops squamae **n. sp.**	*Aiphanes ulei* (Dammer) Burrett 1932, *Astrocaryum subg. Monogynanthus* Burret 1934: *A. javarense, A. huicongo* Dammer ex Burrett 1934, *A. urostachys* Burrett 1934
	On inflorescences of palm species of several genera:
Mystrops astrocaryi **n. sp.**	*Aiphanes ulei*, *Astrocaryum subg. Monogynanthus: A. javarense, A. huicongo,A. macrocalyx, A. urostachys*; also *Elaeis guineensis*
Mystrops beserrai **n. sp.**	*Elaeis oleifera* (Kunth) Cortes 1897 *and E. oleifera X E. guineensis* [1], *Oenocarpus mapora* H. Karsten 1857, *O. multicaulis* Spruce 1869
Mystrops dalmasi (Grouvelle 1902)	*Mauritia flexuosa* L. fil. 1781, *M. carana* Wallace ex Archer 1855, *Oenocarpus mapora, O. multicaulis*
Mystrops debilis Erichson 1843	*Attalea funifera* Martius 1826, *A. pindobassa* Bondar 1942, *Cocos nucifera* L. 1793, *Syagrus coronata* (Martius) Beccari 1916, *S. romanzoffiana* (Chamisso) Glassman 1968
Mystrops lobanovi **n. sp.**	*Iriartea deltoidea* Ruiz & Pavan 1798, *Socratea salazarii*

[1] The interspecific hybrid *Elaeis oleifera* X *E. guineensis* is cultivated on plantations of Brazil, Colombia and Ecuador. It seems to be pollinated by Nitidulidae and Curculionidae originated *E. oleifera.*

been not found in nature as a wild species. *Mystrops bactrii* seem to be specialized only to the mentioned palm species, although the genus *Bactris* contains 63 species (Henderson *et al*. 1995). Listabarth (1992) showed that 3 species of *Bactris* are pollinated by some species of *Mystrops*, which remain unidentified. *Mystrops komissari* **n. sp.** has been found only on *Bactris* cf. *monticola* and *B. maraja*, while *Anthocorcina subcalva* occurs only on *Socratea salazari* in the Western Amazonia (Department of Loreto).

Mystrops beserrai **n. sp.** lives on *Elaeis oleifera* and the hybrid between *E. oleifera* X *E. guineensis*, but never found on *E. guineensis,* although these two species of the same genus are rather similar. The origin of this beetle can be expected in association with Amazonian wild populations of *Elaeis oleifera* (Figs 202-206). The analogous situation is thought to be in case of species of the genus *Couturierius* O'Brien, Beserra & Couturier 2004 and *Grasidius* Champion 1902 (Derelomini), which have been regularly collected on the inflorescences of both *Elaeis oleifera* and hybrid between *E. oleifera* X *E. guineensis*, but never on *E. guineensis* (O'Brien *et al*. 2004). *Mystrops beserrai* **n. sp.** has been also found on *Oenocarpus mapora* and *O. multicaulis*, although it do not develop on the latter palm species.

Mystrops costaricensis has been found only on *Elaeis guineensis*, an imported palm, that is now cultivated in a vast area of South America. The distribution of this palm is limited to the north-western part of South America (to the west of Andes) and Central America (Genty *et al*. 1986; Syed 1983). However there is no record of this coleopterous species from the central and eastern parts of South America. The origin of it seems to be assumed on *Elaeis oleifera* in Central America,

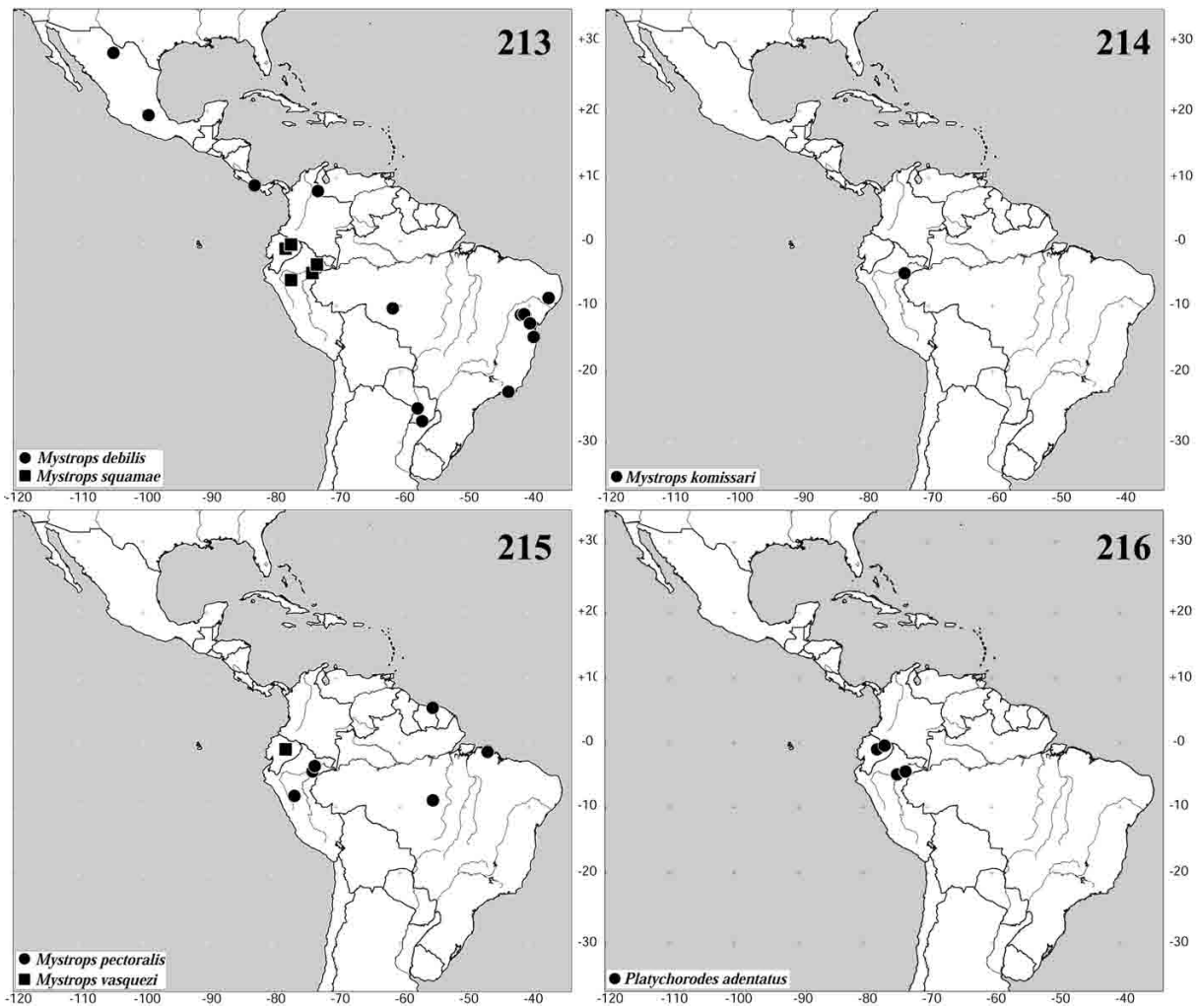
Table 2. Species of host palms and species of Mystropini studied.

Mystropini	Palm species
Mystrops astrocaryi **n. sp.**	*Aiphanes ulei* (Dammer) Burrett 1932
Mystrops astrocaryi **n. sp.**, *M. squamae* **n. sp.**	*Astrocaryum (Monogynanthus) huicongo* Dammer ex Burrett 1934
Mystrops astrocaryi **n. sp.**, *M. kahni* **n. sp.**, *M. squamae* **n. sp.**	*Astrocaryum (Monogynanthus) javarense* (Trail) ex Drude 1881
Mystrops astrocaryi **n. sp.**, *M. kahni* **n. sp.**	*Astrocaryum (Monogynanthus) macrocalyx* Burrett 1934
Mystrops astrocaryi **n. sp.**, *M. squamae* **n. sp.**	*Astrocaryum (Monogynanthus) urostachys* Burrett 1934
Mystrops discoidea, M. pectoralis **n. sp.**	*Astrocaryum (Pleiogynanthus) campestre* Martius 1824
Mystrops pectoralis **n. sp.**	*Astrocaryum (Pleiogynanthus) chambira* Burrett 1934
Mystrops discoidea, M. pectoralis **n. sp.**	*Astrocaryum (Pleiogynanthus) jauari* Martius 1824
Mystrops discoidea, M. pectoralis **n. sp.**	*Astrocaryum (Pleiogynanthus) vulgare* Martius 1824
Mystrops debilis	*Attalea funifera* Martius 1826
Mystrops debilis	*Attalea pindobassa* Bondar 1942
Mystrops bactrii **n. sp.**	*Bactris gasipaes* Kunth 1816
Mystrops komissari **n. sp.**	*Bactris maraja* Martius 1826
Mystrops komissari **n. sp.**	*B.* cf. *monticola* Barbosa Rodriguez 1875
Mystrops delgadoi, M. hisamatsui, M. neli, M. pulchra, M. rotundula	*Ceroxylon quindiuense* (Karsten) H. Wendl 1860
Mystrops debilis	*Cocos nucifera* L. 1793
Mystrops astrocaryi **n. sp.**, *M. beserrai* **n. sp.**, *M. costaricensis*	*Elaeis guineensis* Jacquin 1763
Mystrops beserrai **n. sp.**	*Elaeis oleifera* (Kunth) Cortes 1897
Mystrops beserrai **n. sp.**	*E. oleifera X E. guineensis*
Mystrops lobanovi **n. sp.**	*Iriartea deltoidea* Ruiz & Pavan 1798
Mystrops dalmasi	*Mauritia carana* Wallace ex Archer 1855
Mystrops dalmasi	*Mauritia flexuosa* L. fil. 1781
Mystrops vasquezi **n. sp.**	*Oenocarpus bataua* Martius 1823 (=*Jessenia bataua*)
Mystrops beserrai **n. sp.**	*Oenocarpus mapora* H. Karsten 1857
Mystrops beserrai **n. sp.**	*Oenocarpus multicaulis* Spruce 1869
Anthocorcina subcalva, Mystrops lobanovi **n. sp.**	*Socratea salazarii* H.E. Moore 1963
Anthepurops depressa, Mystrops atrata **n. sp.**, *Platychorodes adentatus* **n. sp.**	*Phytelephas macrocarpa* Ruiz & Pavan 1798
Anthepurops depressa, Mystrops atrata **n. sp.**, *Platychorodes adentatus* **n. sp.**	*Phytelephas* cf. *tenuicaulis* (Barfod) A.J. Henderson 1995
Mystrops debilis	*Syagrus coronata* (Martius) Beccari 1916
Mystrops debilis	*Syagrus romanzoffiana* (Chamisso) Glassman 1968

but only *M. beserrai* **n. sp.** has been sampled in the native and cultivated plant *E. oleifera* to the east of Andes (Ecuador, Brazil). *Mystrops dalmasi* is a regular host on *Mauritia flexuosa* in the Central (Manaus) and Western Amazonia (Iquitos) and *M. carana* in Western Amazonia (Iquitos), where this coleopterous species is rather abundant. It seem to be also expected from other species of the palm tribe Lepidocarieae, such as species of the genus *Mauritiella* Burret 1935. *Mystrops dalmasi* has been also found on *Oenocarpus mapora* and *O. multicaulis* but in few specimens. The presence of *Mauritia flexuosa* near these palms might explain also the presence of *Mystrops dalmasi* on these plants (as in case with *Euterpe oleracea* and *E. precatoria* – see above, although structure of flowers does not allow development of larvae).

Mystrops debilis has the largest distribution, which includes West Indies (Trinidad), Mexico, Colombia, Brazil (Atlantic coast) to Paraguay. It is the only species in this study that is not represented in the Amazonian region and a widest spectrum of host plants among the considered species (see below Tab. 1).

Mystrops pectoralis **n. sp.** and *M. discoidea* seem to live only on palms of the subgenus *Pleiogynanthus* Burret 1934 of the genus *Astrocaryum*. *Mystrops pectoralis* has been found on inflorescences of *Astrocaryum vulgare* at Belem (northeastern part of Amazonia) and on *A. chambira* (figs 198-201) and *A. jauari* nearby Iquitos (Western Amazonia). *M. discoidea* has been found on inflorescences of *A. campestre* (collected by Noblick), *A. jauari* and *A. vulgare.* Both these species seem to be widely distributed in Amazonia. These species can



Figures 213-216
Distribution maps of **213,** *Mystrops debilis* and *M. squamae*; **214,** *Mystrops komissari*; **215,** *Mystrops pectoralis* and *M. vasquezi*; **216,** *Platychorodes adentatus.*

be also expected on inflorescences of other palms of this genus, as *A. aculeatum* and *A. acaule* and others of the subgenus *Pleiogynanthus* occurring in Amazonia. *Mystrops astrocaryi* **n. sp.**, *M. kahni* **n. sp.** and *M. squamae* **n. sp.** are characteristic of the genus *Astrocaryum* subgenus *Monogynanthus* Burret 1934. They are common and regular on inflorescences of *A. huicongo*, *A. javarense*, *A. macrocalyx* and *A. urostachys* in the Western Amazonia (Ecuador and Peru). Nevertheless, some specimens of *M. astrocaryi* **n. sp.** have been also collected on *Aiphanes ulei*. It is supposed that these samplings present atypical comportment, why the most part (thousand specimens have been collected) were obtained from *Astrocaryum* subg. *Monogynanthus*.

Different *Mystrops* species (*M. beserrai* **n. sp.**, *M. dalmasi, M. vasquezi* **n. sp.**) found always in few numbers in the inflorescences of *Oenocarpus* spp. and *M. astrocarii* **n. sp.** in those of *Aiphanes ulei* must be considered as "accidental" visitors. It is thought larvae or adults were never found in palms of the genus *Euterpe* Martius 1823 (*O. precatoria* and *O. oleracea*) and *Lepidocaryum gracile* Martius 1824, because these palms are not attractive and structure of the inflorescences do not permit the development of the larvae. The most part of the species of *Mystrops* reported in this study are highly specialized on genera or subgenera of palms. Nevertheless, adults of some species can be attracted by palms of other genera without possibility of further larval development. The management of some species of *Mystrops* for pollination is a perspective for palms of economical interest in fruit production.

It is shown for the first time that the tribe Mystropini and particularly species of the genus *Mystrops* have a high level of specialization as in the case of the weevil tribe Derelomini, which is also known as including exclusively specialists of palm inflorescences and excellent pollinators (Henderson 1986; Mariau & Genty 1988). Larvae of Mystropini cannot develop in all kinds of inflorescences and this circumstance can explain scarcity or absence of adults on some palm genera (*Euterpe*, *Oenocarpus*, *Lepidocaryum*). Further studies on larval biology of Mystropini are necessary to understand a level of coevolution between palms and the group of beetles considered.

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